

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Continuous pagination/
Pagination continue

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/
Comprend un (des) index

Title on header taken from:/
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments:/
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

CANADA
 HEALTH JOURNAL,
 A MONTHLY MAGAZINE OF
 PREVENTIVE MEDICINE

EDITED BY
 EDWARD PLAYTER, M.D.

Public Health and National Strength and Wealth.

CONTENTS.

Our Inland Waters, Pathogenic Organisms,
 Sewage, and the Spread of Infectious Diseases 333
 The Dietary of Indigestion..... 340
 Drinks and Digestion..... 342
 Prevention of Consumption..... 344
 Air Purification 345
 What Tobacco will do..... 346
 Dangers of Polluted Water..... 347
 Fatigue and Indigestion..... 348
 The Public Health in Canadian Cities in October 349
 Miscellaneous Items—Health and Longevity—
 Diarrhoea and Feeding Bottles—Foolhardiness
 —The Child at School—Health Maxims of

John Wesley—Regulations in Plumbing Work
 - The Wedding Trip—The Air of the Sea—
 Disposal of the Dead—Faith Healing—A Drain
 Pipe Ditty—Evo lution of Disease—Organisms
 and other items..... 352-357
 Editor's Special Corner—The "Patent Medicine"
 Evil—Toronto Trunk Sewer—Sanitary progress
 in Montreal—The Cholera and Quarantines—The
 Centenarian, Chevreul and his Habits, with
 numerous notes 358-359
 Current Literary Notes—*The Century*—*Harper's*—
 —*St. Nicholas*, etc., etc..... 360.

Subscription Price, \$2.00 per year; Single Copy, 20 Cents.

ADDRESS ALL COMMUNICATIONS,

"HEALTH JOURNAL," Ottawa:

Macdougall, Macdougall & Belcourt,

BARRISTERS, ATTORNEYS,
Supreme Court, Parliamentary and Departmental Agents, Etc.,

Scottish Ontario Chambers.

Corner of Sparks and Elgin Streets, Ottawa.

HON. WM. MACDOUGALL, C.B.,
FRANK MACDOUGALL,
N. A. BELCOURT, LL.B.

N. PEARSON, DENTIST, formerly of
Newmarket, corner of King and
Yonge Streets, Toronto.

HENRY WATTERS, Chemist and Druggist

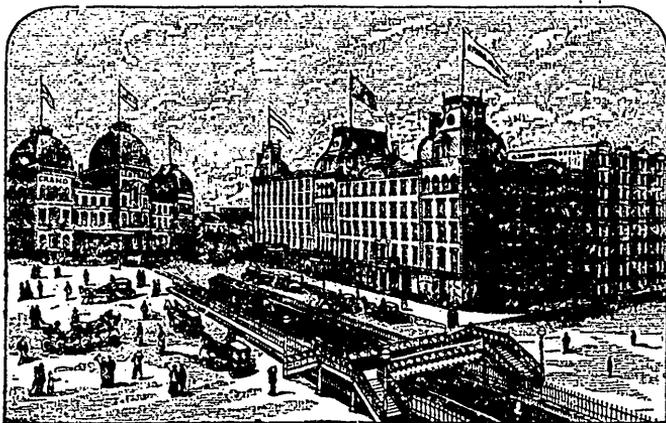
214 & 216 Sparks St., OTTAWA.

Special attention given to the compounding
of Physicians' Prescriptions.

ROBINSON & KENT, BARRISTERS,
ETC. Office: Victoria Chambers,
9 Victoria Street, Toronto.

N. G. ROBERTSON.

H. A. E. KENT.



THE GRAND UNION HOTEL,

Opposite the Grand Central Depot, New York City.

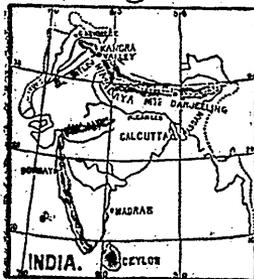
Offers travellers and families arriving or leaving the city to visit Saratoga, Long Branch, White Mountains, or other Summer Resorts, superior accommodations. All improvements, European plan, over 600 elegantly furnished rooms, fitted up at an expense of a Million Dollars. \$1.00 and upwards per day.

Richly furnished suites for families, and elegantly furnished rooms for dinner parties for ten and upwards. Cuisine and wines of superior merit. The Restaurant, Cafe and Wine Rooms supplied with the best, at moderate price. Toilet and Baggage Rooms, for ladies and gents, where coats, valises and parcels can be left free.

W. D. GARRISON, Manager.

Guests' baggage taken to and from the depot free, and \$3.00 cab hire saved by stopping at this Hotel. Be sure and try the Grand Union Hotel.

GENERAL KEER'S
Himalayan Tea



Trade Mark Registered

GENERAL KEER'S HIMALAYAN TEA

IMPORTED DIRECT BY HIM FROM INDIA.

*Selected for him with great care in Calcutta,
the best market in the world for Indian
TEAS.*

Forwarded to any part of Canada or the United States in
Caddies of from 5lb upwards,

FOR SAMPLES AND PRICES APPLY TO

Major-Gen. KEER, 58 Church St., TORONTO.

THE CANADA HEALTH JOURNAL.

VOL. 8.

NOVEMBER, 1886.

No. 11

OUR INLAND WATERS, PATHOGENIC, ORGANISMS, SEWAGE, AND THE SPREAD OF INFECTIOUS DISEASES.

READ AT THE MEETING OF THE AMERICAN HEALTH ASSOCIATION, IN TORONTO,
OCTOBER 5, 1886, BY EDWARD FLAYTER, M. D.

A LARGE proportion of the disease to which the highly organized yet frail unites of humanity are almost universally subject, is caused by the waste products of human life, frequently associated with specific organic substances, which are thrown off from the body by the excretory organs, finding their way back into the body again, and most commonly along with the air and the water consumed. As a common example I may mention the effects of re-breathing again and again the over-breathed air of unventilated rooms, and of breathing air and drinking water contaminated by sewage, or what is the same thing, the contents of out-closets. A more notable example is found in the spread of infectious disease. For whatever the nature of the specific infections—and few, probably, if any, in this assembly doubt that these are microscopic organisms of the lowest type—particulate, living and reproductive—they are for the most part, as it were from the beginning, intimately associated with, and are practically inseparable from, the excreta of the human body, either of the lungs, or of the skin, or of the bowels or, it may be, of the kidneys; while they are also disseminated and communicated apparently in close connection with these waste products of life, and the vehicle for conveying the waste products with the infections from one to another—from the sick to the well—is most commonly either air or water. Indeed, so intimately associated are these specific infections with the excreta that it appears probable it may yet be demonstrated that this entire class of organisms, either within the human

body or outside of it, live, grow and multiply in their highest degree of development, in, or in connection with, perhaps feeding upon, these used up, dead decomposing waste substances.

It is probable that in no other field can this Association, collectively or individually, accomplish more in the way of preventive medicine than in that of efforts in preventing outbreaks and the spread of infectious epidemic diseases.

Pure air and pure water being, too, the first essentials of health, one of the most important questions which concerns this Association and the public is that of the proper disposal of all the waste products of life—the cast off excrete substances of the human body in particular—in order that they shall not contaminate the air and the water which mankind are to breathe and to drink.

In the less dense medium, air, with its abundance of free oxygen—which in one form or another, perhaps as ozone, is probably the best of all disinfectants or destructors of diffused disease germs—waste organic substances of all sorts are soon transformed into simple compounds and their products rendered comparatively harmless by rapid dilution and diffusion; and even when these are associated with living specific infections these too are doubtless for the most part rapidly diffused, oxidised and destroyed. In the heavier medium, water, however, these excrete substances are much less readily diffused, oxidised and rendered innocuous; and it is probable that the infective organisms find water a more favourable medium than air for development and multiplication. We are all

familiar with the convincing evidence which has accumulated to prove that water is a common vehicle for the dissemination of enteric or typhoid fever and cholera, and it may be, as well as milk, a vehicle for communicating scarlet fever and diphtheria, and possibly many other if not all of the infectious febrile diseases.

It seems clear that the spores of some moulds or mildews, which it appears belong to the same class of organisms as the specific infections of disease, will not only sustain themselves when immersed in water containing nitrogenous matter, but owing to the facility with which they accommodate themselves to this medium, they will in it multiply rapidly. Although the pathogenic micro-organisms which are regarded as the germs of infectious diseases are not to be found in ordinary water; the wonderful power of adaptation to a particular medium which all such low forms of life possess, is well known; and they appear to be subject to the same influences as the non-pathogenic organisms. Recent investigations by various medical scientists into the bacteriology of water, have brought out some very interesting and important facts in connection with this subject. It appears from Dr. Percy Frankland's experiments, referred to in late numbers of the *British Medical Journal*, that Kock's "comma bacillus" (of cholera) is capable of adapting itself to the aqueous medium. Dr. Frankland states that, "when introduced into water a large proportion of these bacilli are generally destroyed, but the remaining ones then undergo multiplication; and Dr. Wolffhügel has found that when these adapted organisms are further transplanted into fresh water, they do not undergo this preliminary reduction in their number, but commence multiplication at once." Although the comma bacillus may only survive a few days in good potable water, we are told that in London sewage it appeared to find an excellent culture medium, and was found in largely multiplied numbers after twenty-nine days. Dr. Meade Bolton has shown that the spores of anthrax remained alive in distilled water for upwards of ninety days, and in polluted well-water for nearly a

year; although the bacilli alone when introduced into some kinds of ordinary water perished in the course of a few days. Thus the spores, just as in the case of their resistance to heat and other disinfectants, exhibit a vitality far greater than that possessed by the bacilli. Dr. Wolffhügel found that in polluted river water in Berlin, even when diluted tenfold with distilled water, the anthrax bacilli undergo extensive multiplication. The bacillus pyocyanus, which produces the greenish-blue coloring matter frequently present in abscesses, after having been 53 days in distilled water was found to have increased in numbers many-fold those originally introduced. Dr. Arthur Downes, in a communication to the above named Journal, quoting from a memoir from Professor Duclaux, states that, in sixty-five flasks of M. Pasteur's earlier researches, examined by Duclaux, one hyphomycetes (*Aspergillus niger*), one micrococcus, and four species of bacillus, had retained their vitality for twenty-five years. Dr. Downes has given reasons for thinking that micro-organisms endure injurious influences, such as sunlight, better in water than in nutrient media, for the simple reason that they are in water unable to enter upon the vegetative phases of their existence. This he writes is in accordance with classical observations made by Professor Tyndall on the sterilization of hay infusion.

These results, says the *British Medical Journal*, "clearly show how zymotic diseases may be communicated by potable water of even the best quality, more especially if the microorganisms, which are the cause of the disease, are capable of forming spores, but even in the absence of such spores. This power of adaptation to a particular medium greatly extends the possibilities of vitality for organisms which are not known to produce spores."

With these facts and possibilities before us, and before us too the probability that the bacillus entericus (of typhoid) the bacillus tuberculosis (of consumption), the micrococcus of diphtheria, and possibly the specific organisms of other infectious diseases not yet recognized, have similar characteristics, and the fact that the sewage of any

town or city may contain myriads of these organisms, with the excreta, from individuals suffering from the infectious diseases indicated, it is very easy to understand that to prevent the contamination by sewage of all water supplies is of very great consequence.

We are favoured on this continent with great lakes and vast networks of branching rivers of pure fresh water, or of water which ought to be pure but is not so pure as it once was. If properly cared for these lakes and rivers will remain a standing and entailed inheritance of inestimable value for our descendants for yet unthought of generations. Are they properly cared for? What do we find? Large streams and lakes and small streams and lakes alike, everywhere, being polluted with the sewage of hundreds and thousands of hundreds of people;—of people who seemingly have no thought, no care, for the water, no pity, no fellow feeling for their fellow creatures "down the stream." The people of a town or city exercise some care that their own water supply is taken from a point above where they empty their own sewage, but give little heed to the diluted sewage flowing down to them from those "up the stream." The stream, or it may be only the current of a lake, washes away the sewage of their own city, let the cities down the stream look out for themselves, is their practice. But their trouble is, the cities up the stream act in like manner, and they themselves too must use the impure, dangerous water. We are constantly reminded of Coleridge's suggestive lines:

"The river Rhine, as is well known,
Washes the City of Cologne;
But oh, ye Gods, and powers divine,
What, then, shall wash the river Rhine."

Let us make a mathematical calculation. I need not say, gentlemen, this is not a pleasing subject to handle or discuss, but as medical practitioners we have often to handle unpleasant subjects,—sometimes very young and very tiny ones. Be assured I am not speaking in the interests of the Queen's nor of the Rossin, and in order to destroy your appetite for your meals. I think we are for the most part too familiar with such undainty subjects to permit them to interfere with the few enjoyments of life

which fall to our lot. We are in this city on the border of a lake having a superficial area of about 7,000 square miles. Surrounding this lake—between Hamilton, at its head, on the one hand along its northern shore to Kingston, and on the other along its southern shore to Waterdown—there are not less than half a million of people who pour their sewage almost directly and undiluted into its waters. In other words, into every square mile of this charming body of water, which ought to be all delightfully pure, there are about 65 persons daily and constantly pouring all the washings of their baths, of their laundries and their sinks—of their skin, of their underclothing and of their kitchen utensils—along with all their other bodily excreta and refuse;—65 persons to every square mile—one to every 200 square yards. Given, a lake with an area of one square mile, with a depth even as great as that of the average of Lake Ontario, and beside it a hamlet with a population of 65 persons who daily throw all their washings, refuse and excrement into the lake, the water of the lake being changed only once a week, is there one of us here who would willingly use habitually for drinking purposes this water? Even after "filtering" it, or such attempts at filtering as public water supplies usually receive? This is taking a purely æsthetical view of the subject, aside from the probability or possibility of the water containing, floating about, as it were seeking a favourable spot for reproduction, the germs of specific disease—the bacillus of typhoid or the micrococcus of diphtheria.

The water in the lake beside us moreover is not often changed. The currents in it move slowly, and were they to move directly towards the sea at the rate of one mile an hour, the whole of the water would only be renewed about once a week. Hence there is doubtless in the lake constantly at least a week's accumulation of the sewage of half a million of people; and every square mile of it contains the week's accumulation of 65 persons. But it must be observed that around the borders of the lake, where the sewers empty their contents into it, there must be in the

water a much larger proportion of sewage on the average than this, or than there is in the more central parts of the lake. Again, the water of the lake when changed is replaced by water flowing from Lake Erie, which in the lake must be in a greater degree of pollution than is this of Ontario; for although a larger lake, a much larger number of people pour their sewage into Lake Erie. The same may be said of Lake Huron, and of Lake Michigan. Into these two flow the sewage of the greater part of the State of Michigan, of a part of Indiana, of Illinois, including Chicago, with is more than half a million of people, and much of Wisconsin, with many towns in western Ontario. Into the great rivers, too, the waters of which, it is true, are moved and renewed much more rapidly — the Missouri, the Mississippi, the Arkansas, the Ohio, with all their branches, great and small, into the Susquehanna, the Delaware, the Hudson and the historic Potomac, into the Connecticut, the Merrimac, the Kennebec, the Penobscot, the St. Croix, the St. John, and the famous St. Lawrence, flows day in and day out, the sewage of many intervening millions of people.

I need not dwell at all here on the general nature of sewage, more than to draw attention to the fact that it is all liable to contain, and frequently does contain, the germs of specific disease. Sanitation has not yet made such progress as to secure the disinfection and destruction at the bed side, and before it passes into the sewers, of all infected excreta. The sewage of every town or city will be found to contain from time to time or almost constantly the excremental matter of patients suffering from one or other of the infectious diseases — typhoid, diphtheria, scarlet fever and the like.

What becomes of the sewage in the water? All the liquid part is of course at once diluted, and in a degree great or small according to the quantity of water into which it flows and the rapidity of movement of the water; while the solid substances gradually subside and raise the bed or bottom of the lake or stream and silt or obstruct the currents. As regards the changes which the ordinary or non-specific organic matter of sewage

undergoes on being largely diluted with water, there appears to be a difference of opinion. It is generally believed that it is soon oxidised and rendered innocuous. Doubtless much depends on the nature of the organic constituents. According to the experiments of Frankland, in a Report of the Commissioners appointed to inquire into the pollution of rivers, in 1870, the water in the river Irwell, which receives the sewage of Manchester, after a flow of 11 miles and falling over six weirs, showed but little improvement. Dr. Letheby, on the other hand, in a Report of the East London Water Bill Committee, 1867, considers that purification takes place more rapidly, and that if sewage is mixed with twenty times its bulk of water and flows a distance of 9 miles it will be completely oxidised. This could only be the case, plainly, with the more soluble substances. Dr. Letheby doubtless did not mean to include living, specific micro-organisms, which were at that time hardly recognized. Parkes states, "Average London sewage diluted with nine parts of water and syphoned from one vessel into another so as to represent a flow of 96 and 192 miles, gave a percentage reduction in the organic nitrogen of 28.4 and 33.3 respectively." He found unhardened epithelium in unfiltered Thames water after a transit of 86 miles in a barrel, and after being kept five months. He says plainly, "in inland towns sewage cannot be discharged into rivers."

What has been said by these authorities in relation to sewage must all be regarded as applying only to dead matter — to used up, waste organic substances, largely diluted with water. At those times, and until very recently, there was no known means by which the specific infections of disease in water could be detected, and water that was then considered chemically pure and potable may have contained, and doubtless often did contain, the germs of infectious disease, quite unknown to the chemical analyst. Within the last year or two the microscope with culture fluids and gelatine-plate cultivation have revealed the defects of chemical analysis in deciding upon the purity or non-purity of water.

What had been previously above

stated in relation to the vitality in water of the different forms of infectious organisms, and more especially of their spores, indicates the danger to which the public are exposed in drawing their water supply from any body of water into which ordinary sewage is largely or indiscriminately poured. Reasoning from analogy, we are led to believe that such water, although showing upon chemical analysis but a trace of organic matter and regarded as a pure, potable water, may yet contain the specific infectious particles, which when taken into the human body when this is in a state of receptivity, are capable of giving rise in such body to the specific disease of which the infectious particles are the seeds. If the bacillus of Asiatic Cholera and the spores of the bacillus of anthrax will continue to live in water for weeks and months and there multiply, as the cholera bacillus has been shown to do by Dr. Wolffhügel, why may not the specific organisms (or their germs, or spores, if they are sporing bodies) of enteric or typhoid fever or of other infectious diseases, or certain of them—the fittest—the adapted ones—likewise continue to live for weeks and months and to multiply? And furthermore, when they are cast in countless numbers along with sewage into a body of water even as vast as one of our large lakes or rivers, may not certain of them be wafted by the water currents hither and thither and into some public water supply, and so eventually be swallowed by some receptive but unsuspecting human being, and finding there a suitable soil, develop and multiply and give rise to the special specific disease of which they are the specific infections? just as we know the seeds of higher organisms—as the weeds of the field—are wafted by the wind to other, new and distant fields where they take root and live, develop and multiply. I say, may not this be the case? Is it not quite within the range of possibilities? Is it not possible that in this way may be explained the source or origin of certain outbreaks of infectious disease which otherwise baffle investigation and defy explanation?

There is no lack of evidence to prove, as clearly as any circumstantial evidence

can prove anything, that serious outbreaks of infectious disease—such as enteric fever, have resulted from the contamination of a public water supply by the dejecta of one infected person suffering from the disease. If the micrococcus of diphtheria and the bacillus of enteric fever, or the specific infections of scarlet fever and measles, are as capable of adapting themselves to the aqueous medium and are as tenacious of life as the bacillus of anthrax and of Asiatic cholera—and who can say that we have any reasons to believe they are not thus capable and tenacious?—then we must admit that the danger of contaminating the water of Lake Ontario by the dejecta of the hundreds of individuals who are from time to time or constantly suffering from one or more of the infectious diseases above named, in the cities and towns which surround this lake and make it their cesspool, and the danger of contaminating the water of a small stream or reservoir of water by the dejecta of one infected person, differs only in degree. And I contend that the degree of danger in the former case is sufficiently great to demand more consideration and attention than it receives. What I have said of Ontario may be said of Lakes Erie and Huron and Michigan, and of all our rivers, both great and small.

It may be said that, if what I herein contend were tenable, outbreaks of such diseases would be much more frequent than they are—universal, and that the human race would soon be decimated or destroyed. This need not necessarily follow; and besides, such outbreaks are common, and in the case of many of them—or of the first infections in the outbreak, we know not whence they came.

It is not to be supposed that the micro-pathogenic organisms, these germs of specific infectious disease, are proportionately numerous in our lakes and rivers, although we may reasonably suppose that they will gradually become more and more so; or that they could be detected in every tumbler, or in every barrel or in every hundred barrels, of water. But that there is danger from at least the casual presence of them will I think be generally admitted; and that this danger will increase from year to year.

In cities and towns where the water supply is filtered the danger is lessened. But the filtering process as most commonly practiced is of little value, and gives only a false, and indeed sometimes a dangerous, security. In Toronto, for example, it has been publicly stated that little fishes—small, but very unmicroscopic and fit to fry—have on occasions found their way through the water tap into the kitchen pot. With the nature of the filtering process or processes or of the filtering bed, which permits the passage of such food along with the drinking water, I am not familiar. In London, England, the filtering of the city water supply by the different water companies is most carefully and thoroughly done through a series of filtering beds repeatedly changed. The monthly examinations of the London supply made by Dr. Percy Frankland, and published in Sir Francis Bolton's reports to the local Government Board, show that the river waters, in the process of storage and filtration, have the microorganisms which they contain reduced on an average by 95 per cent. before reaching the consumer; and a similar reduction has been observed in the case of the public water supply of Berlin, which is periodically examined under the superintendence of Dr Koch.

Notwithstanding the great care exercised in those cities in the filtering process, there is still the risk of five to one hundred. Plainly, the only safe way is either to keep the sewage entirely out of the waters, both of rivers and lakes, or, to obtain the water supply from great depths in the earth, such as from artesian wells. And even if the latter course be adopted, if water from great depths only be used, and the present method of sewage disposal be continued, then the foul waters will contaminate the air.

It appears to me that all in this assembly of men, who take so deep an interest in the public welfare, will concede that the present method of disposing of the sewage is not the proper one, and that there should be a change. If it is continued, eventually our rivers and lakes will be but little better than sewers and cess-pools. It may be said what to bring about such a condition of

the waters would require such a length of time that we need not give ourselves any uneasiness about that future. But with the rate of increase of the past half century proportionately continue, what will be the condition half a century or a century hence? What kind of legacy are the people of this generation preparing for their grandchildren and great grandchildren? Look at the Toronto bay, with its "full seven and twenty stenches, all well defined, and several stinks," of Colridge, and think of it clear and pure and beautiful as it was half or three quarters of a century ago, and as it ought to be now. May not the people of this fair city reasonably wish, and ardently, that their grandfathers never had commenced to pour their sewage into its waters, or even into the lake? Will the bay ever again be the same as it once was? Will the soil of the beautiful country at the back of it ever recover its early richness and powers of production, and yield so abundantly of its fruits for the people as did once the virgin soil? and as it would now still do had not those fathers and grandfathers poured its yearly decreasing strength into this once beautiful lake, instead of returning, year by year, as they should have done, to mother earth, the mineral and other elements—the foundation stones, as it were—for her annual products, and at once preserved the soil and the water. Think of the grandeur of the heritage we of this generation would now possess if all the bays and streams, and lakes and rivers of this continent were in a state of virgin purity; or more, even; as for example, with any marsh waters any of them may have long ago contained or been associated with, drained or cut off from them.

But we must not reflect on our fathers and grandfathers; grand old pioneers that they were. They did their best for us, and did very much, and nobly. Moreover they knew not, or hardly, what they were preparing for their descendants; knew not of the mischief that follows such a method of sewage disposal as has been and is still practiced. We may charitably and fairly believe that had they known of it all they never would have commenced the prac-

tice. We know of it now. Shall we not put forth an effort to stay the tide of mischief in order that our grandchildren may not inherit from us a still more undesirable inheritance than we have come into possession of?

A great deal could be said, and perhaps profitably, of the serious consequences (serious in view of the future food supply) of yearly depleting the soil as we now are depleting it, but it is not quite within the province of this paper for me to do so. I would however in but a few words simply allude to, or name for future reflection, two or three points.

The Israelites, when Jerusalem was a large and prosperous city, provided large and costly aqueducts, still extant, which supplied abundance of water with which they flushed their sewers and conveyed their sewage to large tanks, whence the liquid part was drawn to be used for irrigation and the solid sediment employed to fertilize in another form.

The great fertility of China has been largely attributed to the care with which the inhabitants return to the soil that which they have taken from it.

One of the principles of national economy laid down by Prof. Thudichum, is that the capacity to produce food must be rendered permanent by a strict observance of the laws of nature regulating vegetable life, the knowledge of which is the basis of agricultural science. And the first and most important of these laws is, that we must return to the soil the mineral ingredients we take from it in gathering our crops.

F. C. Krepp in his work on sewage refers to the high value of the waste products of the human body, which it appears afford certain materials, gases, &c. for the growth of vegetation not provided by any other fertilizer. The best authorities estimate that the waste products of every individual will, if returned to the soil, give an increased annual yield of crops worth £1 stg. At this rate the sewage on this continent would be worth every year \$250,000,000. While notwithstanding the use of guano and other fertilizers, the sources of which are becoming exhausted, the soil is almost everywhere

diminishing in fertility and no longer yields the amount of produce it once did.

Gentlemen, we of this generation are making drafts upon the future—drafts upon our children and grandchildren—drafts to be paid in their health and life and happiness in which we are little short of criminal. Many of you here who have come long distances to take part in the efforts here being made to promote the well-being of the people, would, I am sure, gladly do much to cause an entire change in the present method of disposal of the waste products of life. Probably there is not a man here who, after the manner of Canute, if he thought he could but accomplish the good intent of the purpose, would not go down to the water's edge and stay the tremendous tide of sewage now flowing into the lakes and rivers of this continent and turn it back onto the soil. The tide of this sewage has a different source from the tide of the oceans; and it could be turned back, and by human effort. The right sort of effort need not result in such failure as did the ssembled effort of the Danish King. But doubtless it would or will take a long time to turn it—to persuade or compel all the people in all the towns and cities on this continent to return their waste products to the soil. However long the time it must have a beginning. I appeal to the members of this association to favor and move for a beginning at this meeting. Let us appoint a special committee to consider, and report upon at a future meeting, the best way in which the great masses of the people can be led to see the advantages of making such a change in the present usual method of disposal of the waste products of life as shall best preserve their great mother, the soil, and their greater and older mother, the water.

THE laws of hygiene are not made by man; their operations cannot be arrested by injunctions issued by courts, and their execution is not dependent upon the verdict of chosen juries or elected judges; but man is subject to them, and for violation of them he will pay the penalty with unwavering constancy—
DR. LINDSLEY, in New Haven, Conn., Board of Health report.

THE DIETARY OF INDIGESTION.

BY J. MILNER FOTHERGILL, M. D., EDINBURGH.

WHEN I hear medical men denouncing a regulated dietary in indigestion, my surprise is excited. Is it a malady to be combatted by drugs only? I do not think anyone will support that proposition. Medicinal agents are not without their value; but the medicinal treatment of indigestion is surely but auxiliary to the dietetic management. That a regulated dietary is too often a restricted dietary—so restricted indeed that the patient is practically half-starved—may be admitted. But need a regulated dietary necessarily be a very restricted one? I opine not; if the matter of the dietary of the dyspeptic be given a little more attention.

And for this it is well to keep the physiology of indigestion in mind. Digestion is solution by hydration so that the carbo-hydrates and albuminoids may pass through the wall of the alimentary canal; after which they are de-hydrated—else they would pass out by the kidney, giving glycosuria and peptonaria, and leaving the body un-fed. But a preliminary to solution is disintegration. If mastication be not properly performed the “lumps” of food find their way into the stomach and offend it.

Pastry, pieces of hard potato, cheese, are notorious offenders. The solvent action of the gastric juice can exercise no disintegrating effect upon the substances, while they act as irritants and set up pain. A piece of meat comparatively unchewed is less objectionable, because the gastric juice acting upon the connective tissue allows the muscular fibrillæ to fall asunder. But even with muscular fibre there is a wide difference. Pork and veal are hard meats, and, not readily falling to pieces in the stomach under the action of the gastric juice are held, and rightly too, to be indigestible. On the other hand, a thin slice of well-boiled ham, cut across the fibre is very digestible. So is the loose fibre of a sheep's head. This is the mechanical aspect of the digestibility of food. Hard stringy meat is very indigestible. So are ill-cooked vegetables,

and especially the crucifere, so are hard-boiled eggs.

Fish, and especially white fish, whose fibres very readily fall to pieces, are in repute, with dyspeptics for obvious reasons. Fish which are fatty, are indigestible (because the fat resists the action of the gastric juice) as the flesh of the salmon, the mackerel and the herring. The short fibre of the whiting, “the chicken of the sea,” makes this fish especially digestible. Then come the flat-fishes, the haddock and the cod. They all are best boiled, for, if fried, care is requisite that the flesh be not soaked in fat—when it is highly indigestible. There are few more indigestible matters than a fried sole which has not been skillfully cooked. And the same holds good of birds. Chicken and game are digestible, while the duck and goose, greasy-fibred meats, are as certainly indigestible.

Potatoes have an evil reputation, but that again is largely a matter of cooking. A potato which is imperfectly cooked has a hard centre. A “stone” an Irishman calls it—and if palpable pieces of such hard indigestible matter be swallowed gastric distress is the inevitable result. But if the potato be well cooked and put through a sieve it ceases to be indigestible from “the mechanical point of view.” It is the question of disintegration which militates against vegetables, and cooked fruit. Pieces of hard apple will sit lightly on the most irritable stomach. The flesh of the grape is in great repute in all conditions of gastric irritability and debility, whether primary or secondary, to some general sickness.

Fat is an offence to a susceptible stomach, even as liquid fat floating about in it; but still more as lumps of fat upon which the stomach can exercise no solvent influence. Hence many persons, children and adults, reject sweet pieces of fat, and (after the meal) take some fishy oil. As the digestion of fat does not commence till the food has left the stomach, it is not well to give fat till its “time draws nigh.” Thin stale

bread with butter rubbed well in and doubled is much more digestible than the same bread cut thick with a stout layer of butter plastered over it.

Pastry, when fat and flour are well rubbed together, form a most indigestible compound, resisting all disintegration except mastication. Suet puddings also are indigestible.

On the other hand, milk puddings, especially if made without an egg, are in repute, and not without reason, for dyspeptics. They are light and sit easily on the stomach, the farinaceous matter being readily disintegrated, and what escapes disintegration is soft and does not give offence to the stomach.

There is another matter not of accult but of microscopic disintegration, or actual solution which has yet to be discussed—a matter of vital importance. As savage man sat grinding the cereals which form so large a factor in human food, the action of the jaws produced a free flow of saliva, and as fast as the finer particles were broken off the seed, by the crunching of the teeth, diastase of the saliva converted the insoluble starch into the soluble dextrine and grape-sugar. The toil of the miller produces disintegration and relieves the jaws of much of the labor. But disintegration is only the precursor of solution. The starch granule remains. By heat the cook cracks the starch granule so that the solvent diastase can readily act upon it. So far, so good; but heat does something more. It has an actual solvent action, and heat will, if sufficient, cause conversion of starch into dextrine. A thoroughly well baked flour if subjected to the iodine test under a microscope will readily show this.

When a large quantity of raw unconverted starch enters the stomach it is a burthen to that viscus. The gastric juice has no effect upon starch, and the starch granules merely embarrass the action of the stomach until they find their way out of it by the pyloric ring—and sometimes by the way they entered, viz., the gullet. Undigested starch hampers the stomach and makes the labor of that viscus a painful toil to it. New bread is a gross mechanical irritant, resisting disintegration. The

impediment caused by isolated but numerous starch-granules is another matter. Biscuits and crackers, if insufficiently masticated, cause indigestion. So do cakes which have not long been exposed to heat. The cakes which are held in such favor by the breakfast table in American households have been regarded as indigestible, and a glance at an American cooking book explains why. These cakes are exposed to heat for from thirty to forty minutes only. [The language of England sometimes requires translation. For cakes read rolls, and for biscuit read cracker.—Ed.] A good biscuit or loaf is much longer in the oven. Potatoes are indigestible as ordinarily eaten, because they are not long exposed to heat. But if well mashed potatoes be put into the oven to brown, or be placed before the fire for that purpose, the longer exposure to heat tells upon the starch-conversion.

Hominy that is well-boiled or subjected to the final heating process of cooking is decidedly digestible. Cereals that have been steam cooked are in repute with dyspeptics either for adding to meat teas, or for preparing milk-puddings. Some cooks who have to cater for dyspeptics boil all their rice, sago, and tapioca thoroughly before making these up with milk for a milk-pudding. In Germany pearl-barley thoroughly well-boiled and passed through a sieve is in request as an addition to meat teas for invalids. The porridge of Scotland, being made with coarse oatmeal, is boiled a long time, while in England a short boil is enough with the fine ground oatmeal in vogue there.

The advantage of the numerous prepared foods—whether babies' food or invalids' foods—which are all more or less compounds of starch which has been to a certain extent predigested either by baking or the malting process, lies in their ready digestibility. A touch of saliva is enough to complete the conversion of such carbo-hydrates, and the soluble matters pass out of the alimentary canal, and the stomach is not burdened with a weight of undigested starch impeding its work.

Gross and fine disintegration of food are cardinal matters in the dietary of dyspeptics.

Mastication must be perfect, else gross particles embarrass the stomach. Starch granules which have escaped the saliva interfere with the solvent action of the gastric juice on albuminoids. The dietary of dyspeptics must be conducted on the above lines; and if the dyspeptic were properly informed he could find a sufficient variety of food; but if he be told to diet himself upon a limited number of articles of food he soon begins to loathe them and often goes without food sooner than partake of them.

Of course there are dyspeptics and dyspeptics! Some only require to give a sufficiency of time to the process of mastication to be free from suffering.

Others must eschew pastry, veal and pork. Others again have to abandon solid meat and vegetable and adhere to meat broths, with cooked starch, malt-extracts, malted preparations, milk puddings and fish. When the stomach has been outraged or offended care is requisite for its restoration. When there is present a condition of general exhaustion food will disagree which ordinarily can be taken with impunity. When a condition of acute indigestion is set up a very careful dietary for a few days is directly curative.

Ready disintegration and solubility of food constitute the base line of the dietetic treatment of indigestion.—*Journal of Reconstructives*.

DRINKS AND DIGESTION.

THE address on therapeutics before the recent annual gathering of the British Medical Association was delivered by Dr. William Roberts, who took for his theme "Feeding the sick." The portion devoted to the consideration of the various drinks taken with our food,—alcoholic beverages, tea, coffee and cocoa, giving, as it does, the results of original research, seems to be of special interest and value.

These articles are usually taken with meals; and they mingle in the mouth and stomach with the food, and thereby directly complicate the task of the digestive organs. In the course of last year I subjected the effects of these accessories on salivary and peptic digestion to a somewhat extended experimental enquiry.

In studying the influence of our food accessories on digestion, it is necessary to distinguish sharply between their action on the chemical processes and their action on glandular and muscular activity. These two actions are quite distinct and generally opposed to each other; for, while all the food accessories were found to exercise a more or less retarding influence on the speed of the chemical process, some if not all of them exercise a stimulating influence on the glands which secrete the digestive juices, and on the muscular contractions of the stomach. It is also necessary to dis-

tinguish between the effects of the food accessories on salivary digestion and their effects on peptic (stomach) digestion, inasmuch as wide divergences were found to exist in this respect.

Distilled spirits—brandy, whisky and gin—were found to have but a trifling retarding effect on the digestive processes, whether salivary or peptic, in the proportions in which they are commonly used dietetically. Their obstructive effects became apparent only when used in quantities which approached intemperance. Taking this in conjunction with the stimulating action which they exercise on the glands which secrete the digestive juices, and on the muscular activity of the stomach, their effect in these moderate dietetic proportions must be regarded as distinctly promotive of digestion.

Wines and malt liquors exhibited an action differing considerably from that of ardent spirits. Wines were found to be highly inimical to salivary digestion. Even very small quantities of sherry, claret, hock or champagne inhibited the action of saliva on starch to a very high degree. This is due to the considerable acidity which all wines possess. When this acidity was neutralized by the addition of alkali, the inhibitory effect of wines on starch digestion was entirely removed. It is a common practice, as you know, to mix wines, especially

sherry, claret and hock, with soda, seltzer or some other effervescent table-water. These waters all contain a charge of alkaline carbonate; and it was found that, when wines were thus mixed, they ceased to embarrass salivary action. This practice may, therefore, be looked on as highly commendable in the case of persons of weak digestion.

On *peptic* digestion, wines exhibited a retarding effect altogether out of proportion to the alcohol contained in them. Both the stronger and the lighter wines, except in very moderate proportions, checked the speed of peptic digestion. In the customary dietetic use of wines with meals, there is probably a double action,—on the one hand a stimulating action on the secretion of gastric juice and on the muscular contractions of the stomach, and on the other hand a retarding effect on the speed of the chemical process. In the case of persons of weak digestion, wines should be taken sparingly, and the quantity so adjusted as to bring out their stimulating action without provoking the retarding effect, which follow their more liberal uses. Champagne was found to have a distinctly less retarding power than an equal volume of claret or hock. This I judged to be solely due to the mechanical effects of the effervescence and liberation of gas, whereby a more efficient stirring-up of the digesting mass would be effectuated. Effervescent wines, therefore, other things being equal, favour the speed of peptic digestion more than still wines.

The effects of tea, coffee and cocoa exhibited some interesting diversity. It was found that tea had an intense inhibitory effect on *salivary* digestion: even in very minute proportion it completely paralyzed the action of saliva. On the other hand, coffee and cocoa had only a slight effect on salivary digestion. The inhibitory action of tea on saliva was found to be due to the large quantity of tannin contained in the tea-leaf. Some persons have supposed that, by infusing tea for a very brief period,—two or three minutes,—the passage of tannin into the beverage could be avoided. This, however, is a delusion. Tannin is one of the most soluble substances known: it melts like sugar in hot water.

You can no more have tea without tannin than you can have wine without alcohol; and I found, experimentally, that tea infused for two minutes had almost exactly the same inhibitory effect on digestion as tea infused for twenty or thirty minutes. If you wish to mitigate the effects of tea on salivary digestion, you should direct the patient not to sip the beverage with the meal, but to eat first and drink afterward. In this way time is given for the saliva to perform its functions unhindered. Another device is to introduce a pinch of carbonate of soda into the teapot. This removes the deterrent effect of tea on salivary digestion. It is a practice occasionally followed in some households, under the idea that soda helps to extract the virtues of the tea-leaves. It was found that the addition of so small a proportion as one per cent. of the weight of the dry tea greatly mitigated its injurious effect on starch digestion, and that twice this quantity (two per cent.) almost entirely removed it. This latter proportion corresponds roughly to ten grains of bicarbonate of soda to an ounce of tea-leaf.

The effects of tea, coffee and cocoa on *peptic* digestion were found to be as nearly as possible alike for infusions of equal strength. All three exercised a retarding effect when their proportion in the digesting mixture arose above twenty per cent. These beverages should therefore be taken very moderately by persons of weak digestion. The good reputation of cocoa in regard to digestion seems to be wholly due to the fact that it is used in weaker infusions than tea and coffee.—*Popular Sci. News.*

TWENTY-FIVE thousand people die yearly from typhoid fever in the United States.

THE third laboratory of hygiene in Prussia has just been inaugurated at the University of Munich, under the direction of Dr. Max Rubner, formerly privat docent in Munich.

DR. FOSTER PRATT says that 25 years ago he attended a marriage that he knew should not be consummated. His impulse was strong to protest, but he did not. To-day two children of the marriage are insane.—*Am. Lancet.*

PREVENTION OF CONSUMPTION.

CONSUMPTION being the most fatal and destructive of all the diseases with which hygienists have to contend, anything instructive in this behalf from good authority will doubtless prove interesting and profitable to the readers of the JOURNAL. The following extracts are from a leading editorial in a recent number of the *British Medical Journal*, a periodical which is probably more generally recognized than any other publication as the best medical authority known. It may be here observed that there is perhaps as much (if not more) in ancestral configuration of body as in "ancestral taint"; and that we have found almost universally in consumptives an imperfectly developed respiratory capacity and function. This condition may be remedied in early, or even in much later, life; while the skin needs to be invigorated and fortified in order to prevent "catching cold"—to both of which points we have repeatedly, as our readers know, drawn attention:—"In spite of improved methods of treatment, phthisis remains one of the most formidable, as it is one of the most frequent maladies, which the practitioner has been called upon to treat. Much, no doubt, has been done by way of therapeutic advance, less in the line of specific remedies and novel methods of treatment, than by a clearer recognition of those dietetic, hygienic and climatic conditions by the sedulous observance of which phthisis can alone be successfully combated. Yet the fully developed disease is only exceptionally cured, and in a great majority of cases we fail to accomplish more than its temporary arrest. It becomes, therefore, a most urgent question whether prophylactic treatment affords a more hopeful sphere for encountering the national scourge, and whether in this, as in so many instances, prevention may not be easy where cure is most difficult.

The prophylactic measures to be adopted in cases of the atened phthisis are fortunately well understood, if too often difficult of application. A healthy dwelling on a dry soil and with spacious sleeping apartments, perfect cleanliness, efficient ventilation, abundance of sun-

shine and fresh air, a life of vigorous activity, and a liberal and varied dietary—these seem to be the essential conditions. They are possible to the rich, difficult to persons of moderate incomes, impracticable in a large degree, unhappily to the poor. Yet the greatest poverty does not altogether preclude some approach to these desirable expedients. Cleanliness is, luckily, cheap; fresh air is cheaper still; the most wholesome and nourishing articles of food are by no means generally high-priced; out-door occupations are in many cases as possible to the poor as avocations and trades which demand constant confinement in a vitiated atmosphere. Thus, all classes might more or less efficiently adopt prophylactic measures against phthisis, if only it could be clearly understood in what cases such measures were demanded.

This leads us to the second and much more difficult problem; namely, what are the indications for the prophylaxis of phthisis? This disease is too often described as incipient when it is really fully developed. When failure of strength, loss of flesh, cough and commencing pyrexia are associated with signs of apical mischief, it is folly to talk of prophylactic treatment. We might as well discuss the advisability of prophylaxis during the incubative period of fevers. We must go further back and consider two questions: namely, what classes of persons are predisposed to phthisis? and, secondly are there signs which can be considered, in strictness, premonitory of the disease, rather than indicative of it?

The first question at once suggests the great importance of the hereditary factor. That phthisis is strongly hereditary is as thoroughly recognized by the laity as by the profession, although we are still without absolute certainty as to the proportion of cases in which it is due to ancestral taint. Different calculations give proportions varying from 30 to 80 per cent., but the exact figure is unimportant compared with the recognition of the general and indisputable fact that children of a phthisical stock run a very grave risk of sooner or later falling

victims of the disease. Hence such children form the first great class of prophylactic treatment. Their early training demands great care. The dietetic and hygienic measures already briefly indicated should be perseveringly adopted; residence among the mountains or by the sea-side, or sea-voyages, should be tried when possible; severe study should be interdicted, and easy open-air employments should, as far as possible, be selected. That great success attends such measures is undoubted. Cases are on record where the development of the disease has been prevented by such means in families of strongly tubercular diathesis, and the lesson has been emphasised by the fact that the neglect of these measures in later life has been followed by the speedy development of the family malady.

Still more urgent is the call for prophylactic treatment in the case of children of an infected stock who show symptoms of delicacy, or become the subjects of acute pulmonary disease. A little loss of flesh or debility at the age of rapid growth is a matter of small concern in the children of healthy parents; but, if the tendency to phthisis exist, these signs may indicate its approaching onset. A retarded recovery from pneumonia in a child does not necessarily excite much alarm; but, if the family be tubercular, the gravity of the prognosis is seriously increased.

The second question opens up a problem of the greatest importance, which has hardly received the attention which it merits. Most of the so-called premonitory signs of phthisis really indicate that the disease has already made good its footing. In several cases which have come under our notice, the first symptom remarked by the patient was a sudden and unaccountable failure of appetite, with digestive derangement. As the practitioner's acquaintance with phthisis widens, we think he will be more and more inclined to keep a very jealous eye on all disorders of nutrition in cases in which he apprehends the development of phthisis. A much larger number of patients, however, date the commencement of disease either from an obscure failure of strength and energy or from catching cold. Suppression of the cutaneous function has been regarded by some as a cause, by others, as an early symptom of phthisis.

In such facts, however obscure, we have sufficient data for the adoption of measures which are full of hope for future generations. Phthisis can be successfully encountered only in its early stage; and it is much to be desired that the public should become thoroughly conversant with its earliest premonitions, in order that cases may come at once under medical supervision, instead of procrastinating until palliation is necessarily substituted for cure.

AIR PURIFICATION.

Dr. Prince, of Jacksonville, Ill., at the late Health Association Convention, at Toronto, read a paper on "An experimental study in relation to the removal from the air of the dust or particulate material supposed to produce yellow fever, small-pox and other infectious diseases." His experiment was based on the following principle:—Finding that air cannot be completely deprived of its floating material by water, attention has been given to the devising of a practicable plan for purification by the passage of air through cotton. The capability of cotton of arresting all particulate material floating in the air is a remarkable discovery. The fact that a

seal of cotton preserves any kind of material from decomposition, provided that the agents of decomposition are not already in it, shows—first, that these agents are not gases; for anything of a gaseous nature goes readily through cotton; and, next, this fact shows that gases do not initiate decomposition and that particulate material does. The problem now in hand is to secure the sterilization of air in motion, and which can have no boundary wall between it and the ordinary atmosphere. The use to be made of such air is (1st) to secure to a surface freedom from the influence of septic or pathogenic agencies, at the same time that it is being manipulated

for surgical or other purposes ; and (2nd) to secure for living beings an air to breathe free from infectious agencies ; or to take immediately away the products of exhalation from the lungs and other parts of the body. A portion of fruit may be sealed in a can by cotton or by solder, and it will keep indefinitely, but a breathing animal, to be free from septic or pathogenic agencies, when these agencies are round about him, must have some other arrangement by which his own exhalations may be carried away. If it is intended, in a particular case, to shield a person from the infection of yellow fever in an infected location, the filtration of the air to arrest the particulate material

of the infection must permit a perpetual change. This is secured in a great degree by respirators, worn upon the face, which are usually made to sterilize the entering air, and perhaps might be made to sterilize the air of expiration. To prevent a subject from taking a disease the filtration of the inspired air is required, and to prevent his imparting a disease the filtration of the air expired must be secured. The writer then submitted a scheme based on these principles for sterilizing the air which enters a room for protection against infection, and one for sterilizing the air escaping from a patient who is supposed to be afflicted with smallpox or some other infectious disease.

WHAT TOBACCO WILL DO.

IN a little catechism on the twin evils, intemperance and tobacco, in answers to questions, are the following, which are in accord with scientific knowledge: Tobacco is a poisonous plant found in America, and first smoked by the American Indians. It was next used by the Spaniards, who learned the habit from the Indians. Afterwards the French took up snuffing, and Sir Walter Raleigh introduced smoking into England. It was first opposed by King James of England, who said: "Smoking is loathsome to the eye, hurtful to the nose, harmful to the brain, dangerous to the lungs; the stinking fume thereof resembling the horrible smoke of the bottomless pit."

It is narcotic and emetic, and contains a deadly poison of which a very small quantity will produce death. If given to a dog he will die in spasms, and a single drop of liquid taken from a pipe stem and placed on the tongue of a cat will kill it almost instantly.

Men may form the habit of using tobacco, because if taken in small doses at the beginning, the system grows to tolerate many kinds of poison. It is an emetic, and the stomach will seldom retain enough to produce death at once.

It poisons the system slowly; poisons the stomach, affecting digestion, often producing dyspepsia, and rendering

the whole system liable to disease. Tobacco affects the heart most? It weakens its action and makes it irregular, so that it does not send a full supply of blood through the body, and the muscles become weak and flabby.

Medical statistics show that about one out of every four tobacco users has palpitation or some trouble of the heart.

Those who use tobacco are more or less afflicted with sleeplessness, irritability of temper, and trembling of hands. Tobacco enfeebles the memory, paralyses the will, diseases the imagination, and deadens the moral sensibilities.

The Surgeon of St. Thomas' Hospital says: "Smoking is one of the chief causes of paralysis." This fact is vouched for by other noted physicians.

Tobacco often stimulates the appetites, and makes men crave strong drink, and other hurtful indulgences. That thirst leads to the immoderate use of alcoholic drinks.

Smoking dries and reddens the lining of the mouth and throat, the hot fumes of the poisonous weed often causing smokers chronic sore throat, and seriously affecting the voice.

Dr. Drysdale, Chief Physician of the Metropolitan Free Hospital, London, says he has had many cases which prove that smoking in youth often causes pulmonary consumption.

A vigorous man may use tobacco all his life, but his children enter life enfeebled and predisposed to disease.

Senator Hill, an eminent man of the South, United States Senator from Georgia, died in 1883 of cancer of the tongue caused by smoking, and ex-Mayor Samuel Powell, of Brooklyn, died of cancer of the mouth from the same cause.

Gen. U. S. Grant, who led our armies to victory in the late war, and was

afterward President of the United States for two terms, fell a victim to cancer of the throat, caused by excessive smoking. He had an iron constitution, and great strength of body and mind, but his system gave way under the dreadful effects of that powerful poison always found in tobacco—nicotine. Yes, tobacco robbed the country of one of its greatest men when he should have been in the prime of life.

DANGERS OF POLLUTED WATER.

AS bearing upon this important question, and upon the paper read at the meeting last month of the American Health Association in Toronto, by the editor of this JOURNAL, published herein, the following from the *Scientific American* is apropos, and very suggestive. Dr. Willis G. Tucker, in a paper read before the Albany Institute says: As regards the natural purification of polluted waters, while the tendency of all organic matter, animal or vegetable, is toward ultimate death and final destruction by oxidation, it is as yet impossible to say how rapid a destruction goes on in many cases. The Rivers Pollution Commission mixed urine with water, in the proportion of one part of urine to 3,077 of water, agitated the mixture from time to time and analyzed samples. At the end of the eleventh day the improvement in the water was so inconsiderable that other experiments were made in which a stream of impure water was allowed to flow from one vessel to another and was thus freely exposed to the air, and as a result of these experiments the commissioners concluded that purification by natural oxidation had been greatly over-rated, and that there is no river in the United Kingdom long enough to secure the oxidation and destruction of any sewage which may be discharged into it, even at its source." They also conclude that "rivers which have received sewage, even if that sewage has been purified before its discharge, are not safe sources of potable water." (Rivers Pollution Commissioners' 6th report, pp. 184-8.) Upon this point Frankland says: "Twelve years

ago there was a general impression among chemists and others that polluted water quickly regained its original purity by spontaneous oxidation. The opinion had no foundation in quantitative observations; indeed, there was not a single experimental fact to prove it. The impression had gained currency from the improved appearance of a polluted river after a flow of a few miles. Two classes of persons strongly interested in its acceptance were chiefly instrumental in the origination and diffusion of this opinion. These were, first, the polluters of running water, and secondly, water companies drawing their supplies from below the sewer outfalls of towns." (*Journal Chemical Society*, May and July 1880.) Such improvement as does take place in running streams probably depends more upon the part played by fresh water plants and micro-organisms than upon direct chemical oxidation, and of course no accurate conclusions can be reached as to the effect of these varying and little understood agencies. Mere dilution also doubtless accounts for the apparent disappearance of much noxious matter. Professor William Ripley Nicholas in his *Water Supply*, italicizes the following statement: "The apparent self purification of running streams is largely due to dilution, and the fact that a river seems to have purified itself at a certain distance below a point where it was certainly polluted is no guarantee that the water is fit for domestic use."

To what extent, therefore must a polluted water be diluted before it is safe to use is a question of the greatest in-

terest, but one to which no answer can as yet be given. Nor can we prove that the specific poisons of certain diseases—admitting their existence—may not contain certain living organisms capable of rapid multiplication, nor can we tell for how long a period or under what conditions these organisms may retain their vitality. In the absence of positive know-

ledge, but in the light of countless facts which all but prove our suppositions true, we had best err, if err we must, on the safe side, avoiding the use of polluted waters, and recognizing the fact that, although chemical analysis may detect no impurities in a water, it is not, therefore, necessarily safe to drink.

FATIGUE AND INDIGESTION.

A cause of imperfect digestion is fatigue. When we start on a walk it does not matter much whether the road is rough or not; any little obstacle is avoided with ease, and we thread our way over rough stones, through tangled heath, or over a quaking bog, without difficulty. Our nervous system is in full vigor, and preserves perfect co-ordination among the movements of the different parts of the body: so that one helps the other, and all difficulties are surmounted. But when we are tired a little roughness in the road will cause us to stumble, and an unexpected stone may give us a sudden fall. The wearied nervous system no longer co-ordinates the movements of the various parts of the body, that they may work together for a common end.

The same thing occurs with the various parts of the intestinal canal. If the nervous system is exhausted by previous fatigue, or debilitated by illness the requisite co-ordination may not take place, and biliousness or indigestion may be the result. How often do we find the meal taken by a person immediately after a long railway journey disagrees with him, and either causes sickness or diarrhoea, or a bilious headache? Forty winks after dinner is not always a bad thing; but forty winks before dinner is certainly much better.

How often do men who have worked hard all day, with their mental faculties constantly on the stretch, go home and have dinner forthwith! Exhausted as they are, how can they expect to digest properly what they eat? They ought to make it a point of having a little rest at home before dinner.

There is grave truth in these remarks, and they should be well laid to heart by those who are compelled to work at high pressure, and thus fail in

that repair of the bodily waste which lies at the foundation of health. But mental emotions and the play of mind may in their turn produce disturbances of the body's duties in the way of food digestion. Here, again, the views expressed seem with a common sense and philosophy which commend them to the thorough appreciation of those who find digestion to fail from the nervous influences that chase one another and career over the surface of the mental atmosphere.

Effects, somewhat similar to those of fatigue, may be produced by depressing or disturbing mental emotions, or bodily conditions. We know how readily excitement of almost any kind will destroy the appetite of some people, and depressing emotion will do it.

From this it would seem to be equally probable that various emotions affect special parts of the digestive system. A strong impression of disgust may excite vomiting; compassion is said to produce movements of gas in the small intestine; worry is known to affect the liver; and Dr. Brunton gives some countenance to the popular notion that jaundice may be brought on through a mental cause, illustrated, for example, by anxiety. The old adage respecting the wisdom of maintaining an easy mind if we would grow fat, has therefore a physical basis. It is the surest of inferences that the mind and nervous system which are allowed to remain placid and unruffled, are most likely to be found presiding over a body and processes which respectively live and act in a healthy and normal fashion. If care really kills us, it seems probable that its method of slaughter is largely that of destroying the harmony of those functions on which the proper nutrition of our bodies depend.—HEALTH.

THE PUBLIC HEALTH IN CANADA.

MORTUARY RETURNS FROM TWENTY-FOUR CANADIAN CITIES.

TWENTY four cities and towns now make monthly returns to the Department of Agriculture at Ottawa. While it will be generally admitted that, in the interests of the public health, the system of mortuary returns should be so extended as to embrace all parts of the Dominion, yet the reports from these twenty four centres give a fair statement of the general condition of the health of the whole country. The twenty four cities and towns include about one eighth, or perhaps a little more, of the population of the Dominion; or about 670,000 persons. It is true we have no knowledge of the sanitary condition of the other seven-eighths of the population; and having no returns of the number of births, fair comparisons cannot be made between the different centres. For where the birth rate is high, there, necessarily, will the mortality be high, and, on the other hand, where the birth rate is low, there, other things being equal, the mortality should be low proportionately. While therefore we must strive for a complete system of vital statistics at an early period, there is much satisfaction obtainable from the mortuary returns now made from the cities and towns to the statistical department here.

The total number of deaths in October in the twenty four cities and towns, as given in the accompanying table, was, according to the returns, 1216; or at the rate of 21·8 per 1,000 of population per annum.

It may be here stated that on the whole the returns are doubtless as complete as could fairly be expected in the commencement of a new system and in a work new to this country, while from some of the cities they are as absolutely correct as ever it will be possible to make them.

While last month we reported a fall in the mortality from August to September of 20 per cent., we find that the fall between September and October was only 16·7 per cent. This is in accordance with what appears to be almost universally the case with large populations in temperate climates; that is, for the mortality curve—which de-

clines from August to November and then rises more or less gradually from December to March—to show a much greater declivity during the month of September than during October.

In the corresponding month of last year, eliminating the exceptional epidemic of small pox, we find a fall of only 5·5 per cent; while the fall in September from August, as stated, was 22 per cent.

In Montreal the mortality in October fell to 28 per 1,000 of population per annum, from 32 in September; in Toronto it fell from 24 in September to 18 in October; and in Quebec from 30 to 25. In Hamilton there was a rise in the mortality, from 20 per 1000 in September to 21 in October. In Ottawa the mortality, so high in September—35 per 1000—fell to 26 in October. In Three Rivers it fell to just one half, in the same period, or from 38 per 1000 in September to 19 in October. In Belleville too there was a fall of 50 per cent. In Sorel the same alarmingly high rate prevailed in October as in September—48 per 1000. This was apparently from an epidemic of diphtheria, which caused 13 of the 24 deaths in that town. In September there were 7 deaths there from this disease.

In Kingston, Guelph, Chatham and Woodstock, the mortality was slightly higher in October than in September. In all the other cities and towns it was lower.

From zymotic diseases the number of deaths for the month was 271, or at the rate of about 5 per 1000 of population per annum. The rate in September was nearly 8 per 1000. Montreal, Hamilton and St. John, N. B., showed a mortality from zymotics a little above the average of the totals; Toronto and Quebec lower than the average. Ottawa, although showing in October a great reduction in the mortality from all causes, returned a much larger mortality from zymotics than any of the other cities, or about double the average—nearly 10 per 1000 of population.

Most of our readers know that the rate of mortality from this class of diseases furnishes a pretty correct index

as to the sanitary condition of a locality. This is not the place to comment at length upon the sanitary condition of any place, but situated as Ottawa naturally is, the continued high rate of mortality from zymotic diseases speaks out badly, and loudly, for the sanitary administration of the Capital of the Dominion, and will not tempt people to "come to stay" within its limits. The fact that a large proportion of the deaths are (probably) among young children does not decrease the power of the reflection.

The mortality from zymotics, chiefly diphtheria, in Sorel, was the principal cause of the very high rate there, already referred to.

In the other places the mortality from this class of diseases was for the most part below the average.

The average mortality from zymotic diseases in England is less than 3 per 1000.

It is again gratifying to find no deaths from small-pox reported from any of the cities, and presumably the Dominion continues free from that plague.

From measles there were 12 deaths reported, in October; the same number as in September.

From scarlet fever, the dread of fond parents, there were 4 deaths; though only 2 in September. Both this disease

and measles are more liable to spread and become epidemic during the cold season. Special precautions and care should be exercised by parents and families as well as by health officers. The most careful isolation, with judicious disinfection, ventilation and inunction of the body, are the great prophylactics.

Diphtheria, which seems more clearly than almost any other disease directly associated with filth, increased in its fatality from 64 deaths in September to 98 in October; over 50 per cent. Of the larger cities, Hamilton returned the highest proportionate mortality from this disease, and Quebec comes next; then London, Ottawa, Montréal, Toronto and St John. Of the smaller places, besides Sorel, Three Rivers, Hull and Fredericton show a high mortality also.

Typhoid and others fevers increased from a mortality of 41 in September to 57 in October. Of these 57 deaths, 20 were in Montreal, 8 in Toronto and 5 in Ottawa, with three each in Hamilton, St. John, Belleville and Sherbrooke.

Deaths from diarrhoeal affections fell from 272 in September to 81 in October. Of these 81 deaths 25 were in Montreal, and 15 in Ottawa; 12 were in Quebec; Hamilton and Halifax returned 4 each and Toronto 3. Woodstock is not included in the table.

MANY chronic invalids are simply the victims of a chronic mode of thought; they have formed the *habit of being sick*, and they could if they would, or rather if they knew how, form the habit of being well. So many believe that they cannot help being weak, nervous, ailing, and miserable, and they live year after year, bound with the fetters which they have forged for themselves. Many a woman frets herself sick, and many a man has lost his life from an overtaxed mind, which has brought corresponding diseases to the body.

M. STOFFEL, at Roubaix, by electrolysis of water, generates ozone, which kills the minute organisms, oxidizes all organic substances, and precipitates the carbonates in course of dissolution.—*N. Y. Med. Times.*

IMAGINARY ILLS.—A. Philadelphia physician says that a deal of what passes for heart disease is only mild dyspepsia, that nervousness commonly is bad temper, and that two-thirds of the so-called malaria is nothing but laziness. Imagination, he says, is responsible for a multitude of ills, and he gives us an instance the case of a clergyman who after preaching a sermon would take a teaspoonful of sweetened water, and doze off like a babe, under the impression that it was a BONA FIDE sedative.

The first physicians by debauch were made;
Excess began, and sloth sustains the trade;
Better to hunt in fields for health unbought,
Than fee the doctor for a nauseous draught.

—Dryden.

There needeth not the hell that bigots frame
To punish those who err; Man in himself
Contains at once the evil and the cure;
And all-sufficient nature can chastise
Those who transgress her law.—She only knows
How justly to proportion to the fault
The punishment it merits.

MISCELLANEOUS SELECTIONS.

HEALTH AND LONGEVITY.—There is a law, we believe, based upon the principles of physiology, which governs this matter of health as well as of life. It can justly be said that there are different degrees of health,—some tolerable, some very good and others excellent or almost perfect. While many factors enter into the agencies productive of health, such as care, residence, employment, climate, habits, etc., there is a law back of all these, constituting the main cause—always predisposing to health. It is this primary fundamental condition of things, which determines, more than anything else, good permanent health. This law is based upon a sound healthy organization at birth, when all the organs of the body are as near perfect in structure and function as they can be. In this case, the whole body is symmetrical in form, well balanced in all its parts, and the functions of every organ are performed in harmony, one with another. It is upon such an organization and on no other—upon which the law of health and the law of longevity have their basis—their foundation. This may be said to constitute the normal standard of physiology. Now the nearer this standard is possessed at birth, is preserved in the growth of all parts of the body and kept good through all the changes of life, the better the health and the longer the life. In case these conditions are carried out, and a uniform result invariably found, why is it not a general law established by nature herself? All diseases, weaknesses and infirmities of the body are nothing more nor less than the violations of physiological laws. These may be produced by individual agency, or by extraneous causes. There are a great variety of factors or agencies that exert a powerful influence upon the body for better or worse, but in every instance some law is obeyed or violated. The more thoroughly the laws of health and life are understood, together with the causes and prevention of disease, the greater is the importance attached to the soundness and strength of the original constitution. Such is the testimony of experience—of all thoughtful and observing persons.—**DR. NATHAN ALLEN.**

DIARRHOEA AND FEEDING BOTTLES.—One of the commonest causes of diarrhoea, nasty, persistent diarrhoea, that resists treatment, is the use of the bottle. Yet it should not be so; it is not a necessary accompaniment of the bottle. But the majority of mothers are careless about keeping the bottle clean. Two bottles should be always in use. When one is emptied it should be well washed in hot water, thoroughly rinsed, and allowed to stand full of warm water, into which a small piece of washing soda has been introduced, until required for use, when it should be again well rinsed. Long nursing tubes are abominations, and form ready nests for the propagation of disease germs. We should employ the ordinary rubber nipple, without any tube, and, having several on hand, those not in actual use should be kept soaking in water and soda. If we have good milk, that has not soured, and if we observe these simple precautions, we will soon cure these obstinate diarrhoeas without drugs.—*Med. and Surg. Reporter.*

A CHILD who enters a public school has become a fractional part of a machine. He has been well understood by persons who have watched him from birth, and who are deeply interested in him. He is now transferred to the care of strangers, who meet with him only five hours in the day, and whose interest in him is restricted by the fact that he forms but a fraction—say from one and one-tenth to two and one-half per cent. of the total group of children that is entrusted to the care of the teacher. He is held by the teacher a few months and then passed on to another, again as a fraction and not as an interger. Does he not lose much as well as gain by this system? As regards his health, he loses that defence which the sympathy of the community always extends to an individual who is suffering conspicuously. Taken generally, all children in school are suffering from discomfort. Average this discomfort among ten thousand and it may not be very great for each one. But a class of fifty children is not made up of fifty averages.—**DR. LINCOLN,** in *Massachusetts Health Report.*

GALEN ON OBESITY.—The best method of getting thinner consists in gradually withdrawing from the body that whereof there is superfluity, and in strengthening at the same time those parts which had been expanded. Bodily exercise will undoubtedly prove very advantageous, as we see stout horses getting lean by heavy work. Thus, likewise, those will never grow fat who are obliged continually to toil with hard labor. This, however, requires great precaution, it being certain that fat people frequently run danger of death when attempting violent bodily exercise. And Galen says: Regular alvine motions; energetic bodily exercise, a moderate life, a diet which, although satiating, yields but limited nourishment; which explains why Hippocrates advises stout people wishing to grow thin to dine on vegetables cooked with fat, in order that they may become satiated by a small quantity of food.

SMALL-POX PREVENTION.—In Philadelphia, if the Health Officer of the city receives in his morning mail notice of a case of small-pox (suspected), he at once sends word to the vaccine physician of the district to visit the suspected house and neighborhood, and vaccinate all who are not evidently well protected, by this operation, against the disease. The agents of the Board are at once dispatched to thoroughly disinfect the suspected premises, and to inquire into and insist upon the premises being placed in proper sanitary conditions. Later in the day the proper officer, when he reports, is sent to investigate the nature of the case reported. The result is that, whether the case be smallpox or not, vaccination and disinfection are secured. The neighbors of the doubtful case are sufficiently frightened to cheerfully submit to the necessary precautions; and as a grand and glorious result, this great city has passed one whole year without a case of small-pox.

PLUMBING.—Much depends upon the plumbing. If it is imperfect, an unhealthy home is the result. It is easy to be seen that plumbing is the most important feature of a house, to which may be added all the convenience,

beauty and polish of a palace. But first of all, stamp it with the character of health by sanitary plumbing. Even with the best devices it is almost impossible to prevent sewer gas at times. Unused fixtures will in time permit the water-seal in taps to evaporate. A string or shred of cloth in a trap may act as a syphon. Fixtures are liable to get out of repair. A reckless carpenter may drive a nail into the soil pipe, Rats sometimes gnaw into lead pipes. Traps may become obstructed by the carelessness of servants. There are many accidents by which plumbing work will become crippled and allow gas to escape. Hence it is advisable to exercise extreme care about the location and quality of plumbing work.—*Rept.*

THE WEDDING TRIP.—The French medical journals and some of the English have been lately calling attention to the evils of the wedding trip. There are few physicians who will not recall many cases in which a girl, perfectly healthy till her marriage and a long wedding trip, is never healthy again. The number of women who date a life of chronic invalidism to a wedding trip is not small. So apparent have been these evils that it is reported a custom has arisen by which the demands of fashion for a wedding trip shall be complied with, and yet the newly married couple enjoy a period of repose and quiet all by themselves. The plan is to make ostensible arrangements for a trip, and even drive to the station, but in reality turn back to a hotel or some intimate friend's in which all alone by themselves the newly married couple shall begin their life journey. Marriage is one of the epochs of life. It is peculiarly related to the physical well-being of both parties and to the unborn. To the young wife, there has been long and exhausting excitement in arranging for the event. To this is added an entrance upon physical relations utterly new to her. Surely this is quite enough to bear in the retirement of a quiet home, or away from inquiring acquaintances. Surely this is enough without the discomfort of railway travel, the exhaustion of hurrying from place to place, the excitement of new scenes and people, and the exposure to extremes of heat or cold

of storms, and all sorts of annoyances inseparable from long journeys. We have often thought that physicians, by giving a word of friendly advice to such of their patients as chanced to be about to enter upon a married life, might be the means of saving such persons from future misery. Family physicians are the ones to reach these cases. True, they would have to combat social customs, but after all we think that in the end they would win.—*American Lancet.*

THE AIR OF THE SEA.—The air of the sea, taken at a great distance from land, or even on the shore and in ports when the wind blows from the open, is in an almost perfect state of purity. Near continents the land winds drive before them an atmosphere always impure, but at one hundred kilometres from the coasts this impurity has disappeared. The sea rapidly purifies the pestilential atmosphere of continents; hence every expanse of water of a certain breadth becomes an absolute obstacle to the propagation of epidemics. Marine atmospheres driven upon land purify sensibly the air of the regions which they traverse; this purification can be recognized as far as Paris. The sea is the tomb of moulds and of aerial schizophytes.—*M.M. Moreau and Miguel.*

DISPOSAL OF THE DEAD.—Dr. A. F. Eklund, of Stockholm, Sweden, does not favor cremation; it follows a pagan custom, and will never become popular in civilized countries. His own preference is embalming and burial in the earth. The prevention of the results of putrefaction, which latter produces organisms that are not only revolting to the mind but dangerous to human life, can readily be effected by a very simple process of embalming and this should be done as soon as possible after death. For this purpose several materials are suggested—sodium chloride solution with boracic acid; some of the now popular mercuric salts, chloride or iodide, mineral acids, etc. Coffins should have impermeable bottoms, and these be lined with absorbent material. He also suggests that there should be educated or trained embalmers of both sexes and a special police service under an inspector, so that immediately after

the decease of any person proper sanitary measures may invariably be secured.—*Therapeutic Gazette.*

FAITH HEALING.—Rev. Dr. Buckley, editor of the Methodist *Christian Advocate* has a long article in the June *Century* opposed to the claims of Christian "faith healers." "Its tendency is to produce an effeminate type of character which shrinks from any pain, and to concentrate itself upon self and its sensations. It sets up false grounds for determining whether a person is or is not in the favor of God. It opens the door to every superstition." "It directs attention from the moral and spiritual transformation which Christianity professes to work, a transformation which, whenever made, manifests its divinity, so that none who behold it need any other proof that it is of God. It destroys the ascendancy of reason in the soul, and thus, like similar delusions, it is self-perpetuating; and its natural, and in some minds its irresistible, tendency is to mental derangement."—*Albany Med. An.*

A DRAIN-PIPE DITTY.

FROM "PUNCH."

Scamping Plumber, ere we part
I'll recall your gruesome art!
Still the memory remains
Of your dalliance with the drains,
Hear me state, with rapturous joy,
'Licensed Plumbers I employ.'

By the typhoid you have spread
From those pipes unstopped with lead!
By your love for leaking taps,
Faulty joints and bogus 'traps'!
Get you trained your trade to know—
Pass your plumbing Little-go!

By the cistern (whence we drink),
Forming a connecting link
'Twixt the noisome parish sewer
And the humble household ewer,
Hear me thank the Plumbers' Co.
Branding you a public foe!

Scamping Plumber! you have wrought
Evil much by being untaught.
'Spite of amateurish ways,
Knowledge is the thing that pays.
If you can't a license show,
Scamping Plumber, out you go!

THE EVOLUTION OF DISEASE ORGANISMS.—Mr. William Sykes, M. R. C. S. (Mexborough) writes: There are two rival theories of the origin of zymotic disease: one, that they have their birth in unsanitary conditions to which their victims are exposed—the *de novo* theory—now little accepted; the other, that each case has its birth in the infective

material left by previous outbreaks, expressed in the formula "omnis typhoidis è typhoide." Does not the bacterial theory of origin of this class of diseases provide an explanation of the apparently anomalous cases which occur which cannot be explained by the above formula? If the infective material in each case is a microzyme, one can imagine that it has a possibility of external life unconnected with the human frame; that it was originally, in fact a harmless creation or development which, accidentally conveyed into the circulation, found there a suitable soil for growth and development, and, by the theory of natural selection, of increased vigour. But that other microzymes of the same species remained (and remain) as scanty growths sparsely scattered under less favourable conditions, which may occasionally find accidental entry into the human economy, as, in the first instance must have been the case with the original *materies morbi*. We find, then, that there is no specificity in zymotic disease; that the low forms of life causing it, exist partly in, partly out of, the body; that the body provides a soil of superior fertility, and that, therefore, the microzymes in it flourish more, increase more rapidly, and are more numerous, than those outside it; that, therefore, most outbreaks of zymotic disease originate in the numerous and vigorous microzymes thrown off in the secretions of previously diseased persons; but that a small number of cases are produced by the accidental introduction of the weaker and less numerous external microzymes, and are examples of the anomalous *de novo* origination of disease.—*British Medical Journal*.

DR. ALBERT L. GIBON, Medical Director United States Navy, read a paper on "Economic Sanitation," showing the importance for a more profound appreciation of the value of sanitary service in the body politic. He said it was futile to depend upon mere talking about physical reforms. Society must have more faith in medical men and measures. "Theraputists, who are men of small ability generally, believe it is more dignified to administer to the sick man than to prevent him from becoming sick. The

sanitary service demands the ablest men in the medical profession; and they should be handsomely paid. When this is done there will be no perfunctory cheap makeshifts as sanitary officers. Specialists pile up gold and greenbacks, while the man who sacrifices his life in preventing disease gets but a slight recompense. Well-paid permanent officials are absolutely necessary for sanitary purposes. If every scoffing councilman will dig from around the cobble stones in front of his door the fetid earth and slime and have it analyzed he will vote a larger appropriation for sanitary measures; and then if he could see the swarms of living things in that dirt, he would probably vote a double amount."

THE patent medicine trade of the United States is rated at \$22,000,000 annually. Of this \$10,000,000 are spent in advertisements. Still on what remains there is said to be a net profit of \$5,000,000. What would the newspapers do without these \$10,000,000 which they receive from this traffic? The humanitarian inquires what would the undertakers do for business if the enormous amount of drugs here represented could be kept from the people? Surely this would be a sanitary movement the beneficial effects of which none can estimate.—*American Lancet*.

WONDERS OF DIET.—The Roman soldiers, who built such wonderful roads and carried such a weight of armor and luggage that would crush the average farm hand, lived on coarse brown bread and sour wine. They are temperate in diet, regular and constant in exercise. The Spanish peasant works every day and dances half the night, yet eats only his black bread, onion and watermelon. The Smyrna porter eats only a little fruit and some olives. He eats no beef, pork or mutton, yet he walks off with his 800 pounds. The coolie, fed on rice, is more active and can endure more than the negro, fed on fat meat. The heavy work of the world is not done by men who eat the greatest quantity. The fattest and longest-winded horse is not the biggest eater. Moderation in diet seems to be the prerequisite for endurance.

THE COMING METAL.—It is predicted that aluminum is the coming metal, which is destined to supersede iron. It is the most abundant metal in the earth's crust, and is not exceeded in usefulness. It is the metallic base of mica, feldspar, slate and clay. It is present in gems, colored blue in the sapphire, green in the emerald, yellow in the topaz, and in the ruby, brown in the emery, and so on to the white, gray, blue and black of the slates and clays. It has never been found in a pure state, but is known to exist in combination in nearly two hundred different minerals. Corundum and pure emery are very rich in aluminum, which constitutes about fifty-four per cent. of their substance. The metal is white and next to silver in lustre; it is as light as chalk, or only one-third the weight of iron, or one-fourth that of silver; it is as malleable as gold, as tenacious as iron and harder than steel. It is soft when ductility, fibrous when tenacity, and crystalline when hardness is required. It melts at 1,300° F., or at least 600° below the melting point of iron, and it neither oxidizes in the air, nor tarnishes in contact with gases.—*Am. Pharm.*

A NEW YORK HOTEL.—Heretofore when visiting New York we have always stopped at a down-town hotel; but this time, for a change, thought we would try an up-town house, and put up at the Grand Union, corner of Fourth avenue and Forty-second street. It is needless to say that hereafter we will take no more down-town hotels when stopping in New York, as we have found it much pleasanter and more agreeable stopping up town. The Grand Union, is run on the European plan, with prices to suit all sized purses—having rooms ranging from \$1.00 a day up—is a model house, every department being first-class. Besides being just across from the Grand Central depot, street cars, omnibuses and elevated railways run directly past the house, enabling guests to take either of the three for any part of the city. Try the Grand Union, and if you don't find Mr. Garrison, the manager, a model landlord, running a model hotel, you will be unable to find such.—*Railroad Record, Atlanta, Ga.*

POWER OF FEAR AND THE IMAGINATION.—The bandmaster of the U. S. Flag-ship Lancaster, now cruising in the South Atlantic, learning that the ship was to touch at Rio de Janeiro, requested his discharge, giving as his reason that he had for years been under the presentiment that if he went to that port he would die of yellow fever. Discharge was refused. The ship entered the harbor of Rio, and the bandmaster immediately took to his bed with all the symptoms of yellow fever. The identity of the malady soon established itself, and he was removed to the plague hospital on shore where he died. One of the bandmen who kissed him as he was being taken from the ship also died. These two were the only cases on ship-board, the other sailors remaining well; and it is said there had been no other cases at Rio for months.—*Am. Lancet.*

DISPOSAL OF HOTEL SEWAGE.—A correspondent who had passed some time at the Manhattan Beach Hotel, L. I., writes that the system of sewage disposal in operation there is very successful; designed by Mr. J. J. Powers, a Brooklyn plumber: "The sewage (excreta and house water exclusively) flows by pipes (of such moderate size as to insure a speedy flow) into wooden watertight tanks, where, by the use of such cheap material as charcoal and copperas, the whole mass, ninety per cent of which is water, is economically and thoroughly disinfected and deodorized, the solids being precipitated, while the liquids flow in a clear and harmless stream to the sea. The process works automatically and easily; there is no smell, even close to the settling tanks, and few of the hundreds of thousands who visit those wonderful caravansaries have any comprehension of how largely the welfare and business of the whole island depends upon this common sense invention of one clear-headed, fair-minded sanitarian. The solid portions of the sewage are disinfected and drained, and are removed as frequently as is necessary; the product (called native guano), a dark-colored poudrette, is used upon the lawns, and with magical effect, and when sold brings \$20 a ton."—*Sanitary News.*

INFANT MORTALITY.—According to Quetelet, “there die during the first month after birth four times as many children as during the second month, and almost as many as during the two years that follow the first year, although even then the mortality is high. The tables of mortality prove, in fact, that one-tenth of the children born die before the first month has been completed.” . . . The census has shown that the mortality of infants in cities is twice as great as that in rural districts. The question arises. What is in cities that is so hostile to infant life? . . . Many city infants perish from bad feeding. More especially is this true of the tenement-children. The youngest member of the family is placed at the common table at an incredibly tender age. Often in the dispensary in response to the question, “With what are you feeding your baby?” comes the reply, “It eats what we all do.” With these people, even if they are not extremely poor, milk or anything else purchased especially for the baby, is an item of extra expense, and therefore it is considered easier and cheaper to feed it with the rest of the family. The sins of feeding among the poor people are monstrous. City infants of all classes are at a disadvantage in regard to their food. Unfortunately, city mothers who nurse their own children are fewer than those in the country. The search for a wet-nurse is one of the most disheartening. Many an infant suffers from irregularity of feeding and over-feeding. There is in the popular mind but one interpretation of a baby’s crying, “It is hungry,” and immediately it is given more food to eat, when already its tiny stomach is distended and irritated. Infants’ meals should be regulated by the clock. This prescription, unaided by anything else, has often restored a nursing baby to equanimity and to health. An infant under three weeks should be fed every two hours, or twelve times in the twenty-four, receiving one to one and a half-ounce of cow’s milk each time, if artificially fed. At three months the child should be fed every three hours, or eight times in the twenty-four, receiving three ounces of milk at each feeding, which at six months is increased to

four. The times of feeding should be fixed, but of course the amount taken will vary more or less with the individual. —DR. GRACE PECKHAM, in *Popular Science Monthly*.

CONTAGIOUSNESS OF CONSUMPTION.—At a recent meeting of the Conseil d’Hygiène, Paris, a committee was appointed, including Profs. Trélat and Troust, and Dr. Dujardin Beaumetz, who were charged to make researches to see what could be done to stop the development of pulmonary phthisis, the following resolutions were adopted:—1. The most active agent in the transmission of this disease resides in the sputa. 2. Care must be taken not to allow this expectoration to be thrown on the ground nor on linen, where it may be transformed into dangerous dust. 3. We recommend, therefore, that patients be instructed to spit into utensils containing sawdust, and that these are to be emptied and washed once a day, and their contents are to be burnt. 4. Any room which has been occupied by a phthisical person should, after his death, be disinfected with sulphur before again occupied, and all linen must be steamed.—*Med. Times*.

A MINISTRY OF HEALTH.—The London *Lancet* contends that there ought to be a department of health in the Government of Great Britain, and that a Minister of Health should have a seat in the Cabinet. Public medicine is preventive, and as such it can only be effective when it forms an integral part of state policy. Surely, health is not secondary to wealth; and if trade needs to be specially controlled in the interests of the state, health promotion has a not less urgent claim to be considered a constituent part of policy. The question has been re-opened, and is being agitated by Mr. Hamer, a practical worker in the field of health promotion. There are urgent matters of sanitary enterprise which call loudly for help from the government, and which it is not only inexpedient, but a cause of weakness to neglect. The Prime Minister who shall perceive the need, and take measures to satisfy it, will deserve well of his generation and serve his country.—*Scientific American*.

SELF CONTROL.—The first error in all discussions of the social evil, says the *New York Medical Journal*, is the assumption that the only way to regulate the sexual instinct is to permit its unlawful gratification. It is taken for granted that the control of his or her sexual appetite is impossible to men and women. We endorse the view of the editor that this is untrue to facts. We fully believe that by the ordinary moral and religious aids to intelligence and physical activity, the sexual appetite can be fully controlled and made to contribute to the energetic pursuit of life's work. It were far better to carefully study how the means for its proper control shall be made effective with the masses. Teach each man, woman and child how to look after themselves and the problem is solved. It is the history of science as well as the dictum of inspiration that the soul that sinneth shall die. None better than doctors know how sexual sins kill the body. None know so well as they that the only way to avoid this death is to control the sexual appetite. He who cannot control his own body has yet to learn the first lesson of physical safety and physical health.—*American Lancet*.

FOOLHARDINESS.—To one who is familiar with the carelessness exhibited by persons who have served a long time in dangerous occupations or in close proximity to dangerous machines, the wonder is not that so many accidents happen, but rather that so few fatal casualties occur. A young man of exceptionally steady and cautious habits was employed some time ago by one of our leading woodworking establishments. His steady, cautious nature led to promotion, and a part of his duty required his presence where there are many rapidly revolving pulleys and belts. It was noticed that he gradually got to "fooling" with the belts, and he was warned of the danger by some of the old hands. The other day there was a sudden jar and a stoppage of a part of the machinery. An examination revealed a broken belt and the mangled corpse of the young man. The cause was evident to the coroner's jury—pure carelessness. Every week we read

of accidents to carpenters, painters, etc., and no wonder. The recklessness of this class of men in trusting themselves on rickety scaffolds is incomprehensible. The other day we saw a painter at the top of a long light ladder, the foot of which rested on a frail pine goods box on a sideling pavement. On a close calculation there was not more than an inch, or at most two inches, of "center of gravity" that prevented his receiving a terrible fall. And this man, like hundreds of others, takes a pride in showing his fearlessness in the pursuit of his vocation under all circumstances. Sensible people call it foolhardiness. It has cost the life of many a good fellow, and we really believe that whenever a man exhibits unmistakable symptoms of this form of mental obliquity, he should be discharged from positions involving danger to himself or others.—*Scientific American*.

VALUE OF ALCOHOL.—The *Révue Scientifique* publishes a paper on alcohol and alcoholism which presents statistics and conclusions of a startling nature. The author, M. Fournier de Flaix, affirms that the outcry against alcohol is utterly unmerited, as it does far more good than harm. To demonstrate this M. de Flaix furnishes tabular statements to show that not only in the French departments, but in all other countries, the birth-rate is lower and the death-rate higher wherever the consumption of alcohol is small. It is further argued from these figures that neither criminality nor suicide is in proportion to alcoholic consumption. In the Seine et Oise the consumption of alcohol is just about half what it is in the Seine Inférieure, yet the suicide rate is double in the former. In England, again, more alcohol is consumed than in France, and yet in France, the writer points out, the birth-rate, the death rate, the statistics of crime and suicide, are less favourable than in England. The comparisons for Italy, Spain, Sweden, Norway, Denmark, Russia, Austria and Germany show analogous results. M. de Flaix's conclusion is that it is the nations with the most vital powers, the greatest wealth, and the best morals who consume the most alcohol. *The Week*.

EDITOR'S SPECIAL CORNER.

Canada Health Journal,

A MONTHLY MAGAZINE OF PREVENTIVE MEDICINE

Specially designed for medical and other health officers, heads of families and all interested in promoting the public health. The only Health Journal published in Canada.

Communications solicited on all sanitary subjects. Local health officers would confer a favor by sending copies of their reports, brief notices of local sanitary condition, improvements, or events in any way connected with health.

All communications, with remittances or otherwise, should be addressed.

"Health Journal," Ottawa, Can.

A blue cross opposite this indicates that the subscriber to whom it is addressed is indebted for *this year's* subscription (from Jan. to Dec. \$1.50) and all such will confer a favor by kindly remitting, for which we shall feel obliged.

We cannot undertake to make out accounts and send them by mail or otherwise and only charge \$1.50.

All not remitting on receipt of this number, or during this month, must expect to pay \$2.00; we must insist on this in common fairness. Physicians pay \$3.00 for their Medical Journal, containing no more reading matter than this one.

Will all in arrear please think of this and help us in the work by an *early* remittance.

SEE CLUB RATES to Health Boards and others on advertising page; also, rates with other journals.

ADVERTISEMENT of unexceptionable character taken to a limited extent, and at reasonable rates—none of patent medicines.

EDITOR'S SPECIAL CORNER.

In Toronto, although the recently proposed scheme for trunk sewers and pouring the sewage into the lake, four or five miles from the intake of the water supply, was rejected by a popular vote, the leading citizens seem determined to have some change in the manner of sewage disposal, and a large committee has been appointed to consider the question. The scheme as voted upon was certainly a dangerous one, so far as it related to the outflow of the sewage into the lake, although the opinions of the engineers employed upon it were to the contrary. We would suggest that Canadian Sanitarians, as well as Canadian Engineers, be more consulted in any future scheme.

If the authorities of Toronto, or the Committee referred to, would heed the results of recent experiments in bacteriology and water supply by Dr. Frankland, of London, England, and Dr. Wolffhugel, of Berlin, showing the vitality of disease germs in water, as referred to elsewhere in this JOURNAL, it seems hardly possible that they would ever consent to any scheme for pouring the sewage unchanged, and infected as it often is, into the lake at all, or at any point. Such a course can only be characterized as dirty, unnatural and unscientific, wasteful of valuable, indeed most

essential material, and dangerous to the public health.

A SYSTEM of depletion of the source of the food supply, such as Toronto, (as well as many other cities,) is practicing, cannot fail to relatively increase the price of food from year to year; while, on the other hand, if the sewage, or the solids of it, were returned to the soil, it could not fail to relatively reduce the price of food. There are thousands of acres East of Toronto the soil of which is admirably, even as if designedly, adapted for purifying the sewage and allowing the water of it to flow in a comparatively pure state into the lake, while being itself so enriched as to be capable of yielding such crops of vegetables as would give a good paying surplus above outlay. As we have on more than one occasion pointed out, a tank near the mouth of the Don for receiving the sewage could be provided of such depth that it would give a good fall and outflow to the front street trunk sewer, and from which the sewage could be pumped up at small cost onto this impoverished hungry soil.

MONTREAL has made much progress in sanitation of late, under the vigorous action of the chairman of its board of health, Mr. Alderman Gray. Besides burning all the garbage, general cleanliness is enforced. A correspondent there writes to us: "We are second to no city on this continent now, in the care and continually increasing effectiveness of our sanitary methods. Our yards and lanes are scrupulously clean, and our drains are better every year. Every house is periodically inspected, landlords are notified daily and punished for neglects." Toronto is not without vigorous men in its health department. The city commissioner and medical health officer are not wanting in vigor, and in the right direction, and its mayor is full of energy, though sometimes misled by defective counsel. The people there will probably, as did apparently Montreal, wait for the effects of a fatal and humiliating epidemic. Epidemics appear to be as it were very forbearing at times, but at length strike heavily.

Few greater evils exist at the present time than that of 'patent medicines.' The time will probably come, and all whose knowledge of medicine—of the effects of drugs upon the functions and organs of the human body—enable them to form any fair conception of the magnitude of the evil, will hope it may

soon come, when restrictive legislation will control, suppress or prohibit the evil. The press is so largely subsidised in the way of advertisements by the manufacturers and vendors of the nostrums, that the obstacles in the way of suppression are great. Nevertheless, we shall endeavour to do what little we can, through the JOURNAL, in enlightening the public, and to awaken them to a knowledge of the injurious consequences of consuming annually millions of dollars worth of concoctions which, for the most part, to those who swallow them, are positively poisonous.

In the *British Medical Journal* of October 23rd, is a leading editorial upon "Cholera in Europe." From it it appears that last year, on one or two occasions, cases believed to have been of the nature of cholera, reached Cardiff and Bristol, in the persons of sailors from the Mediterranean, but, "as the result of sanitary precautions promptly taken the disease did not in any case spread." If there is one thing that superabundant experience has taught, says the *Journal*, "it is that cholera spells dirt; and until some glimmerings of this truth penetrate the minds of continental and eastern nations, it is idle in the present activity of commercial intercourse between all parts of the world, to shut the disease out by the insufficient barrier of quara tine."

ENGLAND, the *Journal* continues, "puts her trust in measures which shall secure purity of earth, of water and of air, and regards this purity as sufficient to prevent the spread of cholera in an European community. And as the measures which shall protect herself and other countries from such danger as attach to intercourse with already infected places and communities, England relies and exhorts other countries to rely upon the same purity of local surroundings as the means for rendering that intercourse inoperative of harm. Accordingly, she would dispense, in land and sea traffic alike with those detentions known as quarantine, having found them in practice to result rather in hazardous concealments and evasions, than in any effectual exclusion of cholera."

THE next and early numbers of the JOURNAL will contain, besides a paper by Dr. Nathan Allan, of Lowell, Mass., on "Sanitary License and the Medical Profession," a copy of which we have been favoured with, but too late for this issue, also papers on Temperance and Prohibition, the Milk Supply, the Toronto Trunk Sewers and other important subjects.

OBSERVATIONS AND ANNOTATIONS.

THE late Dr. Flint did not write a book till he was 50 years old.

A GERMAN chemist, Wickelmann, says that age improves wines for a certain length of time and then injures them. Mosel improves for five years and then deteriorates.

ANOTHER of Mr. Pasteur's patients died about the middle of August. It was bitten by a rabid dog on June 14. On June 16, it was placed under Pasteur's treatment.

AT the recent annual meeting of the Belgian Medical Federation, a resolution was discussed which recommended the establishment of a special diploma in state medicine, giving the title of "Médecin Légaliste." and that courts of justice should be obliged, when possible, to give the preference to those possessing the special diploma when medical evidence was required.

A TELEGRAM from Vienna, according to the *British Medical Journal*, states that a Dr. Schmidt, who held a leading position in the administration of the State Railway Company, was attacked by cholera on the 16th October, on his return from Pesth, and died the following day.

THE late Dr. James G. Wakley, for a quarter of a century editor of *The Lancet*, some time before his death, made a special request that the following confession of faith should be introduced into any notice of his life which might appear in the pages of *The Lancet*: "Feeling my deep responsibility to God for the position in which in His providence He has placed me, I desire to testify to the comfort derived during my sickness from a lively faith in our Lord Jesus Christ, and that I die in the sure hope of a glorious resurrection."

AUGUST 31st last was the one hundredth anniversary of the birth of M. Chevreul, a French chemist and scientist, who has been a most industrious laborer in the field of chemical research for over eighty years. The learned centenarian offers a striking example of the connection between longevity and moderate living. A Paris contemporary states that his breakfast consists of two eggs, a slice of chicken pastry made by his own cook, and a pint of *café au lait*. His dinner is also unvaried, and daily consists of tapioca soup with grated cheese, a cutlet, a bunch of grapes, cheese, and three glasses of water." He never eats fish nor drinks wine. And he yet labors ten hours every day with the vigor and enthusiasm of a man in the prime of life, and bids fair to yet accomplish much work in his favorite field.

THE *Medical Record* believes that long beards are not the things for doctors, but are unhygienic, barbaric and inconsistent with great historic precedents and the attainment of the highest professional eminence.

RESEARCHES by Dr. Newton, published in the *Medical News*, prove that milk warm from the cow, when placed in tight cans in a warm atmosphere, will so change as to develop a substance which will cause poisonous symptoms in those using the milk.

At Croydon, England, a farm of 600 acres effectually disposes of the sewerage from a town of 60,000 people. The farm during the 20 years it has received sewerage has increased in value from \$5 per acre to \$45 per acre. Here is a hint for Toronto with its proximate Scarborough Heights. There is money in it, and pure air and pure water.

THE undersigned sends us the following for insertion: If any reader of your JOURNAL has met with a case of Cocaine addiction and will send me the fullest details at his command, I'll thank him for the courtesy, reimburse him for any expense incurred, and give him full credit in a coming paper.

J. B. MARRISON, M. D.,
314 State St., Brooklyn, N. Y., U. S.

THE following, on ice in the sick-room, is "going the rounds" and is well worth preserving: An old jack plane, set deep, is a most excellent thing with which to shave ice. It should be turned bottom upward and the ice shoved backward and forward over the cutter. A saucerful of shaved ice may be preserved for twenty-four hours, with the thermometer in the room at 90° F., if the following precautions are observed: Put the saucer containing the ice in a soup plate and cover it with another. Place the soup plates thus arranged on a good, heavy pillow, and cover with another pillow, pressing the pillows so that the plates are completely embedded in them.

CONFIRMING what we have repeatedly stated in relation to a low death-rate for a short period of time in towns of moderate size is the following: According to the quarterly report of the medical officer of health of the Town of Hastings, the death-rate during the three months ending June 30th had fallen to the extraordinary low figure of 11.51, this being the lowest death-rate in this quarter recorded in the last eleven years. The medical officer mentions as an instance of the low mortality of the borough, that it was worthy of notice that during the month of May only three deaths were registered in the conjoined parishes of St. Clements and All Saints, conjoined of about 10,000 persons, and one of them was a newly-born infant found dead.

NE never afraid of the man who keeps his mouth open, says the shrewd Indian. A closed mouth, says the *American Lancet*, indicates power, not to be lightly esteemed.

AN engineer states that underneath Westminster, England, at a depth of some 30 feet, is a stratum of sewerage water which has been accumulating for about 2,000 years.

THE Incas of Peru were under religious obligations to marry their eldest sisters, and these unions gave birth to a line of twelve princes, all equally remarkable for prowess, vigor and ability.

THE Paris correspondent of the *British Medical Journal* reports a case of delayed development of the vaccine vesicle: 15 days after a first vaccination, and 8 after a second, a typical vesicle appeared, corresponding to an ordinary pustule of the fifth day after vaccination, appeared at the point of the first operation.

A DISINFECTING, or, probably rather deodorizing, flameless lamp is mentioned by the same Paris correspondent. This is provided with a spiral thread of platinum which after being heated to redness remains so long as any alcohol remains in the lamp, and gives off at the same time a "sweet etherized odour, and the most mephitic air is quickly purified."

AT the late meeting of the British Medical Association, G. E. Shuttleworth, B. A., M. D., Superintendent Royal Albert Asylum, read a paper on marriages of consanguinity and mental unsoundness, and showed that restrictions on such marriages were imposed in the fourth century from ecclesiastical rather than from physiological considerations. The danger of such marriages would appear to be in the intensification of morbid hereditary tendencies.

"DAVID" enquires of the *Western Ploughman*, "How can the offensive tobacco smell be removed from a cigar box?" The *Ploughman* replies: "This is no easy matter. If I could remove the stench from many a fellow I meet in the street, I would do so, as I prefer the stench of the skunk! If this horrible, pestiferous smell could be removed from such carcasses, even by soaking them for a few months in clean rain water—changed once in five minutes, as the water would soon become very filthy—it would be for the public good. It might require a great deal of soap and sand, a great deal of time, but, it might pay, just to have them reasonably clean, even for a short time, so that they might be fit to mingle in decent society, and not disgust the cleanly. . . . I should rather use some other kind of wood."

A WOMAN died in the chair of a Brooklyn dentist, while taking ether for the extraction of a tooth.

DR. DOWN says he once had commenced a paper to prove that consanguineous marriages were exceptionally productive of imbecility and idiocy, but the facts he met in his investigations converted him to the opposite view.

FACTORY inspectors in England have the power of imposing certain regulations as to dress and ablutions which diminish the amount of poisoning resulting from the handling of lead. Painters and others working with lead should attend to these regulations.

A PHYSICIAN writes to the *British Medical Journal* and wants to know "whet her any steps could be taken by the board of health to stop the sale of socks dyed with irritant dyes," and states that he has had several cases in practice of severe irritation and skin disease from the wearing of woolen and silk socks highly colored with poisonous dyes.

IN relation to the sanitary condition of the Thames, it appears that arrangements have been made for experiments being carried out which will permit the affluent water being poured into the river, free from all objectionable matters, and convert the solid refuse with the filtering material into a valuable fertilizer. The results already achieved, it seems, leave no doubt as to the success of the scheme.

SIR T. SPENCER WELLS, President of the Sanitary Institute, at their late congress, said that any great sanitary improvement must be the result of elaborate co-operation. Combined action of investigators, legislators and administrators, was necessary; the work of investigation had hitherto, for the most part, been personal, and the waste of labour has been enormous. The Colleges of Physicians and Surgeons had done much. "Why," he asked, "should we not have a College of Health, which should show our appreciation of the gift of life, and our reverence for the Giver?"

DR. LOUIS PARKES, at the same congress, in the course of an address, said that cow's milk was a perfect food containing, in the right proportion, all the dietary constituents necessary for healthy growth and nutrition in the young, yet its use in an uncooked state was attended with a possibility of very serious dangers, derived partly from the animal source of supply, and partly from causes which might operate on it between its origin from the cow, and its consumption by man. He dwelt at length upon the question relating to the transmission of disease of the cow to its milk secretions and to human beings.

IN Glasgow, Scotland, a public meeting was held last month for the purpose of taking steps to promote legislation for preventing the continued pollution of the Clyde, the Carl and the Kelvin Rivers.

ENGLISH exchanges report a number of cases of poisoning, some of a serious character, by meats preserved in tinned cans. Care should be exercised that such food is fresh and good.

IN Washington they are building a sewer 22 feet in diameter. It is over 2,000 feet long, and has connected with it a sewer 20 feet in diameter and 5,000 feet long. It is intended to drain the water shed north of the city and to carry to the eastern branch of the Potomac all the contents of the smaller system of sewers in the northern portion of the city.

PROFESSOR BALL, of Paris, expresses the opinion that consanguinity in parents, while it certainly multiplies pre-existing morbid predispositions, has no evil influence when the parents of both are of fairly sound health. "In several mountain valleys of Europe, the whole population seems descended from the same stock, and yet exhibit no signs of degeneracy.

A PAPER on sanitary associations was read at the congress by the Rev. J. Malet, Lambert Hall, who in the course of his remarks observed that, the present chasm between sanitary science and sanitary practice was great. They might best popularize sanitation by working on individuals and also by acting on public bodies, who had control of the laws. What was needed was a voluntary association of men of all classes, creeds and politics, whose objects were above suspicion, and whose business it should be to ascertain clearly the actual position of affairs, to make it public, and there to put in motion the forces most calculated to bring about improvement.

RELATIVE to the question, does one attack of measles protect from future attacks? Dr. F. A. A. Smith writes the following to the *British Medical Journal*:—"Most text books on medicine state that a second attack is very rare. This is certainly not my experience. In 1884, we had a severe epidemic of measles. I attended 160 cases, and was frequently told by mothers that their children had had measles before. I did not pay much attention to these statements at the time, but now we have another epidemic, and I am at present attending several children who were under my care in 1884 suffering from the same disease. I am told that one child, who is now suffering from measles, has already had the disease three times, and I have no hesitation in believing the statement, especially as I have attended this child twice in the same fever.

THE November *Century* marks a new era in the history of that Magazine, in beginning the publication of the "Life of Lincoln," by his private secretaries, John G. Nicolay and Colonel John Hay. From an historical point of view the value of the work—largely resting on documentary evidence not attained by other writers—must be ranked high. In fact, the inner history of the war waits upon this work. The first part is concerned with the Lincoln family as pioneers, including their relations with Boone in Kentucky, and their subsequent life in Indiana and Illinois down to the Black Hawk War, and a picture of the society and surroundings of young Lincoln, involving a concise history of the Western States of that day. A paper is contributed by Theodore Roosevelt, on "Machine Politics in New York City;" and an illustrated paper—the first of two—is contributed by Dr. B. E. Martin, on "Old Chelsea" and consists of chat about the literary and other localities and celebrities of that fast changing quarter of London. The climax of the war is reached in the military series of the battle of Gettysburg, which is to be described by Generals Hunt, Longstreet, Doubleday, Law and Alexander. There is an illustrated paper on a far reaching question to which *The Century* has given much attention, "The Need of Trade Schools," by Colonel R. T. Auchmuty, founder of the New York Trade Schools, who discusses his subject with reference to what is being done in this line of progress in different parts of the world. This paper has a bearing on hygiene in education. We read: "Education is in a transition state. Systems that have come down to us from past ages are found incapable of meeting the wants of the latter part of the nineteenth century. Especially is this the case in the way in which the young are taught how to work. . . . The present custom of requiring a lad to work four or five years before becoming a journeyman necessitates his beginning at an early age. Placing boys ten hours a day with men of whose antecedents nothing is known is objectionable. . . . A trade school not only avoids any danger but it gives the parent an opportunity to ascertain for what sort of work the boy is suited. As it is now, the lad may work for several years at a trade and then find he has no taste for it.

In the first number of the new volume of St. Nicholas (for November) we find, the frontispiece, "The Last Walk on the Beach;" a City of Old Homesteads, with six illustrations; the Knavish Kite, illustrated and engrossed; The Blind Lark; illustrated; A Song of Singers, a poem, Sixteen and Six, illustrated and engrossed; Victor Hugo's tales to his Grandchildren; The Man who drove Down Stairs; Historic Girls.; VI. Edith of

Scotland; Talking in their sleep, poem; In a Flamingo rookery; St. Nicholas dog stories, with illustrations; and funniest of all, the Brownies in the Gymnasium, with three illustrations.

HARPER'S BAZAR of the 13th inst. comes out in a tinted cover and is a very good number. It contains, among other things, excellent papers on "Sweeping and Dusting," "Women and Men—A glance at a grange," "Buying a Saddle Horse—What sort of a horse to buy," and some good illustrations, the most notable of which is a large double page one, "Inspiration," from the painting by Edwin Howland Blackfield, exhibited in the London Academy of 1886. The BAZAR always contains some intensely amusing illustrations and notes.

HARPER'S WEEKLY during the past month contains some admirable things, both in illustration and reading matter. That of November 6th contains, besides good articles on "Partis" in Great Britain and "Money Politics," a timely paper by Mr. P. M. Arthur, Grand Chief of the Brotherhood of Locomotive Engineers. "It takes sides neither against labor nor capital, because it does not admit any essential hostility between them, while it concedes that there is an ancient and irremediable controversy between work and idleness. Mr. Arthur holds that when industrial differences arise they cannot be settled by fury and violence, but only by moderation and arbitration. Capital, as he says, cannot afford in the long-run to be oppressive and unjust, because persistence in injustice precipitates violence and injury to both sides."



MAIL CONTRACT

SEALED TENDERS, addressed to the Postmaster General, will be received at Ottawa until noon, on Friday, 17th Dec., 1886, for the conveyance of Her Majesty's Mails, on a proposed Contract for four years, three times per week each way, between Ashton and Prospect, from the 1st January next.

Printed notices containing further information as to conditions of proposed Contract may be obtained at the Post Offices of Ashton, Munster, Dwyer Hill and Prospect, and at this office.

J. P. FRENCH,
Post Office Inspector.
Post Office Inspector's Office,
Ottawa, 23rd Oct., 1886.

FREE GRANTS, PRE-EMPTIONS, ETC.

How to obtain them in the Canadian North-West.

DOMINION LAND REGULATIONS.

Under the Dominion Lands Regulations all Surveyed even numbered sections, excepting 8 and 26, in Manitoba and the North West Territories, which have not been homesteaded, reserved to provide wood lots for settlers, or otherwise disposed of or reserved, are to be held exclusively for homesteads and pre-emptions.

HOMESTEADS.—Homesteads may be obtained upon payment of an Office Fee of Ten Dollars, subject to the following conditions as to residence and cultivation:

In the "Mile Belt Reserve," that is the even numbered sections lying within one mile of the Main Line or Branches of the Canadian Pacific Railway, and which are not set apart for town sites or reserves made in connection with town sites, railway stations, mounted police posts, mining and other special purposes, the homesteader shall begin actual residence upon his homestead within six months from the date of entry and shall reside upon and make the land his home for at least six months out of every twelve months for three years from the date of entry; and shall, within the first year after the date of his homestead entry, break and prepare for crop ten acres of his homestead quarter section; and shall within the second year crop the said ten acres, and break and prepare for crop fifteen acres additional: making twenty-five acres; and within the third year after the date of his homestead entry, he shall crop the said twenty-five acres, and break and prepare for crop fifteen acres additional—so that within three years of the date of his homestead entry, he shall have not less than twenty-five acres cropped, and fifteen acres additional broken and prepared for crop.

Land other than that included in Mile Belt, Town Site Reserves, and Coal and Mineral Districts, may be homesteaded in either of the three following methods:—

1. The homesteader shall begin actual residence on his homestead and cultivation of a reasonable portion thereof within six months from date of entry, unless entry shall have been made on or after the 1st day of September, in which case residence need not commence until the first day of June following, and continue to live upon and cultivate the land for at least six months out of every twelve months for the three.

2. The homesteader shall begin actual residence, as above, within a radius of two miles of his homestead, and continue to make his home within such radius for at least six months out of every twelve months for the three years next succeeding the date of homestead entry; and shall within the first year from date of entry break and prepare for crop ten acres of his homestead quarter section; and shall within the second year crop the said ten acres, and break and prepare for crop fifteen acres additional—making twenty-five acres; and within the third year after the date of his homestead entry he shall crop the said twenty-five acres, and break and prepare for crop fifteen acres additional, so that within three years of the date of his homestead entry he shall have not less than twenty-five acres cropped, and shall have erected on the land a habitable house in which he shall have lived during the three months next preceding his application for homestead patent.

3. The homesteader shall commence the cultivation of his homestead within six months after the date of entry, or if the entry was obtained after the first day of September in any year, then before the first day of June following; shall within the first year break and prepare for crop not less than five acres of his homestead; shall within the second year crop the said five acres, and break and prepare for crop not less than ten acres in addition, making not less than fifteen acres in all; shall have erected a habitable house on the homestead before the expiration of the second year, and on or before the commencement of the third year shall have begun to reside in the said house, and shall have continued to reside therein and cultivate his homestead for not less than three years next prior to the date of his application for patent.

In the event of a homesteader desiring to secure his patent within a shorter period than the three or five years, as the case may be, he will be permitted to purchase his homestead, or homestead and pre-emption, as the case may be, on furnishing proof that he has resided on the homestead for at least twelve months subsequent to date of entry, and in case entry was made after the 25th day of May, 1883, has cultivated thirty acres thereof.

PRE-EMPTIONS.—Any homesteader may, at the same time as he makes his homestead entry, but not at a later date, should there be available land adjoining the homestead, enter an additional quarter section as a pre-emption, on payment of an office fee of ten dollars.

The pre-emption right entitles a homesteader, who obtains entry for a pre-emption, to purchase the land so pre-empted on becoming entitled to his homestead patent; but should the homesteader fail to fulfil the homestead conditions he forfeits all claim to his pre-emption.

The price of pre-emptions, not included in Town Site Reserves, is two dollars and fifty cents an acre. Where land is north of the northerly limit of the land grant, along the main line of the Canadian Pacific Railway, and is not within twenty-four miles of any branch of that Railway, or twelve miles of any other Railway, pre-emptions may be obtained for two dollars per acre.

Payments for land may be in cash, scrip, or Police or Military Bounty warrants.

TIMBER.—Homestead settlers, whose land is substitute of timber, may, upon payment of an office fee of fifty cents, procure from the Crown Timber Agent a permit to cut the following quantities of timber free of dues: 30 cords of wood, 1,800 lineal feet of house logs, 2,000 fence rails, and 400 foot rails.

In cases where there is timbered land in the vicinity, available for the purpose, the homestead settler, whose land is without timber, may purchase a wood lot, not exceeding in area 20 acres at the price of five dollars per acre cash.

Licenses to cut timber on lands within surveyed townships may be obtained. The lands covered by such licenses are thereby withdrawn from homestead and pre-emption entry, and from sale.

INFORMATION.—Full information respecting the land, timber, coal and mineral laws, and copies of the regulations, may be obtained upon application to THE SECRETARY OF THE DEPARTMENT OF THE INTERIOR, Ottawa, Ontario; THE COMMISSIONER OF DOMINION LANDS, Winnipeg, Manitoba; or to any of the Dominion Lands Agents in Manitoba or the North-West Territories.

A. M. BURGESS, Dep. Minister of Interior.