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## HYGIENE OF THE AGED.

BY L. H. WATSON, M.D., IN POPULAR SCIENCE  
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Different epochs in life are marked by the frequency or infrequency of certain morbid phenomena constituting that departure from the normal standard of health which we denominate disease.

What is life? is the unanswerable question the human race has ever sought to solve. Bichat called it "the sum of the functions by which death is resisted." Physiologists of the present day offer little more that is satisfactory in their definitions, calling it "the aggregate of the phenomena peculiar to living organisms." The inscrutable mystery which surrounds the principle of vitality renders any attempt at definition illogical and unsatisfactory. We have to deal with the phenomena of life, and the functions through which these phenomena are manifested. In the child we have an exuberance of life. Manhood is the period of repose; waste and repair seem to neutralize each other; and calmness, deliberation, and quietude prevail.

With old age comes disturbance, waste without repair, destruction without building up, action without reaction, decay and death. These phases of animal life are constantly repeating themselves. In discussing the diseases of old age, we have to deal with the phenomena of life, the perversion of functions which have counterbalanced each other. The prime of manhood and stability is passed; internal resistance now fails to maintain itself against external force. Nutritive action does not respond to the demand to renew effete material. The equilibrium being destroyed, decay and the products of decomposition become the most important factors in the study of the diseases which now threaten to disintegrate this hitherto self-sustaining system.

It will easily be seen that the diseases which disturb the formerly evenly balanced organism tend toward what pathologists call destructive metamorphosis. Blood-changes, tissue-changes, and secretory changes, are subjecting us to constantly varying standards of health. How to maintain the equipoise as long as possible, and prevent the too rapid decline of the vital forces, as well as to suggest measures—when care and forethought can ward off the blow—is the province of the thoughtful medical man.

Threescore years and ten should certainly be reached by most of those who attain adult age, provided no inherited taint weakens the vital forces. It is difficult to determine the exact period of life at which the decline commences. In fact, there can be no absolute standard from which we can predict with unvarying certainty the gradual failure of the physical powers. Some seem to inherit a vitality which almost defies the ravages of time; but, although they are apparently in the full vigor of life, close scrutiny rarely fails to detect the fact that the scale is tipping downward. We do not grow old in a night, although we often make the remark that So-and-so has grown ten years older since the occurrence of some great grief, or some disastrous reverse in business. The eye-sight gets poorer, the hair and beard greyer and thinner; the form is more bent, the walk more uncertain the *arcus senilis* appears in a cornea. After all, this is not old age; these are all warnings, but the heart is still warm, the eye still bright, the muscles still firm. The world looks as inviting as it did in early manhood or womanhood—a little larger print to read, a smoother road to walk on, a few more flannels at night, and a little less labor during the day, with perhaps a greater disposition for quiet, a greater fondness for home-life, and a disinclination to encourage the enthusiasms which time and experience have so often proved to them to be illusive.

We are to study the physiological and pathological conditions arising during this epoch of life. Many of these are characteristic, and do not earlier manifest themselves. We have many works upon the diseases of children and adult life, but almost none pertaining to the diseases incident to age. And yet they are peculiar. The pneumonia of a child is not the pneumonia of an aged person. Slight ailments, unobserved or disregarded in the adult, become positive disease in advanced life. Our acute fevers, inflammations, fluxes, etc., are not met with among the aged.

Congestions, chronic inflammations, tumors of the brain, paralysis, rupture of blood-vessels, enlargement of the heart, chronic bronchial affections, dropsical effusions, indigestion, diseases of kidneys and bladder, especially the latter, cancers, etc., are what the physician is most often called upon to prescribe for in old people. Aside from actual disease, the conduct of the life of elderly persons is to be studied and observed. Ordinarily old age brings with it, or should, a certain degree of leisure and immunity from the distressing anxieties which vex and worry the lives of men actively engaged in business. The danger of sickness from exposure, as far as the *liability* to exposure is concerned, and the danger arising from accidents are lessened; old people are careful, and warily thrust themselves into danger. Calmness, quietness, and a regular habit of life, succeed to confusion, activity, and an indulgent and irregular method of living. Life wanes, the descent is easy and gradual, a peg is lost here and a prop there, the sympathies become blunted, the intellect chilled, the senses lose their acuteness, and "the play is played out." What more delightful spectacle than an aged person in full possession of all his faculties, enjoying life with the zest of manhood's prime, appreciative of the pleasures of the table, the society of friends, the charm of music, and the intellectual feast that a good book presents to him!

Hufeland, in his "Art of prolonging life," advises old people to eat sparingly. There is a great difference between a "gourmet" or "gourmand" and a glutton. The pleasures of eating dependent upon the sense of taste, when eye-sight and hearing are daily becoming more and more impaired, the possession of leisure in which to cultivate their gastronomic talents, as well as the quiet necessary for the performance of the digestive act, combined with the necessity for careful

nourishment, prohibit old people from yielding to any mistaken notion that, because they are old, food is of little consequence to them, and that the ordinary rules governing assimilation and nutrition do not hold in their case.

A great deal of the immunity of old people from sickness will depend upon their power of digestion and assimilation.

Food and drink should be partaken of sparingly, and at proper intervals: an overloaded stomach, or a stomach filled with badly cooked food, or food taken at an improper time, will occasion much distress to an old person. At the same time, it may lay the foundation for disease which will cut short a hitherto robust old age.

If actual pain and danger do not follow this gorging, it will probably entail loss of sleep, and consequent exhaustion, all of which we seek to shield the old from, as we do the child.

In the normal act of digestion, the consciousness of that act is wanting. Most persons engaged in active life fail to give the proper amount of time to eating and digestion; for this natural and physiological action to be performed with the ease and perfection of detail which Nature, in her arrangement of the means of such an end, intended, deliberation must accompany the eating, and rest of mind and body the digestion of food. Haste when eating, and activity, bodily or mental, during the digestive process, are fatal to the object for which food is taken. It is only in old age (I refer particularly to America) now, that that leisure which is indispensable to the proper performance of digestion is obtained, and yet, when, after years of toil, we perchance through the inheritance of a resisting power which has enabled us to arrive at sixty years of age, and upward, find the *time* to rest, our teeth are gone, our stomach, from constant action, is unable to act with that promptness and energy which early in life enabled us to digest food on the run, as it were. Then the physician is called upon to encourage, stimulate, and prop up by his art, Nature's waning forces.

The manifestations of dyspepsia in the aged do not vary materially from those of adults, but the causes are somewhat different; the treatment is conceived on a plan based on the age and life-long habits of the patient. An aged stomach is not an active stomach. Atony characterizes its functional action.

Acid digestion, gastic catarrh, and flatulency, are the leading forms of dyspepsia of the aged. Old people have not in general what we call a healthy appetite. One well-known writer has said that they eat because no other interesting occupation is offered their senses. This may be true for the *very* aged, and it is undoubtedly a fact that most people of eighty years and upward find as much pleasure in eating as in almost any other occupation left them. The appetite is often lost when no disease can be detected. There is loss of the sense of taste, and even several days without food does not provoke hunger. In another form, the breath is somewhat offensive, the tongue furred, when in the former case it is clean.

Fisher tells us that, if this continues, it leads to senile marasmus or atrophy of the aged. Some old people suffer from a difficulty in swallowing, which seems to be the result of a partial paralysis of the throat; the pharynx does not respond to the stimulus of food as it passes over it. Solids pass more freely than liquids. Deglutition is more difficult in an upright than in a horizontal position. Fisher speaks of the case of a man sixty years of age who swallowed soft and mucilaginous preparations with difficulty, but warm food, salty or irritating substances gave little trouble. Day has noticed the same fact, and observes that irritating or highly seasoned foods were the only ones swallowed easily. Canstatt thinks that the abuse of tea and coffee leads to the development of this state, which he says is very common in Holland.

Old people are subject to accumulations of gas in the intestinal tract, which not only occasion distress through over-distention of the stomach, causing pressure upward upon the diaphragm, and consequent interference with the heart's action, especially when lying down, but also from its passage downward into the bowels.

Diarrhœa is one of the consequences of dyspepsia, and it is not unusual to find old people who have several movements of the bowels daily, without any of the exhaustion attendant upon ordinary diarrhœas. Another remarkable fact is, that we find, even in very old people, a diarrhœa which would naturally seem to weaken and prostrate even a strong man, but the effects of which are not noticed until suddenly we learn that death has taken place. Overfeeding is a frequent cause of these senile diarrhœas. The pres-

sure of undigested food in the intestinal canal is followed by a sudden purging, without pain, but exceedingly rebellious and difficult to conquer. Before treating of the methods of cure for dyspepsia and its accompaniments, such as loss of appetite, difficulty in swallowing, flatulence, constipation, etc., there remains to be studied the foods suitable for old people, the quantity to be eaten, and the time for eating.

It would be useless to present a dietary list to which one should be strictly confined. A long life of indulgence in eating and drinking, as well as diversity of taste, would preclude any attempt at regulating the diet of healthy elderly people. To those who have arrived at an advanced age without any form of indigestion, I would suggest a cup of coffee and a slice of dry toast before rising in the morning. The reason this should be served while one is yet in bed is, that very old people, even when perfectly well, are often subject to a slight faintness and a nervous tremour before rising, and the exertion necessary to dress often leaves them too faint to eat. It takes but a few moments to prepare it, and, as old people like to rise early, it is usually an hour or two before the family are prepared for the morning meal.

A light luncheon at noon, and dinner not later than five or six o'clock. If the dinner is taken at noon, and supper at six o'clock, it will be found to suit the habits of the aged better in one way, as old people love to retire early. In most countries, among civilized nations, the practice of crowding three meals into the twelve hours or more of daylight has grown to be such a habit that it seems a heresy to suggest eating when hungry, day or night; nevertheless, I would suggest to the healthy and not *too* aged person to forfeit the "bugbear" of "not eating before retiring," which compels many a person—otherwise disposed—to pass ten or twelve hours with the stomach in a collapsed condition, while during the other twelve it is constantly distended with food. I would say to the aged, eat sparingly and eat frequently. Let your food be light, and easily digestible, but eat when hungry, whether it be twelve o'clock at noon or twelve o'clock at night. Aged people are light sleepers, and often wake up during the night with an intense craving for food, and a good plan is to have a cup of bouillon and a cracker on a stand near the bed. The broth can be readily heated by an alcohol lamp in five minutes.

This simple habit will often procure hours of uninterrupted slumber, which would otherwise be passed in restless longing for daylight and breakfast.

I have said, eat sparingly and frequently. eat sparingly, because the digestive action is not so strong as in earlier life, nor is the demand for large quantities of food so urgent. Eat frequently, for several reasons. The digestive organs are not then burdened with large quantities of food, and dispose of it with greater ease. A moderate amount of food in the stomach gives a feeling of comfort and quiet to a person whose sole occupation may be a little reading or knitting, or even nothing at all, when extreme age is reached.

The kind of food to be eaten varies with the condition: if the old person needs building up, the more nutritive foods, that is, those containing the greatest amount of nourishment to a given volume, the greatest proportion of assimilative matter; if, on the contrary, it is necessary to encourage the digestive action, we select stimulating food. In this connection I shall quote from an eminent French authority: "As age advances, not only is one able to bear with impunity food which is piquant, pungent, and more exciting, but the use of these latter foods is necessary to the physiological conditions acquired by the 'organs of digestion.'

"This alimentation becomes especially necessary to individuals whom residence in great cities, sedentary life, and confining work separate in a great measure from the natural conditions of life, found in free air and bodily exercise." With regard to the use of wines or liquor by the aged, I would say, if there is a proper time in the life of a man when he should use stimulating drinks, that time is when he has arrived at a good old age.

A glass of sherry or burgundy during dinner often aids digestion wonderfully. When the tongue is pale, and the desire for food absent, a "nip" of brandy will stimulate the stomach into secreting properly. This condition of atony or sluggishness of action is not at all unusual. A glass of milk-punch at night often goes, as a very good and exceedingly temperate old lady once told me, "to the right spot." Coffee is a natural drink for the aged. Its mildly-stimulating, soothing qualities directly indicate it as a beverage for the old. Gasparin tells us that "coffee has the property of rendering the elements of the body more stable, and thus, if not affording nourishment, it diminishes the waste going on."

The origin of many dyspepsias in the old will be found in the lack of the proper means for the complete mastication of their food. The loss of their teeth, and the neglect to replace that loss with artificial ones until a dyspepsia is established, will often entail a long train of ills. A set of false teeth will sometimes remove dyspeptic troubles of long standing. The teeth with metal plates (platinum or gold), although more expensive than rubber or celluloid, are to be preferred. Mastication must be well performed even if the food is not very solid. The one golden rule is to eat slowly.

Some old people have idiosyncrasies about certain foods, which must not be overlooked. Milk is one of the most easily digested of foods, on account of its various constituents, and can be taken when nothing else is permissible. Eggs, soft-boiled or raw, are easily digested. Oysters, fish, and lamb follow in about the order named. Beef, mutton, and fowls, and wheaten bread, occupy about the same time in digestion. I have met with two forms of dyspepsia more frequently than any others in prescribing for old people—the acid form, where there is an excess of acid found in the stomach, and the atonic form, where there is sluggish action of the mucous membrane of the stomach, and the time for digestion is greatly lengthened. In acid dyspepsia, Dr. Ringer recommends the use of glycerine, stating that an old gentleman upon learning that glycerine prevented milk from turning sour, concluded that it would be just the thing to prevent "himself from turning sour." I have used glycerine combined with charcoal with considerable success in remedying this form of dyspepsia.

Dilute nitro-muriatic acid, a half-teaspoonful in a claret-glass of water, immediately after meals, breaking up the weaker acids and affording the natural acids of the stomach, is an exceedingly useful remedy. The atonic form of dyspepsia, combined with loss of appetite, requires quite a different treatment. The stomach is feeble and needs stimulating; two or three grains of capsicum with one half-grain of aloes in a capsule will excite it to action; the constipation which often accompanies this form will be obviated. When there are accumulations of gas, charcoal tablets an hour or two after meals generally give great relief; but it is not a good plan to keep up their use permanently, as it tends somewhat toward constipation. Electricity is the great tonic for those debilitated, relaxed stomachs. The

sympathetic nervous system is rehabilitated, and the most marvelous effects are often produced. The apathetic condition of the intestinal track is dissipated, the liver pours out its bile, and life seems to move on again. Alkalies taken before meals stimulate the flow of the gastric juices. Slight fatigue often spoils the appetite, and lowers the digestive power. Nothing so securely revives this as a glass of wine before meals. While small quantities of alcohol aid digestion, larger quantities retard it and encourage gastric catarrh. The quantity of wine or brandy must be small when taken for this purpose.

#### HYGIENE IN RELATION TO THE PRIVATE FAMILY.

BY R. J. HICKS, M.D., CASANOVA, VA. FROM THE SANITARY MONITOR.

Should I tell you that consumption was largely a preventable disease, it would come as a startling announcement; for it has been accepted as an hereditary disease the world over. Yet of every one hundred who die of it in the city of New York, only twenty-six per cent. of it can be traced to hereditary influences. *Seventy-four* per cent. are charged to damp air, insufficient food, poverty and filth. It is an admitted fact, abundantly proved by statistics, "that dampness of soil is an important cause of tuberculosis, to the population living on that soil, and that the improvement produced by draining the subsoil, in lessening the amount of consumption is marked." Are we not individually responsible for the drainage of our locations?

But however developed, it acquires a capacity for further transmission, and thus in a geometrical ratio adds annually to the ever increasing harvest of suffering and death. I would like to impress upon the public the great fact that tubercle is not a new formation, dependent upon hereditary taint. It is merely an alteration of normal nutrition; a degraded and degenerated tissue, frequently resulting from neglect of trivial complaints in connection with a disregard of ordinary sanitation.

Since living in Fauquier, four members out of five in an Irish family have died of consumption in rapid succession. As fast as one died another fell a victim to it. I am assured that in Ireland this disease was unknown to this family. The poor old mother asked me in the saddest possible

manner to examine her premises and tell her whether the house had killed her poor children. All had slept in a garret room with an end window only, and without a fire-place. The staircase to this room, which was tightly plastered, led from the room below, in which the family congregated and lived, along which had ascended all the foul air that had served the purpose of respiration to pollute the supply of those who slept in this low-pitched and ill-ventilated room. To aggravate the matter, the house was located in a bottom, on a cold, damp, clay soil. The old man, having considerable means, by my advice changed his location to a hill, on which he built a comfortable house and carried with him his son, the only remaining child, and, according to advice, put him in a comfortable and well ventilated room, with a fire in an open fire-place night and morning during all damp weather. Though threatened with the same disease, this young man is now the picture of health and the father of a family.

The idea that because the parent died of consumption, therefore the offspring should meet with the same fate, should be abandoned. This depends upon whether sanitary laws are understood and regarded. "Diseased tendencies are for a generation or two; the laws of health are for a thousand years," and can therefore completely eradicate the seeds of disease. It may be suggested by some of our late investigators—in the case just mentioned—that a bacillus floated from the lungs of the diseased to those of the healthy above, formed a nidus there and began the work of destruction. But without favorable surroundings in my opinion this bacillus would have perished.

In consumption it is the weakened nutritive system that is inherited, just as it is the weakened will and the craving appetite for alcohol that is inherited by the drunkard.

This tendency of medical men to consider more closely the conditions of disease promises the greatest possible benefit to mankind.

I am glad to be able to say that these unmistakable lessons teach us that no inexorable decree like the sword of Damocles hangs over the heads of the offspring of consumptives, condemning them to the fate of their fathers; that breathing and exercising in the pure air, bathing in Heaven's health-giving light, aided by nutritious diet, a milder climate on a warmer and dryer soil if necessary, may and does furnish a strong

and almost sure means of escape from this dread disease that is said to claim for its victims, in some parts of our country, more than half of those who die between the ages of fifteen and thirty-five.

Of four brothets within the limits of my practice, three died in rapid succession of consumption. They were tradesmen, and carried on their trade in a close, badly ventilated store, confining themselves strictly and successfully to their business, each taking it up as the previous one died. The fourth, induced by the pecuniary success of the older ones, endeavored to continue the succession, but his health soon broke down, and consumption threatened him. Being frightened by the fatality connected with the business, he regarded my advice, abandoned merchandise, went to farming, and is now—twelve years since—healthy and well.

I now turn to another class of diseases, which I premise with the remark that he is not always happiest who would seem most entitled to it—that health is better than wealth. Its sacrifice in its accumulation too often leaves an embittered existence. The poor man who travels the path of toil, on his simple and frugal fare frequently looks with a jealous eye upon his more fortunate neighbor, who rolls in wealth and luxury. But it may not occur to him that indolence, that luxurious living, that wealth, may be laying the foundations for diseases of which his hardy life, his industrious habits and simple fare have completely exempted him.

A satiated stomach, an over-burdened liver, an abused kidney, demand relief, or else we may expect them to show their resentment of offended laws by dyspepsia, by gout in some of its protean forms, or perhaps by its kindred and more fatal disease, Bright's disease of the kidney.

Neuralgia has been termed very properly the prayer of the nerve for nutriment. The pain of gout may be termed the groan of an over-burdened liver. Alcoholism, dyspepsia, gout, as well as Bright's disease, are the logical sequences of either our habits or those of our ancestors, and may therefore be classed as preventable and subject to the laws of sanitary reform; but reform within our own doors, at our own tables and sideboards.

Let the drunkard drink no more; let him reform before his will power is gone, because alcohol habitually and excessively indulged in surely leads to the delusion that reform is

always possible, but almost never effected. Let him realize that he is under a double responsibility: First, to himself; secondly, to the children that come after him; that the supremacy of his spiritual nature subordinated to a base appetite may appear as an epilepsy or insanity in his offspring, cursing them for more than one generation with mental enfeeblement and moral decrepitude, and when not reducing its victims to a state of pitiful imbecility, laying the foundation of incurable disease in some one or more of the great organs of the body.

It is not only what we drink, but what we eat and how we live that has an important bearing on our health. Not only the nature of our food and its bearing on our health, but the principles of digestion should be more generally understood. It is a simple process—the preparation of the food for the wants of the body. It should be kept in mind that its object is to repair the waste of tissues and furnish heat to the body. It is therefore very properly divided into materials suitable for this two-fold purpose. The materials are classed as hydro-carbons and albuminoids. The former is best represented by the fats and sugar; the latter by muscles and the white of eggs. While the line of demarkation is not perfect, the former supplies, as remarked, heat to the human machine, and the latter is used in repairing tissue. The former is emulsionized and otherwise so changed by the juices of certain organs as to prepare them for absorption and to pass out of the body by a process of oxidation or combustion, in which heat is evolved.

The latter are digested or broken up by secretions from the glands of the mouth and stomach, then absorbed and carried to the liver, where part is converted, by a chemical process, into bile to be further used in the human economy, and first converted into tissue to supply waste. While the products of hydro-carbons are eliminated by a process of oxidation through the lungs, the debris of the latter find their escape through the kidneys. It is therefore evident that if primary digestion be good, abundant work is imposed on the liver, resulting in great physical vigor, provided this organ is capable of properly disposing of its supplies. But neither the human machine nor any of its parts can be kept at high pressure continuously. Youthful vigor, especially growth, manages to bear up under too free indul-

gence—excessive consumption of rich nitrogenous food; but in that decline of life when all the organs are not so capable of the work previously performed, the burden is felt, and if not lightened, disorders of the liver result, just as the Englishman even in the vigor of manhood falls a victim to similar complaints in India, from pertinaciously adhering to a diet adapted to the cool climate of England.

So long as this organ is equal to its task, and all excess is eliminated from the system, health is maintained. Nay, more, the body during this period is in a state of excessive health—a pampered condition. The blood is all the time laden with the richest of products; but in that decline just alluded to, if no allowance is made for it, the abnormal is substituted for the normal.

Urea, a natural product, unirritating in its character, breaks down into the less oxidizable substance—uric acid, a substance irritating in its character and foreign to the body. In its elimination from the city, the inflammation it develops in the joints is gout. In the kidneys it may be nephritis; continuous irritation, falling short of inflammation, may produce Bright's disease, or, as Dr. George Johnson better expresses the idea: "Renal degeneration is a consequence of long-continued elimination of products of faulty digestion through the kidneys."

No organ can continue sound and be the constant carrier of morbid products. But, paradoxical as it may seem, an individual with an hereditary tendency to gout may be saved by indigestion, as was the case with the clergyman who had dyspepsia all his life and thanked God for it, while all his brothers died of gout. This is explained by the fact that the liver is saved from excessive labor by the revolt of the stomach. The joints and kidneys are saved by the relieved liver. Centuries ago observations taught Galen that an intimate connection existed between these two organs. Clinical experience frequently precedes pathological research.

Bearing the above facts in mind, it is easy to understand why gout and Bright's disease are the special complaints of the rich and the luxurious; and being the result of excessive indulgence and immoderate habits, may be classed as preventable diseases.

Moderation in eating and drinking—eating for the purpose of supplying the wants of the system, and not for the pleasure of

the appetite, not through gluttony—eating to live, and not living to eat, will save an old age from many a pain and ache, and departing like ripe fruit falling into the lap of mother earth, crown the end with an euthanasia.

Let therefore the threatened victims of these diseases know in time that their safety is in their own hands, and that the responsibility cannot be wholly shifted from their shoulders to those of their ancestors. Let them forsake their fine liquors and diminish their tempting cuisine. Let them adopt a nutritious but simple diet. Let them learn a little self-denial and a little self-control. But how much better, how much safer that indolent habits, luxurious living, excessive indulgence at the table and the wine cup should never be begun. So much for our habits.

I turn to another feature of my subject. Another source of disease is found in the location of the house entirely independent of our mode of living. A neighbor of mine attracted by the beauty and romance of a cliff on the borders of a pond, selected it for the location of his house. I advised him against it, asserting that if his family could escape malarial fever living there, then malarial fever was an impossible thing in that section. Wise in his own conceit, my advice was disregarded. The result was, that all the members of the family—which was large—save one, were prostrated with fever, which did not leave the house during the whole Summer.

Another farmer of moderate means purchased a small farm within the limits of my practice. On account of his limited means, rather than build a house, he went into a small cabin, located rather beneath the surrounding level. The water therefore converging in all directions towards it, completely saturated the soil upon which it stood during all the wet seasons, which of course made damp the superincumbent air, as the floor was in immediate proximity to the ground. Within the last two years two members of this family have had several attacks of pneumonia, two have had bronchitis. The mother of the family has had acute rheumatism of the severest type, and all have had catarrhs of varying degrees of severity.

The intelligent location of the dwelling house is a matter both of economy and hygienic importance. It should not only be



elevated, but should have an outfall of water in all directions. If practicable, a dry, sandy soil should be preferred to a cold clay one.

Some years ago scarlet fever was introduced into my family from a negro family living in an adjoining cabin. Not one member of this family escaped. It was first contracted by the son of a laboring white man, and from him to a little nephew staying with me. Thinking its communication to my children inevitable, I made no effort to exclude them from the little boy that had it. He also had a brother who had been sleeping with him at the time. Neither this little fellow nor any of my children contracted it, though in the same room continually.

I ascribe their escape to the excellent sanitary condition of the premises. The house stood upon a hill, with an outfall of water in all directions. It was built on a basement eight feet from the ground, with large, airy, high-pitched rooms, ventilated and lighted with two large windows, conditions unfavorable to the propagation of disease.

Pure air is antiseptic. Expose vaccine matter to it and in a short while it is worthless. So with most poisons. But impure air is the home of noxious germs. . . . Proper ventilation is within the reach of all. There is no excuse for its neglect. Yet this sanitary law is frequently violated in public and private houses, especially in public schools, where children are crowded together—a fact worthy of consideration on the part of public school supervisors.

It is not only in a change of its component parts that air become unsafe, but in a way that escapes observation, and that the minutest chemical analysis and the greatest powers of the microscope cannot as yet detect. Just as we smell the perfume of the rose and all fragrant flowers, and the essence of that perfume is too subtle for our chemistry or microscope, so diseased germs float in the air, eluding our minutest scrutiny. But as we know from where the fragrant odor emanates, so we know the sources of many diseases. As we can destroy the odor by extirpating the flowers, so we may destroy the germs of disease by removing those substances in which we know they exist. No scientific process has made tangible the germs of malarial fever, but we know that it exists in swamp mud, and that by drainage these germs disappear and unhealthy sections become healthy. Disinfection will destroy

many others. It is well to know that cold will not, but that intense heat will destroy it. Heat is the only perfect disinfectant. It only can destroy immediately the diseased germs of infected clothing. Fire is the great refiner, at last. The natural abode of deadly poisons is in filth, in disgusting and offensive animal and vegetable decomposition. But in this way they give us notice of their presence, just as the rattle of the rattlesnake tells us we are in danger. Forewarned, forearmed.

But the house should not only be well located, not only well ventilated, but light and cheerful. Light is essential to all living beings. It is tonic in its influence, and of material aid in convalescence from disease.

In the dark alleys and in the slums and cellars diseases always make their first appearance, there show themselves in their most virulent forms, and there linger the longest. Plants instinctively turn their heads towards the light, without which they are pale and sickly. The human inmate of the dark room is not unlike the plant. Malarial poisons lose their power in the sunlight. They love not the light because their deeds are evil.

It is important to know that old rubbish is one of the most potent agents in the production of low, or zymotic diseases. In earth from old dwellings may lurk for years fever germs, only requiring to be upturned and exposed to begin their work of destruction.

During the year 1883 I visited a family, every member of which had been stricken down with typhoid fever, and one, a most promising daughter just budding into womanhood, died. This outbreak of fever was caused by levelling up the inequalities around a new home with excavated earth from an old building which was being removed for the purpose of digging a cellar. The germs of this fatal disease were liberated by the upturning and exposure of this filthy soil.

The loss in labor, in medical bills, in drug bills, in nursing, is great; but what are they in comparison with the loss of a loving member of one's family?

Now, again, in relation to each individual, nothing is of more importance than pure water. It is essential to all things living, animal or vegetable. But it frequently becomes the vehicle of much that is deleterious to health. Last year I attended a family for diphtheria. Of five children attacked,

two died of laryngeal exudation. Believing that this disease had a local origin, I asked an examination of the premises. From all appearances, policing had not been known on the place. Uncleanliness was manifest everywhere. But the well was on the lower side of the porch, and in dry seasons was not more than eight feet from the surface, with filth-sodden earth all around.

This water, which the family had been using, was filled with animalculæ obvious to the naked eye.

There was no evidence of any importation of the disease, nor did it pass beyond the limits of this family. It must have originated here, and when material for it was exhausted it ceased, and the latter cases were milder and more manageable than the first. The use of this well was forbidden as soon as I was called to the cases.

During the same year a little girl sickened with typhoid fever. Here the premises were again examined. No obvious cause of the disease was discovered. After her recovery another was stricken down. Another investigation disclosed the fact that that well, while not previously polluted sufficiently to be obvious to the senses, had now become offensive from filthy and decomposing matters, still so gradually as not to be noticed by the family. The well was abandoned, and no other case occurred in the family or vicinity.

Last summer, while visiting one of the finest farms of that beautiful section known as Upper Fauquier, I was impressed by the extensive stables forming a semicircle on the rising ground around a beautiful spring. The row of buildings was terminated by the houses of the hostlers and servants. Nothing could be more convenient; but the great oversight, the great defect, was the sanitary arrangement. The drainage was of necessity all directed towards the spring.

Without knowing anything of the sanitary history of the place, I remarked to the manager that I had never seen an arrangement more convenient, but better adapted to the development of typhoid fever. He replied that as far back as he knew anything about the locality, those houses had not been exempt any whole year from typhoid fever, and that one of their men had died in the house adjoining the stables last year. Such violations of sanitary law as this is what gives the mountain country the reputation for typhoid fever which it has. It is no

fault of the country, I protest, but the fault of the people.

On another occasion, in a large family of twelve, six had typhoid fever from sitting and eating in an outhouse under which was a cellar filled with filthy, stagnant water. The cellar had been dug for potatoes, and had been forgotten. Desertion of the house was followed by a subsidence of the disease.

Clinical observation, therefore, teaches me that whether the causes of these diseases be living germs or not, whether propagated within the body or without the body, in a practical point of view it is of no consequence so far as prevention is concerned. The fact that is prominent, standing out in bold relief, is that in decaying animal matter certainly—perhaps also in vegetable—is to be found the proper dwelling place of zymotic diseases, and that when these are removed or destroyed, the germs go along with them to destruction.

It is, therefore, very satisfactory for us to know under what conditions they live and thrive.

Drainage, proper policing and efficient quarantine will eventually stamp out the germs of both yellow fever and cholera, as well as most of others. But the substratum of the work *must, after all, rest on the single family.*

The manner in which diseased germs survive is not only remarkable, but is curious. Thus they have polluted water. This water has been drunk by cows, and thus their milk has been contaminated. This milk used by individuals has produced typhoid fever, as was proved in the most conclusive manner in the English towns of Wolverhampton, Islington and others.

The germs of zymotic disease stick to old clothes, hang about the wall, remain in rubbish, and in some mysterious manner seem actually to be generated by filth. We can very positively say that the proper abode of health is not in the midst of disgusting odors; that she scorns a home amid filth and uncleanliness; that cleanliness, physical and moral, is her natural abode.

If those only who violated sanitary laws suffered like retributive justice. But when infectious diseases are once started into existence they become centres of propagation, and, like the widening circles formed by casting a stone into the water, they involve all within reach—the innocent as well as the guilty. Therefore, each indi-

vidual, just as well as the corporation, has resting upon him a great responsibility. It is his duty to know what is a sanitary nuisance, and to see that it is removed; to see that infectious diseases, such as scarlet fever and diphtheria, are isolated; that infected rooms are purified; that infected clothing and other articles are destroyed. He has not completed the full measure of his duty until, after doing what he could individually in calling the attention of the public authorities to all sanitary nuisances. If he needs instruction, let him apply to his family physician, who should be the health officer of each family in which he practices, whose intelligence and good sense should be such as to command the respect and confidence of his patrons, and whose advice should therefore be regarded.

#### WHAT SHALL BE DONE WITH THE SEWAGE?

BY EDWARD ORTON, LL.D., PRES'T OHIO STATE SANITARY ASSOCIATION, STATE GEOLOGIST, ETC., IN "SANITARIAN" FOR MAY, 1885.

I. "What *shall* be done with the sewage?" Its meaning, as I understand it, would not be materially changed if it were made to read, "What *ought* to be done with the sewage?" But the question would certainly be no easier to answer in this form. It would still transcend the wisdom of the nineteenth century, not so much on the theoretical as on the practical side. If, however, it were thrown into the negative form, some advance might be made. I believe we are in a position to make good a few points of vital interest in answer to the question—

II. What *ought not* to be done with the sewage? By such replies the field will at least be somewhat narrowed.

1. The sewage ought *not*, in its crude and gross form, to be emptied into our rivers. No dilution with drainage-water or storm-water should reconcile us to this abominable and dangerous misuse of our natural drainage streams.

Water-carriage for sewage is as old as civilization, but its present enormous extension dates back only twenty or thirty years. The system, as it stands to-day, is largely the result of the sanitary awakening that England has experienced in the latter half of the nineteenth century. The various steps taken seem to have come in the following order:

The dangerous character of city wells was amply demonstrated in the cholera epidemic that laid so heavy a hand on London and other English towns about the beginning of the period above named, and the absolute necessity of a pure, public water-supply was clearly recognized.

The necessity of efficient drainage as a factor of public health was made apparent. The sewers which should secure the latter object would also be a necessary concomitant of the new water-supply. Two great objects were thus united under one system, viz., ground-water is lowered and removed, and potable and safe water is introduced. One other object is dear to sanitary science, viz., the removal of the products of waste, festering in cesspools and vaults. Why not turn these also into the new drainage channels? The work is done, the circle is completed, and the problem of the public health seems happily solved. Great is the jubilation. Pure water is introduced into the towns, ground-water is lowered and withdrawn, and the sewage is promptly and efficiently removed. What more can be asked? Great Britain makes haste to compel by law the swarming populations of her thousand towns to avail themselves of the protection furnished by the new system, and especially of that part of the system which pertains to the removal of the sewage.

For a time all goes well. Pure water and efficient drainage are in themselves priceless factors in the health of a community. The sewers send out their branches, like the veins in the human body, to gather in the waste from every nook and corner of the regenerated town. Vaults are abolished, wells are discarded. The sewers pour their black and noisome floods with ever-increasing volume into rivulet and river. But a new evil appears, more threatening than the old. The waters of these streams, once pure and potable, are turned, as by a Pharaoh's plague, into a poisonous current from which all living things fly, as if from a furnace-blast—all living things except those dark and mysterious broods that revel in corruption and decay.

But it is from these streams that the towns below us must derive their water-supply. The excremental origin of the alarming change that has been wrought in them cannot be concealed: "Drink of them, lave in them, then if you can."

Our jubilation was premature. The pro-

blem is not solved after all. There is no supply of water available to the town but the river, and our system is hopelessly polluting the river, polluting it beyond the possibility of correction. The Government is again appealed to, and the same towns that were compelled by law a score of years ago to deliver their sewage to the rivers, are now forbidden under more stringent penalties to so dispose of it.

Sewage that has been lost in a flood of drainage and storm-water must be recovered by chemical precipitation or by downward intermittent infiltration through the soil, so that the effluent water shall be at least clarified. The resources of the chemist and the engineer have been taxed to provide proper means for accomplishing this work. The earlier experiments were undertaken in the hope, and, I may say, in the confident expectation, that value enough would be found in the recovered sewage and the reagents employed, to provide for the expense of the process and leave a margin of profit. Not only is the realization of this hope still deferred, but the impossibility of attaining such a result seems to have been almost demonstrated. The purification of the sewage, in other words, cannot be made to pay for itself, and the expense, whether great or small, must be added to our municipal burdens.

I am aware that we have not yet reached the end of these investigations and inventions, but I see no good reason to expect results very different from those already reached. It is furthermore to be distinctly borne in mind that water is not necessarily purified when it is clarified. The clearest water may be a source of the gravest danger.

The *sewage-farms* by which the process of intermittent filtration is accomplished, and by which the sewage is, in part at least, utilized, may be effective where suitable topographical conditions are found, but we shall scarcely find in them any general or permanent relief from the evils of river pollution. The climate of Ohio is unfavorable to their full efficiency, but they could be made to work a vast improvement on present practice in many of our towns.

The most advanced practice abroad is insisting upon these attempts to purify the sewage before turning it into the rivers, but our own practice, even the best of it, has no place for these refinements. Take the Ohio Valley, for example. It is the most favor-

able instance to be found in the State, except, perhaps, the cities of the lake border, because it is traversed by the largest river. Pittsburg, Steubenville, Wheeling, Bellaire, Marietta, Pomeroy, Gallipolis, Ironton, Portsmouth, Ripley, Maysville, New Richmond, and a score of smaller towns, pour their unfiltered sewage, so far as they get rid of it at all, directly into the Ohio. Leaving out of the account the effect of these towns upon those below them in the list, let us consider the case with reference to Cincinnati alone. With a population of 300,000, busy with scores of manufacturing industries, many of them replete with vile and poisonous waste, not only derives her entire water-supply from a river used as a sewer by a million people, but herself opens every sewer and every channel of manufacturing waste directly into the Ohio, and still the towns below drink from the beautiful river and give thanks for their bountiful water-supply!

But when some protracted drought reduces the Upper Ohio to a narrow channel, across which a pebble can be tossed, and when into these upper waters the germs of Asiatic cholera, for example, shall have been dropped, what is there to hinder a pestilential wave from sweeping down the valley, as resistless as the floods of 1883 and 1884, and far more destructive?

Viewed, then, with reference to water-supply, that altogether vital element in the maintenance of the public health, the system that we are now pursuing in the disposal of sewage is self-destructive. It breaks down with its own weight, and I repeat the statement with which I set out, the sewage *ought not* to be turned into the rivers.

But there is a second reason of almost equal weight with the first, for prohibiting the discharge of sewage into our rivers. Even if sewage could be conveyed by the rivers without running them as sources of water-supply—and rivers of the first class may possibly be made to serve the double office—there would still be a powerful argument against such a disposition of it. The excremental portion of the sewage constituted the very life of the soil from which, by the last analysis, it was derived; and no system of agriculture can be counted other than a system of spoliation that allows it to be withdrawn and permanently lost. It is poison to the rivers, it is the life of the soil. The soil, that wonderfully beneficent covering of the rocky framework of the earth, to

which we owe so much, adds this to its varied services. It is the great disinfectant and purifier. It has an almost magical power in this respect. Science has not yet learned the secret of its power. The waste products that are a source of danger and death elsewhere are shorn of their powers of evil when they touch the soil. Returned to it, they cause it to bud and blossom as the rose. They insure its never-ending fertility and furnish a full solution of the weightiest problem of agriculture. To divert these products from their natural destination is to break the circuit of nature's exchanges, and neither individuals, corporations, nor nations can do this with impunity.

2. In the second place, if our best practice falls under sanitary and economical censure, much more must the rude ways of our smaller cities and villages be condemned. These ways are clearly a relic of barbarism. It is scarcely possible to name a more shocking example of what ought *not* to be done with the sewage than is furnished in the practice of the larger part of our body politic. Recall the disposition that is made of excremental waste.

Gathered into shallow and uncemented pits in a porous soil, left to fester there for years or decades, loading the atmosphere above with hateful and dangerous gases, ruining the water of all adjacent wells or springs, almost equally endangering cistern water, through defects in their construction, and spreading out so far on every side that many of our dwellings must draw their ground-air, in part, at least, from these polluted sources, what can be worse? It is as wasteful as water-carriage and vastly more dangerous. The uncemented cesspool is, in fact, entirely outside the limits of sanitary consideration. It is an enemy to civilization, and it must be abandoned.

III. What *ought* to be done with the sewage? To my mind, the theoretical answer is easy and obvious: *It ought to be returned to the soil from which it was originally derived.* It is idle to say that this cannot be done. It is done to-day, and has been done for ages in two of the great hives of mankind—China and Japan, and the results from both a sanitary and economic point of view are assuring to a high degree. It can, however, be urged with justice that their experience cannot give a law to the Western nations, or, in other words, to Europe and America. Our ideas

of propriety and decency are such that it would be impossible for us to adopt the methods of China. But we can invent our methods. We have the resources of modern science at our command. Already they are beginning to be placed at our disposal. The object to be attained is the conversion of human excreta into a disinfected and deodorized substance, portable, soluble, and retaining all fertilizing properties. A new system has lately been introduced into Augsburg, Germany, which claims to attain such results. Whether its claims are made good, I do not know, but the end will certainly be reached—all the sooner now that we know what to demand.

What ought *we* to do with the sewage? This is the pressing question that comes up from every quarter, and from none more urgently than from our towns and cities. It is a question of life or death, health or disease, prosperity or ruin. We are just attaining a knowledge of sanitation, and our knowledge reveals the dangers amid which we walk without giving us the power of altogether escaping them.

There is no one answer to the question that will suffice. Perhaps there will never be exact agreement in details. The conditions under which we work differ, the size and wealth of the towns to be provided for, the character of their populations, the proximity of lakes and rivers, the abundance or short supply of water, the topography, the climate.

1. There is much to be said in favor of the system of *dry removal*. By it the excreta are *systematically removed at public expense*, at such frequent intervals that no danger can ordinarily result from their presence. Facilities for disinfection are also at hand whenever any unusual necessity occurs. The products are fully available for agricultural use, and a margin of profit sometimes remains from their sale, beyond the cost of collection. There are various modifications of the system, but in all, a *central authority, armed with full executive power*, is an indispensable necessity. There is no room for voluntary action or for moral suasion any more than in the collection of taxes. It is the prevailing system of Southern Germany, in Paris there is a crude application of it, but in several English towns, as in Rochdale and Manchester, it is a pronounced success.

All of those Ohio towns that lie on or

near the watershed of the State, like Canton, Mansfield, Crestline, Galion, Marion, Bellefontaine, Urbana, Lima, and a score of others, ought to turn their attention immediately to this line of inquiry, and all growing towns in this belt should hasten to adopt this or some other adequate system by which the ground-water and ground-air can be saved from pollution.

2. *Sewage irrigation farms* have proven very successfully in various parts of the old world, and on a smaller scale in the United States. The Gennevilliers farms below Paris now utilize one-sixth of all its sewage, which does not, however, at present receive all the products of excremental waste. Provision is being made to extend the system of application to a much larger acreage, so as to comprehend the whole outfall. The Edinburgh farm has long been successful in its comparatively narrow line of operations. The Berlin farms are reported as giving altogether satisfactory results, and Dantzic, the first city on the continent to introduce the system, finds in it all that can be demanded on the score of health and economy. In England many towns are making very successful application of the system, and among them may be named Oxford, Leamington, Bedford, Croydon, Doncaster, and Wrexham.

There is no reason why such farms should not be made equally successful with us. The details of the Pullman system I am not familiar with, but I understand the results to be very satisfactory and encouraging. There are many Ohio towns that ought to be compelled to treat their sewage in this way. Among them may be named Columbus, Springfield, and Dayton.

3. The *separate system of sewers* offers great possibilities. Small sewers, glazed inside, to be periodically flushed, confined to the carriage of household waste alone, in such a shape as to respond readily to chemical treatment and utilization, are an immense advance on these great underground rough channels, always and necessarily unclean.

The *Liernur pneumatic system* appears to me worthy of more attention than it has hitherto received. The utilization of the sewage is measurably accomplished by this scheme. The *von Podewils system* of Augsburg I have already referred to as a new claimant. If its claims are made good, it carries us a long step ahead, and leaves it possible for us to utilize sewage while still holding to water-carriage by the combined system.

4. There is one thing that all persons who recognize in any degree the demands of sanitary science, can agree upon, viz., the *careful exclusion of human excrement from the soil which they occupy*. We can all unite in insisting that, in cities and villages, *all vaults and cesspools can be thoroughly cemented and that their contents shall be systematically and frequently disinfected and removed*. This one step may be made the beginning of an extended reformation. It does not involve great outlay. It can be made to commend itself to the good judgment of any Ohio community. But if we should at once be freed from several threatening evils. If, at the same time, the value of these disinfected excrements when applied to our wasting soils could be practically demonstrated, another factor of great moment in the solution of our problem would be added.

#### FEARFUL PRACTICAL LESSON—DIRT TO DEATH.

The following history of the late terrible typhoid epidemic in Pennsylvania, which was unusual only in its *extent*, is from the *Detroit Lancet*, and is reliable :

The town of Plymouth, Pa., has been the scene of an epidemic of typhoid fever fearful in the extreme. Many also have been attacked with malarial poison. Out of a population of some eight thousand about one-third have suffered from the disease, many dying.

The local physicians have been unable to attend the sick, and so volunteers have been called for. Hospital accommodations have been provided, and proper measures for suitable treatment. The origin of the epidemic is also clear. The town is situated on the alluvial soil of hills, which slope towards the Susquehanna river. The water supply is from reservoirs made by damming a brook running through the town. This water has become polluted to an extreme degree. Prof. R. C. Kedzie, of the Michigan State Agricultural College, has made a careful examination of this water. He reports it the very worst drinking water he ever examined.

The town has no sewerage system. Hence, all the water polluted by being used for household and other purposes, is left to find its own way through the soil to the river. The population, also, is so full of ignorance that it paid no attention to sanitary laws. As to the origin of the epidemic in this

particular form, it seems to have been imported from Philadelphia. A person visiting that city contracted typhoid fever. In March, after his return to Plymouth, the disease broke out. While sick, he was in a house some forty feet above the banks of the brook, and between the third and fourth reservoirs. It seems that there are quite a number of these reservoirs, formed by damming the brook on its way through the town. From this water is distributed by pipes to most of the town.

The excreta from this typhoid fever patient were carried by rains, melting snow, etc., into the brook, and so to the reservoir, whence it was widely distributed. In support of this view is adduced the fact that many of the families obtaining water from wells were not attacked by the disease.

Post mortem examinations made by Dr. E. O. Shakespere, of Philadelphia, establish the fact that the disease is typhoid fever. That it could be introduced and spread in the manner described all admit. Such an epidemic would have been impossible had the town been simply *clean*. The gospel of cleanliness needs far more prophets ere towns such as Plymouth become free from the ravages of epidemics caused in the same way as this. This is unusual, simply from its vast proportions.

#### IMAGINATION AND DISEASE.

The following is related of three prominent gentlemen during their first visit to an oxygen factory. One, who thought he was bilious, exhausted all the air from his lungs, and placing the tube to his mouth, drew in a long, deep breath. Then he related to his friends how he felt. It tingled to the very tips of his fingers and toes, and the sensation was delightful. He could feel it all over his system, and was sure he felt 100 per cent. better for the one inhalation. Another who wasn't sick, but came up just to accompany his bilious friend, took the tube and obeyed instructions. When he turned to his companions he was pale and agitated. He had been told that the compound oxygen would find any weak place in his anatomy and locate latent disease, and a slight pain in his chest assured him he was on the brink of death with consumption. Then the third gentleman seized the tube and took a long breath through it, but declared he felt no extraordinary sensation; said he could "suck that stuff all day." And so he could,

for as it turned out the "doctor" had neglected to fasten the other end of the tube to the oxygen reservoir that morning, and the three gentlemen had breathed ordinary air through the rubber tube.

#### SEWAGE FUEL AND THE PROCESS OF MAKING IT.

A few months ago a brief reference was made in this JOURNAL to a process for making fuel out of sewage. Below the process is given in detail by the inventor himself, Dr. C. H. von Klein, of Drayton, Ohio, in the *Sanitarian* for May.

Ever since the fact has been recognized that zymotic, constitutional and even local diseases are produced by miasma, or offensive effluvia of obnoxious gases arising from privy vaults and other places where animal and vegetable matters are deposited and there undergo decomposition, it has become a study worthy the intellect of sanitary scientists to know wherein lies the remedy.

What shall we do with our excrement and garbage, which contaminate the water we drink and the air we breathe? has been the inquiry of ages. In my mind there arose several years ago the question, could this decomposed and decomposing matter be metamorphosed so as not only to be harmless but actually advantageous to suffering humanity, by being converted into fuel? Here was required a zeal for scientific and chemical research. I feared, too, that my knowledge of chemical science was too limited to pursue those investigations with advantage. In fact it appeared necessary to possess the knowledge of a manufacturing chemist, not an artificer like myself. Thinking perhaps I would stumble on some excellent method by borrowing from writings and teachings of others more competent for the task, many years have elapsed and numberless experiments have been made without encouragement. Small is the number of works on chemistry I have not consulted. For my object they appeared as a mere barren desert. No one to whose voice I wanted to listen could give me any information respecting it. All those obstacles were very discouraging but I continued.

I now have the honor to disclose the method by which it can be accomplished. The substance may be treated anywhere, in the vault or in an open field, in the following manner:

For example, take a vault containing forty barrels of excrement, throw in one barrel of chloride of sodium (common salt). Twenty-four hours after throw in fifteen bushels of unslacked lime. This will form chlorinated lime; the fumes may be started with four ounces of nitric acid. Let it remain for eight days; then it will all be dissolved and the contents disinfected. Next add seventy-five pounds sal soda. This will solidify within ten days, unless there is a very great excess of liquid, in which case the proportion of lime may be increased, thus completely and entirely disinfecting and deodorizing the mass; and it may now be made into bricks, which will take about thirty days to dry in the open air and be ready for use as fuel. It is odorless and in every way cleaner than any other fuel known. It can be seen that all the ingredients used with the animal and vegetable matter have disinfectant qualities. It produces a better flame and retains more heat than Allegheny coal; the salt and soda both have flame-inducing qualities, and the lime the heat-retaining quality.

The question now arises as to the expense of producing this fuel. We will therefore estimate on forty barrels of excrement.

1 barrel of salt.....	\$1 00
15 bushels of lime at 12c. per bushel..	1 80
75 pounds of soda at 1c. per pound...	75
Labor (one day).....	2 00
<hr/>	
Total.....	\$5 55

This will equal three tons of coal at the rate of \$3.50 per ton, making total \$10.50, almost within a fraction of one-half the cost of the cheapest fuel we have in market.

There is another point, to which I desire to call attention, of great importance. The above mode of preparing the fuel is of that which is collected in vaults. If the sewers were provided with receiving basins at the outfall into which all garbage might be placed the whole mass could there be treated in the same manner.

There is only the question of adoption of this important discovery, the outcome of sanitary science, that stares us in the face. I cannot see what excuse can be offered to let it remain idle and jeopardize human life, as it is cheap, clean and good.

[In evidence of the cleanliness of the material the essayist exhibited several specimens which were perfectly odorless.]

THE MIND CURE.

In the *Woman's Journal* Miss Louisa M. Alcott gives her experience in regard to the "mind cure" as follows: As many invalids have written to ask my opinion of the mind cure, and as various false reports are going about, I will briefly give my own experience, leaving others to profit by it, or to try the experiment, as they choose.

Writer's cramp and an overworked brain were the ills I hoped to mitigate by the new cure, of which marvellous accounts were given me. With a very earnest desire to make a fair trial, I took about thirty treatments, finding it a very agreeable and interesting experience up to a certain point. No effect was felt except sleepiness, for the first few times; then mesmeric sensations occasionally came, sunshine in the head, a sense of walking on the air, and slight trances, when it was impossible to stir for a few moments.

Much cheerful conversation, the society of an agreeable person, and the hope that "springs eternal in the human breast," made these earlier weeks very pleasant. But when no bodily pain was alleviated, and instinct warned that something was wrong, I began to question and doubt a theory which claimed to cure cancers, yet could not help a headache. I made myself as passive as a reasonable being can, hoping that since lunatics and children were helped, I also could be, if I gave up trying to see, believe or understand. But when thirty treatments left the arm no better, and the head much worse, I dared lose no more time, and returned to the homeopathy and massage, from which I had been lured by the hope of finding a short and easy way to undo in a month the overwork of twenty years.

This is my experience, and many others, who have made the experiment, tell the same story, while half the fabulous cases reported to me prove to be failures, like my own, when investigated. My opinion of the matter is that, being founded on a fact which no one denies, namely, the power of mind over body, there is truth in it and help, if it is not overdone, and more claimed for it than is due. Every physician has cases where the mind rules the body, and works wonders with science to lend a hand; but to ignore such help, and only rely on the blind, groping self-delusion, or temporary excitement which the mind cure brings to most, is a mistake.



Mesmerism, unconsciously used, perhaps, does much; curiosity, the love of the miraculous, the hope of health, and more than all, the yearning of weary spirits for divine support, lends this new craze its charm, and attracts the crowds of sufferers, who fill the rooms and pockets of the persons who profess the healing gift.

If it be all they claim, may it prosper and grow clearer, higher, and stronger, for we need all the help we can get to meet the new diseases that afflict us. If it be a delusion, as some of us believe, let those who practice it beware how they coin money out of the suffering of fellow-creatures, and blindly lessen faith in God and man by promising what they cannot perform.

#### CATARRHS—CHILLS—COLDS.

Catarrhs should receive careful consideration (London *Lancet*) instead of the neglect which they generally meet with until they have fastened on the part affected so much as to excite the attention, and perhaps alarm of the sufferer. Here, however, we propose to say a few words about the causes of chills.

A person in good health, with fair play, easily resists cold. But when the health flags a little, and liberties are taken with the stomach or the nervous system, a chill is easily taken, and accordingly to the weak spot of the individual, assumes the form of a cold, or pneumonia, or, it may be, jaundice. Of all causes of "cold" probably fatigue is one of the most efficient. A jaded man coming home at night from a long day's work, a growing youth losing two hours' sleep over evening parties two or three times a week, a young lady "heavily doing the season," and young children at this festive season overfed, and with a short allowance of sleep, are common instances of the victims of "cold."

Luxury is favorable to chill taking. Very hot rooms, soft chairs and feather beds create a sensitiveness that leads to catarrhs. It is not, after all, the "cold" that is so much to be feared as the antecedent conditions that give the attack a chance of doing harm. Some of the worst colds happen to those who do not leave the house, or even their beds, and those who are most exposed to changes of temperature, and who by good sleep, cold bathing and regular habits preserve the tone of their nervous system and circulation.

Probably a good many chills are contracted at night or at the fag end of the day, when tired people get the equilibrium of their circulation disturbed by either overheated sitting-rooms or underheated bedrooms or beds. This is especially the case with elderly people. In such cases the mischief is not done instantaneously, or in a single night; it often takes place insidiously, extending over days or weeks. It thus appears that "taking cold" is not by any means a simple result of a lower temperature, but depends largely on personal conditions and habits affecting especially the nervous and muscular energy of the body.

#### CAUSE OF CANCER—MENTAL.

Mental disquietude has been advanced as a cause of cancer, and many cases can be cited where this horrible disease has been preceded by some social or financial trouble which preyed upon the victim's mind, constantly, day and night without relief; making sound refreshing sleep impossible, and destroying all relish for food. Where the blood became impoverished from this lack of proper nutrition, and the entire nervous system impaired by the constant worrying and fretting; thus breaking down the natural fortifications against disease and making its entrance into the system easy.

This seems strikingly true in the case of Gen. Grant. We have it in his own words, that his disturbance of mind while commander-in-chief of the armies of the Republic, and while the destiny of the nation depended upon him was nothing in comparison to the worry and fretting which followed the Grant-Ward failure. The conduct of Gen. Grant since then indicates that his anguish of soul and his feelings of disgrace have been beyond expression.

This theory has much to support it, and gives us a plausible explanation for the alarming increase of cancer during the past few years. Any facts relating to this subject will be gladly received.

The patient's gratitude to his doctor is part of his disease. It is most declared when the fever is highest, cools off during convalescence, and entirely disappears with the complete return of health. The physician who is in the habit of letting his bill run till the end of the year is furnished with frequent illustrations of this fact.

## PRESERVATION OF CUT FLOWERS.

On this pleasing art, the *Popular Science Monthly* gives the following:—An important rule is, never to cram the vases with flowers; many will last if only they have a large mass of water in the vase, and not too many stalks to feed on the water and pollute it. Vases that hold a large quantity of water are much to be preferred. Flat dishes filled with wet sand are also useful for short-stalked or heavy-headed flowers; partially withered blooms will revive when placed on this cool, moist substance. Moss, though far prettier than sand, soon smells disagreeably, and always interferes with the scent of the flowers. When flowers in winter are brought out of warm houses into the dry air of a house, and are put into ice-cold water no wonder many poor victims succumb. If they were put at once into a large basin of blood-warm water (or even still hotter) till they could be arranged properly, and the water in which they are finally placed were also warm, a great saving in trouble would result.

With regard to plants whose juice, or sap, is milky, this precaution is invaluable, for this thick, milky sap readily coagulates in the tissues and prevents the flower drawing up the necessary supplies of water.

In the case of flowers that only grow in a cool temperature, and suffer when they get into warm and dry air, all that we can do is to lessen evaporation as much as possible; and, when such flowers have hairy stems and leaves, to submerge them for a minute, so that by capillary attraction they may continue to keep themselves moist and cool; but this is dangerous to table-cloths or polished surfaces, unless care be taken that the points of the leaves do not hang down. Another means of preventing such delicate and sweet-scented flowers from flagging, is to cut them with several leaves on the stem, and when the flower-head is placed in water, to allow only this head to remain above the water, while the leaves are entirely submerged; by this means the leaves seem to help to support the flower, which will then last for three days in a fairly cool room. Perhaps no hardy flower succumbs sooner to heat than the Christmas rose. With this it seems that frequent cutting of the stem is of great use; but with all such flowers, by far the best plan is to put them outside, exposed to dew or rain, during the night, when they will regain strength enough to last on for days. All New Holland plants, and particularly

flowering acacias, are benefitted wonderfully by this apparent cruelty, and will even stand a slight frost far better than a hot room at night indoors.

ATTENDING CHOLERA PATIENTS.—The following is from a valuable 30 page pamphlet, entitled "Memorandum on Cholera," adopted at a medical conference held at the Bureau of Agriculture, Ottawa, in March 1866, Dr. J. C. Tache, now Deputy Minister, "Reporter." Drs. Hill and Grant, of Ottawa, were members of the conference: Cowardly fear may lead people even to forget what they owe to their fellow-creatures and even to their near relatives; and, on the other side, ill advised devotedness may expose people to unnecessary danger. . . . Who ever is the sick, and wherever he lies the prey to the malady, whatever your station in life, you owe to him help and comfort: if he is in need of medical assistance, seek it; if he requires anything in your power to give, give it to him; if he has no attendance, attend to him or procure it for him. But if the sick person happens to be well provided and attended to, then there is no occasion to go near him unless he is a bosom friend or a relative. . . . If we except unwholesome crowding, there is not, generally speaking, so great danger as people may fancy in the attendance on the sick, and provided that the precautions indicated in this memorandum are observed, there is hardly any more peril than in the mere walking the streets of a locality under the scourge. Most of the medical men, sisters of charity and attendants of hospitals in the country, have weathered several epidemics without having been seriously ill, although living in close communication with the sick day and night for months; their secret has been to avoid fear, to be calm, cleanly and prudent.

AMOUNT OF SLEEP REQUIRED.—The latest authority on the vexed question of sleep, Dr. Malins, says (*American Inventor*) that the proper amount of sleep to be taken by a man is eight hours. So far as regards city life the estimate is probably correct. Proverbial wisdom does not apply to modern conditions of social existence. "Five (hours) for a man, seven for a woman, and nine for a pig," says one proverb; and a second quoted by Mr. Hazlitt in his *English Proverbs* declares that "Nature requires five; custom gives (? allows) seven; laziness takes nine, and wickedness eleven." These conclusions

were, however, drawn from observation of country life. Physical fatigue is more easily overcome than intellectual. Men, however, who follow any intellectual pursuit are exceptionally fortunate if the processes of restoration occupy less than seven hours. More frequently they extend to eight or nine hours. Kant, I see it stated, took never less than seven hours. Goethe owned to requiring nine. Soldiers and sailors, on the other hand, like laborers, do with a less quantity.

APPLES OF THE WORLD.—At the World's Industrial Exposition at New Orleans the apple display is immense, embracing nearly 500 varieties and coming from nearly every apple section of the world. Speaking collectively, the fruit is large, smooth, handsome and well grown—exceptionally so. Referring to the separate State exhibits, the correspondent named Arkansas first on account of the exceptional excellence in her apple display. Her tables in this hall, as well as the glass cases in the Government building, form the most attractive apple exhibit to be found there. This praise is due more especially from the fact that apple growing is comparatively a new business in Arkansas, the adaptation of her soil and climate to this fruit having been only recently discovered. She has 400 plates and 140 varieties, uniform and handsome, with a good average flavor. She has been awarded several premiums, among one for the best plate of any variety grown in a Southern district, also for the largest and handsomest sort.

A NEW DANGER FROM CONSUMPTION.—Our Paris correspondent writes (*Brit. Med. Jour.*): A farm at Charenton has furnished somewhat startling evidence of the transmissibility of tuberculosis from man to domestic animals. One of the farm-servants, who was phthisical and too weak to undertake fatiguing duties, was placed in charge of the poultry-yard. He grew steadily weaker, and coughed incessantly, expelling a quantity of sputa, which the fowls were observed to swallow with avidity. In a few weeks, the fowls began to die off. The owner of the farm sent one of the fowls to the veterinary school at Alfort. M. Nocard found that the lungs and liver were infested with tubercles about the size of a pea, and of a greyish-yellow colour. In a microscopic preparation, there were numbers of bacilli. The fowls were killed, and the poultry-yard disinfected. A less honest farmer might have sent the tuberculous fowls to market, a probability

which doubtless has been, and will yet be, a certainty not always easy to discover. The danger attending the consumption of diseased poultry or milk from tuberculous cows, indicates that a rigorous system of inspection ought to be organized for markets, farms, and poultry-yards.

ABUNDANCE OF FRESH AIR is after all the best disinfectant. It should by all means be let freely into sick rooms and, if possible, an open fire-place or some provision should be made for withdrawing the foul air. It is well known that the contagion of typhus fever, for example, is very virulent, and spreads like "wild fire" with over-crowding and personal uncleanness, but is completely disarmed by cleanliness and ventilation alone. In the sick room, as we find in a report just issued by a committee on disinfectants of the American Public Health Association, "no disinfectant can take the place of free ventilation and cleanliness.

THE GENESIS OF CANCER.—A marked increase in the death-rate from cancer (*London Lancet*) during the latter part of the present century has for some years occupied the minds of several well-known pathologists in endeavors to reveal its cause. There is a pretty general agreement with regard to this disease, that it is prone to rise out of prior morbid states which do not appear directly or necessarily related to it. It is evolved as a successor to innocent tumors, or in the track of an old inflammatory lesion. It rises apparently *de novo* out of mere senility or exhaustion of tissue, its permanently rudimentary type representing the best efforts of wearied nature to make good the daily wear of more perfect structures. On the other hand, cases occur in which, without impairment in any visible degree of vital power, the energy of some local irritant appears to master so completely the normal process of growth, as to maintain its elements in the exuberant imperfection of the malignant tumor. Manifestly the same irritant acting on weak tissues is still more likely to work out its pernicious consequences. If we admit, therefore, as we constantly may, that tissue exhaustion, the result of toil, anxiety, or privation, and whether inherited or directly induced, affords sufficient basis for the development of cancer, we need not look far into the history of our laborious age to find an explanation of a rise in its death-rate which at first may seem to be anomalous.

## ON THE PROPOSED DOMINION SANITARY BUREAU.

### THE OBJECTS, ADVANTAGES, COSTS, ETC.

Canada is now about the only country which is without a central or Government health organization. For many years the necessity for a Dominion Sanitary Bureau has been urged upon the Government of the day by the foremost medical men in the Dominion and others who have considered the subject and know the advantages such a bureau would confer upon the country. Indeed no one doubts that the advantages would be far more than commensurate with the costs. All men know that of the many thousands of deaths which yearly take place in the country a large proportion are preventable. Large sums of money are spent on immigration. Surely a few thousands of dollars spent in saving the lives of the good people now in the country would be most wisely spent.

### EDUCATION OF THE FIRST IMPORTANCE.

With the individual provinces, in accordance with the Acts of Confederation, rests the responsibility of *compelling* people to remove nuisances, and to be in their surroundings, if not in their dwelling and person, clean. But it is almost as impracticable and difficult to compel them to be cleanly as it is to compel them to be godly. They must first be educated and taught the direct and individual advantages to be obtained from practicable sanitation. Sanitary progress made but poor headway in England until the educating process had been for a time practised. The foundation—the A B C of the educating process—is in the knowledge scattered abroad relating to prevailing diseases and to the death-rates and causes of deaths, and to the proportion and frequency of certain diseases and deaths in the different localities. In this way the public may best be taught the real money value of health, and then the public will try to learn the best means of preserving their health.

The power and the duty of collecting statistics relating to health—statistics of diseases, deaths, births, marriages—is in the

hands of the Federal Government; hence the power and duty of practically educating the people up to a recognition of the advantages of sanitary work rests with the Dominion Government, rather than with the Provincial Governments. It is not difficult to distinguish between the powers and functions in relation to health of the two forms of government. To the provinces belong the power of enacting laws relating to nuisances and all compulsory proceedings bearing upon health, while with the Dominion rests the function of collecting statistics, and certainly of reporting upon the same and educating the people therein.

### REPORTS OF DISEASE—HEALTH STATISTICS.

No one questions the necessity for correct returns of births, marriages and deaths. There is, however, another form of statistics, or perhaps more properly, reports or statements, of more immediate practical use than are returns of births, marriages and deaths; these are reports or statements relating to prevailing diseases, especially those of an epidemic character. To get actual statistics of these is hardly practicable. But to get a weekly or fortnightly report from as many localities as possible of the condition of the public health throughout the country is, we maintain, of the first importance.

About three years ago the editor of this JOURNAL submitted a plan for obtaining fortnightly reports of prevailing diseases which was endorsed at the time by the medical profession in Ontario. A resolution in favor of it was passed unanimously by the Ontario Medical Council (an elective, governing body), and the two medical journals advocated it.

The plan provided for 145 reporters—physicians in good standing—in 145 centres throughout the Dominion, or one reporter to about every 30,000 of the population. These to report every two weeks to the Statistical Department at Ottawa the general condition of the public health, especially as relating to epidemic or contagious diseases, in their respective localities.

## ADVANTAGES OF DISEASE REPORTS.

As to the advantages of carrying out such a plan we may here be permitted to quote from a back number of this JOURNAL, as follows: "The knowledge which the working of such a plan would give would be of immense value. It would then be known where any epidemics were prevailing, in any electoral district throughout the Dominion; and the extent, severity and duration of these and their course from one locality to another. It would also be known what districts were free from epidemics, and all this knowledge would be a strong inducement for the people everywhere to endeavor to keep free from such by using precautionary and preventive measures. The publication of monthly reports of the collected information, condensed and tabulated, along with sanitary information, would create a general interest in public health proceedings hitherto unknown. The returns from the reporters in the different districts, though not giving the exact number of cases in any epidemic, would be otherwise definite, especially as regards locality.

"It is a great mistake to try to suppress and prevent the spread of knowledge of the fact of an epidemic prevailing in a locality. The temporary check to 'business'—the slight interference with the 'trade' of the small dealers and tavernkeepers, would be a very insignificant matter compared with the great and serious losses through sickness and deaths which a knowledge of the fact of the prevailing epidemic might aid in preventing. And few indeed are there, we believe, who, on giving this question a little serious thought, would not be in favor of the diffusion of information relating to the prevalence of an epidemic in any locality or neighborhood. The question of dollars and cents should not be so far allowed to jeopardise the health and life of the people as to prevent the diffusion of such information.

"Besides the interesting and practically useful information which disease reports as above indicated would give, they would afford most valuable accumulative know-

ledge which in time would show the course of epidemics, even of the lighter sort—of measles, scarlet fever and whooping cough, for example, what relation they may have to prevailing winds, or other meteorological conditions, or if there is any tendency in them to return at certain periods or to be as a rule more severe and extensive in certain localities or communities than in others, and much other useful information which might be mentioned. Besides, such knowledge would doubtless develop facts in connection with epidemics which have not yet been thought of."

Last year the Sanitary Association of the Province of Quebec, in a memorial to the Minister of Agriculture, recommended that this plan for the collection of disease reports be carried out, with the exception that the reports be made monthly instead of fortnightly. The Hon. Edward Blake, we were pleased to observe, expressed himself in the House last session as approving of the principle of having reports made of the prevailing diseases, and as being of more practical value than mortuary statistics.

## MORTUARY STATISTICS.

With regard to mortuary statistics, the present plan of collecting them, *i. e.*, from the principal cities of the Dominion, is undoubtedly one by which most accurate returns may be obtained, but it will prove too costly to extend, in its present form, to all parts, rural and urban, of the Dominion. We would suggest that the Federal Government grant an adequate sum to each of the provinces for the purpose of defraying the expenses of collecting statistics of births, marriages and deaths, after a plan similar to that which has been many years carried out in Ontario. In this province the returns from the cities and towns are now fairly accurate, and with some modifications for the rural districts, or perhaps by imposing penalties on those who neglect to register, the system might be advantageously adopted by the other provinces, the Dominion defraying the expenses; or in other words, purchasing

the statistics from the provinces. This would be comparatively an inexpensive plan.

FUNCTIONS OF A BUREAU — THE PLAN  
ADOPTED LAST YEAR.

Under the supervision, then, of a Sanitary Bureau would naturally come, besides the quarantines, diseases of animals, etc., as at present, the disease reports and the statistics of births, marriages and deaths; while it would devolve upon the bureau to utilize the reports and statistics as far as possible in the education of the people in public hygiene.

As many of our readers will remember, a large meeting was convened last year during the session, at which nearly all the medical members of both Houses and the practitioners in this city and vicinity were present, for the consideration of a plan for a Dominion Sanitary Bureau. A plan was submitted, adopted with some slight changes, and a committee appointed to lay it before the Government and to urge that it or a similar one be carried into operation. The Prime Minister kindly granted the committee an interview, and the plan was submitted and the desirability of action being taken by the Government urged. The Premier stated that the Government would give the question the consideration which its importance demanded. This plan had been printed and in the hands of those at the meeting some days before the meeting was convened, and many stated at the meeting that they had given it much consideration. It provided, briefly, nearly as follows :

NATURE OF THE PLAN.

That a Sanitary Bureau be associated with the Department of Agriculture in Ottawa, and that the Minister of Agriculture be also Minister of Public Health in all such matters relating to the public health as come within the supervision or jurisdiction of the Federal authority. That there be a Deputy Minister or Superintendent of the Sanitary Bureau, who shall be a medical man, appointed by the Government, and who shall be practically the Chief Sanitary Officer of the

Dominion Sanitary System. That there be a permanent advisory Sanitary Committee associated with the Sanitary Bureau, which shall consider and discuss all matters coming within the province of the bureau, and all matters pertaining to the public health of the Dominion, and which shall confer with and advise the Minister and Chief Sanitary Officer in all such matters, and consider what legislation will best promote the public health. That the Sanitary Committee have a chairman and secretary, appointed as such by the Government, and to be medical men; the chairman to be appointed from amongst the members of the committee, and the secretary to be a permanent officer, holding office during pleasure, and to be the chief executive officer of the committee. That the Minister or Deputy (or Superintendent of the Bureau) be *ex-officio* members of the Sanitary Committee. That the Sanitary Committee meet at least once every year in Ottawa, during the parliamentary session, for the consideration of all such matters relating to the public health of the Dominion as they shall deem most desirable. And that the Chief Sanitary Officer and the Secretary of the Sanitary Committee each receive a salary; and the travelling expenses and a *per diem* honorarium while engaged on the duties of the committee be paid to the other members of the committee.

The plan provided that the Sanitary Committee should be appointed by the Federal Government, a certain number of members for each province, and that it consist chiefly of medical men. We would suggest as a modification of this that the committee consist of the chairmen of all provincial boards of health, and in provinces not having a provincial board that the Government of the province appoint a competent physician to the position; that members of the House of Commons who are qualified physicians be also members of the committee; and that the Federal Government appoint a sanitary engineer, a veterinary surgeon, and at least one other not a physician, a barrister, for example, as members of the same.

This committee, being large, need meet only once a year, in Ottawa, and during the session of the House. Each year it should elect an executive committee of three or five members, which might meet as often as desirable.

The plan provided for the collection of reports of diseases, and for the issuing by the department of regular fortnightly or monthly reports or bulletins.

#### LEGISLATIVE ACTION.

Seven or eight years ago the writer was informed by members of the House that the then Premier, Hon. Mr. Mackenzie, had stated that he was very desirous of organizing a bureau at the earliest opportunity; the late Hon. Dr. Brouse being then active in urging it upon the House and Government. The present Government are certainly favorable to it, and it only wants to be taken up actively by some competent Government action. The public will receive it gladly, and regard it as a wise and profitable action. Surely there is one member of the House in order to secure among the several able medical men in the House who will next session give this matter the attention it demands from some one. And we would respectfully urge that during the recess *all* members, irrespective of party, give this important question the consideration to which it is entitled, and be prepared next session to support a measure for the organization of a Dominion Sanitary Bureau.

#### DANGER OF DISEASE FROM ANIMALS.

The health of animals is closely related to that of the people, much more closely than is commonly supposed, and demands close looking after. Glanders, hydrophobia and anthrax are very fatal diseases and come only from animals. The foot and mouth disease of cattle may be transmitted to man by means of the milk of the diseased cows. Tuberculous disease (consumption) is doubtless communicable from animals to man. We have recently collected a large amount of evidence of a very convincing character in support of this, and published in a pam-

phlet on "Consumption and its causes and prevention in man and animals." In the ninth annual report of the Agricultural College and Experimental Farm, Guelph, Ont., it is stated that, "The extent to which this disease exists amongst the better breed of cattle in this country is alarming, for many reasons; not the least one of which is the danger to which the public are exposed from the consumption of meat from such animals." All this, with the fact that many troublesome and fatal diseases from parasites in the body, such as trichinosis and diseases caused by different sorts of tapeworms, have their origin in animals make it highly desirable that the health of animals as well as of man should be under the supervision of some properly organized body.

#### THE MONTHLY STATEMENTS OF MORTUARY STATISTICS.

All interested in true sanitary progress will be pleased, as we are, to find that monthly statements of the mortuary statistics of cities are henceforth to be issued regularly by the department of agriculture and statistics of Canada, and that the first statement, for the month of June, 1885, has been distributed. It includes the returns from nineteen cities, and gives the total number of deaths of each sex, for each city, for the month of June, with the number from each of the causes of death in the zymotic class (the most important in relation to public health), and the total number in the other four classes. Besides the largest cities and capitals of the different Provinces, the following cities are also included in the system, and make returns, viz.: Guelph, Belleville, Chatham, Sherbrooke, Peterborough, St. Hyacinthe and Galt. We are disposed to enquire how it is that London has not yet made returns. The death-rate there is surely not too high to be made public.

The wide difference between the total mortality of some of the cities and that of others is somewhat remarkable. The total number of deaths which took place in Montreal during

the month (June) was 552 ; in Quebec, 144 ; in Toronto, 117 ; Halifax, 71 ; Hamilton, 63 ; Ottawa, 60 ; and St. John, 43. A mortality at the rate per thousand per annum of about 44, 25, 15, 22, 19, 24 and 18 respectively.

The enormous death-rate of Montreal, nearly three times that of Toronto and only equalled probably by that of Russia, is doubtless largely owing to the usually fearful mortality amongst infants in that city, and especially of foundlings in the asylums and hospitals. Twenty-two deaths were caused during the month in Montreal by small pox. Not one death was reported as caused by this disease in any other city. A total of 15 deaths were caused by measles. Of these 6 were in Montreal ; 5 in St. Hyacinthe ; 2 in Halifax and 2 in Ottawa. There were 7 deaths from scarlet-fever ; of which 4 took place in Kingston, and one in Montreal, one in Toronto and one in St. Thomas. Diphtheria caused 43 deaths in the 19 cities ; 24 of which were in Montreal, 5 in Hamilton and 3 in St. John. By fevers, a total of 16 deaths were caused ; 5 in Montreal, 2 in Toronto ; 2 in Quebec and 2 in Peterborough. And from diarrhoeal affections there were 178 deaths, doubtless nearly all of infants ; 135 of these were in Montreal ; 15 in Ottawa ; 8 in Quebec, and 5 in Toronto.

We understand that the monthly statements will be issued about the 15th of every month, each for the next previous month. The preparation—compiling and arranging, involves much more work and careful oversight than many would suppose. In the course of time the statements will probably be enlarged and give more information.

VISITORS TO NEW YORK can hardly do better than to stop at the Grand Union hotel, opposite the Grand Central depot. It is on the European plan. The rooms, of which there are over six hundred, are very nicely furnished ; the "table-fare" is unexceptionable in every respect ; and the charges are very reasonable—for New York. No charge is made for conveying the baggage of guests to and from the depot.

## Recent and Current.

THE CHOLERA seems now to give the public but little trouble. Even the medical journals have almost ceased to discuss it, probably because about all that could be said or written relating to its prevention had been said or written even many times. But most of what can be *done* in the way of prevention is still *undone*. Indeed, so far as we can learn very little has yet been done by the people generally, or by the municipalities, to remove the exciting causes of the epidemic. In the cities and towns the authorities go through the form of discussing the slaughter house nuisance, and this is about as far as most of them go. They will "strain" at two or three of these comparatively unimportant causes of disease and "swallow" hundreds of cartloads of the worst sort of concentrated, preserved filth.

CHOLERA INOCULATION.—Telegraphic despatches to the daily press announced most brilliant results from the cholera inoculation experiments of Dr. Ferran, of Valencia, Spain. Up to about the latter end of June 8,000 persons in the province of Valencia alone had been inoculated. Two well-known Madrid doctors, who went to study Dr. Ferran's discovery, were inoculated by him. Four hours afterward they felt all the symptoms of cholera—coldness, cramps, diarrhoea, fever and delirium—but after sixteen hours they were all right again. At the Alcira hospital all the inmates were inoculated excepting two, who refused to submit to the operation. Cholera attacked these two and they died of it, while all the others were safe. The same thing occurred elsewhere. Delegates from all parts of the country are going to study the alleged discovery, and the Cortes has voted a sum to enable Dr. Ferran to prosecute his experiment, as he is poor.

This possible successor of Jennor is said to be only 33 years old. Born in Tarragona, he studied medicine at Tortosa, and took his degree at Barcelona. He claims to have been led to his discovery by following the cholera microbe through its various stages of



development and transformation until he detected a spore (*peronospora Ferrani*), which in his belief, contains the real virus of cholera. It was with specimens of this organism that he made his inoculative substance. Thus far, what has been demonstrated appears to be simply the fact that the process results in a modified form of cholera. Judging from the latest news relative to the progress of the cholera in Spain, the value of Dr. Ferran's theory will soon be put to the test.

The resemblance of the Bacillus of common cholera, as described by Finkler and Prior; of that of the mouth; as described by Lewis and Müller; and of that found in stale cheese, by Denecke, all of which have been referred to in this JOURNAL, to the true cholera comma-bacillus, has given rise to much confusion. But similarity of morphological appearances does not constitute identity; identity of growth, culture and function is essential. Because the English Cholera Commission did not recognise this, their work was practically without value. Klein admitted that he had found the comma-bacillus of Koch in greater or less number in all cases of cholera. Dr. Biggs, at a recent meeting of the New York county Medical Association, pointed out the distinctions between the various kinds of comma-bacilli, and in speaking of the mouth-bacillus, he stated that it took the followers of Koch four months to isolate it; but at last it was done by Prof. Müller. He exhibited cultures of the three comma-bacilli, and, in conclusion, remarked that in the mere matter of diagnosis, Koch had certainly made a very valuable contribution to our knowledge of cholera.

**CANNED GOODS.**—The denial of Gen. John P. Hawkins, recently published in the *New York Medical Times*, that canned goods are poisonous, has called forth a counter statement from Dr. S. Rosenburger, who asserts, in the *Medical and Surgical Reporter*, that he himself and several of his patients have been made sick in this manner. The trouble, he says, undoubtedly lies in the bad material used in the manufacture of the cans. The tin used, if tin at all, must necessarily be of

the most inferior kind, on account of the very low price at which the goods are put on the market. The reputed tin is a combination of lead, antimony and tin, and probably some other equally poisonous conglomerations. There is no supposition about this. It is a known fact in the tin trade, and the stuff is sold cheap as such. Legislation is required to protect the public from this becoming a common, every-day occurrence of poisoning by canned goods, both vegetable and animal, as much so, if not more than to protect against adulterated food.

**CAUSE OF CHEESE POISONING.**—We have just received an abstract of a paper on this subject, read at the meeting of the Michigan State Board of Health, July 14th (instant), by Prof. V. C. Vaughan, who has been making investigations relative thereto. It is well known that cases of severe illness follow the eating of some cheese. A German author says:—"The numerous kinds of soft cheese, prepared in small families, or on small farms, are generally the cause of the symptoms; while it is exceptional to hear of symptoms arising from the use of cheese prepared in large quantities." The old foul-smelling cheese, such as Limburger and Schweitzen, have never been known to be poisonous. The samples of cheese examined had no peculiarities of appearance, odor or taste, by which they could be distinguished from good cheese; but if two pieces of cheese—one poisonous and the other good—were offered to a dog or a cat, the animal would select the good; probably from acuteness of smell. A person tasting cheese, knowing it to be poisonous, might detect a sharpness of taste which would not ordinarily be noticed. There is no certain means, Dr. Vaughan says, aside from a chemical examination, by which a poisonous cheese can be distinguished from a wholesome one. The most reliable ready method is this: Press a strip of blue litmus paper against a freely cut surface of the cheese, if the paper is reddened instantly and intensely the cheese may be regarded with suspicion. When treated in this way any green cheese will

reddden the litmus paper, but ordinarily the reddening will be produced slowly and will be slight.

**NATURE OF THE POISON.**—Dr. Vaughan has succeeded in isolating the poison, to which he has given the name tyrotoxicon. It is a product of slight putrefaction in the cheese, which probably occurs in the vat, as the curd has been known to be poisonous. Different samples of poisonous cheese contain different amounts of the poison. The same weight of cheese from one cake furnished three times as much poison as that from another. The poison was obtained in long needle-shaped crystals, freely soluble in water, chloroform, alcohol and ether. The smallest visible fragment of a crystal placed upon the end of the tongue causes a sharp stinging pain at the point of application, and in a few minutes, dryness and constriction of the throat. A slightly larger amount produced nausea, vomiting and diarrhœa. The poison is volatile at the temperature of boiling water and for this reason even poisonous cheese may be eaten with impunity after being cooked. The substance had also a marked, pungent odor, and through the nose one can obtain sufficient of the volatile isolated poison to produce dryness of the throat.

**COMMON SALT AND THE TEETH.**—At a late meeting of the New York Odontological Society, Dr. E. Parmlly Brown ventured the assertion that the excessive use of common salt is one of the main factors in the destruction of human teeth to-day. He said: "I am now engaged in collecting statistics on this point, from which I hope in time to demonstrate, what seems to me to be the fact, that common salt excessively used is a great solvent of the human teeth. If it will injure the human teeth through the chemistry of our systems in some way or other that I will not try to explain to-night, why might it not also have the effect of preventing a good development of the teeth when taken into the system in excess? I have lately procured some statistics from the Sandwich Islands, from a gentleman who has been there for a period of over forty years, that

are very suggestive and interesting. Within that period the teeth of the Sandwich Islanders have decayed rapidly, and since they have begun to decay it has been noticed that the natives are in the habit of biting off great chunks of salt and eating it with their food. According to all accounts, the teeth of the Sandwich Islanders were formerly the most free from decay of any people on the face of the earth. You will find that people who eat a great deal of salt and a great deal of sugar are often entirely toothless."

THE CHINESE CONSUL in New York says that, despite the apparent neglect by the Chinese of most of the laws which, to our ways of thinking, are absolutely essential to the preservation of health, it is rare that one of the race dies of a zymotic disease. He says that his people have been studying the laws of health for the last thousand years, and that they have, to this extent, mastered those laws, is proved, to his mind, by the circumstance that contagious disease is seldom found among them.

**POISONED CANDY.**—The Sanitary Bureau of New York has been investigating candy-making in that city, and during this investigation have ascertained that thirteen out of sixty-four wholesale manufactories of confectionery use poisonous matter in making their goods. Chromate of lead, chrome yellow, red lead, Prussian blue and vermilion were employed. At one place the manufacturers made use of a poisonous aniline called fuchsine. The inspectors say that all the pigments used in the adulterated candy are very poisonous, except burnt umber and Prussian blue, which are more or less injurious. This discovery, which is not a new thing, would seem to emphasize the statements of one of our correspondents that there is no sweet so harmless as honey sweet. A later account says that three tons of highly colored candy found to be dangerous to the health of consumers were seized by the inspectors and destroyed.

The "mind cure" is mesmerism over again, applied to practical therapeutic uses. The mind curers are doing just what Mesmer did with his "magnetic fluid" at the beginning of this century.

## SPECIAL NOTICE.

The publisher is very sorry for the late appearance of this number. It has been simply impossible for him to get the mechanical work done any sooner. The JOURNAL has been in hands, and much of it has been in type, over a month, and all the printing establishments in Ottawa have been over-crowded with work for many weeks. It will be no satisfaction to readers, however, to be informed that this JOURNAL is far from being the only periodical in Canada, or ever in the "go ahead" United States, that is sometimes a month late.

This number being for June and July, the next number will also be for the next two months (August and September), and will not be issued until September, as the Editor will be absent from home.

All—advertisers and others—will please bear in mind, however, that they will receive the same compliment of *numbers*, and that the volume will be completed in December instead of in October.

With the September and later numbers, it is proposed to give more attention to house to house decoration and floriculture, and to make other improvements. The publisher therefore trusts that subscribers will bear with these unavoidable delays and irregularities, and respectfully request attention to accounts enclosed in this number.

## NATURE AND REALITY OF RELIGION.

In his review of the controversy between Mr. Spencer and Mr. Harrison, Count Goblet D'Alviella, professor of the history of religions in the university of Brussels, writes as follows: The last word of Evolution agrees with the definitions of the most refined theologians, which, transcending vulgar symbolism, have constantly recognized God in the double character of reality and incomprehensibility. We may add that, before becoming the scientific faith of Spencer, Huxley, and even of Haeckel, this religious conception has sufficed for men of the highest mind and the most pious imagination, such as Giordano Bruno, Spinoza, Kant, Goethe, Shelley, Wordsworth, Carlyle, Emerson, and even M. Rénan. It can lead not to religion only, but even to mysticism, however little, like some Neoplatonists and certain Hindoo philosophers, one may become absorbed in the conception of the supreme unity. Under this relation the danger is not that it will remain with-

out influence, but that it will communicate to its adepts a kind of vertigo more formidable than the fascination of the abyss, either by the contrast of its incommensurable grandeur with the insignificance of our being, or by the opposition of its immutable Unity with the unlimited Variety and perpetual expansion of the material Universe. These sentiments, as Mr. Spencer remarks, can only increase in frequency as well as in intensity as the human mind becomes more capable in seizing the comprehensiveness of things and their complex relations.

Certainly, it is no longer possible to attribute to that Supreme Reality goodness, consciousness, and personality, *as we conceive them*. But do our conceptions exhaust the modes of the infinite? Mr. Harrison will see only the negative side of the Unknowable. Whether you will employ, he tells us, the term existence or energy, you never have anything but a scientific generalization, a dumb, blind, insensible entity, without common attributes, and consequently without possible sympathy with man. Mr. Spencer meets the objection in advance in his "First Principles." "Those who espouse this alternative position," he says, "make the erroneous assumption that the choice is between personality and something lower than personality; whereas the choice is rather between personality and something higher. It is not just possible there is a mode of being much transcending intelligence and will as these transcendent mechanical motions? It is true that we are totally unable to conceive any such higher mode of being. But this is not a reason for questioning its existence; it is rather the reverse. Have we not seen how utterly incompetent our minds are to form even an approach to a conception of that which underlies all phenomena? Is it not proved that this incompetency is the incompetency of the Conditioned to grasp the Unconditioned? Does it not follow that the Ultimate Cause can not in any respect be conceived by us because it is in every respect greater than can be conceived?"

HOW TO DRAIN A HOUSE; PRACTICAL INFORMATION FOR HOUSEHOLDERS, by Geo. E. Warring, jr. M. Inst., C.E., Consulting Engineer, &c., &c.; New York: Henry Holt & Co.

This is an admirable little book, of 222 pages, with numerous illustrations. It treats the subject under such heads as the following: House-drains and health; foundation and cellar; special advice as to plumbing; the sewer gas question; sewage disposal for isolated houses; and sub-surface irrigation. It treats of fresh air inlets, soil pipes, cowls, traps, water closets, sinks, &c., &c. The contents of this book should be familiar to every householder. Elsewhere we give extracts from the book.

There will be issued by the New England Publishing Co., Sandy Hook, Conn., during this month, a book entitled "Berlin as a Medical Centre," by Horatio R. Bigelow, M.D., of Washington, D.C. This book will be a complete and accurate medical guide to Berlin, giving instructions in reference to board, clinics, lectures, expenses, &c., and all information that will be necessary for the medical student abroad.