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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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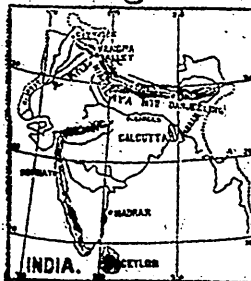
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THE RELATIONS BETWEEN SANITARY SCIENCE AND THE MEDICAL PROFESSION.

BY NATHAN ALLEN, M. D., READ AT THE FOURTEENTH ANNUAL MEETING OF THE AMERICAN HEALTH ASSOCIATION, AT TORONTO, CANADA, OCT. 5, 1886.

WHAT IS SANITARY SCIENCE?

IT is only about forty years since this subject began to attract general attention. It started with the establishment of the registration of births, deaths and marriages, in Great Britain, by Dr. William Farr. While investigating upon a large scale the causes of death, the enquiry naturally arose, What can be done to prevent as well as to cure disease? This enquiry, from a small beginning, has resulted in the most surprising advance in the knowledge of the laws of health and life. So rapid and extensive have been these changes, that one living during this period can hardly credit them; and never were these improvements taking place faster than at the present day. But the advantages already secured, though great and invaluable, are mere harbingers of richer and more permanent blessings in store. In the progress of this science, every year has signalled the past, that it had a deeper and broader scope, not so much in improving the old methods of work, but in entering into new fields and enlisting new agencies. Its aim is not merely to remove the existing causes of diseases, but to destroy the germs or seeds of disease. It does not stop with preventing this or that contagious disease, or reduce to the minimum the zymotic class of diseases; but when the principles of this science are applied to the fullest extent, they will present the human body so sound and healthy in all its parts as in a great measure to forestall disease.

There is we believe a normal standard of physiology, where all the organs are so sound and well-balanced, and where all perform respectfully their functions

so thoroughly, as to afford small chances for disease. This organization represents the highest standard of health, and the nearer the human body in all its parts approximates to this standard, the better or higher degree of health shall every such person possess. With this view of physiology, it will be seen that all disease is a violation of law, whether it arises from internal or external cause. As there must be some change in the structure or functions of certain organs in the body, for the introduction of disease, is it not clearly the province of sanitary science to take cognizance of such changes? If the violations of law can be arrested or modified in the very first stages, may it not serve to prevent a vast amount of disease? * * *

By commencing early and with the use of proper means, the organization of every individual can be greatly improved and made more healthy; and by a proper application of the laws of inheritance for three or four generations, organization may become so perfected as to diminish a large proportion of the sickness and disease that exist at the present day. This is not mere theory nor speculation, but a doctrine based upon the laws of physiology--laws which should be better understood. Inasmuch as such a change would be productive of sanitation in the highest degree, is it not the province of sanitary science to enter and cultivate this field? Would it not improve health and prolong life upon the largest scale and to the greatest number? What other science or agency can do this work so well? That human organization can be improved, by the laws of exercise, nutrition and inheritance, there can be no question. If the

highest state of health depends on a normal standard of physiology, in which all parts of the body are perfect in structure, combined with a harmonious development of every organ, it is certainly the province of sanitary science to use all its appliances to obtain that standard * * *

In case the body is thus reconstructed, —made sound and healthy in every part —the germs or seeds of disease will not be found in the system. Here is work for sanitary science on the largest possible scale. In making these changes, in order to secure the highest standard of health and to the greatest number, it will be seen that sanitary science has a great work to do. The whole system of education, especially in early life, must be based more and more upon the systematic training and development of the body. There are a multitude of evils in the present state of society that conflict with the laws of health and life, which sanitary science would remove or regulate. Then, in all matters pertaining to mental improvement, to the progress of society, to every phase in civilization and the various developments of Christianity, the sanitation of the body and of the mind must be paramount to everything else. In fact, the province of sanitary science covers the entire life; not only of every individual, but of the whole human race. No other subject or science is of such transcendent importance. It is in its infancy, and no comparison can be made between what it now is and the magnificent proportions it is destined to attain.

Taking this view of physiology, and that health is its normal condition, it will be seen that all deviations from this state, or violations of the laws that govern it, furnish the causes or entrance of weaknesses, imperfections and diseases which afflict the human system. These changes may occur from internal, predisposing causes, or from agents operating externally to the body. Just at this point, in these changes of organization from a normal to an abnormal state, we are taught most important lessons. On one side, we have sanitation and sanitary science; on the other disease and its superstructure, medicine.

Just here start the most powerful and destructive evils that ever befell the human family. These evils may be trifling in their origin, but increase—sometimes slowly, sometimes rapidly—and become terrible in their results. They include the whole catalogue of diseases; their name is legion. We dwell on this point, for it is very important to have clear and definite ideas of disease, its nature and cause. It is simply the penalty of violated law. There is no mystery in it; no visitation of Divine Providence; no curse inflicted by some evil spirit. It is no less important for sanitarians than for physicians to have a clear and definite knowledge of disease as well as its cause.

HISTORY OF SANITARY SCIENCE AS CONNECTED WITH THE MEDICAL PROFESSION.

Formerly the great object of the medical profession was the *cure* of disease. The programme of studies and lectures in the medical schools was confined almost exclusively to this one idea. The term "hygiene" was scarcely to be found in books, or referred to in lectures. Physiology was comparatively a new science, and some of its most important applications have not been discovered, till within a few years. In fact, this science can not be fully understood in all its bearings without combining with it the principles of hygiene. * * *

From 1840-50 several leading physicians in Great Britain, from careful observation and reflection, began to make some changes in their practice: 1st, to dispense less medicine; 2d, to study more carefully into the natural laws of disease; 3d, to summon to their aid the powerful resources of nature. Among these physicians were John Forbes, John Connolly, Andrew Combe and others. The *British and Foreign Medical Review* was their organ of publication, which attracted much attention. Several works explaining the views of these men were published at that time, and had a large circulation.

From 1840 to 1850 the Registrar-General's office for collecting and publishing reports of the births, marriages, and deaths in great Britain became fairly

established. This agency has been more influential than any other, for creating an interest in sanitary matters. In examining into the causes of death, in different localities, and comparing the mortality of one place with another, started many inquiries on public health. The annual reports, also from this office, prepared by Dr. William Farr, added greatly to the interest on this subject. About the same period Dr. Andrew Combe of Edinburgh published several works on the application of physiology to education and health. These works had a very large circulation and exerted great influence in directing public attention to the laws of health and life. The writings of Dr. A. Combe were peculiarly calculated to show the advantages of a practical knowledge of physiology for developing healthy bodies, and thereby preventing disease. While the writings of Dr. Combe were based strictly on scientific principles, they were remarkably well adapted, both in style and matter to instruct the masses.

One of the most distinguished physicians at this time in Great Britain, advocating reform in medical practice, was Dr. John Forbes. In his celebrated paper called "Young Physic," which was published in the *British and Foreign Medical Review*, he made this significant statement: "Redoubled attention should be directed to hygiene, public and private, with a view of preventing diseases on a large scale, and individually in our sphere of practice. Here the surest and most glorious triumphs of medical practice are to be achieved." If this prophecy has not already been fulfilled, it is very evident that in progress of time it will be still more abundantly.

As a result of the interest on this subject, a royal commission was appointed in 1857, to inquire into the sanitary condition of the army in England. This commission recommended that not only some regulations should be adopted for protecting the health of the army, but that a school be established for educating army-surgeons, in which "hygiene and sanitary science" should be taught. This was the nucleus or starting-point of that celebrated work on practical hygiene, by Dr. Edmund A. Parks. This "Manual of Practical

Hygiene," constituting a treasury of knowledge on sanitation, has had a large circulation, and passed through several editions.

The interest in sanitary matters has been steadily increasing in Great Britain among all classes. Its fruits are becoming every year more and more manifest by improved health generally, and by a reduction of mortality, especially in cities. Numerous acts of parliament have been passed in favor of sanitary science. The medical profession and journals generally commend it; and never were its prospects brighter in Great Britain than at the present time.

Perhaps the science has not created so general an interest, nor taken so strong a hold, in the United States as it has in Great Britain; but still its history is one of marked interest. Let us notice a few of its salient points. From 1830 to 1840 Dr. John Bell conducted the *Journal of Health*, in Philadelphia, which very ably advocated the principles of hygiene. In 1835 Dr. Jacob Bigelow, in the annual address before the Massachusetts Medical Society, pronounced a certain class of diseases "self-limited" in their character, and urged that they should be treated accordingly.

In 1842 was issued the first registration-report of births, marriages and deaths in Massachusetts, and have been continued annually, till we have now the forty-fourth report. Sanitary science has been greatly advanced by facts and arguments derived from these reports. Several other states have followed the course of Massachusetts, in establishing registration-department. No one agency can do so much to advance the cause of vital statistics as such registration-reports. The application and progress of sanitary science depend much upon a knowledge of vital statistics; and the more thoroughly these are understood, the better for the cause of sanitation.

In 1844 Dr. Elisha Bartlett published in Philadelphia a work on the "Philosophy of Medical Science," and in urging upon the profession a better knowledge of the cause and nature of disease, said: "The next thing to be done is to find out the best methods of modifying and preventing disease. This is the great mis-

sion which now lies immediately before us: *this is to constitute the great work of the next and succeeding generations.*" This statement was made two years before that of Dr. Forbes, already quoted. Both these men, living in advance of the times, were distinguished for original thought and independence of expression; they have proved themselves true prophets.

In 1860 one of the most brilliant addresses ever given in this country was delivered before the Massachusetts Medical Society by Dr. Oliver Wendell Holmes. At this time the importance of a more thorough study of *Nature* in medical practice had been urged on the profession in previous addresses and other medical papers published. In pursuing this line of thought, Dr. Holmes expressed very positive opinions, accompanied with reasons and illustrations, that too much medicine altogether was given by the profession, and that there were great evils arising from over medication. For this opinion Dr. Holmes was not only severely criticized by prominent physicians, but denounced, and abused, if harsh language could do it. But reaction soon followed this violent attack. The discussion led many physicians to a new and more careful study of the natural laws of disease and the true effects of drugs. Great good came out of this controversy. Dr. Holmes, instead of being injured, gathered new laurels. Many young physicians, seeing the propriety and force of his strictures, struck out a new course in their practice.

[Dr. Allen here referred to the good influences exercised by the various health boards in the U. S. and continued.—Ed. C. H. J.]

In 1872 the American Health Association was organized in New York. This is the most extensive and powerful agency of the kind in this country, and we think we may safely say in the world. It has published eleven large volumes, which contain a greater and more valuable collection of papers on sanitation than can anywhere else be found. The primary object of the association, as stated in its constitution, is the "advancement of sanitary science."

RELATIONS OF SANITARY SCIENCE TO THE PROFESSION.

While the success of this science depends mainly upon physicians, there is a wide difference in the interest which they take in it as well as the sacrifices which they are willing to make for it. Let us inquire who, and how many, of our physicians have been actively engaged in this reformatory work? The number, compared with the whole profession, is not large,—in fact, is very small. Those engaged in this work are widely scattered both in city and country, and are generally active with the pen and tongue, so that they seem more numerous than they really are. There are, it is true, great numbers in the medical profession who are kindly disposed to sanitary reform, and speak highly of it in their practice, but, at the same time, are unwilling to make much sacrifice to advance its interests.

Unlike many other reforms and good works, there is a direct antagonism between the interests of this profession and sanitation. The support of this profession depends mainly on the *cure of disease*, not its prevention. Every step in this reform diminishes more or less professional income. There is no trade or speculation in this reform. When a person has spent years in study and made large investments to secure a livelihood, how can we expect he will sacrifice these interests? There is probably no class of men, engaged in professional or other kinds of business, to whom appeals of so complex and antagonistic character are made for services. The success depends much upon the education and the moral training of parties. On the one side stands out the highest welfare of the individual, and society in respect to health, while on the other side the physician is tempted to make his own interests paramount to all others.

Let us for a moment consider his position. In choosing this profession, the pecuniary considerations were undoubtedly most powerful; and, then, in his early preparations and through his whole course of study, compensation for professional services has been constantly kept in mind. The whole drift of medical study, and teaching by sickness

Or from books, has express reference to the treatment and cure of disease,—not, as we may say, its prevention. Add to this the most implicit faith that all classes generally have in drugs, together with the crowded state of the profession, and it will be seen that the physician is virtually constrained to have an eye constantly on his business. It is true that in medical studies, lectures and books, a great deal is said about the charitable aspects of the profession, and that it is always expected to give a large amount of service to the poor.

It is just to state here that the claims of the sick poor have been most liberally responded to by physicians, and that no other profession or class of men do so much for the poor as the medical profession. But this work of charity has its equivalents;—it secures to the physician a stronger hold in the affection and confidence of the people, and, in different ways, tends to increase his business. But to engage actively in means to prevent disease, not simply in one instance, but in case of great numbers, this is very different,—it cuts off directly the support of the physician. Such action is based upon a love of humanity—of philanthropy—a higher range of motive than that of giving services to the sick poor. It appeals to the very highest class of motives,—not simply to save expense and relieve suffering or improve health and prolong life, but to elevate mankind and increase, physically, mentally and morally, the sum of human happiness. Such are the legitimate fruits of sanitary science.

Considering the powerful pecuniary interests of the profession, and the disinterested motives requisite to engage in sanitation work, it is rather surprising that so many members of the profession have from time to time engaged heartily in advancing sanitary science. The main object must have been the promotion of health, the diffusion of useful knowledge and the enlightenment of mankind generally in respect to the laws of health and life. In some few instances, he might have been prompted by pecuniary considerations,—the individual holding some official position or seeking one. But these are exceptional cases. Our

state and municipal authorities have made such small appropriations for public health that the salaries offered to medical men are not numerous or large enough to be very attractive. In this respect great Britain is far ahead of us. The promotion of the public health has become there a part of her government machinery. The whole kingdom is divided into some fifteen hundred districts, over each of which a medical officer of health is appointed, with salary graded according to the services rendered.

Besides this provision, and showing the interest of the government in sanitary matters, there are over one thousand inspectors of nuisance appointed, in charge of as many districts. This inspection proves of great advantage, not only directly in preventing disease, but by dispersing information among the people, they become helpers in the work. The medical appointments in Great Britain are made on the ground of special training and qualifications for this kind of work, and the same persons are continued in office for years. Thus there is a wide difference between the interests in sanitary science in Great Britain and in the United States. In the former the science receives a powerful support from the government and a large amount of means is annually distributed among its advocates. Besides, there is on the part of the people more general intelligence on the subject,—a higher appreciation of the benefits of the science, and a more ready disposition to cooperate in carrying on the reform. Though the science has been making advances in these respects in the United States, there is much room for improvement. Our national government is not doing what it ought for public health; neither are the state or municipal authorities making the appropriations for it which they should.

Most of the contributions to sanitary science here have been voluntary. This reform has been carried forward by men heartily interested in the work,—very few seeking or expecting any remuneration. The reward for such services does not consist in dollars and cents, nor in the plaudits of the multitude, but in “the consciousness of duty done and noble deeds performed,” A

distinguished medical writer lately made this remark: "The most important work that sanitarians are doing at the present day is 'sowing seed which in time will yield abundant harvest.'" And never in the history of medicine was there such a combination of circumstances so favorable to improvement in the practice of medicine. Never before has there been such earnest inquiry made on the part of the profes-

sion to ascertain the true causes of disease. It has been found in the moral world, that in order to eradicate great evils, their primary causes must be first removed. So in the prevention of disease, the same course must be taken. This accords with the teachings of sanitary science. Leading members of the medical profession have here been doing noble work. (Concluded in next number).

WHY DO CHILDREN DIE ?

FROM THE PACIFIC RECORD OF MEDICINE AND PHARMACY.

IT is the generally received opinion that those contemplating matrimony should select the opposite of themselves as nearly as possible in complexion, person, etc., but even this rule affords no absolute safety in the majority of cases, if viewed from externals only. That those born of a union of opposite temperments will live, while those born of the same, will not, is only another way of expressing the phrase, "the survival of the fittest." In the happy union of opposite temperments, the comforts and happiness of married life, as well as the welfare of the future children is secured—while a union of equal temperments results in unhappiness and continued opposition, in other words, of sexual incompatibility.

If, as we have before written, it be admitted that the child is the joint inheritor of the physical and mental qualities of the parents, then it follows that these are contributed by each, and the condition of the parties are to determine not only the character but the viability of the child. If one or the other, or both parents, are laboring under, or recovering from, any weakness or disease, a scrofulous, consumptive or delicate tendency in the child may result. Epilepsy or idiocy may surely be traced to the intemperance of either party. We may suppose that the parents are in ordinary health, neither having any disease or weakness of body, yet non-viable children are the result. We have then to look to the condition of the nervous system. The majority of births occur after a year of marriage

—in other words, three months of intercourse, and consequently of intense excitement, has weakened the nervous system of the mother, while the father, if he is a business man, is ambitious, restless, wakeful, and always under more than normal pressure. Business cares are always attended with excitement; the life is intense, and wears away the health of *his* nervous system, and that principle of vitality which should be transmitted to the child, is entirely wanting. If to these are added any discordant elements of domestic life, the amiability and loving repose which should accompany the act, is replaced by hysterical excitement.

It is a law of the animal kingdom that reproduction at too early an age will result in offspring of an inferior quality, both of body and mind; and this law holds good with regard to the human species. At the present day the passions and impulses are cultivated by our modern civilization; the sexual functions are developed at a very early age, and their desires find their gratification in early marriages. At a time when both body and mind require all the constructive force, all the vital principle they possess, to complete their development, they part with them in the creation of a new being, and not only retard their own growth, but produce inferior offspring, with a low degree of vitality.

But, it is not only in the early period of marriage, but in their moral aspect, that a fault lies, which must have its influence on the progeny. That many, if

not most of these marriages are unsatisfactory in results; as regards happiness, is a too well known fact. The contracting parties are too young to understand the responsibilities of the new condition, and having acted on impulse, find very soon that they have been mistaken. The antagonisms of feeling and opinions react injuriously on the nervous system of the mother, and this, with the worries and cares of married life, produce unhealthy effects on the embryo. The result, is the birth of an inferior infant, having a diminished power of resistance and a feeble life force.

There are few mistakes, more common among females, especially those early married, than that of regarding the perfectly natural process of child bearing, as something abnormal, and requiring an entire change in the habits of life. Their fancies and cravings are to be indulged; the exercise necessary to health is abandoned, and the appetite is pampered, and gratified, in whatever manner, lest harm should ensue to the child. These errors lead surely to the development in the embryo of any hereditary failing, and not only tend to lessen the viability, but produce the very evils they were intended to obviate. Another evil altogether too common, is the opinion that there is something derogatory in the fact of being pregnant, and every means is taken to conceal it; the corsets are not loosened until the increased size of the womb will no longer submit to bondage, and the ordinary avocations and pleasures are continued, even to exhaustion.

The birth of the child follows. The contracted pelvis is hardly large enough to allow safe and easy passage, and the mother is exhausted to a greater extent than natural. In very many cases, the condition of the body—*i. e.*, the vital force—does not permit the secretion of milk, and either a wet nurse must be procured, or feeding from the bottle is resorted to. The chances of life, always precarious, are rendered more so, by the transference of the child to any other nurse than its own mother, of whom it is a part. One of our best known lecturers on infantile disease, says: "The same law that applies to a

scrofulous, tuberculous or insane mother, in forbidding the nursing of her infant, applies equally to a wet nurse." The child, supported by the secretions of her breast, receives from her the seeds of any disease, hereditary or acquired, that she may labor under, without taking into account any moral defects. Again, the mother's milk may be impaired in quality, and there is a consequent failure of nutrition when most needed. If the mother's secretions, as from the bowels, liver, kidney, skin, etc., are not healthy, surely the milk cannot be healthy. Dr. Flint is reported as saying that many infant lives are lost from starvation, owing to the lack of nutrition in the milk. If the infants are fed from the bottle, the character of the milk is often perilous to its life. Coffee, tea, brandy, and even beer, is often mixed with the milk among the poor people, in the mistaken idea that it strengthens.

We quote from an excellent article on "diseases incident to poverty," by H. Schaberg, Health officer of Kalamazoo.

"Mal-nutrition is the most prolific cause of disease, being liable to cause the development of dyscrasias, those many-headed hydras whose blighting touch consigns many to ultimately graves.

What physician has not witnessed the terrible results of deficient and improper nourishment in the infants of those who are poor? How often it may be said of the corpse of a little one that perished from gastritis, enteritis or colitis, that improper nourishment was what killed the child. How is it possible that an infant, with most of its organs still in a weak and rudimentary state, can assimilate the improper food which often is thrust upon it, improper both as to quantity and quality, accompanied with foul and unwholesome air and surroundings? The mother, weakened by lack of proper food, and harrassed by many cares, often being prematurely broken down by hard labor, is unable to bring forth an infant that is physiologically sound and healthy. After its birth she gives her child nourishment, which is modified and vitiated by her own physical and mental condition. In case the mother for any reason, is unable to nourish the child herself, or

wishes to supplement what little nourishment she has with other food, owing to a lack of means and knowledge, she deliberately proceeds to poison her offspring with food, which nature never intended it to use, and which it must bring on indigestion and marasmus, causing the little patient to waste and pine away, or bringing on diseases of the prima via of an acute nature, which quickly stop the course of life, with terrible sufferings. Indigestible foods cause many an untimely death, and kill more human beings than almost all other causes combined.

Many an infant dies from the results of irregularity, and of over-feeding. If it cries, "it is hungry," and must be fed, and the tiny stomach is distended and irritated. Among the lower class, in which the mortality is greatest, the improper ventilation of the rooms, is a prolific source of disease. Compelled to breathe a vile, poisonous atmosphere, reeking with emanations from the filthy bodies and lungs—there is laid the foundation for disease of the lungs, if not marasmus. Malarial poison, and sewer exhalations, cause many of the diseases which destroys the lives of infants during the first month of life. In one month, in New Haven, there occurred forty-two deaths from infantile diarrhœa, in forty houses. A sanitary inspection revealed the fact, that all had privy vaults, but two, and of these two, one had thirty-four persons resident in the house, and the other had twelve, but the "plumbing was bad." In these houses there were thirty-six untrapped sinks, and about 11 houses there were fifteen cesspools. Many of the houses were supplied with water from the wells in close proximity to the privy vaults. In all large towns or cities, the condition of the sewers, is a prolific cause of infant mortality. During the summer months the deaths of infants is greatly increased; the heat and steam bath atmosphere of an unsalubrious climate show their death-dealing power in new-born infants. Is it any wonder that two and a half times as many infants perish from diarrhœal disorders, as of any other disease.

It has been suggested, and perhaps

with some show of reason, that it is a wise provision of nature that there *are* so many infant deaths, else the population of the earth would outrun its capacity for their maintenance. The animal kingdom is cited as an instance, where, if left alone, or protected, the earth would not contain them. "That the greatest number of births and deaths are found among the lower classes, and the more that die the better; that they are only a little higher than the animals, and would cumber the earth."

That the law of nature, that only the fittest should survive, gives the world a chance to progress, which it would not do, but for the weeding process of infant death. But, unfortunately, for this view of the matter we have been writing mainly in regard to the higher type of the human family. That the greater number of deaths occur among the lower orders, is true, but not in proportion to the number of *individual births*. It is a corollary from natural law, "*that in inverse ratio to the development of the intelligence, is the propagation of the species,*" and where twenty die of the lower, they are offset in intelligence by a single death among the higher. But, unfortunately, the percentage of deaths among the intelligent is greater than among the non-intelligent, and from the causes mentioned, which hold, in a lesser degree, among the lower. Again, among the individual births, in the lower ranks of life, there will be one survivor, ("the fittest,") who will, by force of intelligence, innate, or acquired, take his, or her place among the intelligent classes, where children, from environment, and education, will succumb to the causes which militate against infant life. We have only to refer to the leading men of our country. Nearly all of them have risen from the lower ranks of life—their parents were rich only in children, of whom they had some dozen or more. One or two of them survived, and now stand on the pinnacle of wealth and power; but *without children*, in many instances, and where they have one or two living, wish in their hearts, that they had none, since luxury and dissipation has so enervated them, that the hope of

viable, healthy offspring, is almost impossible.

Well, now, it is asked—How can you remedy this condition of things; how prevent the vast number of deaths? Will the world take heed to its instructors? We answer: There is no remedy. The vast army of infant funerals will wend their way to the cemetery, and the world will go on in the same old way, until it becomes *educated in the knowledge of what constitutes life, and of the laws that govern that life*; until every mother and every girl shall realize that the health of her offspring, and of herself can come only of a *healthy union with a male, her opposite in temperament, and entirely free from any hereditary or acquired taint*. Until the State, for its own protection and welfare, shall decide, by a wise commission, that A and B may be healthfully and happily joined in matrimony; until early marriages, before the constitution of either the male or female, are formed, are no longer allowed. This is a utopian scheme, but the "world moves," and the time must come, when in the advance of the

knowledge of the laws of life, the directors of the affairs of the State, will place some restrictions on indiscriminate marriage, willingly submitted to, for the interest each (to be) mother and father, will feel in the welfare of their offspring. To attain this end, a wider knowledge of the physiology of the human system; of the laws of health, and of temperaments is needed. Let public interest be aroused to this end, and "year by year some half inspired genius will arise, who, into the great cauldron of human thought, will throw his mite and theory of opinion, and in turn sink into the common mass of things unheeded. By-and-bye some Huxley or Spencer will step forth, resolve the whole bubbling and seething mass of opinions into a living fact, upon which the waiting world will plant itself anew, and another step in the march of human happiness, and in the diminution of infant mortality will be taken. Then will there be less "mourning for the children, because they are not," and less need for separation of man and wife from sexual incompatibility.

DEEP BREATHING.

The lungs seem in a sense to be scavengers—as one of the products of decomposition, carbonic acid appears, as we know in the tissues of the body; from them it is taken up by the blood, carried to the lungs and exhaled from the pulmonary mucous membrane as a gas. The expired air contains four per cent. of its volume of carbonic acid and a series of experiments made by French scientists proved that this amount varied in different individuals, depending upon the lung capacity. It follows, then, that since every part of the organism is susceptible of culture, the capacity of the lungs can be increased, not only as to the amount of air they can inhale, but also the length of time that air can be retained in the lungs. Of course an increasing time is given for the interchange of gasses, there is a more prolonged inter-communication between the "residual" and the inhaled air, the carbonic acid is

necessarily exhaled in a greater quantity and since the lungs cannot in a state of health remain empty, the cells are richer in oxygen and the blood by contact becomes purer.

Oxygenized blood is an essential to health and to growth, as it is inimical to disease. The object of sanitation, as of medicine, is to make the fluid upon which life's processes depend better fitted for its function, as a natural sequence of perfectly healthy blood is nutrition and growth of the body.

Careful observation of one hundred moderately healthy children between seven and fourteen years will afford proof of the statement that not more than 10 per cent. if as many, use their lungs to their full capacity, few have perfectly erect carriage, many have varied degrees of round shoulders, while not a few carry the head in advance of the body.

It would seem to be one of the duties of

the family physician to call the mother's attention to this need of the child, and by instruction in the meaning of the few rules here suggested, the little one may be taught to get the very most out of the air with which she is surrounded the little one may be taught how to get the very most out of the air with which she is surrounded.

To practice deep breathing: 1. Stand erect, the feet separated, the right slightly in advance. 2. Shoulder and head in natural position. 3. Hands lying tightly on the abdomen, the fingers pointing to the umbilicus. Complaisance with this rule enables the child to be sure she using the abdominal as well as the pectoral muscles in respiration. 4. Empty the lungs of air; then close the mouth. 5. Inhale slowly through the nostrils, using abdominal as well as chest muscles. (The lungs thus receive the utmost possible amount of pure oxygen and the muscles have exercise. 6. Hold the breath as long as possible, and meanwhile use the ordinary calisthenic exercises. 7. Never exercise except with the chest well expanded with air. 8. Exhale slowly, enunciating the vowel sounds as the air passes the lips.

It is well to call the attention to the fact that when the child begins these lessons she makes many mistakes. The lungs are not half filled, the exercises are nervously executed, and of course are imperfect, and she catches her breath between the vowel sounds. Sometimes she inhales with undue force, holds the breath until the face is flushed and dizziness is complained of; but do not let her be discouraged. *Vires acquirit eundo*. In a fortnight the rules are acquired, and practice produces the desired results.

The habit of deep breathing once fixed the proper development of the voice will come in its order, and besides being conducive to health, the wise use of the respiratory organs will be an aid in acquiring that most delightful accomplishment for our daughters, reading and speaking well.

There can be no doubt that there is great advantage to the growing child in properly training him in the direction of deep breathing, as it not only oxy-

genates the blood and tissues to better advantage but develops the chest muscles, and stimulates the child in the direction of increased energy physical and mental. The remark that has very properly been made regarding beer drinkers, "drink beer and think b. er," may well be made to apply in this connection: breath deeply good pure air and think deeply good pure thoughts.

In addition to teaching the importance of this subject, the family physician should impress upon the minds of the patients under his care the importance of breathing through the nose rather than through the mouth. Nature intended the nose as a breathing organ as well as a smelling one; in fact, the latter function is adjunct to the first, as, warned by the sense of smell, the air which contains offensive and injurious odors can be avoided.

The nose as a breathing organ warms the air and drains it (by means of the free distribution of hairs between the nostrils which act as a sieve) of its irritating particles, thus rendering it more fit for absorption through the capillary vessels of the lungs. Some nation has a proverb which in substance says: Fear not the man who breathes with his mouth open.

Children who breathe habitually through their mouth are much more prone to disease of the air passages of both the congestive and infectious class. Impress the child with this maxim: Talk and eat with the mouth, smell and breathe with the nose.—*Weekly Med. Rev.*

A nursing bottle "for a baby with a long tube" is the latest contribution in appliances.

A REMARKABLE CATTLE DISEASE.—The Chief of the Bureau of Animal Industry at Washington, says that a cattle plague prevalent in Clinton County, Ind, is not pleuro pneumonia, but vermicular bronchitis, very contagious, and frequently fatal. The post-mortem in each case disclosed thousands of small, hair like, white worms, from one to two inches in length, in the bronchial tubes. The infected cattle are quarantined, and it is thought the disease will be checked.

THE UTILIZATION OF GARBAGE.

BY THOMAS D. MCELHENIE, IN THE SANITARIAN, DEC. 1886.

THE apparent purpose of chemistry, so often realized in the last thirty or forty years, is that nothing shall be wasted; but the solution of the vexed question, "What to do with garbage?" appears thus far to have escaped the notice of the chemists. The very best disposition of it would be for every family to burn their own in the kitchen fire, but there are many housekeepers who object to this. They say it causes unpleasant odors through the house. The writer is unable to confirm this after ten years' experience. The odor, if any, goes up the chimney, as all bad odors should. But the fact remains that in cities there will always be great numbers of housekeepers who want such work done for them at public expense. The cremation of garbage is just now attracting attention. This would be excellent as compared with converting it into unwholesome meat and milk; but there would be nothing recovered except the ash, which might have some slight value for fertilizing. The writer has for some months been considering a plan for destructive distillation of garbage, which for the purposes of this article is understood to mean waste food products, animal and vegetable.

An outline sketch of a plan for the purpose is herewith submitted. It may be premised that it is as much the duty of cities to disinfect the sewers as to clean the streets or extinguish fires; therefore, as this will involve only a small extra expense, let the necessary works be erected near the head of one of the sewers and lay a pipe—say six-inch—from the sewer to the grating of the furnace, which should be inclosed in such a way that the draught for the fire would come from the sewer instead of the surrounding air. Having a high chimney to secure free combustion, this would withdraw the sewer gas and render it innocuous by burning.

Let me say in passing that it would be worth while for the authorities of a city having sewers and factories with high chimneys to connect them in this way to aid thus far in disinfection.

Having our pipe in place, the plan of operation should be about as follows:

1. As there is always more or less melted grease and greasy water in the barrels, dump the contents into bins having a slanting grooved bottom and a gutter at one side by which the liquid portions should be conducted to a vat for treatment.

2. When the garbage has drained, transfer it to a cylinder or cylinders of boiler iron erected over the furnace; apply heat, and through a faucet at the bottom draw off the further accumulation of melted grease.

3. When this is about done introduce a quantity of quicklime, which, in contact with the organic matter, will generate gaseous ammonia. This should be washed and collected in the usual way, and may be purified and concentrated by a subsequent distillation, heating by a steam coil.

4. When ammonia gas is no longer evolved and as the mass acquires a higher temperature, becoming carbonized, the evolution of illuminating gas will begin. This should be conducted through a washer into a suitable receiver.

5. When this is finished there will remain in the cylinder or retort a coke, which can probably be used as fuel for further operations.

6. The ash from this might possibly contain enough potash to pay for lixiviation. This could readily be determined by analysis.

7. The melted grease and greasy water should be pumped into a boiling pan placed over the fire, boiled, strained off, and allowed to cool. Then collect the solid fat and purify by boiling and cooling again with clean water once or twice, and finally utilize in making axle grease or some other commercial way that should insure that it would never touch the human skin. I believe the plan here outlined would be feasible, and by some aid from the city would in time yield a profit. It would not be difficult to prepare working designs for the necessary plant, and by hiring some idle factory the experiment could be tried on a practical scale for a thousand dollars or less.

THE TORONTO TRUNK SEWERS.

THE DISPOSAL OF THE SEWAGE, AND THE BIRMINGHAM SEWAGE FARM.

TH**E****R**E are many readers of this **J**O**U**R**N**A**L** in Toronto, and we have been repeatedly desired to give our opinion upon the questions relating to the sewerage of that city. Much of what will apply to Toronto in this respect will apply to many other large cities and towns.

It is a matter of wonder to many, in consideration of the condition of the bay and of the water supply, how it is that the mortality in Toronto is not higher than it is, on the average,—although it was about 30 per 1,000 of population per annum in July last, or about 50 per cent. greater than the average in London, Eng.,—and that the city has escaped, so far, a ravaging epidemic. It is to be hoped that the people will not put off applying a remedy until they receive such a lesson as was last year received by the people of Montreal.

In the first place, one or more intercepting sewers, for preventing contamination of the water of the bay, is indispensable to the health of the city; and in the next place, if the people will insist on pouring the sewage, directly and unchanged, or without treatment, into the lake, the outflow should be many miles from the intake of the water supply, and there should be an absolute certainty that in even these many miles there will be no Western under-current toward the water supply intake. It would be a great mistake for a city like Toronto to attempt any half-way measures, and we are sure the people of that city want no such thing. We believe it is very generally desired by the people that there shall be a trunk or intercepting sewer system, and that they will vote for a satisfactory system for preventing the pollution of the bay. The question is, what shall be the nature of it—what shall they do, with the sewage?

One great, indeed the chief, requisite in any sewerage system is a free outflow. A free fall cannot be secured without a good fall in the grade, toward the terminus of the outflow, unless provision be made for a *vis a tergo* that would be

quite impracticable in Toronto with her want of water force, or a pneumatic *vis a fronte* that ordinary porous sewers will not permit of. To be sure, water and even sewage will find its way along a course so long as there is a well graded fall in it, however slight this fall may be, and in Toronto the free flow in the sewers which would supply a trunk on Front street would assist the flow in the trunk, but with only the slight natural fall between the Garrison Creek and the Don there never would be a good outflow in the trunk, and the accumulation of sewer gases would be such as to give rise to great and serious trouble.

As we have on several occasions suggested, by means of a large, deep pit or well sunk at the mouth of the Don for receiving the sewage, a sufficient fall in the course and grade of the Front street trunk could be obtained. We are moreover persuaded that in this way only can a satisfactory fall in this trunk be obtained. For the intercepting trunk or trunks North of Front street, a sufficient fall could easily be secured by giving them a South Easterly course. From this well the sewage could be pumped to a destination. And what of this destination? Plainly, the sewage must be allowed to flow in its natural foul state into the lake at some point, far or near, or it must be treated in some way, by filtration, as through soil, or by precipitation, and so purified,—the liquid part only being permitted to flow into the lake.

At the recent meeting in Toronto of the American Health Association, a paper was read by the editor of this **J**O**U**R**N**A**L**, (published in the November issue) bearing strongly on this question of the safe disposal of the Toronto sewage. In this paper it was shown, from the experiments of Drs. Frankland, Meade Bolton and Wolffhügel, that the bacilli of cholera and anthrax live for weeks and undergo multiplication in water but little polluted, and even in potable water. "The results of these experiments," says the *British Medical Journal*, "clearly shows how zymotic

diseases may be communicated by potable water of the best quality." And, quoting from the paper, "With those facts and possibilities before us, and before us too, the probability that the bacillus entericus (of typhoid) 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 Toronto must contain almost constantly myriads of such organisms, it is easy to see the danger which must arise from pouring out the sewage in proximity to the intake of the water supply. The question is, what would be regarded as a safe distance from this water supply source? If there were in the water of the border of the lake a constant Eastern current moving like that of a river at the rate of 2 or 3 miles an hour, the distance proposed in the scheme submitted to the people in October would have been safe so far as the Toronto water supply were concerned, leaving Eastern towns to care for themselves as best they could. (It seems possible however that legal proceedings against Toronto might be sustained in the present state of sanitary knowledge, by Eastern towns, and an injunction obtained to prevent that city pouring its sewage thus into the lake.)

At the last quarterly meeting (Oct. 29) of the Illinois State Board of Health it was shown in the secretary's report, from experiments made during last summer, that the water of the canal carrying the sewage of Chicago, after a flow of 33 miles to Joliet, had lost, by sedimentation and oxidation, about two-thirds of its sewage pollution, and it is estimated that after a flow of 10 miles further it will have lost all traces of sewage. In its course the water is agitated by "falls, wheels, lockages, etc." 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 6 weirs, showed but little improvement. 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." It is commonly believed that flowing water contaminated by sewage will become pure at a more rapid rate than this; but these are the facts.

How would it be with the still water of Lake Ontario in this regard? and how about adverse currents toward the West, on the border of the lake? It would be difficult to prove clearly that there never are currents flowing from that part of the lake where it was proposed to pour out the sewage Westward toward the intake of the water supply.

With these facts in mind will the people of Toronto favor any scheme for pouring the sewage directly into the lake?

There are two ways, both quite practicable, in which the sewage of Toronto could be treated and purified, the solid parts being removed, when the water could be allowed to flow into the lake with safety.

One of these is by precipitation—treating the sewage chemically, by lime, iron, etc., in tanks. This gives a valuable manure, which should command such a price in Toronto that would materially reduce the cost of treatment. It is practiced successfully in some places in England, with small cost to the municipalities. It does not usually, however, sufficiently purify the sewage to allow the liquid part to flow into small streams, and it is possible, in case of infections, that the sewage might not be thoroughly disinfected.

The other method or disposal we have long urged as being the best for Toronto: this is by way of sewage farming. There is abundance of most suitable land for this purpose East of the city, which could be made to yield immense quantities of produce—vegetables, grasses, milk and other dairy products—that should materially reduce the cost and prices of these to the citizens. We cannot do better than to close this subject for the present by quoting, as an example, the following on the sewage farm at Birmingham, England, from a paper in the *Sanitary Record*, (of Nov. 15, '86,) by Alfred Hill, M. D., etc., medical health officer of that city:

Sometimes the difficulty of obtaining land or suitable land for irrigation is urged against the method. This difficulty is often made too much of, especially as erroneous views, founded on theory rather than practice, have been entertained respecting the quantity of land and the kind of soil necessary. Experience proves that soils of the most different kinds are capable of affecting the purification of sewage, though, of course, light sandy soils are, as a rule, best suited to the purpose. According to Dr. Frankland, the results of irrigation of different kinds of soil were much more uniform than might be expected. At Norwood a clay soil removed 76 per cent. of dissolved organic carbon and 92 per cent. of dissolved organic nitrogen; at Warwick a stiff clay removed 71.7 per cent. of carbon, and 89.6 per cent. of nitrogen; at Banbury a soil consisting principally of clay removed 87.8 per cent. of carbon and 91.3 per cent. of nitrogen; at Croydon a gravelly soil removed 73.2 per cent. of carbon and 93.2 per cent. of nitrogen; while at Aldershot a light sandy soil removed 91.8 per cent. of carbon and 87.3 per cent. of nitrogen. In all the cases cited 100 per cent., or close upon it, of the suspended organic matter was also removed. It thus appears that with good management almost any soil is or may be made suitable for the purification of sewage.

As to the quantity or area of land necessary, without quoting the very variable opinions of engineering and other authorities, I may state on the authority of Mr. Till, the able engineer of the Board, that for the actual disposal of the sewage of Birmingham and neighborhood, under the management of the Birmingham Tame and Rea District Drainage Board, embracing an estimated population in 1885 of 619,693 persons, an area of 1,227 acres is found amply sufficient, and more than sufficient. This area is equal to one acre to 500 persons. The volume of sewage is in ordinary weather 16,000,000 gallons a day, which, supposing it to be equally distributed over the whole area of the sewage farm, would give 13,040 gallons per acre. The land is drained to a minimum depth of 4 feet 4 inches, though in many cases the level character of the

land has rendered a greater depth necessary at the lower ends of the drains. The effluent is so pure that to the eye it appears, as regards its colourlessness and transparency, fit to drink, and on admission into the little country brook of clear water it is seen before mixing with it to be very superior in appearance to the natural water of the stream, by the side of which for a time it runs. A few words in explanation of the mode of treatment of the sewage may not be out of place. At a distance of about a quarter of a mile from the subsidence tanks the main sewer receives a constant supply of thin milk of lime, the use of which is to neutralize acids and promote the precipitation of organic as well as mineral matter. In the first tanks road detritus and other heavy matters are deposited, and in the other tanks the lighter suspended matter is precipitated. The sewage, thus to a certain extent defaected and clarified, is carried by a conduit nearly three miles long to the land where it is disposed of by distribution over the surface. The sludge which has collected in the tanks is removed by bucket pumps, and conveyed along elevated and moveable wooden carriers to a part of the farm, of about forty acres in extent, situated at the near or upper end. After a fortnight it has become by drainage and evaporation contracted in bulk, and sufficiently consistent to admit of being trenched into the land. Crops are then planted, the soil soon regains its usual character, and it may afterwards be irrigated like the rest of the land.

It might be supposed, as some indeed have asserted, that so large an expanse of sewage-treated land, must necessarily be not only a nuisance but injurious to health. I can assert from years of experience that it is neither the one nor the other. The people who hazard these speculations draw their conclusions from the fact that putrid manure, heaped or strewed on land, is offensive; but with sewage the conditions are altogether different. In the first place it is not putrid but fresh, and instead of being heaped or strewed, it trickles in a thin layer in contact with and in the pores of the land, the deodorising and purifying powers of which are so well known,

Hence there is no nuisance, and as to injury to health, some of the employés live with their families on the farm, and not only have never suffered from typhoid fever or other filth diseases, but have enjoyed exceeding and exceptionally good health. Nor is the method an altogether unprofitable one. The crops raised on the farm and the area devoted to each kind, are as follows :—

280	acres to	mangolds, swedes and kohl rabi.
250	"	market garden produce.
100	"	Italian rye grass.
130	"	cereals.
340	"	pasture.

The milk produced is large in amount, and its production continues to increase. The quantity sold last year was 128,995 gallons, realizing a sum of £4,406. Altogether for the sale of stock and produce, £20,008 was realized last year, and stock was purchased during the same period to the value of £7,760. From these facts and figures it can be seen how

valuable is the return in food and money yielded by a sewage farm.

I am aware that the opponents of sewage farms have endeavored to show that the produce of such farms is open to the suspicion of danger. It has been asserted that butter so raised is inferior in quality, that it will not keep, and in a very short time becomes intolerably offensive in odor; while it has been further suggested that dangerous parasites may find their way from the sewage on to the vegetable produce, and from this into the system of the cow, rendering its flesh unfit for food. I have experimentally proved the incorrectness of the allegation regarding butter, and a special and crucial investigation, carried out under most competent authority, into the question of the health of animals fed on sewage farm produce resulted in the complete refutation of the idea that it suffered as suggested, or in any other way.

THE MORTUARY STATISTICS OF 1885 IN CANADIAN CITIES.

THE Third Annual Report of Mortuary Statistics, for the cities and towns of Canada which make regular returns to the Department of Agriculture at Ottawa, for the year 1885, recently issued by the Department, contains matter of much interest, and ought—relating as it does to the public health of the Dominion—to attract more attention than is usually given to such reports. It consists principally of abstracts of the monthly returns, and as stated in the report, in the returns which form the matter of the volume “some come up to the standard of accuracy, others approximate to it more or less nearly, and others again are more or less far below it.” Although from some of the places the returns are not absolutely accurate, they form useful and interesting data for comparisons from which profitable lessons may be learned, and upon which indeed a useful and practical volume might be written. Besides showing the causes of death, the report gives tables showing the rates of mortality according to ages, to religious denomination, to nationality and to occupation.

Last year there were regular returns

from nineteen cities and towns; in 1884 there were returns from only ten, and in 1883 from only six.

The total number of deaths, from all causes, returned from these nineteen cities and towns last year, was 17,948. The cities and towns contained an estimated population of 595,900, and the mortality from the whole, as returned, was therefore about 30 per 1,000 of the population, for the year. In Montreal the mortality was at the rate of 54 per 1,000; in St. Hyacinth it was 48; and in Quebec 31. The high rate in these cities was chiefly caused by small-pox. Ottawa comes fourth in high rate of mortality, returning nearly 25 per 1,000. Next in order are St. John, (N.B.), returning 24 per 1,000, Kingston 22, Halifax 21, and Toronto 20·6. The remainder of the places all returned below 20 per 1,000. Winnipeg returned the lowest mortality, but 9·85 per 1,000; most likely incorrect. The next highest are St. Thomas returning 10·4 per 1,000, and Guelph 11·6. These rates, especially the former of these two last named cities, are very low. The health officer of Guelph, however, Dr. Keating, assures us that every death in that city is regu-

lary recorded. A late number of the London *Sanitary Record*, referring to the mortality of the town of Hastings, Eng., states that it had fallen to the "extraordinarily low figure of 11.51" for the quarter ending June 30, the lowest on record for that quarter. Chatham comes next, giving 14.5; then Charlottetown and Galt, with 16 per 1,000 each.

From the various zymotic diseases alone there were 6,567 deaths in the nineteen cities and towns during the year, or 11 per 1,000 of population,—about four times as high a rate from zymotics as that of England. But more than the half of these deaths (3,312) were caused by the exceptional epidemic of small-pox, leaving 5.4 per 1,000 as caused by the other zymotic diseases. From these last, of the cities, Ottawa returned the highest mortality or nearly 7 per 1,000.

Small-pox caused in the year 3,312 deaths, 3,193 of which were in Montreal. Of the remaining 119, 52 were in Charlottetown, 37 in St. Hyacinthe, 13 in Ottawa and 9 in Quebec.

Diphtheria caused 752 deaths in the nineteen cities and towns, 309 of which were in Montreal, and 92 in St. John. Of the remainder, 77 were in Toronto, 69 in Quebec, 63 in Hamilton, 43 in Halifax and 20 in Ottawa. There were from 1 to 18 deaths from this cause in each of ten other of the cities and towns.

Measles, usually not regarded as a disease of a serious character, caused, according to the returns, 312 deaths, 145 of which were in Montreal and 107 in Quebec, making 252 of the 312. Could any of these have been from small-pox, certified as measles?

From scarlatina, 151 deaths occurred, a much smaller number than from measles. Of these, 47 were in Kingston, 36 in Montreal and 20 in Toronto.

From diarrhoeal affections there were 1276 deaths, showing bad sanitary conditions in many of the cities.

Of the constitutional diseases, consumption (phthisis) was most fatal. Indeed, excepting small-pox, it caused a larger number of deaths than any other disease. Such is invariably the case. Consumption we have ever with us; not sweeping along, but, as it were stealthily, picking out a victim here and a victim

there. The mortality from this disease, in the nineteen cities and towns, was 1,424, or at the rate of 2.4 per 1,000 of population. This, too, is a very high rate of mortality.

Of local diseases, diseases of the lungs were by far the most fatal. In the nineteen cities and towns last year 1,477 deaths were caused by these alone, so coming next to the more specific disease, consumption. Thus little less than 3,000 deaths were caused by consumption and the more local lung diseases.

Cancer, a constitutional disease, caused 288 deaths; and not depending so directly on special insanitary conditions, they were pretty evenly distributed in the different places.

A SIMPLE TEST FOR ARSENIC IN WALL-PAPER.—A simple and easily-applied test for arsenic in wall-papers has been devised by Mr. F. F. Grensted. No apparatus is needed beyond an ordinary gas jet, which is turned down to quite a pin-point, until the flame is woolly blue; when this has been done, a strip of the paper suspected to contain arsenic is cut one-sixteenth of an inch wide, and an inch or two long. Directly the edge of this paper is brought into contact with the outer edge of the gas-flame a grey coloration, due to arsenic, will be seen in the flame (test No. 1.) The paper is burned a little, and the fumes that are given off will be found to have a strong, garlic-like odour, due to the vapour of arsenic acid (test No. 2). Take the paper away from the flame, and look at the charred end—the carbon will be colored a bronze-red, this is copper reduced by the carbon (test No. 3); being now away from the flame in a fine state of division, the copper is slightly oxidised by the air, and on placing the charred end a second time, not too far into the flame, the flame will now be colored green by copper (test No. 4). By this simple means it is possible to form an opinion, without apparatus and without leaving the room, as to whether any wall-paper contains arsenic, for copper arseniate is commonly used in preparing wall-papers. Tests one and two would be yielded by any paper containing arsenic in considerable quantities.—*Brit. Med. Journal*.

THE PUBLIC HEALTH FOR NOVEMBER.

MORTUARY RETURNS FROM THE TWENTY FOUR CANADIAN CITIES AND TOWNS.

THE twenty-four cities and towns which make monthly returns to the Department of Agriculture, at Ottawa, show but a slight increase in the number of deaths in November, as compared with October—or from 1204 to 1218. There was a decrease of about 25 per cent. in the number of deaths from zymotic diseases, or from 266 in October to 202 in November; while there was an increase in the number from all the other classes. The principal increase was from local diseases, such as of the lungs and other special organs—441 having been recorded under this head in October and 497 in November.

No deaths were recorded from small-pox during the month. From measles there were 4 deaths, 2 in Montreal and 2 in Hamilton. From scarlet fever there were also 4 deaths, 2 in Montreal, 1 in Toronto and 1 in Winnipeg. The number of deaths from diphtheria was about the same as in the previous month—97; 28 of which were in Montreal, 15 in Toronto and 12 in Quebec. Ottawa and Halifax contributed 6 each, London and St. Hyacinth 4 each, and Hull 5. The number of deaths from diarrhoeal diseases fell from 79 in October to 31 in November, which we may regard as an illustration of the effect of frost in checking bacterial development, or in other words, in lessening the development of disease germs from filth. The number of deaths from typhoid and kindred diseases also decreased largely, or from 55 to 23. There was no increase from remittent fevers nor from rheumatism.

The total mortality for the month in the 24 cities and towns, with an estimated population of about 666,000, did not much excel 22 per 1,000 population per annum. In 28 cities in England, with a population of over 9,000,000, the rate was, from reports just received, 19.3 per 1,000. In London, Eng., it was less than 18 per 1,000.

Of the larger cities in Canada, Montreal returned the highest mortality, or at the rate of 29 per 1,000 of population

per annum. But Montreal probably gives the highest birth-rate, and as we have repeatedly pointed out, the mortality is largely influenced by the natality. In Quebec and Ottawa the mortality was much larger than the average of the whole, or 24 and 25 per 1,000, respectively. In St. Hyacinth it was at the rate of 40 per 1,000 of population, though it was only 20 in the previous month. So, in small towns does it fluctuate. It was therefore at the rate of 30 for the two months. In Hull, the rate fell from 39 in October to 37 in November. In Sorel, a terrible rate of mortality has prevailed for many months. In September and October it was about 48 per 1,000 per annum; in November it rose to 76 per 1,000. Of the 38 deaths returned from this town, of about 6,000 people, 27 were from the class "local" diseases; there was therefore no special epidemic it appears. There had been 13 deaths from diphtheria in the previous month, but none were so recorded in November; though there were 2 from quinsy.

Something should be done by authorities of some sort, municipal or other, to prevent this dreadful slaughter, after first investigating the cause of it. Herein is felt the want of a central health authority. Here, in this little town, without any special epidemic, human beings are dying at the rate of from 150 to 200 a year more than should die even with a high prevailing death rate.

ON the seventh of August last, forty-three persons were taken sick at two of the Long Branch Hotels. Dr. Newton investigating the causes discovered tyrotoxin in the milk furnished to the hotels. The cows had been milked at noon, and the milk with the animal heat retained, had been placed in tight cans and carted eight miles on a hot day. It is somewhat strange that more reports of poisoning from milk, cheese or cream, have not been made before. — *Chicago Med. Times*,

MISCELLANEOUS SELECTIONS.

“EDUCATE A WOMAN AND YOU EDUCATE A RACE.”—This is a saying full of promise if it be rightly interpreted, full of dire disaster if applied to the mind to the exclusion of the body. While it may be true that too much bodily labor may render women less prolific, it is very much more clearly shown that excessive mental labor is a cause of sterility (or infertility). “In its full sense,” says Mr. Herbert Spencer, “the reproductive power means the power to bear a well developed infant, and to supply that infant with the natural food for the natural period. Most of the flat-chested girls who survive their high pressure education are unable to do this.”—*Can. Lancet.*

EARRINGS.—Dr. Morin, in his work on the hygienics of beauty, makes a dead set against earrings. In numbers of cases he has known erysipelas proceed from their use. The idea that they are good for weak eyes he quite disposes of. It is possible, he says, that in cases of inflamed eyes they might act as a counter irritant, but if they did they would make the lobe of the ear, which, not being rich in blood vessels, has little recuperative vitality, in a state of permanent ulceration. There is no surer test of a good or bad constitutions than the state of an ear which has been pierced and exposed to the irritation of heavy earrings. If the lobes keep red and swollen, they proclaim bad blood and scrofulous tendencies.—*Sanitary Record.*

PREVENTION OF SCARLET FEVER.—Scarlet fever is a disease whose prevalence does not seem to be greatly effected by improvements in drainage, water supply, or by better modes of living generally. This is shown by English statistics. For the last twenty-five years the annual mortality in all England from this disease has kept above 12,000. In London the mortality, until within the last two years, has been over 2,000. In New York city the mortality in 1871 was 791; in 1875 it was 515; in 1883 it was 744; and in 1885, 559. It is only by isolation and

disinfection, therefore, that this disease can at present be checked; but there is already considerable evidence that such measures are helpful. Thus in London, in the last two years, since more efficient means have been adopted for isolation, the mortality rate has fallen to 700 in 1884-85, while for the present year it has been only at the rate of about 400. At Salford, England, according to Mr. John Gatham, the annual death rate from scarlet fever used to be about 185 per 100,000 of the population. Since the establishment of a fever hospital, and the passing of a compulsory notification act, the mortality has been only about 50 per 100,000. It thus appears that by means of isolation, by the establishment of fever hospitals with the enactment of a proper compulsory notification law, scarlet fever can be reduced in amount about one-third. And this seems to be the only way at present by which we can seriously affect the prevalence of the disease. It may be said that in New York we have both these things, and yet no marked effect is produced. To this, the answer is that New York, owing to its crowded population, is under peculiarly unfavorable circumstances; and again, it is by no means certain that we may not claim a diminution in the prevalence of the malady; for our population has increased 300,000, while the scarlet fever mortality has not increased, the annual average being, perhaps, even less than it was a decade ago.—*Med. Record.*

A TOOTH POWDER should possess certain characteristics; it should be antiseptic, cooling, agreeable to taste and smell, and have no injurious action on the teeth. After use, it should leave the teeth white, and a sensation of freshness and cleanliness in the mouth. As an antiseptic in this connection nothing can displace boric acid. For years I have used the following powder, and can recommend it: Boric acid, finely powdered, 40 grs.; chlorate of potassium, 3ss; powdered guaiacum, 20 grs.; prepared chalk, 3i; powdered carbonate of magnesia, 3i; attar of roses, half a drop. The boric acid in

solution gets between the teeth and the edges of the gums, and there it discharges its antiseptic functions: the chlorate and guaiacum contribute their quota to the benefit of the gums and mucous membrane generally; the chalk is the insoluble powder to detach the particles of tartar which may be present, and the magnesia the more soluble soft powder which cannot harm the softest enamel.—*Brit. Med.*

SULPHUR FUMIGATION AS A DISINFECTANT.—Dr. S. V. Shidlovsky, of Professor A. P. Dobroslavini's laboratory in St. Petersburg (*Vratch*, No. 26, 1886, pp. 469-71), has carried out a series of careful experiments, from which he concludes that sulphur fumigations do not present a reliable disinfectant, as far as spores of the bacillus anthracis are concerned. The experiments consisted in burning sulphur (moistened after Wolffhügel's method with 20 cubic centimetres of a 90 per cent. spirit to every $\frac{1}{2}$ kilogramme; see the *Sanitary Record*, June 1882, p. 507) in a chamber in which, at various heights, silk threads soaked with the spores were placed. The capacity of the chamber was about 2 cubic centimetres. The duration of the experiments varied from 24 to 26 hours; and the amount of sulphur burnt, from 87.9 to 125 grammes to one cubic centimetre of room. In some of the experiments the chamber was moistened with water. Sometimes those of the microbes which were situated near the bottom of the chamber lost their vitality. But in none were all of them destroyed, as subsequent cultivation and inoculation invariably proved. Dr. Shidlovsky has also shown (*Vratch*, Nos. 50 and 51, 1885) that 'Professor Trapp's disinfectant sulphur cartridges', which are extensively used by the Russian Ministry of War and various *Zemstvas*, and which consist of 58 parts of nitrate of potassa, 36 of sulphur, and three of charcoal, entirely fail to attain what is expected from them. They do not destroy all pathogenic spores, even when burned under the most favorable conditions for disinfection, and even in the dose, which is twenty times larger than that officially given.—*Sanitary Rec.*

DE SENECUTE—CENTENARIANS AND THEIR HABITS.—To most people there is something peculiarly fascinating in a description of the habits and constitution of persons who have lived to extreme old age; even if the reader is not possessed by a secret hope that he may rival them in vitality, his imagination is stimulated by the eighteenth century, living on to witness the achievements, to share the sorrows, and, in their own persons, to afford matter for the scientific speculations of the last quarter of the nineteenth century. The series of fifty-two cases of reputed centenarians got together by the Collective Investigation Committee has been analysed by Professor Humphry, of Cambridge, who is able to state positively that, in eleven cases, two males and nine females, the evidence left no doubt that these old people were centenarians. In the large majority of the cases the evidence was not conclusive, but there can at least be no doubt that all had attained to a very great age. Swift, in his *Voyage to Laputa*, has given a description of extreme old age so appalling, and yet so nearly in accordance with every-day experience, that it is a pleasure to find Professor Humphry championing our common humanity, and describing centenarians who were cheerful, retained their faculties and interests in relatives and old friends, and even showed a marked liking for making new acquaintances. The centenarian generally comes of a long-lived family, and is a person of active habits, both of body and mind, a good sleeper, endowed with a good appetite, and a tranquil, cheerful disposition. One centenarian collier had always drunk as much as he could, and expressed his intention of continuing this habit, but all the others were stated either to have been moderate or very moderate in the indulgence of this taste or to have been total abstainers. The majority also did not take tobacco in any form, but one chewed the drug, and seven, of whom, four were women, smoked a great deal. Perhaps the most interesting fact which has come out of the analysis of these cases is that, though centenarians, as a rule, have not

suffered much illness during their long lives, yet a considerable number of instances were met with where even severe illness had been recovered at an advanced age. Indeed, some of these old people seem to take a new lease of life, as the saying is, after passing four-score years, and are not only able to resist fresh attacks of acute maladies from which they had been previously suffering. It is interesting to note that women are in a decided majority in Professor Humphrey's list; after making every allowance for their comparative immunity from accident, exposure, and anxiety, and their greater temperance in eating and drinking, there still appears to be reason to believe that woman possesses a greater inherent vitality than man. In conclusion, we may be allowed to express the hope that Professor Humphrey may live to swell the list and improve the male percentage.—*Brit. Med. Journal.*

SHALL THE PATIENT EAT WHAT HE CRAVES?—I often notice in medical journals, and hear it talked by medical men, that people should eat whatever the appetite, that being the true guide to the wants of the system, craves. In theory this may be right, based upon a normal appetite. (Who has one?) but in practice I believe it decidedly wrong. Whenever we find a person craving some article of food or drink, and we can satisfy ourselves that it is a demand of nature for a needed supply, give it by all means. But there are so many perverted appetites, cravings and desires, that one must discriminate very closely, and think in straight lines, or he will err, and do harm to the body and life. Country doctors, do so little thinking as a rule, that advocates and teachers should be very careful what they teach. Who has not seen an old toper crave his whiskey, an old smoker his tobacco, an opium eater his drug, or a dyspeptic whose secretions are so loaded with lactic acid, and the mucus membrane of whose mouth, stomach and bowels is so irritated by it, that functions can not be properly performed at all, and still craving and eating pickles, lemons and other sharp acids, etc. Any number of examples

might be given, and yet doctors will often tell these patients to eat and drink what the appetite craves. When will medical men learn to think and try to understand vital processes, and realize that disease is not an entity but merely prevented life. This thought might be carried on into the realm of medicine, as well as food, its uses and abuses. There is a field here for both thought and experiment—*E. P. Whitford, M. D., in Jun't of Reconstructives.*

SENSIBLE MOVE.—With a view to assist the metropolitan police in checking the spread of contagious infectious disease, the committee of the Seamen's Hospital society have given instructions that the number of every cab which brings a patient to the hospital suffering from any contagious or infectious disease should be communicated to the Commissioner of Police, so that the cab men be disinfected.

COMPARATIVE LONGEVITY OF MEN AND WOMEN.—Interesting researches concerning the comparative longevity of men and women in Europe, have recently been made by the Director of the Bureau of Statistics at Vienna. From these it appears that about a third more women than men reach an advanced age. Women oftener lead quieter, regular lives, They have fewer bad habits, are less exposed to strong passions and excitement. It appears from the gathered statistics of the world that women have a greater tenacity to life than men. Nature worships the female in all its varieties. Among insects the male perishes at a relatively earlier period. In plants, the seminate blossoms die earliest, and are produced in the weaker limbs. Female quadrupeds have more endurance than males. In the human race, despite the intellectual and physical strength of man, the woman endures longest, and will bear pain to which the strongest man succumbs. Zymotic diseases are more fatal to males, and more male children die than females. Deverga asserts that the proportion dying suddenly is about 100 women to 780 men; 1,080 men in the United States in 1870 committed suicide to 285 women. Intem-

perance, apoplexy, gout, hydrocephalus, affections of the liver, scrofula, paralysis, are far more fatal to males than females. Pulmonary consumption, on the other hand, is more deadly to the latter, which argues that we ought to give the girls of our families all the out-door exercise they need. Females in cities are more prone to consumption than in the country. All old countries not disturbed by emigration have a majority of females in the population. In royal families the statistics show more daughters than sons. The Hebrew woman are exceptionally long-lived while the colored man is exceptionally short-lived. The rush and worry of the average business man in this country is apt to make him prematurely old, unless he take judicious recreation. The females are to a great extent exempt from this overstraining about business cares, which may, in a degree, account for their superior vitality.—*The Indicator*.

DR. FRANKLAND ON FILTRATION.—Dr. Koch of Berlin, with Professor Frankland and Dr. Bischof, of England, have made a great number of highly interesting and instructive experiments on the germ culture of water and in determining the proportion of the micro-organisms that can be eliminated in various ways; by filtration through different media, by agitation with solid particles, by chemical precipitation, and by natural agencies. Dr. Frankland's results and conclusions are given in the December number of the *Journal of the Society of Chemical Industry* for 1885. From this report the following conclusions are to be drawn in regard to filtration: 1. It is possible by a proper filtration to entirely deprive water of its germ life. 2. After complete deprivation of its germ life, if water is exposed to the ordinary influence of air and contract with the biologically unclean materials used for its storage and conveyance, the germ life is rapidly reintroduced and multiplied. This makes it desirable to furnish the filtered water for use as soon after the operation as practicable. 3. It is necessary to renew or cleanse the filtering material very frequently. In some cases the water

filtered through materials which had been in use for a month had its germ life increased by the operation. 4. Some materials, which exert but an insignificant chemical action, are completely successful in purifying the water, from a biological point of view. This is the case with powdered coke and charcoal.—*The Sanitary Era*.

RAILWAY SANITATION.—The traveling public especially that class known as summer visitors, or summer tourists, have, in keeping with the advancement of sanitary science, grown more thoughtful each year of the too visible results of bad sanitary conditions, possibly hypercritical in many instances, and are demanding that the lines over which they travel and the places in which they briefly sojourn shall possess the minimum of objections in this direction. The railroad that best provides for all these things, every thing else being equal, will be the best patronized. Several railroads have added a medical officer to their list of managers, who has within his province the charge of railway sanitation as well as the other duties of the office.—*Sanitary Era*.

BACTERIA IN THE AIR.—At the commencement of June, 1884, Dr. Miquel, of Paris, who was then in London, made some observations on the number of bacteria contained in the air of Byder Street, St. James'. A cubic meter of this air was found to contain only 240 organisms, but this low result was probably due to the wet weather which prevailed on four out of the five days on which the experiments were conducted—the air being remarkably free from dust. In Paris at the same time the air of the Rue de Rivoli contained 360 organisms per cubic meter. Dr. Miquel would not, however, be surprised to find that the air of London was habitually fairly pure and free from organisms, owing to the proximity of the sea and the fact that the houses of London being generally of no great height—unlike Paris—the streets are continually being swept by currents of air. The air of sleeping apartments is very impure as regards the number of contained micro-organisms. One such room in Paris

was found to contain on the average, in the winter and spring of 1882, 73,540 bacteria per cubic meter, and the air of the Hopital de la Pitie has been observed to contain 79,000 bacteria per cubic meter. In contradistinction to these large numbers, the air over the Atlantic Ocean (Moreau and Miquel) has been found to contain from 0 to 6 bacteria per cubic meter, and the air of the higher mountains an average of only 1 bacterium per cubic meter (Freudenreich). M. Moreau has investigated the number of organisms present in sea air. These investigations—undertaken under circumstances of considerable difficulty on board ship, and conducted on an elaborate scale—are of much interest as bearing on the treatment of phthisis by high mountain altitudes or by sea voyages, in both cases the special object desired being to place the patient in an atmosphere free from all impurities. We will quote a few of M. Moreau's conclusions on this subject: 1. Air taken on the coast, when the wind is blowing off the sea from a direction in which land is at a great distance, is in a state of almost perfect purity. 2. In the neighborhood of continents, winds blowing from the land always bring an impure atmosphere: at 100 kilometers from the coast this impurity has disappeared. 3. During moderate weather the sea does not yield to the air any of its contained bacteria; during rough and stormy weather sea air is charged with a minute quantity of bacteria. 4. The air of ships' cabins is also charged with a number of microbes incomparably greater than that of the open air at sea, but the purity of the air of these cabins increases rapidly during the first days of the voyage. Later on, an equilibrium appears to be established, depending on the amount of purification of the air by ventilation and the number of occupants. 5. The air of ships' cabins is relatively very poor in bacteria; these probably are one hundred times less in number than the air of an occupied room in Paris.

—*Scientific American,*

A STORY OF A RED BLOOD CORPUSCLE.—The *Rutland Herald* gives the following school composition, which was

written by a little Vermont girl twelve years old. It is said to be given just as it was written. She was only half an hour in writing it and had no book of reference. She told her papa that she had thought it well out the night before: "As I am resting in a piece of tissue to which I was sent, I thought I might as well write my adventures, which are many and varied. I first came to life with many of my relations in a large fleshy room which I came to know was the right ventricle of the heart, then by a sudden squeeze we were sent altogether into a long canal with hard walls (it was the pulmonary artery); there were so many of us that we were all jammed together, and I said to myself, 'I had a great deal rather go back into that nice large room again,' so I ran back as fast as I could, but lo and behold, three little doors barred my way, and the more I pushed the tighter they closed, and so I gave it up and went back to my fellows. We then went on into smaller veins or capillaries, and through thin walls. I could see the spongy substance called the lungs. On we traveled into an immense vein called the pulmonary vein, and from there into a smaller room than the one we were in first; presently another squeeze sent us from the left auricle, as it is called, into the left ventricle, and from there into another large artery called the aorta; just then I and my companions were startled by a telegraphic message from the brain, 'We are busy with a Latin verb and need red blood corpuscles to help us.' About 2,000,000 of us started for the brain, but we had hardly got half way before there came a despatch from the arms, 'We have been swinging clubs and have used a great deal of tissue. Come and help us.' Half of us went on to the brain while the others went to the arm. And here I am expecting to be used at any minute. Ah, here I go! the arm has raised and I must die."—*Albany Medical Annuals.*

"MOUTH BREATHING." said a distinguished physician, "is a curious affliction. It is more common than is supposed, occurs in infancy, at manhood and at middle age, and causes a

great deal of suffering; yet it is a strange thing that the people in general do not seem to pay any attention to this affliction when occurring in their own families, in spite of the manner in which it distorts the face, until some fatal disease sets in and medical aid is necessary. Even the physicians do not seem to reflect that this trouble may cause anyone of a large number of diseases affecting the system in general. It is necessary for parents and nurses to watch children when they fall asleep and prevent them breathing with their mouths open. Children should be taught to use the mouth for eating and speaking only; and if they fall asleep with their mouths open the lips should be gently pressed together. Thus many constitutional diseases may be avoided; not to speak of affections of the nose and throat. George Catlin, the portrayer of American Indian life and customs, claimed in one of his works that it was a known fact that a man can inhale mephitic air through the nose for a certain time in the bottom of a well without harm, but if he opens his mouth to answer a question or call for help his lungs are closed and he expires. Catlin says: "I have seen a poor Indian woman in the wilderness lowering her baby from her breast and pressing its lips together as it falls asleep." Among 2,000,000 people he found that deafness, spinal curvature, and deaths from teething and diseases of the respiratory passages were almost unknown. He attributed this exemption from these ailments, so very common in civilized life, chiefly through the habit of breathing through the nose.—*Selects*.

GARBAGE DESTROYER.—Application was made, by the health authorities of Wheeling, Va., U. S., for the use of a Smith gas furnace for the heating of steel slabs preparatory to being rolled into nail-plate. This furnace is capable of generating a more intense heat than any furnace known. The use of one was given. The result was as follows:—A barrel of ordinary garbage or slop was burned in four minutes; a barrel of butchers' offal (bones and animal matter) was burned in seven minutes; a barrel of fluid night soil, thrown into the furnace with buckets, was almost

instantly evaporated, and a barrel of solid feces was burned in fifteen minutes. Convinced that this furnace had every requisite for fulfilling the design of destroying night soil and garbage, the committee reported the result of the above experiments to the Council, and recommended the making of a contract for the building of such a furnace, capable of destroying daily sixty tons of night soil and garbage, and also for burning dead animals of all kinds which might die within the city limits, as well as the other matter from the butcher shops. The furnace is to be constructed for using natural gas as a fuel. Of its success the writer maintains that there could be no doubt. Mr. Smith's faith in the success of the furnace is so strong that he has agreed with the Wheeling corporation to ask no compensation until, by a series of successful experiments, he has shown its capacity to destroy all substances proper to be offered as tests of its powers.—*Paper by Dr. Geo. Baird, at late Convention, in Toronto, of American Health Association.*

SOME HEALTH MAXIMS—By John Wesley in 1735. The air we breathe is of great consequence to our health. All pickled, smoked, salted and all high-seasoned food is unwholesome. Nothing conduces more to health than abstinence and plain food, with due labor. Coffee and tea are extremely hurtful to persons who have weak nerves. The fewer clothes any one uses by day or night, the hardier he will be. Water is the wholesomest of all drinks; it quickens the appetite and strengthens the digestion most. Exercise should never be continued to weariness; after it we should cool by degrees, otherwise we shall catch cold. Every one that would preserve health should be as clean and sweet as possible in their houses, clothes and furniture. The studious ought to have stated times for exercise, at least two or three hours a day; the one-half of this before dinner, the other before going to bed. Walking is the best exercise for those who are able to bear it. We may strengthen any weak part of the body by constant exercise. Thus, the lungs may be strengthened by loud speaking, or walking up an easy ascent.

ON BEAUTIFYING THE SKIN.—1. A healthy integument is not necessarily beautiful. Even if all requirements concerning diet, residence, atmospheric and climatic conditions, etc., are carried out, the complexion is often extremely bad. The general condition of health has no influence upon the beauty of the complexion, though it has upon the health of the skin. 2. Cleanliness is a *sine qua non* of the beauty of the complexion, though it does not play a great part in the health of the skin. 3. Water is serviceable to the skin only in moderate amounts and at moderate temperature. Very cold or warm baths, when used to excess, diminish the elasticity of the skin and its power of resistance to external irritants. 4. Distilled and so-called soft water is more suitable for washing, and less irritating than hard water. 5. The hard soda soaps are usually preferable to the soft potash soaps for toilet purposes. The quality of soaps depends upon the quality of their constituents and the thoroughness of their saponification. Good soaps must not contain free alkali, or any foreign irritating substance. The addition of moderate quantities of perfumes does not materially change the quality. 6. Simple, finely-ground powders, such as starch, magnesia, etc., are entirely innocuous; and often act as a useful protection against external irritants. 7. Frequent application of alcohol abstracts the water of the skin, makes it dry and brittle, and impairs its nutrition. This is also true of glycerine. All toilet washes containing alcohol to any considerable extent should be avoided. 8. This is true to a still greater extent of other additions to washes, such as corrosive sublimate, mineral acids, certain metallic salts, etc. 9. Camphor acts merely as a bleaching powder. This is also true of benzoic resin, sulphur flowers, and substances containing tannic acid. 10. The use of sweet-smelling oils and fats should be employed to a greater extent than is now done for toilet purposes. 11. This is particularly true with regard to the growth of the hair. The nutrition of the scalp should be increased by the rational application of fat (for example in the form of oil baths by means of the application at night of

a sponge soaked in oil upon the scalp), and the greater use of simple pomades. This should be applied to the roots of the hair rather than the shafts. 12. Substances should be avoided, or sparingly used, which abstract water from the skin and the roots of the hair.—*Dr. Heinrich Auspitz, of Vienna, in Prof. Von Ziemssen's valuable work on Diseases of the Skin.*

AVOID OPIATES.—The *Manufacturers' Gazette*, we believe, speaks candidly when it says that the increasing use of opiates and other drugs intended to either allay or excite nervous activity as an evil in this country equal to if not worse than the excessive use of intoxicating liquors. Comparatively little is said of it in public journals, and there is no such crusade against it as there is against intemperance. The insidiousness of the drug habit makes it the more dangerous. The great majority of those who begin the use of opium, morphine and chloral do it under prescription of physicians, and often without being allowed to know what they are taking until the habit is thoroughly fastened upon them. Such trifling with life and health by physicians should be made a criminal offense, and its victim or his friends should prosecute for malpractice to the full extent of the law. It is a safe rule to take no medicines from any except those known to be trustworthy; and no physician is trustworthy who refuses to inform patients of possible danger from the drugs he may prescribe. So many have been wrecked in this way that the old secrecy about the composition of medicines is out of place, at least to the extent of informing patients that they are taking nothing liable to bind them in the hopeless slavery of some drug habit.—*Scientific American.*

THE American Indians, it is said, never smoke pure tobacco. It is always three-quarters adulterated with the "Red Willow," common along the western streams, or an herb called Larb, which grows in the Rocky Mountains." "They cannot smoke tobacco as a white man can, as it is too strong for them."

THE effect of sewerage on the mortality from typhoid fever is shown in some statistics given by Dr. Adelt in a carefully prepared article on the sanitary conditions of the city of Bunzlau, which is published in Vol. XLV. of the *Vierteljahrsschrift für gerichtliche Medicin und Öffentliches Sanitätswesen* for the current year. Bunzlau contains about 10,500 inhabitants. The old part of the city has a combined system of sewerage for that part which is most densely populated, and in this part the average annual mortality from typhus and typhoid during the twenty years (1863-1883) was 0.048 per 1,000. A part of the old city and a large part of the new have sewers for rain-water, street washings, and house drainage, exclusive of excreta, which last are disposed of in privy vaults, and in this section the average annual mortality for the same period from typhus and typhoid was 0.292 per 1,000. In that part of the city without sewers the corresponding rate was 0.352, and in the vicinity of the sewage irrigation field it has been 0.363. —*Sanitary Plumber.*

CHRISTIANITY AND POPULAR EDUCATION.—Twenty-five or thirty years ago most of our public schools were under Christian influences. No attempt was made to inculcate the dogmas of the Christian religion, but the teachers were free to commend the precepts of the New Testament, in a direct, practical way, to the consciences of their pupils; and some of us remember, not without gratitude, the impressions made upon our lives in the school-room by the instructors of our early days. All this has been rapidly changing; and, contemporaneously, it is discovered that something is wrong with society. Grave dangers menace its peace; ugly evils infest its teeming populations. Pauperism is increasing. The number of those who lack either the power or the will to maintain themselves, and who are therefore thrown upon the care of the state, is growing faster than the population. The cure of this alarming evil is engaging the study of philanthropists in all our cities. Crime is increasing. The only State in the Union that carefully collects its moral statistics

brings to light some startling facts respecting the increase of crime within the past thirty years. In 1850 there was one prisoner in Massachusetts to every eight hundred and four of the population; in 1880 there was one to every four hundred and eighty-seven. The ratio of the prisoners to the whole population nearly doubled in thirty years. But it may be said that this increase is due to the rapid growth of the foreign population in Massachusetts. There would be small comfort in this explanation if it were the true one; but it is not the true one. The native criminals are increasing faster than the foreign-born criminals. In 1850 there was one native prisoner to every one thousand two hundred and sixty-seven native citizens; in 1880 there was one native prisoner to six hundred and fifteen native citizens. The ratio of native prisoners to the native population more than doubled in thirty years.—REV. DR. WASHINGTON GLADDEN, IN THE *Century Magazine.*

THERE is an unaccountable epidemic of typhoid fever raging in the new and rapidly growing district west of Central Park, New York. Physicians have from six to a dozen cases on hand at once. People have been moving to the new dwellings there in the belief that no part of the city could be so free from zymotic diseases, and are being grievously disappointed. The physicians say that they are not able to fully account for the prevalence of typhoid fever, but some of them are inclined to attribute it to the turning up of the soil by the builders. The disease is not, so far, specially fatal.—*Sanitary Plumber.*

IT is said that dull times are never known by the agents for the publishing house of George Stinson & Co., of Portland, Maine. The reason of this exceptional success is found in the fact that they always give the public that which is appreciated, and at prices that all can afford. They need many more agents in all parts of the country. Those who need profitable, respectable work should apply at once. Women do as well as men. Experience is not necessary. An agent can do a handsome business without being away from home over night. Another advantage—it costs nothing to give the business a trial, and only spare moments need be given to it. Stinson & Co. guarantee success to all who engage and follow simple directions that they give.

EDITOR'S SPECIAL CORNER.

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EDITOR'S SPECIAL CORNER.

THE cholera has now become established in many centres throughout the world—in Europe, Asia and South America,—and is continually spreading. It surrounds this continent, as it were, and so many points of infection are there, that, with the incessant and universal human intercommunication, it seems hardly possible that the United States and Canada can escape it. Readers of this JOURNAL know that our practice has been rather to calm the public mind than to alarm, but there are times when to endeavor to calm would be to deceive and mislead. It is the opinion of many who are in positions to form the most correct judgment upon the nature and course of cholera that it is now much more threatening to the Dominion than it has been for many years, and that it will be miraculous like if it does not next summer find its way into Canada. It is not too soon to consider the best means for lessening the chances of its getting into the country and preventing its spread should it find entrance.

THE greatest danger from the cholera is probably to be apprehended from South America. It is spreading gradually in Europe, and the many centres there now greatly increase the risk, through immigration. But from South

America it can gradually reach this country without a long sea voyage, which much decreases the risk. It appears to be spreading rapidly in the Argentine Confederation. On December 11th there were reported in Monte Video 15 new cases and 6 deaths. On the 10th, 7 new cases were reported to have occurred among the prisoners in the penitentiary at Mendoza, and great alarm was felt. In Rosario, 34 new cases reported and 25 deaths. In Cordova, 11 new cases and five deaths. The President of Chili has ordered that all ports be closed against vessels from Monte Video. It appears that the disease never yet has obtained a foothold in Europe that it has not spread in from one to two or four or five years to this continent. So it is very liable to come either from there or from the south of us this next season. We would urge upon all cities and towns to prepare to put their house in order.

THE dog nuisance is almost a universal one. It is simply a "disgrace to civilization" that our cities should be overrun with miserable, useless dogs, to the annoyance of almost everybody. Hydrophobia has for years been becoming more and more common. This could hardly be otherwise with the increase in the number of dogs. It is spread almost solely by dogs. Everyone concedes that probably at least three-fourths of the dogs should be destroyed. And why is it that some means are not adopted for their destruction? People have no hesitation or even delay in destroying vermin, with which indeed most dogs might be classed, so noxious are they. In England there is a society for the reform of the dog laws and the prevention of hydrophobia. In the metropolis there, during the month of November, the police captured 1,614 dogs, and of these about a dozen were said to have been suffering from rabies. Nottingham has taken the initiative among the smaller cities in an attempt to stamp out this frightful disease. There had been a serious outbreak of the disease there. What city or town in Canada will take a strong and active position in this same good work—good for the dogs as well as for human beings?

ASEPTOL, it is said, is likely to take the place of carbolic acid as an antiseptic and disinfectant. It is not irritating in solution up to ten per cent. It has a more pleasant odor than carbolic acid, is more soluble, is less poisonous and irritating, while it is equally efficacious as an antiseptic.

IN Japan, between August 28th and Sept. 5th, inclusive, 13,348 new cases of cholera were reported, with 8,472 deaths. In Tokio the wells were examined and 740 out of 1,177 were condemned as unfit for drinking purposes. Is there not now direct communication by merchant vessels between Japan and British Columbia? And how about quarantine in the latter place?

CHICAGO papers inform us that there arrived in that city recently a man who had been travelling throughout the West, selling the right to manufacture a chemical composition for milk. He said there was nothing mysterious about the manufacture: He simply did chemically what the cow did naturally, and his artificial milk contained exactly the same constituents as the milk of the cow; but these constituents, instead of being obtained from clover or hay, were bought from a chemist. It is said that on letting it stand beside other milk, "it was found that about the same quantity of cream had risen on both." Oleomargarine may now "step out." What next?

As a sign of the times, the daily *Evening Express*, of Portland, Maine, in a prospectus announcing the enlargement and improvement of the paper, states as one of its reasons for asking support of the newspaper-reading public, that "it will advocate all measures which will tend to aid the sanitary improvement of the city."

FIVE different species of bacteria have been discovered in ordinary milk. Some of them are easily killed by boiling heat, others not so easily. Ranke recommends sterilizing all milk used for children—to put it in bottles placed in water, slowly heated to boiling, and as soon as the water boils, the bottle to be closed and kept in the boiling water for about forty minutes. Thus the bacteria that are often in great numbers in cow's milk are killed, and the danger of producing diarrhoea is avoided.

"Our National Foods," manufactured by Messrs. Fish & Ireland, of Lachute, are becoming more and more appreciated, and deservedly so, for they are decidedly still more elegant and palatable than they were, experience in their manufacture leading to greater perfection. We have, on several occasions, recommended these delicious cereals—especially the desiccated wheat and rolled oats—to our readers, as most digestible, wholesale and nutritious foods, and we are pleased to learn that, although the manufacturers had, not long ago, added new machinery which doubled the capacity for producing the foods, they have now, in order to meet the greatly increased demand, commenced the construction of a new mill, which will enable them to turn out 50 barrels a day

of the foods, and this increased demand has come about without the aid of "travelers," or much advertising to "puff" the foods.

IN New York a society has been formed for the prevention of the spread of venereal diseases. This it proposes to do by the cure of those afflicted, and the establishing over them of proper sanitary surveillance. It is opposed to legislative enactments, and proposes to do its work in an unostentatious way. Possibly in this manner the *American Lancet* says, may be reached a solution of the problem of dealing with this sort of cases.

THE abolition of afternoon sessions in the schools of Hamburg has been attended, it appears, by good results in every way.

ANY of our readers who have not tried Mr. McTiernan's pure bottled milk, should try it for a month.

NOTES ON CURRENT LITERATURE.

A TEXT BOOK OF HYGIENE—A Comprehensive Treatise on the Principles and Practice of Preventive Medicine from an American standpoint, by George H. Rohé, M. D., Prof. of Hygiene, College of Physicians and Surgeons, Baltimore, U. S., etc., etc. Baltimore: Thomas and Evans. This is an excellent work of over 300 octavo pages, to which we have already drawn attention. Besides treating of air, water, food, scavenging, disinfection, sewerage, construction of houses, baths, &c., &c., in a brief, practical manner, it gives chapters on military and naval hygiene, history and prevention of epidemics of the various prevailing diseases, and vital statistics. Any one desirous of obtaining a general knowledge of the principles and practice of sanitary science will find it plainly and practically given in this book of Dr. Rohé.

INFANT FEEDING, by Mr. C. S. Redmond, is a very useful book in which the author strongly opposes, "farinaceous food," for infants, and condemns "arrowroot, tapioca, sago, white bread, pap, sop, boiley," and various other starchy poisons commonly given to "young infants." He may be congratulated on leaving the well-trodden path followed by most authors of books on infants, who give minute details how to wash and dress an infant, and furnish only cursory and unsatisfactory directions concerning their food, either early or later on in life. Mr. Redmond is not guilty of any exaggeration when he says that the articles of infant diet above enumerated are as sure poisons as strychnine, only they produce convulsions slowly instead of rapidly;

SCIENTIFIC DAIRY FARMING, by Mr. W. H. Lynch, is a practical and most useful book which should be widely read. It is the project of years of time specially devoted to the subject, by one whose previous efforts were the test to fitness, as recognized by aid voted by the Canadian Parliament. The book is the sequence of other works by the same author, such as, "Scientific Butter Making," and "Butter and Cheese," and will form a "complete guide and directory for the farmer-dairymen of Canada—a source of practical instruction and business information in dairy matters."

THE CENTURY for December is a rich number. The articles on Henry Clay and his Home and French Sculpture are highly interesting. Lincoln's life has proved much more interesting than we thought it would be to Canadian readers, and many have found it highly attractive. The "Food Question in America and Europe," by Edward Atkinson, is a valuable contribution. This is a great subject, involving the greatest of human mundane interests. The paper is suggestive of great changes, and there is a promise of other papers on the "Science of Food." There is a sensible editorial on the "Eight-hour Working Day," the writer believing such day will come, but in a natural way, not by force.

St. Nicholas for December is full of most attractive Christmas charms, for people of all ages, indeed, as well as for young people. The illustrations are unique and undiscussible, if not inimitable. The "Story of a Squash," "A Scheming Old Santa Claus," and "The Woodcock and the Sparrow," are worth the price of the magazine, and these do not constitute a fourth of it. There is a new "Jack in the Pulpit"—a changed parson, for "this time only."

IN HARPER'S WEEKLY of December 18th is a most delightful double-page illustration, "Here's a jolly Christmas load" by F. S. Church, with a poem by Julie M. Shippman. Altogether, it is decidedly one of the best things of the season. That of the 25th is filled with pleasure-giving illustrations and reading matter. One of the best things in it is a combination of reading and illustration, "The Thought Reader of Angels," by Bret Harte. A sweet thing is a double-page illustration, "Santa Claus can't say that I've forgotten anything." The Serial story, by Walters Besant, "the World went very well then," which is being given in the weekly gives rise some thrilling illustrations.

HARPER'S BAZAR for Christmas comes out in an attractive cover, with much within to attract, too. A double page illustration,

The Seed of the Woman shall bruise the Head of the Serpent," is pretty and suggestive, and would be lovely but for the large central figure representing Satan. There are a Christmas Story, illustrated, "Susie Rollin's Christmas," by E. P. Roe, and an editorial, "Christmas for Children." The paper on "Women and Men" in this number refers to "School Inspection by Women." In it we learn that Mayor Grace, of New York, has appointed two women as members of the Board of Education in that city. One of these, Mrs. Mary Nash Agnew, is the wife of the eminent surgeon and oculist, Dr. Agnew, and is the mother of eight children. While the other, Miss Grace Dodge, is a granddaughter of the late William E. Dodge, a well known philanthropist. "The great majority of teachers are women, and in many schools the majority of pupils are girls. Questions constantly arise of discipline, of propriety, of sanitary regulation, on which their opinion is essential." "I have myself known great improprieties among unruly pupils and grievous sanitary evils to go unreported for a long time, simply from the inseparable unwillingness of young girls to discuss them with a committee-man or a superintendent perhaps not very much older than themselves. Had there been a woman to whom to report these troubles, the cases would have been soon settled."

THE CENTURY DICTIONARY of the English language is a projected work of which Professor William D. Whitney, of Yale College, is editor-in-chief. It is the purpose to make a more comprehensive work than has yet appeared in popular form, to include in addition to a very full collection of words in all departments of the language, all technical phrases, not self-explaining, in law, the sciences, mechanical arts, etc.

THE *British Medical Journal* under the able editorship of Mr. Ernest Hart, manifests much interest in preventive medicine. In a "retrospect and prospect" relating to the British Medical Association and the Journal, in the issue of Dec. 11 we find the following: "Of the Journal itself we need say but a few words; as certain figures which are referred to in another column indicate, and as the continual growth in the size, and severity in the sifting of contents, sufficiently testify the course of the *British Medical Journal* during the past year has been one of uninterrupted development. The circulation of the *Journal*, as now guaranteed, is phenomenal and without precedent, and implies that at least every other member of the profession actually subscribes for a copy." The average weekly issue is now 13,300 copies.

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 once or Military Bounty warrants.

TIMBER.—Homestead settlers, whose land is destitute 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 fool 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.

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