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CANADA

HEALTH JOURNAL,

A MONTHLY MAGAZINE OF
PREVENTIVE MEDICINE

—EDITED BY—

EDWARD PLAYTER, M.D.

Public Health and National Strength and Wealth.

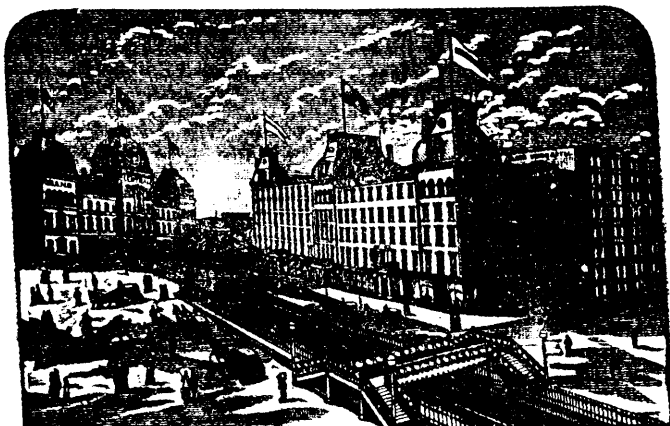
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The Canada Health Journal

VOL. X.

MARCH, 1888.

No. 3.

PREVAILING DISEASES AND THEIR PREVENTION.

I.—CONSUMPTION (Continued.)

UNDER the head of predisposing causes of tubercular diseases—causes which create a receptivity, or prepare the body for the exciting or direct cause—the infection or bacillus, may be enumerated anything which lowers the vitality of the body, and so interferes with its resisting powers. I am in accord with the views put forth by Dr. Flick at the meeting in January of the Philadelphia Medical Society, that consumption is entirely dependent for its initial starting-point on malnutrition; that without malnutrition and malassimilation such a thing as consumption cannot take place. “When one is run down he is then a fit subject for the bacillus tuberculosis, and unless he is run down and his digestive apparatus is out of order he will never fall a victim to consumption.” This, indeed, is almost the unanimous opinion of the medical profession.

Most persons who suffer from pulmonary or lung consumption have relatively small lungs and hence a small respiratory capacity. Individuals with small lungs doubtless the most readily fall victims to pulmonary tubercular disease. Such individuals indeed are probably never so strong, for obvious reasons, as those with well developed respiratory organs. This defect, therefore, usually hereditary, may be regarded as a predisposing cause of the disease. It is, too, or should be, the first cause to be considered, as when the lungs become properly developed, other causes produce less injurious or depressing effects upon the organism.

The size of the lungs may be increased by frequent deep

inspirations, as follows : Out of doors in a pure atmosphere, one should stand perfectly erect with the hands hanging down at the side or resting on the hips, and then gradually and slowly draw in air through the nostrils until the lungs are well distended and filled, hold the breath for a few seconds, and then gradually and slowly expel air until the lungs again assume their natural state in expiration. This should be done three or four times or even oftener in succession ; breathing naturally two or three times between each forced inspiration to rest as it were if desired. The exercise should be repeated two or three or more times a day. It is well to raise the arms from the side during the act of inspiration ; and they may with advantage be brought together above the head, or swing backward on a level with the shoulders. It is useful, too, to count, during expiration only, in a loud voice, as long as possible. After a little practice the inspirations should be longer and the lungs expanded to their utmost capacity ; and forced inspirations, too, should be practiced, in order to expel as much air as possible from the lungs.

Too much force must never be used, and at first especially, care is needed not to strain the lungs nor even the walls of the chest. Later, much more force may be exercised. When too much force is exercised slight momentary blindness or dizziness may follow, but this would be only very transient.

Moderate running, such as will not cause much difficult breathing or "loss of breath," is a useful practice ; so likewise is walking up hill ; or indeed any exercise which causes long deep inspirations. As a gymnastic exercise, that of hanging by the arms to a rope or pole, just so high as that the toes only can rest on the ground, and swinging the body around in a circling way, and from side to side, is of much value.

I have known the circumference of the chest increased two or three inches in a few months' time by the judicious practice of such exercises as above described ; and never knew the least harm whatever to result from the practice of any of them.

Imperfect respiratory action in persons with naturally full respiratory capacity is common. There are many who have well-developed lungs, and not relatively too large, who yet never

exercise or use them to their full capacity. The movements of the lungs and walls of the chest have their origin in and are controlled by nervous influence. Breathing is not a voluntary, but an involuntary act. We breathe without knowing it; but breathe we must. We can breathe quicker or slower, take long breaths or short ones, but we cannot by any effort of the will stop the breathing. But from imperfect nervous development or derangement of the nervous system, from habit or want of active exercise, many persons do not commonly and perhaps never fill and distend their lungs to the fullest extent. In such circumstances not only is the whole function of respiration imperfectly performed, but the almost unused parts of the lungs, the distant parts—the extreme upper (especially) and lower edges, become weakened and eventually diseased, like any part of the body, as an arm for example, would if it were not used for a long time. Such people are as liable to suffer from consumption as those with relatively small lungs, if indeed they are not more liable. The remedy is obvious, and in their own hands.

All parents should see to the chest development of their children. A physician should be consulted, and if the chest of a child is found to be relatively small, early means, on the principle above described, should be employed to increase the size of the chest and lungs.

Remember, in employing means for the prevention of pulmonary consumption, this chest development is of the first importance.

The next most important predisposing cause of consumption is foul air, especially close air befouled by respiration. "That phthisis is cultivated, if it does not originate, in over-crowded and ill-ventilated dwellings, is a truism of sanitary science," writes the editor of the *British Medical Journal*, (Feb. 25, 1888); an opinion almost universally held. Hence all persons predisposed to consumption should carefully avoid unventilated rooms. They should indeed be as much as possible in the open air; being particular as to the ventilation of their bedroom. Damp air from undrained soil has been found to favor the development of consumption; probably from its tendency to lower the bodily

vigor. A damp soil is indeed inimical to the health of all the higher forms of life, animal and vegetable.

In view of the vast number of lives that are yearly destroyed by this scourge of humanity, some public measures should be adopted for its prevention. The wide dissemination alone of a knowledge of the causes of the disease among the masses would do much, and save many lives. Dr Arthur Ransome, F.R.S., of Manchester, Eng., has recently been making investigations into the causes of the disease in that city. At the last meeting of the Sanitary Institute of Great Britain he concluded a most able address on the prevention of the disease in the following words: "The measures that are needed for the prevention of this terrible scourge of our population may be thus briefly enumerated: (1) As far as possible the disinfection or destruction of the phthisical expectoration; (2) the discouragement of marriage between phthisical individuals, [or those with relatively small lungs.—Ed.]; (3) the prevention of irritating dusts in workshops, or at any rate the adoption of means for sweeping them away from the mouths of work people, as is now almost universally done in the workshops of Sheffield; (4) the discouragement of stooping or confined postures during labor; (5) the better drainage of impervious soils, and (6) the provision of thorough ventilation, not only in workshops, offices, warehouses and factories, but also in the dwellings of both rich and poor, and the streets and crowded alleys in which they live. By the adoption of some such means as these I firmly believe that in the course of time we should see the present frightful mortality from consumption greatly diminished."

Much greater care should be exercised than heretofore in regard to the destruction or disinfection of sputa or expectorated matter from the lungs of those suffering from consumption. In this, and probably in this only, the infection exists. With the destruction of all this at once as it is coughed up great progress would be made toward extinguishing the malady. As the infection, however, unlike most other infections, can only take root and develop in a constitution predisposed by some depressing influence to receive and harbor it, it is of very great importance to avoid all depressing causes.

With well developed lungs, good digestion and a plain nutritious diet, abundance of pure out of door air and exercise, comfortable clothing and attention to the skin, abundance of rest and strict temperance in all things, one may defy consumption.

LIFE HISTORY OF 824 AGED PERSONS.

LAST year we gave some of the results of the work of the Col-
lective Investigation Committee of the British Medical
Association in reference to Centenarians. Following is an account
of the past life history of 824 persons—432 men and 392 women—
between the ages of 80 and 100 years, made upon the enquiry
papers issued by this Committee, prepared by Prof. Humphry, F.
R. S., and published in the British Medical Journal, March 10th,
1888. Of the 824 persons, nearly a fourth (24 per cent,) were
'first children,'⁶ and at least 17 of the number were 'only child-
ren,' though the greater number were about the third or fourth in
the family. In 196 instances, in which the ages of the fathers and
mothers at the time of the birth of the children were included in
the returns, the average age of the fathers was 34, and that of the
mothers 32. This would indicate the age of about 30 to be, as
we might expect, so far as the offspring are concerned, the most
favourable for child-producing. Five are stated to have been
'twins.'

Of the 335 men who are stated to have been married, the
average age at which they married was 29, the average duration of
their married life was forty-five years, and the average number of
their children was six.

Of the 292 women who are stated to have been married, the
average age at which they married was 26, the average duration of
their married life was forty years, and the average number of their
children was six. The shorter term of married life of the women
as compared with that of the men is explained by the fact that
men are, on the whole, somewhat shorter-lived than women, and
also that they marry at a rather later age, the term of the married
life of the women being, therefore, curtailed by the earlier deaths
of the men.

The greater proportion (55 per cent.) of these old people had lived in comfortable circumstances, 35 per cent., had been 'poor,' and 10 per cent., had been 'affluent.' The greater number had been of average stoutness or of spare habit. Eight per cent., are said to have been 'delicate,' whereas 54 per cent., are reported to have been 'robust' throughout life, and 37 per cent., to have been about 'average' in this respect. Ninety per cent., had always enjoyed good health. In the category of 'good health' are comprised good digestion, which is reported with regard to 92 per cent., good appetite, which is noted in 88 per cent., and good, regular action of the bowels, which had taken place, and in most instances daily, in 85 per cent., costiveness being noted as habitual or frequent in only 10 per cent.

With regard to diet we find that the smallest proportion (15 per cent.) had been habitually 'large' eaters, 20 per cent. had been 'small' eaters, and the largest proportion (61 per cent.) had been 'average' in this respect. Five per cent. only had been in the habit of taking 'much' animal food—that is, more than a pound of meat daily; 38 per cent. took 'little'—that is, less than half a pound; and 53 per cent. had been accustomed to partake of it 'moderately'—that is, from half a pound to a pound in the day. Fifteen per cent. had taken no alcoholic drink at all throughout the whole or great part of their lives, 40 per cent. had been in the habit of taking a 'little'—that is, less than a pint of beer or two glasses of wine; 33 per cent. had been accustomed to take it in 'moderation'—that is, one or two pints of beer daily; and less than 9 per cent. had taken more than this. The last number is composed chiefly of men who lived to between 80 and 90; with respect to the men between these ages, of whom there were 298 returns under this head, it is to be observed that 15 per cent. appear to have drunk rather freely—2 or more pints of beer daily—and 10 or 12 had drunk rather heavily for a portion or throughout the greater part of their lives. These exceptional cases scarcely detract from the value of the important confirmation which our tables afford of that which good sense suggests and which ordinary observation tells—namely, that abstinence from, or a spare or moderate partaking of alcoholic drinks, as well as spare or

moderate eating, and spare or moderate meat-eating are most compatible with health and most conducive to the prolongation of life. In this respect the poor are at some advantage as compared with the rich, for it is quite possible—indeed, very easy, to have too much of good things in the way of food, especially when they are made agreeable to the palate, and out of the abundance of what is good much that is evil is likely to ensue.

A greater number and a wider range of statistics would be needed to give trustworthy information respecting the influence of different occupations, modes of life, and places of dwelling upon the duration of life; but we find that by far the greater number (94 per cent.) of those included in our tables had been 'active' persons, and had led active lives, only 6 per cent. being described as 'sedentary.' The greater proportion (77 per cent.) of the men had been occupied much out of doors; this being the case, as might be expected, to less extent (33 per cent.) with the women. Of several it is remarked that they were good walkers, athletes, sportsmen, etc. Nothing, perhaps, more surely than good enduring power in walking, running, or similar exercise, indicates that soundness of frame and nutritive energy and good balance of organs which led to longevity. Moreover, the opportunity for nutrition to do its restorative work was in nearly all provided by the faculty of 'good sleeping,' to which was commonly added its appropriate attendant, the habit of 'early rising,' I say 'appropriate attendant' for 'good' sleeping is, for the most part 'quick' sleeping, that is the reparative work which has to be done in sleep is done briskly and well. Good sleepers, in the prime of life, do not usually sleep very long, especially when they are well and actively and happily employed during the day; and we are sometimes surprised at the small amount of sleep which those who are actively employed seem to require, the fact being that activity and energy of the will and the volitional system induce activity and energy in the sleeping or restorative operations, and, conversely, a dawdling day is commonly followed by dawdling sleep or drowsiness at night. When we speak of early rising, it must be observed that the word 'early' has a relative significance with reference to the time of going to bed. A person who retires to rest four hours

after midnight and gets up at 10 a.m., may be strictly regarded as an 'early riser.'

As we found in the case of centenarians with regard to the hair, so in the old people we are considering it held its ground and its colour well, the proportion of those who were bald 'early' being about 26 per cent., whereas those in whom it was noted that this had not taken place amounted to 72 per cent. Those who were grey 'early' are 24 per cent., whereas in 75 per cent. this change is said to have been 'late.'

Sixty-nine per cent. had been of 'energetic' temperament, giving us the satisfaction of finding energy thus associated with the qualities that promote longevity, and that good working and good wearing qualities are commonly linked together. Thirty-six per cent. are reported to have been of 'placid' temperament, and 13 per cent. to have come under the designation of 'irritable.' In a few (5 per cent.) only is the intellect described as having been 'low ;' in 21 per cent. it is said to have been 'high ;' and 73 per cent. are said to have possessed an 'average' amount of intelligence.

It may seem somewhat remarkable that nearly one-half had suffered illnesses, more or less severe, at some period or periods of life. Of these illnesses many were caused by some external influences or poisons, such as those of fever, small-pox, or scarletina, and they therefore had no special relation to weakness, disorder, or defect in the body... Our statistics are confirmatory of the view that the qualities which lead to old age are those which for the most part give immunity from ailment and disease, and also promote recovery from them when they occur.

With regard to family history, this subject has been so much dwelt upon and so worked out in connection with life-insurance that little remains to be said. In many of our cases no sufficient information respecting it could be obtained. Still, 406 are reported to have belonged to long-lived families, those only being included in this number in the case of whom four of the immediate relatives (grandparents, parents, brothers, or sisters) had attained to the age of 70, or three to the age of 80. In six instances the families are stated to have been "short-lived."

In 367 instances, in which returns on blood-relationship are given, it is stated that none such existed between the grandparents or between the parents in 357. In four instances the grandparents were said to have been cousins ; and in six instances the parents are said to have been cousins ; and it is probable that in all these the relationship was that of first cousin. I do not know the proportion which the marriages of cousins bear to those in which no such relationship exists, or what is the numerical proportion of the children of cousins to the population generally ; but the fact that 10 out of 367, with respect to whom a return on this point was made, or rather more than 27 per cent., were the children of cousins, seems to place the offspring of cousins in a very fair position with regard to the prospects of longevity.

The results of this collective investigation respecting aged people have not been to evolve anything very novel or startling, or to give rise to any fresh theories with regard to longevity and the means of attaining it, but rather to dissipate certain ideas which are more or less current though founded upon too limited observation, and to show that the maxims and laws which common sense and sound reason would dictate hold good, and that, as a general rule, those persons live the longest who might be expected to do so.

THE UTILIZATION OF SEWAGE.

THE latest and best conclusions on this subject are those below, by Dr. E. Frankland, in the Medical Press, London: 1. The utilization of human excreta and their interception from English rivers and water courses has made slow but steady progress during the last thirty years. 2. The utilization of human excreta *per se* or in the form of sewage is generally attended with very considerable loss. Only in rare cases has it been carried out with a profit. 3. For towns not too far removed from the coast, the most economical mode of dealing with sewage, so as to prevent river pollution, is to discharge it into the sea. 4. Most English towns are not sewered and in such towns the so-called preventive methods

of dealing with human excreta hinder river pollution to a very slight extent only, and the sewage of these towns requires to be dealt with exactly in the same manner as water-closeted towns.

5. No chemical method has yet been devised by which sewage can be so far purified as to render it incapable of polluting running water. It has been generally conceded, however, that such treatment, if effective, is sufficient for sewage discharged into the tidal estuaries of rivers, provided the volume of the treated sewage is small relatively to that of the water flowing up and down the estuary.

6. The only effective, and at the same time practical, process for the purification of sewage is passage through land, and 145 English towns have adopted this process, either in the form of irrigation or of intermittent downward filtration.

7. Where land can be obtained at a sufficiently reasonable rate, irrigation is to be recommended, the sewage of about 100 people being supplied to each acre of land.

8. Where it is desirable to restrict the area of land, intermittent filtration should be employed, the sewage from 1,000 to 2,000 being passed intermittently through each acre. By throwing up the surface of the filtration area into ridges, luxuriant crops may be grown.

9. In the purification of sewage by land, it is desirable, but not essential, that the raw liquid should first receive chemical treatment.

10. The sludge resulting from chemical treatment may be pressed into solid cakes or blocks and used as manure; but where land is available for the purpose it is best to drain the sludge upon the land, and then plough it when it has become sufficiently solid.

11. The purification of sewage by passage through land either in irrigation or intermittent filtration is not attended with injury to health upon the sewage works or in the neighborhood. No locality can be named in which typhus, enteric fever, dysentery, or other zymotic disease attributable to foul emanations, has been traceable to this source.

12. Legislation affecting river pollution is in a very unsatisfactory condition. The Rivers Pollution Act of 1876 is useless. The best available legal remedy is by injunction obtainable in the High Court of Chancery, but it is slow and very costly. An Act giving a cheap, quick and summary remedy is urgently required. Hitherto almost all improvement in respect of river pollution in England has been obtained through the action of the Court of Chancery.

HOW TO MANAGE THE INFECTED SICK.

IN a lecture recently delivered to the Association of Public Sanitary Inspectors, by Dr. F. Vacher, F. R. C. S., F. C. S., Medical health officer, Birkenhead, England, we find the following instructive remarks on the subject of the above head :

How to prevent the air being tainted by the seeds of disease, especially infectious disease, and how to remove such seeds from the air? are in some respects simpler questions than—How to ventilate? At least they are more circumscribed. It is not now believed, as it once was, that epidemics travel very long distances by means of air. When plague or cholera spreads from one country to another it is conveyed by infected persons or bales of goods, not by currents of infected air. The seeds of disease, as they occur in the air are generally attached to portions of skin, mucous or diseased tissue, and do not travel far or maintain their vitality long in the air. The problem, therefore, for all practical purposes resolves itself into how to manage the infected sick so as to prevent the spread of infection? Instructions in this respect, to be of much service, would require to be drawn up with reference to each specific disease. The following general directions will, however, indicate the main points to be observed.

1. In preparing the room for the reception of an infectious patient it should be cleared of all furniture but that absolutely required, and the floor should be cleansed and left bare.

2. The room or rooms used by the patient should be regarded as infected, and cut off from the rest of the house by means of a sheet or sheets (wrung out with a disinfectant solution and kept moist therewith), suspended outside each door, and reaching to the floor.

3. Everything brought into the room—as dishes, glasses, books, toys—should be regarded as infected, and nothing that cannot be readily rinsed or soaked in a disinfectant solution should be removed from the room.

4. Towels, pocket-handkerchiefs, soiled linen, &c., should be boiled in a disinfectant solution. One made from sulphate of zinc and common salt is efficient and does not stain.

5. The patient should be washed daily with a simple disin-

fectant and soap and water. In scarlatina, after washing the, skin may be anointed with oil.

6. There should be a good open fire in the infected room summer and winter, and, if no special ventilation be provided, the window should always be left a little open.

7. Dogs and cats and domestic pets should be rigidly excluded from the sick room, as they may readily carry the infection to the external air.

8. If the patient die, the body should be at once swathed in cloths wrung out in a disinfectant solution, and should be sealed in a metal coffin before being removed from the room.

9. When the room is no longer required by the patient, the doors and windows should be carefully pasted up, and the room and its contents disinfected with the fumes of burning sulphur for twenty-four hours: The room and contents should then be left to air for a week, the windows being open and a fire in the grate. The room and contents should then be thoroughly washed. Books and toys which cannot be washed, &c., should be burnt.

DRAIN TRAPS AND VENTS.

THE subject of drain traps is one upon which there is great diversity of opinion, and it is one also upon which the public are not well informed. At the meeting in November of the New Jersey Sanitary Association a paper by J. C. Bayles, M.E., of Orange, relating to this subject was read in which were put forth views so fully in accord with our own that we give them below as reported in the Sanitarian.

The trap, as stated by Mr. Bayles, is simply a bend or enlargement of a waste-pipe so arranged as to hold a small quantity of water. The function of this is to close a branch waste against the free passage of air currents. If more than this is expected of a trap, it is sure to disappoint the expectation. The more complex the structure of a trap, with a view to making it secure against influences tending to empty it, the greater the certainty that it will become a conservator of filth and in itself a nuisance. The

writer's observation and experience led him to believe that the simplest form of trap, the "S" and "half-S," adequately vented from the crown of the bend, is the best, all things considered. A vent as large as the trapped pipe is adequate under all conditions. Traps are sometimes placed in positions which render vents of doubtful value. The venting of traps has a double purpose. It is intended to save the seals, which are liable to displacement by the creation of a partial vacuum in the waste-pipe system beyond them, making a demand for air which, if supplied through the trap, carries enough water out to leave it unsealed. It is also intended to afford an outlet for foul air which might otherwise accumulate in the branch waste below the trap, and finally pass its seal by the well-known process of the absorption and release of gasses by water. When the objections to the trap vent are analyzed, they will be found to be advanced in the interest of patented traps. Commercial considerations underlie most of the current literature of mechanical hygiene. A large part of the inventions which are crowded upon the public notice are made, not because they are needed, but because by persistent advertising they can be made a source of profit. Most of them originate with persons ignorant of the practical problems encountered in plumbing, and who seek to remedy difficulties which exist only in imagination. Traps to "exclude" sewer gas belong to this class of inventions. Those who make them are either ignorant of the fact that in good practice the attempt to bottle up bad air in pipes has long been abandoned, and that progress tends steadily in the direction of multiplying easy and safe outlets for it; or else they disregard this fact on the assumption that people who have not given the subject intelligent attention are still laboring under the delusion that it is possible or desirable to exclude sewer gas by mechanical means. Having examined on the average seven new traps a week for the past ten years, the writer does not hesitate to put it on record as his opinion that the simplest trap is the best, and that any complication introduced in its construction tends to impair its value.

FOR every two that die from intemperance, it is said that five die from that preventable disease, consumption.

ON THE TRAPPING OF HOUSE DRAINS.

THIS is another point upon which there is a decided difference of opinion. Some contend that a trap should be interposed between the house and the sewer; while others, like Mr. Bayles, at the N. J. Convention, believe that a trap of any form there will retard the sewage flow and create worse conditions than those sought to be escaped from. Unless there is a free outflow, a trap in the drain will undoubtedly become foul and be a nuisance. But where possible, there should we think be a sufficient fall in the grade of a drain to clean a trap or prevent it fouling. A dip in the drain, with a fall of a foot or two near the trap on the house side, giving a rapid flow, with the force and weight of water, and with frequent flushing, would facilitate cleanliness. An opening or even a man-hole communicating with the trap by which it could be cleaned would overcome the objections. As sewerage systems are now usually constructed, we should certainly object to occupy a house with no trap on the drain between the house and the sewer, however well ventilated the drain might be; while we should also object to the trap as usually placed in an ordinary drain. With a perfect system of sewerage—all sewers perfectly graded and ventilated and frequently flushed, and the house drain and soil pipe properly constructed and ventilated, there would be, it is true, little or no need for a trap in the drain; but with the present condition of nearly all sewerage systems we much prefer some cut-off in the form of a ventilated, accessible trap between any such system and the dwelling. There should then be, it may be observed, an inlet for fresh air near the trap, on the house side, and the soil pipe should have free vent at the top; better if it be carried up full bore above the roof. The plan of connecting the soil pipe with a chimney flue, as a rule, is not to be commended. It is not uncommon to build a separate flue adjoining a chimney for this purpose, but care must be taken that there be no opening from it into a room below, and it should extend to a greater height than the chimney.

FROM heart disease, it is stated deaths are six times more frequent proportionately in Boston now than thirty-five years ago.

THE PTOMAINES—POISONOUS FOODS.

THE poisonous effects upon organic life of decaying animal matter has been known from the earliest times. Although long recognized that the source of the poison was inherent in the dead body, it has only recently been learned that the germs for its production the (exciting cause) were always transplanted from without. The organized body after death does not bear within itself the means of decay and decomposition, and may be preserved intact, indefinitely when protected from the inroads and action of the ubiquitous microbe. The microbe it appears withdraws and appropriates to itself certain component parts of the molecules of the proteids of which an organic animal body is largely composed, setting more or less free the other constituents of the molecule which form various products, the basic or alkatoidal ones of which constitute the poisons known as ptomaines (from ptoma, the fallen or dead beast) cadaveric alkaloids or alkaloids of decay. Poisonous substances quite similar to the ptomaines have been found in putrescent cornmeal and in ergotized flour. Hence it is not in dead animal substances alone that these poisons are found. It appears that they may be produced by certain microbes from vegetable as well as from animal proteid substances.

Although it has not been demonstrated that it is so, it seems most probable that the microbes, which in certain canned foods, cheese, etc. for example give rise to poisonous ptomaines, are harbored by certain foul conditions and are not found in places which are always scrupulously clean and in an antiseptic condition. Hence foods should be kept in places surrounded with the utmost cleanliness, well lighted and well ventilated.

Again, although heat at the boiling temperature will effectually destroy the microbes, it is not known that it will destroy the active power of the ptomaines; yet it seems quite possible that it may by the thorough solution and after the decomposition of these alkaloids, transform them into more harmless substances. In most recorded cases of poisoning from food if not in all cases the food had been eaten cold. It will therefore be safest to always subject any suspected food to a high temperature before it is eaten. Canned meats after the can has been opened seem most liable to undergo dangerous decomposition, and require particular care and watchfulness.

THE PTOMAINES AND LEGAL MEDICINE.

THE discoveries which have been made from time to time in recent years in relation to the formation in animal bodies after death of certain cadaveric alkaloids, known as ptomaines, bids fair to upset all pre-existing methods of investigation and analyses for the detection of criminal poisoning and to entirely change many hitherto established views in Medical Jurisprudence. These interesting discoveries have given rise to the most formidable barriers to medico-legal proof and have immensely complicated the work of the analyst in his search for administered poisons in the human body. In view of what has already been established, the gravest responsibility would rest upon any specialist in toxicology who would swear away the life of a fellow creature upon evidence heretofore regarded as conclusive of a death having been caused by the administration of a certain alkaloid poison.

So long ago as 1871, Francesco Selmi brought out the importance of the ptomaines in forensic medicine by his brilliant researches in a poison case, upsetting the expert testimony which tended to convict an accused person (by Dr. Wolff, of Jefferson Medical College, in *Therapeutic Gazette*). This was during a celebrated trial for the supposed murder by poison of an Italian general, Gibbone, whose servant stood accused, on circumstantial evidence, of having administered to him the poison. Two prominent experts declared to have found delphinine in the intestines of the deceased. Selmi proved incontestably that the same reactions as produced by the experts for the prosecution would also result from a ptomaine obtained by him in the usual manner from the alkaline fluids of animal substances by extraction with ether. He showed, besides, that delphinine responded to many reactions which the substance derived from the deceased's body did not yield. This, of course, tended strongly to revolutionize all dogmas in regard to poisoning by alkaloids, and the medico-legal proofs of their existence, especially as subsequently strychnine and morphine were also found to be closely simulated in their reactions by those of certain ptomaines. In the case of a widow in Cremona, whose body was exhumed twelve days after death, and where morphine was asserted to have been found, Selmi again, by

an extended series of reactions and physiological experiments, proved without doubt that the supposed morphine was nothing but a cadaver alkaloid of similar chemical reactions. Liebermann separated from a decaying stomach, during a toxicological analysis, a base which possessed properties of coniine, but proved totally inert physiologically. During a case tried before the assizes of Brunswick in 1884, there was discovered, besides arsenic, a coniine-like body, which corresponded in reaction both with coniine and nicotine, but differed in some reactions from both. It was very poisonous, 44 milligrammes killing a frog within a minute. Another coniine-like base was isolated by Brouardel and Boutmy from the body of a woman, who, with others, had eaten of a stuffed goose. The same base could be obtained from the remnants of the goose. It gave the general alkaloidal reaction and others non-alkaloidal besides, and also acted as a poison on frogs. The same investigators also isolated from other dead bodies a veratrine-like body, which reduced potassium ferri cyanide, and did not induce tetanic symptoms in frogs.

WHAT ARE INFECTIOUS DISEASES AND WHAT CAUSES THEIR TYPICAL SYMPTOMS.

THE discovery of ptomaines with a knowledge of the characteristics of these peculiar organic alkaloids has opened up to the pathologist that which promises to explain the mysterious nature of infectious disease. Below we give an extract bearing upon this from an able paper read not long ago at a meeting of the Philadelphia German Medical Society, by Dr. L. Wolff, Demonstrator of Chemistry in Jefferson Medical College :

It may be claimed, says Dr. Wolff, that science moves in cycles, and that in our search for knowledge we return to the old and cast-away hypotheses, to view them with eyes fortified in a better manner. Humeropathology, long since passed away from modern medical science, seems to be recalled to us, though in an entirely new garb. The study of the physiological action of poisons proves beyond doubt that their toxic influence is proportionate to the chemical constitution of the intoxicant. The study of the

nature and action of the microbe, has forced more and more upon us the condition that their presence and mechanical irritation alone could in no way account for the different types of disease, and that they must manifest themselves rather by chemical effect than by simple physical traumatisms. Even by the most sceptic the presence of special types of micro-organisms in different diseases in countless numbers cannot be denied, while their absence in health is also established. The principal doubt seems to have been always as to their pathogenetic function. It is not to be denied that they are as such not pathogenetic, that they may exist in limited numbers or on unsuitable soil without producing disease. That they are organized individuals, depending for their life and propagation on chemical changes, none will or can dispute. Organized individuals require for their natural life, food, and the foods differ in the plants and animals almost as much as do the characters of their different species. The food is not merely consumed as such and ejected, but the vital phenomena are but the results of the chemical changes they undergo in the consumer, the heat units stored up therein being definitely reproduced either in mechanical action, heat radiation, or in reproduction and other vital functions. While in the micro-organism we can scarcely claim for this correlated force production many of the familiar vital phenomena, their rapid reproduction certainly shows that their food consumed is not an unimportant matter. While only a limited portion, however, is utilized in the reproduction of force, the greater portion of the molecule broken up by them, now disassociated, seeks other relations, and furnishes new products which are foreign to the animal organism.

Given the presence of the micro-organism and the disease proportionate in its intensity to the numerical strength of the former, together with an array of symptoms not to be explained by simple mechanical irritation only, what is left to account for the typical character of disease? While this may be said to be arguing for the presence of pathogenetic matter by exclusion, it is by no means intended as proof, which the chemical pathologist of the present has already furnished in some instances, and will, no doubt, further furnish in the near future. The late Austin Flint

foresaw this when he intrusted the future of medicine to chemistry, and daily the evidence is accumulating that infectious diseases are but specific intoxications with products resulting from special micro-organisms.

The study of the ptomaines, not as carriers of, but as specific intoxicants during, disease is one, therefore, that offers a wide field of action for chemical pathology

A ptomaine of cholera was isolated in 1885 by Villiers ; it was principally found in the intestines, and in traces in the kidneys, but not in the heart or liver. It had an odor of trimethylamine, was volatile, and had a biting taste. It answered the usual ptomaine re-action, and acted on animals by cardiac heat intermittent. He also separated from the organs of a child dead from pneumonia a volatile, acrid-smelling ptomaine, differing in its physiological actions and by its reactions from the cholera ptomaine, and with feeble basic properties. This base is considered identical with the ptomaine from a child which had died of diphtheria

I cannot close my account of pathological ptomaines without referring to the one discovered in this country by Vaughan, of Michigan. To this he gave the name of tyrotoxinon, from its origin from putrid cheese. This while developed at first principally to clear up the frequent poisoning from dairy products, was by its discoverer inferentially declared to be the pathological ptomaine of cholera infantum. While as yet the proofs to this end are not conclusive, the proofs by analogy offered by Vaughan, together with the clinical experience in such cases, leave no doubt that tyrotoxinon is really the ptomaine producing the symptoms of that disease. In his interesting paper, read before the Section of State Medicine at the thirty-eighth annual meeting of the American Medical Association, the author proved beyond much doubt the identity of tyrotoxinon with diazobenzol, $C_6 H_5 N_2 C_4 H_7 O_2$, both by chemical as well as physiological tests. The important bearing of this discovery on the milk-feeding of infants during our heated term is, indeed, a great one, and has already borne fruitful results.

As an agent that has caused frequent forensic investigations, tyrotoxinon has cleared up many mysterious poisoning cases that

were formerly attributed to wilful admixtures. I have had several opportunities of verifying its presence where charges of poisoning by arsenic had been made. The same may be said of other ptomaines which were the poisonous elements in chicken and lobster salads, canned meats and fish, as well as sausages, when wholesale poisoning was promptly attributed to other agents admixed to the viands.

PURE WATER SUPPLIES.

THE two great sanitary problems which most concern the cities and towns at the present time are, what is the best method of disposing of the waste matters and how best may a pure water supply be obtained. It augurs well for the future that these questions now engage the public minds as much as they do. So unwisely has the first problem been dealt with that the second has become a most difficult and serious one. The great question now is, not as to the quantity or wholesomeness of the dissolved constituents, organic or inorganic, which a water may contain, but whether or not it contains any of the living specific germs of disease. Of all the cities and towns on this vast continent, how few there are that have a water supply above suspicion or even that is not known to be more or less dangerous. On every hand the living infections of dangerous disease are finding their way, along with excremental matter, into the flowing streams which furnish the water supplies. Indeed, so universal has contamination of waters become, so wide spread is the typhoid poison, and other poisons of this nature, and so great is the danger that any stream, however pure its source, may at any time become contaminated, that we consider it unwise for any municipality to even consider the question of a public water supply from any stream or other body of surface water without at the same time making provision for having the water most carefully filtered. Here too we are at once met with the difficulty of imperfect filtration. It is true, that in England, where filtration has been so long practiced, over 90 per cent. of the bacterial, besides most of the other, im-

purities are commonly removed by the processes of filtration and subsidence with storage ; but it is not known that the typhoid or other pathogenic bacteria can be removed by filtration. Indeed even if these organisms can be so removed, it is not at all probable that their spores—" seed " or " eggs"—can be removed by any filtering process yet known. Moreover, if there were filters known, when properly managed, to remove all dangerous contamination, there would yet be the constant menace and danger of bad management, such as neglect of proper construction or frequent cleansing of the filtering bed. The only absolute safety is in obtaining water from great depths in the earth after it has been filtered naturally through many strata of the earth's surface. Where artesian wells are not possible, natural water may often be obtained from similar strata by means of pumps, through what are called drive-wells. Perforated pointed pipes, two inches or more in diameter, are driven down until a satisfactory water bearing stratum is reached. The pipes being driven at distances of a few feet apart are connected with a main leading to a pump. In Brooklyn a system of one hundred pipes about fifteen feet apart connected with a common pumping apparatus, supply about five millions of gallons of water daily. It is stated that of forty-five towns in Iowa having each a public water supply, nineteen obtain the supply from either artesian or drive-wells. As regards the purity of such waters : clearly they must be free from all possible specific contamination, and usually, if not always, from all organic matter. Any superabundance of inorganic constituents may be easily and safely removed by filtration. To wells of great depth therefore we think public attention should be universally turned in the outlook for pure water.

THE HISTORY OF THE GERM THEORY.—Prof. Edgar Crookshank gave an interesting lecture on this subject (*Brit. Med. Jour.*) at the Parkes Museum, Feb. 2nd. He referred to the writing of Kircher, and to the discovery of micro-organisms by Leuwenhoek, whose researches were eagerly caught up by some physicians. Nicolas Andry and his school regarded these minute organisms as

worms, and attributed small-pox and other diseases to their action. Lancisi believed that the deleterious effects of marshes were due to such minute creatures, and the rapid extension of the theory to account for all sorts of diseases brought it into ridicule. The micro-organisms themselves, however, continued to be studied, notably by Gleichen, Hill and Muller; and subsequently the discussion which arose with reference to spontaneous generation invested the investigation with profound interest. After giving an account of the scientific controversy which raged on this subject for so many years, Prof. Crookshank mentioned the discovery by Cagnard de la Tour and Schwann of the dependence of alcoholic fermentation on the yeast plant, and pointed out that, owing to relations which were believed on theoretical grounds to exist between the process of fermentation and that of certain diseases, again brought the germ theory of disease into prominence. The discovery by Bassi of a fungus in the silkworm disease encouraged the theory, which was adopted and ably defended by Henle. Pasteur took up the study of the yeast plant, and in 1850 Davaine discovered the bacillus of splenic fever. Then followed Pasteur's researches on the diseases of wine, and the silkworm disease. Davaine, again, studied the anthrax bacillus in 1863; but it was Koch who first published its whole life history, and, by his subsequent observations, placed the existence in some diseases of *contagium vivum* beyond a doubt.

DIET OF NURSING MOTHERS—IMPORTANT POINTS.—The influence of the diet upon the function of lactation is a subject of such importance for the rising generation as to warrant frequent investigations by scientific authorities. It seems to be one of the evils inherent in a high degree (so-called) of civilization that women, in a large proportion, especially among the upper and middle classes, should suppress and ignore the physiological function of the secretion of milk, and abandon the privilege of nursing their children in the natural way. The feeding-bottle is but a poor substitute for the mother's breast. A knowledge of the influence of the food upon the composition of milk ought to be widely circulated, at least in its chief features. Dr. Z. Docent, University of Dorpat, is the latest worker (Berl. Klin. Wochen.,

Nos. 4, 5, 1888, Brit. Med. Jour.) in this subject. He has made careful analyses of the proximate constituents of milk, both in the lower animals and in women, under various conditions of diet, and his chief conclusions are : 1. Milk which contains an undue proportion of fat may have a very injurious effect upon the child. 2. A highly nitrogenous diet causes a great increase of fat in milk ; the same kind of diet lowers the proportion of milk-sugar but has very little influence over the other constituents. Alcohol, exerts the same influence as a nitrogenous diet. 3. A proper composition of the milk may be attained, speaking generally, by the use of a proper dietary. 4. The lower animals are subject to the same laws as human beings in the above respects. 5. A large proportion of milk is derived, directly or indirectly, from albuminous sources. The above conclusions are directly opposed to the views of the laity on the subject. The wet-nurse, as a rule, is a highly privileged being, who must be allowed an unlimited quantity of butcher's meat and a good supply of stout. The amount of exercise usually taken is a gentle saunter ; active exertion being out of the question. Probably the diet has been previously very plain, and too often the sudden change influences the composition of the milk to the detriment of the child and diarrhœa, of a more or less fatty character, is often the consequence. Dr. Zaleski instances a case.

SANITAS oil is highly recommended by the sanitary inspector of Torquay, England, Mr. MacMahon, for drain testing. He has used it almost daily for a number of years, and thinks there is nothing better. He pours "about 4 ounces of the oil down the water closet," and its fragrant pine wood odour will in a few hours become perceptible in the neighbourhood of any break or opening in the drain, either outside or inside the house.

MARCH drawing-rooms have just been receiving the attention of Mr. *Punch*. In noting it in a sub-leader, the British Medical Journal says : When fair daughters of Eve, in so-called full dress, ingeniously display to the utmost their shapely arms and backs and busts ; when, with the help of the *modiste* and the *undress-maker*, they approach as nearly to the nude as may be ; when the

young and beautiful, after a brief season of gaslight gaiety, are seen to be careworn and haggard ; when matrons, beautified with feathers and paint, complacently smile at the sight of their daughters thus victimised ; when modesty is thus shocked and common sense outraged, then we come to know that we are in the halls of modern fashion and enjoyment. Is the medical profession justified in witnessing such vagaries of human judgment without protest ? Perchance the counsel of the wise, if properly directed, might yet succeed in coming to the rescue of long-suffering and half-clothed humanity.

AT a recent meeting of the Philadelphia County Medical Society, Dr. Mays read a paper (published in *New York Medical Journal*) relating to the expansion of the lungs as a preventative of consumption. His remarks were confirmatory of the conclusions of a brief Statistical Report published five years ago by the editor of this magazine. He concluded as follows : After reviewing the whole subject, the author had been driven to the conclusion that the line of immunity from consumption would not stop until it touched the shores of the Pacific ; that the question of curing the disease did not depend on the purity or freshness of the air, nor upon the number of bacilli which the atmosphere might contain, nor upon the amount of oxygen which might be introduced into the body—for these were all secondary considerations ; but it was simply a mechanical question—a question as to the best mode of expanding the lungs, and especially the apices of round-shouldered and flat-chested patients, of removing the infiltrated products already existing, and of enhancing the constitutional resistance.

ÆSTHETIC ASPECT OF HEALTH.—The *Annals of Hygiene* correctly contends that it is not only healthy to have well-paved and clean streets, good water and competent sewers, but it is also æsthetic. What can be more beautiful in nature than the contemplation of a healthy man or woman, or what more acceptable to the eye than the pure, sparkling water of an uncontaminated spring, or the well-paved and immaculately clean streets of a city . . . Or what more comforting to a refined intelligence than the sence

that the plumbing of a well-drained house terminates in sewers properly constructed. What more beautiful than the contemplation of nature, in whose company hygeia dwells ; what more vulgar and revolting to the more refined side of man than the spectacle of a badly watered, badly sewered and generally insanitary city. The Goddess Hygiea is truly the Goddess of æstheticism, and it is at her shrine rather than at that of the ridiculous Bunthorne that the love-sick maidens of "Patience" should worship.

TRUE MEDICINE, as Modern Life says, proclaims that the true physician is most happy when his patients are most healthy. The common mind, however, rejects this doctrine as absurd and unpractical. The idea of money-making is dominant in the majority of humanity. Every occupation is looked upon as a trade and philanthropic motives, pure and simple, are either sneered at as the vision of a dreamer, or are uncharitably branded as a trick of trade and considered a mere advertising dodge. . . There is a belief very generally spread that the physician has no interest in the preservation of health, but rather rejoices when there is the most sickness. This may be true in rare cases but as a rule it is untrue. The physician who practices his profession for mere mercenary motives has certainly a very low character and a decidedly sordid spirit. Sanitary engineering and preventive skill which make our homes sweet and comfortable, tend to check disease, and to impoverish those who dare to bring down medical art to the level of a trade.

INFLUENCE OF HOSPITALS FOR INFECTIOUS DISEASES.—The Sanitary Record (Feb. '88) gives the following on this very important point: A Supplement to the Tenth Annual Report of the Local Government Board was prepared after very careful local inquiries by Dr R. Thorne respecting some 150 hospitals (including the London Fever Hospital, which is situated in a thickly populated metropolitan locality); and it contains evidence that 'in well-administered hospitals having an open space of some 40 feet between the hospital wards and any neighbouring thoroughfares or dwellings no risk of the spread of infection from scarlet fever, typhus, and enteric fever need be apprehended. Proper

administration is, however, absolutely essential in order to secure this result. A proper ambulance must be used for the conveyance of patients to the hospital, so as to obviate risk of spreading the disease *en route*, and proper regulations must be laid down and strictly enforced for the management of the hospital and for the prevention of illicit communication between the persons and things inside the hospital and persons and dwellings outside. As regards small-pox, however, the same report, as well as subsequent reports by Mr. W. H. Power, embodied in the recent reports of the medical officer of the Local Government Board, contain strong evidence that hospitals for that disease may be capable by some means or other of spreading the disease over the neighbourhood around them. The Hospitals Commission of 1881 (*see* their report) arrived at this conclusion, and recommended that not more than thirty or forty acute cases of small-pox could safely be treated in a hospital within the metropolis.

ENTERIC FEVER — Following is a summary of Dr Buines views of the origin of typhoid fever (*Phila. Med. Times*): 1. The exciting cause is a specific, poisonous, microscopical germ; and under no circumstances can typhoid fever originate from the influence of filth alone, unless that filth contains the specific germ. 2. The germ is practically immortal. Typhoid dejecta may be imprisoned in an old cesspool or unused sewer-pipe for half a century, and then, after a lapse of this period, when this cesspool or unused sewer-pipe is opened, the typhoid germ literally springs into existence with frightful malignancy, and a few whiffs from the accumulations in the cesspool will be sufficient to cause it. The germ does not die spontaneously; it can be killed. 3. The germ multiplies in the human body, and an inconceivably minute quantity of this germ introduced into the human system makes the individual susceptible to the disease. An individual having a dozen movements of the bowels a day, each dejection contains germs enough to impart it to a hundred or a thousand individuals; so there is clear proof that the germ multiplies in the human body. 4. The specific germ of typhoid fever is eliminated by the bowels. A person may inhale the breath of a typhoid patient without danger of contracting the malady. He may lie on the same bed

throughout the entire course of the disease without danger to himself, unless in some way the intestinal dejections or emanations have found their way into his own circulation. The poison is not contained in the urine, nor in the emanations from the surface of the body, but simply in the fæcal discharges. 5. The fresh germ itself is innocuous—non-poisonous. Some investigators in Germany have engaged in the unpleasantness of drinking down fresh typhoid discharges, and have demonstrated with absolute certainty that these fresh discharges are innocuous. 6. In order for the discharges to acquire activity or virulency, they must be exposed to atmospheric air; hence, old typhoid putrid discharges undergo partial decomposition. 7. The poison of typhoid fever is almost invariably swallowed in drinking from impregnated water supplies. It is sometimes swallowed in the food. In rare, exceptional cases, typhoid germs may be diffused through the atmosphere, and find their way into the human body through the lungs. 8. A patient may have the disease two or three times; one attack does not protect him from subsequent attacks.

THE PHYSICIANS POSITION.—In Medical Science is the following: Some have said that too much knowledge makes men impractical, but the same has, time and again, been said regarding scientific farming, which now is proving itself to be the only hope of agriculture. Without speaking pragmatically, it may fairly be said that a liberal education is the first step toward giving those practicing Medicine, and those who may be sufferers, true ideas of what the scope of the science is; while the physician will be much more likely to seek the accomplishment of the noble purposes of his profession with less regard to its financial aspect, and the patient, realizing what is involved in the attainment of professional status, will be more ready to recognize his financial obligations. It is true that many of the *trade* elements would proportionately be reduced to a minimum; but if the physician were recognised primarily rather as a conservator of health than as a curer of aberrations from it, he would be placed in his true position, and the proper status of the profession might be in some degree attained. Should anyone characterize such an ideal status as utopian, we answer that from the moral stand-point it is the only position which is unassailable.

MY NEIGHBOR.—“Who is my neighbor,” in a sanitary aspect? Not only is the Irishman in his miserable hut neighbour to Dives in Belgravia, but the Polish Jew in his filthy “quarter;” not only the unvaccinated children of Leicester, but the unvaccinated French Canadian: not only the poor man in the slums, but the Indian ryot, who washes in the village tank and casts his dead into the sacred stream.

IN 1887, notwithstanding the high mortality in some of the cities in Canada during the hot season, the total number of deaths recorded in twenty of the principal cities and towns in the Dominion was less by 382 incidents, or nearly 2.5 per cent., than in 1886. A fact noted in our January issue, although we have not observed it noted elsewhere. It is worthy of note too that the record from zymotics alone in these places was 250 less in 1887 than in 1886.

A GOOD MOVE RELATING TO POULTRY SELLING.—The State Legislature of Massachusetts has enacted the following: 1. No poultry, except it be alive, shall be sold or exposed for sale until it has been properly dressed, by the removal of the crop and entrails, when containing food. 2. Whoever knowingly sells or exposes for sale poultry contrary to the provisions of Sec. 1 of this Act, shall be punished by a fine of not less than five, nor more than fifty dollars for each offence. The Boards of Health in the several cities and towns shall cause the provisions of this Act to be enforced in their respective cities. It would have been better surely to have omitted the words, “when containing,” in the first section. The entrails always contain either food or the excrete refuse of it, containing numberless microbes ready to set up putrefactive or diseased processes.

KNOW THY SELF FIRST.—Dr. E. A. Wood, a distinguished sanitarian, says: “We know all about other people, next to nothing of ourselves. We know the size of the sun, the temperature of the moon, and the weight of Saturn. We spend millions to teach our children the geography and the histories of foreign lands; we study the habits of extinct races that gnawed bones in caves, or slept on piles out on lakes; nay, we even teach the very

anatomy of the cave men and pile dwellers of antiquity ! But how many dollars are spent to teach our children self-knowledge, the kind of knowledge most important.

HYGIENE AND THE CARLSBAD CURE.—Carlsbad water has a world-wide reputation, and thousands of people, afflicted with various diseases, go every year to drink of it, and most or all of them are benefitted while at the watering place. Is the benefit from the water ? We think the water has very little to do with the cure. Equally as good water is to be found in probably hundreds of places on this Continent. Whence the general benefit of a sojourn at Carlsbad ? The town provides 30,000 acres of fir wood laid out with well kept paths, guarded and provided with abundant of convenient seats. The town is composed of gardens, parks, hotels and lodging houses and two of the best bands in Europe provide the most admirable music. After his drink of the hot saline water the patient breakfasts on the most perfect bread and the most highly aromatized coffee with whipped cream. Then follows meandering through the thick woods, and joining in the modes of recreation. The mid-day meal, palatable and wholesome, carefully arranged by the medical attendant, is taken in the open air. The afternoon and evening are spent in various amusements that do not fatigue. And thus are provided every healthy attraction that can encourage life in the open air, moderate exercise, rest of mind, and an attractive and wholesome diet. And to these hygienic measures may be attributed the chief benefits of the Carlsbad cure.

GREAT IMPORTANCE OF DIETETIC CARE.—in the Dietetic Gazette we get the following, in substance : We are firmly of the opinion that many of the ailments common to humanity are due to errors in diet and faulty assimilation. Sir Wm. Roberts says that the natural diet is a very simple and monotonous one, like that of cows and horses ; and that, although by the process of evolution the digestive functions have, in a degree, kept up with the demand made upon them by the concoctions of the progressive cook, they are yet a long way behind. Furthermore, although the digestion of food is one of the simplest of animal functions, if

interrupted or at all interfered with, the most harassing results follow. Man, in his present civilized condition, is a very nervous specimen, and the digestive process, like all others, is under nerve control. The delicate mechanism by which the crude aliment is properly prepared for absorption and appropriation is, in our time, constantly subject to a storm of interference through mental and physical influences; we refer to worry and strain of the mind, and the ingestion of improperly cooked or selected articles of diet, and the imbibition of unnatural beverages. It requires only a reference to these points in order to prove their significance.

FACTORY LEGISLATION AND HYGIENE.—At the sixth International Congress of hygiene, held in Vienna in October last, this subject was discussed at considerable length, by a large number of representatives from the different nations. Dr. Lewy, of Vienna, vehemently opposed the practice of child work in factories "Children under 14 belonged to the school and not to the factory. The work of children in factories was hurtful not only to themselves, but to the population."—Herr Pernerstorfer, (Mem Austrian Parliament) and Dr. Busch, of Vienna, expressed similar opinions. Resolutions were adopted to the effect that children from 14 to 18 years should be allowed to work in factories for only a few hours daily, and not at all at night, and those under the age of 14 should not be permitted to be employed at all. A resolution was also passed that women should only be allowed to work for a limited number of hours during the day. It was desirable that women should not be allowed to work in factories for several weeks after confinement, and the State should take care that they did not lack the means of subsistence during this period of enforced idleness. The Section agreed in fixing from ten to eleven hours as a full working day, and a further resolution was passed that the observance of Sunday as a day of rest was one of the most urgent hygienic necessities for the working classes. The full advantages of this could only be secured if women were given the opportunity of doing their domestic work on the Saturday. A copy of these resolutions was sent to the Parliaments of all the States which took part in the Congress.

DIET AND CONSUMPTION.—Dr. J. Milner Fothergill says : “ My experience leads me to express the following opinion, deliberately with a full consciousness of the gravity of the subject. If persons born with a phthisical tendency were properly fed from the first day of their existence onwards and upwards ; and as soon as they were of years and intelligence enough to comprehend, to have explained to them how they carry their life in their own hands ; how too, very often, their food inclinations are not in harmony with their tissue-wants, and must be struggled with ; if this were done, we should be spared a very considerable proportion of our cases of pulmonary phthisis.” Dr. Fothergill is good authority.

TRANSMISSION OF TUBERCULAR GERMS.—Cadeat and Maleat, at a meeting of the Académie des Sciences in December, presented the following conclusions regarding the transmission of tuberculosis by the respiratory tract : of forty-six animals made to inhale dust containing tubercular matter, two only died. 2. Tuberculosis could invariably be caused by enclosing animals in chambers into which tubercular liquids were admitted. 3. If tubercular matter was injected into the trachea the animals became rapidly tuberculous. Thus showing that the disease develops more readily when the tubercle-bacilli enter the respiratory channels in a moist state.

MOST INTERESTING TREATMENT OF THE INSANE.—The N. Y. Medical Times gives the following : Two lunatics among the Blackwell's Island patients were disposed to commit suicide. In addition each possessed a special delusion, one to the effect that he was a cow, the other that his head was an iron ball, and was to be rolled along the floor. The two patients were placed together, and each was privately informed of the other's weakness, and warned to watch his companion to prevent him from taking his own life. Thus each had a charge in the other. Their vigilance was unceasing. Each supposed himself perfectly sane, and this belief was accompanied by considerable scorn for the other's weakness of intellect. Gradually under the influence of this treatment the patients were observed to improve, and a complete cure was effected.

THE PUBLIC HEALTH FOR FEBRUARY.

THE total record of deaths in February in the twenty-six cities and towns in Canada which make monthly returns to the Department of Agriculture in Ottawa was 1,325, or less by 140 deaths than the record for January.

February being a short month usually returns a smaller total record of deaths than January, although the rate of mortality may even then be higher in February than in January. This year the record for last month was proportionately lower than usual; indicating a comparatively satisfactory state of the public health.

In almost every one of the cities and towns the total record and the record for each particular class of disease was proportionately considerably lower in February than in January.

Scarlet fever is the only disease from which the record shows an increase in mortality over the previous month. Halifax returned four deaths from this cause and Winnipeg seven.

From diphtheria the total record of deaths fell from 150 in January to 92 in February.

From typhoid fever there were only 17 deaths in February; a fall from 24 in January. Of these 17 deaths, four were in Ottawa, three in Montreal, two in Toronto and two in Quebec.

The total record of deaths from zymotic diseases fell from 260 in January to 186 in February. While therefore the total record from all causes, as stated, was 140 less in February than in January, the record from zymotics alone was 74 less.

From constitutional diseases the decline in the mortality was less proportionately than from any other class of diseases.

Compared with February 1887, last month's mortality was not so satisfactory; there having been, in the same twenty-six cities and towns, 170 more deaths last month than in February 1887; an increase of fifteen per cent.; far beyond the proportionate increase of population.

AN ice pitcher is needed in which water may be readily cooled by putting ice in close contact with the water instead of in it.

THE EDITOR'S SPECIAL CORNER.

RAILROAD-ACCIDENTS, within the last year or so, seem to have occurred with more than usual frequency. In a little time, if some measures are not taken to check their frequency, the words heretofore used to designate such casualties which usually destroy, without a moments warning, a number of human lives, may as well be used as one word. Frequently pure and simple carelessness, with apparent indifference to responsibility on the part of an employee, has been found to have been the cause of the so-called accident, and yet still more frequently, perhaps, the cause has proved to have been a defective bridge, rail fixture, coupling, or something of this sort, for which somebody was responsible, and which defect would not have existed if that somebody had done his duty. Yet whenever do we learn of any one having been punished for any such case of manslaughter? It is surely time that some measure of justice were being administered in such cases of criminal indifference to the destruction of human life. For if the chiefs of a road do not learn and know that everything in connection with the road has been of the most perfect construction and kept in perfect order and condition in every respect, before permitting human beings to be carried over it, they certainly become guilty of criminal indifference and should be severely punished. If they would but take measures to have every part, roadway and rolling stock, constructed in the most perfect manner and kept in this state, so far as human skill and ingenuity would permit, accidents from defects, such as have been discovered in bridges, would be of very rare occurrence indeed. If through the indifference or carelessness, and not overwork, of their employees, serious accidents occurred, the punishment should be meted out to those who were blameworthy, whoever they happened to be.

IN the case of "boodlers," who have defrauded the public by selling their influence in the council and legislature, the machinery of the law is put in force and they are punished as criminals; while those who by running old and worn out cars over a rickety railroad defraud wives and children of husband and father, escape deserved imprisonment by paying out of their millions, easily earned from the public, a few thousands of dollars "damages." Like it is in many other affairs, railroad companies rather than pay out money for keeping everything in connection with their road in the most perfect condition and so *preventing* accidents, prefer to pay out less and run the risk of casualties, or loss therefrom. Until some one or some society takes up this matter and presses criminal charges against all persons responsible for loss of life by railroad accidents, such accidents will continue to increase as railroads continue to increase in number and age. Some compulsory legislation should at once engage the attention of our legislators, with the view of compelling railroad companies to heat and light their cars in a safer manner, as by steam and electricity. So far, only a very few roads have adopted this plan. The Canada Atlantic has set the example in Canada of such method of warming and lighting. It is to be hoped others will soon follow it, or be compelled to do so.

THE ventilation of railroad cars, too, especially of sleeping cars, is a subject which demands attention and legislation. The very thought of a human being, and probably two of them, being cooped in for seven or eight hours in a space of less than seventy-five cubic feet, breathing over and over again the same air until it has become, and indeed long after it has become, loaded with a virulent poison, is too disgusting for any thoughtful refined mind to endure without painful shuddering. Many a case of troublesome and serious disease has had its starting point in one of these vile cells, commonly termed a sleeping berth. The day coaches are bad enough, a disgrace to the age in which we live, but in them there is a freer circulation of air, and the doors are frequently opened, permitting the entrance of fresh air. The "ventilators," so-called, at the upper part of the car are comparatively ineffectual. When open—and usually the passengers object to have them open unless they feel "too warm," no matter how foul the air may be—they certainly permit the flight of much pent-up foulness, but it is utterly impossible that they can properly ventilate the car, or anything near it. When the air in the car is not very warm, the outer air passes for the most part directly through the top of the car from one side to the other—in through one "ventilator" and out through another. An improved system of car ventilation is a great want.

OBSERVATIONS AND ANNOTATIONS.

NON-ALCOHOLIC MEDICATION should receive a check from the recently published report, for 1886-7, of the London Temperance Hospital. Out of thirteen cases of acute pneumonia, four (abstainers) died, one of them on the fifty-fourth day from exhaustion. (Brit. Med. Jour., 10 March, 1888.) Only four cases of typhoid fever were admitted in all, and although the cases were of young people—15, 7, 14, and 35 respectively—and comprised three abstainers, they all proved fatal. The treatment was the same as elsewhere, the only difference being in the non-exhibition of alcohol. Simple exhaustion, eighty-seven days after the onset of the disease, proved fatal in one instance. The average stay of patients in the hospital would seem to show that convalescence is unduly prolonged, and this, notwithstanding the fact that the list of cases comprises several of "nasal catarrh" and other trivial complaints. It is contended that this was an exceptional year, and that previous reports showed greater success in the treatment.

THIS hospital experience confirms the recent decisive testimony given to the value of alcohol as a sustainer of life by General Greely, of Arctic expedition fame. One-fourth of an ounce of pure alcohol diluted with water given to the men after the day's work was over had a decidedly favourable effect. More than that seemed wasted. As the N. Y. Medical Times, Mar. 88, says: "It seemed to supply food and to have a decided alimentary value. These results are what have been claimed for alcohol ever since its physiological

effects have been critically studied. Their integrity has often been assailed by well-meaning but misguided enthusiasts, to whom anything concerning alcohol savors only of the powers of darkness."

AT the late annual meeting in Toronto of the Association of Health Officers, Dr. Burrows, of Lindsay, moved, seconded by Dr. Lundy, of Preston, that, owing to the Provincial Board of Health not being in a position to give to Local Boards necessary assistance in local investigation and experiments in relation to the causes of disease, the Association appoint a Committee, to be named by the President, to bring these views before the Attorney-General and the Minister of Agriculture, and to urge the great necessity of placing the Provincial Board in a position to give practical support to the efforts of Local Boards to improve the public health.

ON the subject of disinfecting walls there is in the Medical News for February (Sanitary Rec.) an abstract of a paper by Dr. Esmarch. Notes of numerous experiments are carefully put together and statistics given of the various results. "Of all the methods tried none was so successful as rubbing the walls with bread; and it was found that the germs adhered to the bread so firmly that on cultivating them they were found to grow from the bread and did not become detached readily. This procedure is said to be absolutely without danger to those employed in the work; it makes possible the immediate occupation of the room, it is easy and inexpensive, and can be carried out by anyone. Disinfecting by means of the spray, or washing with carbolic acid solution, or solution of corrosive sublimate, gave nothing like so good a result as that obtained by using bread crumbs." We should be disposed to use the fumes of sulphur or chlorine too, after the bread crumbs.

ON paying "health laborers," Dr. Coventry of Windsor, Ont., in his Presidential address at the late meeting of the Sanitary Officers Association of Ontario, said: "A scriptural maxim says that 'the laborer is worthy of his hire;' the sanitary laborer is expected to work without hire. Just how long this condition of affairs will last, is a problem that those who are entrusted with the legislation of the country are to consider. Is the Medical Health Officer a necessity? If he is, what should be his duties? what sum should he be paid for the faithful discharge of these duties."

HOPE for consumptives. Dr. Vilbert, of the Paris morgue, states that among 200 post mortoms which he had made on persons who had died a violent death, as many as 20 per cent. had evidence of old tubercular disease in the lungs, which had healed.

It is estimated that a cubic inch of space will contain 8,000,000,000,000 disease germs of average size. They increase by fission at the rate of one division every hour. Hence a single one becomes the parent of 16,000,000 in twenty-four hours. In forty-eight hours the number would become quite inconceivable. ..

MORE care should be exercised in the barber shops. An exchange refers to two cases in which "loathsome disease" was contracted in the public barber shop.

IN Japan, Mr. W. S. Caine, M.P., tells the Sanitary Record in a recent letter from that country, every town and village has an abundant water supply, and the sewage and refuse of every house are collected nightly, and carefully used in agriculture.

DR. BONBROW's report on the death rate in Russia shows that the rate of mortality there is very high. In certain localities there are 60 to 80 deaths per 1,000 inhabitants, and a mortality of from 59 to 79 per cent. amongst the children. The annual number of deaths in the Russian Empire is about 2,800,000. Of this number half a million may be attributed to the want of proper sanitary conditions.

A SANITARY CONVENTION will be held at Manistee, Mich., June 6th and 7th, under the auspices of the State Board of Health. There is a programme of interesting subjects laid down, and it is expected that the Convention will be a success.

HEALTH LECTURES.—It would greatly assist in the diffusion of hygienic information among the masses if one of the duties of the Medical Health Officer was to deliver, say, two or three lectures annually in his municipality. Besides the information he could impart, it would draw around him those who have a natural taste for sanitary work, and afford a more beneficial direction for the pent-up energies which seek an outlet in the formation of secret and other societies, and I am sure that if subjects pertaining to health were discussed with the same earnestness which characterizes the deliberations of these organizations, the sum of the results would reach a ten-fold measure of usefulness to the community at large. Dr. J. Coventry, of Windsor, Ont., at the late meeting of Health Officers.

SAND BAG FOR THE SICK ROOM.—The Annals of Hygiene gives the following: One of the most convenient articles to be used in a sick room is a sand bag. Get some clean, fine sand; dry it thoroughly in a kettle on the stove. Make a bag about eight inches square, of flannel, fill it with the dry sand, sew the opening carefully together, and cover the bag with cotton or linen. This will prevent the sand from sifting out, and will also enable you to heat the bag quickly by placing it in the oven or even on top of the stove. After once using this, you will never again attempt to warm the feet or hands of a sick person with a bottle of hot water or a brick. The sand holds the heat a long time, and the bag can be tucked up to the back without hurting the invalid. It is a good plan to make two or three of the bags, and keep them on hand, ready for use at any time when needed.

THE following practical subjects have been selected by the Executive Committee for consideration at the next meeting of the American Public

Health Association, to be held in Milwaukee in November next : I. Pollution of Water Supplies ; II. The Disposal of Refuse Matter of Cities ; III. Animal Diseases Dangerous to Man ; and IV. Maritime Quarantine, and Regulations for the Control of Contagious and Infectious Diseases, and their Mutual Relations.

COMPULSORY notification of infectious diseases is making fair progress in England. In Salford, the mortality from scarlet fever has been 38 per cent. less since notification has been practised there than it was during the previous five years. It is proposed to pass a general Act promoting it or making it compulsory throughout the whole country.

WHILE danger lurks in most of our public water supplies, and still more in many private wells, it is satisfactory to know that the Caledonia Seltzer can be had at most of the principal grocers and hotels, and is a pure natural mineral water, a delicious and safe beverage, probably superior to any imported table water.

DR. SWEETLAND, member of the Ottawa Board of Health, put the whole sanitary trouble of the city in a nutshell when he stated at a meeting of the board that "there had been no life in the board." Life there has been a "long-felt want." A thoroughly-alive board could soon mend matters.

NOTES ON CURRENT LITERATURE.

CANADIAN LEAVES—History, Art, Science, Literature, Commerce—A series of new papers read before the Canadian Club of New York, form a very nice volume indeed, and creditable to the publisher, to the gentlemen who contributed the valuable papers, and to the Club. We have found "The Future of Canada," by Edmund Collins, most interesting, and agree with the writer that "national independence is the most natural and logical future for Canada." "Echoes from Old Acadia," by Prof. Chas. G. D. Roberts, is an attractive paper. Every one of the papers is highly instructive. Prof. Goldwin Smith's "Schism in the Anglo-Saxon Race" is very comprehensive, as also is the Rev. J. C. Eccleston's "Great Canadian North-West." Mr. Wiman, in "The Advantages of Commercial Union," tends to make one believe there must be something in it. He shows that there are now about one million Canadians in the United States. There are twelve papers in all. Two notable ones are "Canada First," by Principal Grant, and the "Mineral Resources of Canada," by John McDougall. Sandwiched in with this nutritious mental treat is a tasty morsel by J. W. Bengough, "The Humorous Side of Canadian History," which, it is enough to say, is characteristic. "The Literature of Canada," in a paper under that head, does not receive justice. We agree with the writer that the most that is needed to give Canadian literature a higher status is a "leisure class." But that "we have had to write our books under our breath" is as far-fetched and inaccurate as that authorship here has failed "entirely to butter our parsnips" is commonplace

and vulgar. One could wish the portraits were a little better likenesses. While at least one of them is quite too flattering to bear a strong resemblance, the first and second hardly do justice to the originals.

THE POPULAR SCIENCE MONTHLY for May will contain the first of three remarkable articles on "Darwinism and the Christian Faith," reprinted from "The Guardian," and understood to have been written by an Oxford tutor. The question, "Is Combination Crime?" will be answered from the side of the combiners by Mr. Appleton Morgan, in an incisive article in "The Monthly" for May, and Mr. Arnold Burges Johnson will give an article of great interest on "Sound-Signals at Sea," describing a number of new devices for facilitating communication between vessels, and for obtaining knowledge of the proximity and direction of dangerous objects.

THE CENTURY for April will contain what will doubtless be a very interesting paper, by Edward L. Wilson, "From Dan to Beersheba," illustrated; and another, by Geo. Kennan, "The Russian Penal Code"; also a sketch and portrait of "Robert Lewis Stevenson," who was reconciled to life largely because "it offers the widest field we know of for odd doings," and "to be even one of the outskirts of art leaves a fine stamp on a man's countenance." There will be too an article on the "Works of Elisha Mulford:"

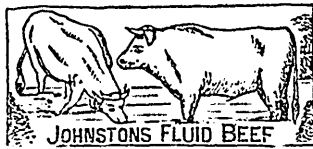
"Unnoted as the setting of a star
He passed; and sect and party scarcely knew
When from their midst a sage and seer withdrew
To fitter audience, where the great dead are."

THE ILLUSTRATED LONDON NEWS, American edition (Potter Buildings, N. Y.,) is giving some exceedingly pretty illustrations in a serial, "The Strange Adventures of a House-Boat," by William Black. The number for March 31 contains a good double-page portrait of the Emperor William and a full page one of the new Empress, Victoria, with numerous sketches of scenes associated with his death and funeral, also of his appearance and associations in recent years.

HARPER'S WEEKLY for March 31 contains a full page illustration of "The Deathbed of the Emperor William," and another "Bismarck Announces The Death of 'His Master,'" besides many other illustrations of much interest.

ST. NICHOLAS for April is quite as charming as usual, and is well filled with instructive and entertaining matter. The "Ballad of the Rubber-Plant and the Palm," illustrated, is comical and suggestive; while the inimitable "Brownies" have a good, and in some respects a rather horrifying, time "In the Academy," with skeletons, microscopes, retorts and sulphuric acid.

IN THE OVERLAND MONTHLY for March, F. L. CLARK gives the first valuable and scholarly account printed of the recent Revolution in the Hawaiian Islands. There are delightful descriptive sketches, "After the Hounds in Southern California" by Helen Elliot Bandini, and "Two Nights in a Crater," D. S. Richardson's account of the ascent of Popocatepetl.



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