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T H E

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SUGGESTIONS FOR PREVENTING THE SPREADING OF INFECTIOUS AND CONTAGIOUS DISEASES

By ALFRED CARPENTER, M.D., C.S.S. From *Sanitary Record*.

You have probably heard learned disquisitions regarding the so-called germ theory of disease. It is sometimes called the graft theory; there is also the glandular theory, and various other titles have been given to explain this class of epidemic diseases. Great battles have been fought by learned sanitarians, as if the very existence of sanitary progress depended upon the unconditional acceptance of one or other of the views of the combatants. These combats appear to me very much like those which occasionally arise between such individuals as Tweedledum and Tweedledee, and are really of no consequence to you except so far as they require to be explained. I believe that the learned authors are wrong in some points, but they are right in others. It is not necessary to deny the truth of the glandular theory in some cases, because I hold that the germ theory is right in others, and because I feel sure that disease is sometimes produced by parasitic life, I am not quite shut out from the belief in the possibility of chemical origin in others. No one who has studied the causes of itch, or has had to treat some of the diseases of the skin which are produced by parasitic life, can doubt that such states can arise. Such hold has this idea of parasitic disease had upon the minds of some men that the founder of a sect in unorthodox medicine promulgated the theory that disease in general had its origin in the presence of animalculæ in the human blood, and that sulphur was a sovereign remedy because it was fatal to the itch insect. The imagination of the practitioner was not altogether at fault. It is now found that several diseases are at any rate accompanied, if not caused by, parasitic life in the blood of the victim. This is especially the case in some cattle diseases and in those maladies which are ostensibly caught by human beings from animals. Whether that life is animal or vegetable is a doubtful point. I am satisfied myself that all those diseases which require a time for incubation,

and are of the zymotic class, are propagated by germs infinitesimal in their size but as much alive as is the egg of a bird or the seed of a plant. At the same time I am also satisfied that there are cases in which a process arises which does not require a stage of incubation, and in which the product of tissue change is capable of spreading mischief and promoting a similar disease in another person, that the *materies morbi* is not necessarily a living particle capable of reproducing one of its own class, but is a secretion of matter produced by an action on the frame similar to that which arises when a particular gland is irritated. The irritation produces a secretion which, under certain circumstances, is quite different from the ordinary fluid. Thus the milk from the mammary gland of a woman who has recently been in a state of passionate excitement is known to be injurious to her sucking child; convulsions have followed from its use, and it is a case quite to the point.

I will shortly explain the manner in which, according to each of these theories, or rather my view of them, disease may spread. We will suppose that a minute granule of small-pox matter has found entrance into a body susceptible of its influence. A time is required for it to assimilate material to itself. This is called the stage of incubation. It probably increases and multiplies in a manner somewhat similar to the growth of the yeast plant in sweet-wort. There is a constant deduplication of the germ, either by the division of cell or by the aggregation of fresh matter, and with that growth there is a rise of temperature. The period of growth is definite, like to ordinary fungi, and is not prolonged beyond a given time. In some cases there is a continual renewal of growth until the patient succumbs, or all the material available has been used up, and fructification has taken place. Until this process is completed fever runs its course. The new produce has to be expelled from the body. If the material upon which the germ has been able to feed has not been excessive, the patient throws off the disease in a mass of pustules, and then recovers, or the secondary fever set up by the pustules themselves may be fatal. If the quantity of available food is large, the newly-formed material interferes with the nourishment of the body, and the patient succumbs to the disease. In this class of case there are three parties to the disease—the germ or particle to be planted; the body in which it is to take root; and the material by means of which it grows. If the latter is absent the germ aborts and comes to nothing. This is my idea of the germ theory. It applies to small-pox and its allies; to typhus and typhoid and cholera; to diphtheria, scarlet-fever and measles. Whenever a stage of incubation is required after the advent of the germ, there is an action set up as a sequence, and the result of that action must be growth of germ, then development, and afterwards a process similar to fructification. This growth is provided by a material which is not proper to the human body; it is something extraneous, and not necessarily a part of it. It is the retention within the blood of some used-up or absorbed material which ought not to be there, and which is the re-

sult of some insanitary state of the body itself, or of its surroundings. These cases constitute the major part of all epidemic diseases.

The other class consists of cases in which there is no defined stage of incubation, in which the result is as immediate and as certain as is that of viper poison. The morbid material sets up a change in the blood which appears to be propagated by contact. The constituents of the blood are changed in their character, and if the quantity of the poison is sufficient, and the powers of resistance of the body low, it rapidly leads to a fatal termination. These cases are much influenced by the size of the dose. The more numerous the points of contact between the particles of poison, the more rapid and immediate is the result. There is however, a reproduction of morbid material as in the first set of cases, and it is probable that such morbid matter may be manufactured out of the blood of anybody, whatever may be their state of health. An attack does not protect the individual from future attacks of the same disease. A chemical change arises in the blood; there is no act of growth such as is the case with small-pox matter or diphtheria, but there is an alteration in the character of one of the constituents of the blood, and a result follows similar to that which arises when a gland is irritated and secretion altered. We all know how the sight or smell of some pleasant food promotes the flow of saliva in the mouth of a hungry man, but that it will not affect the man who is full to repletion. There is a condition of system which makes the gland prone to take on the required action. So the poison of erysipelas or of irritative fever sets up an action in the blood of the recipient, and a secretion is formed in it which is antagonistic to the continuance of life, and which sooner or later acts as a poison on the manufacturer himself. Something is set free which is as much a poison in its way to animal life as any kind of organic poison which is produced in the chemist's laboratory.

This is my idea of the glandular theory. It is quite possible that it may be correct as regards the whole range of zymotic disease, and that it is a secretion from the germ rather than the germ itself which kills. Be that as it may, the question is of no moment whatever to you as far as practical application is concerned. In either case there is a granule of matter which is material and nonvolatile, which can be caught, and which will not grow except in congenial soil, and which granule it is your duty to catch and destroy. I want you to keep this point fully in your mind. Contagia, or the elements which spread contagion, are material particles, which you can see if you have a sufficient number of them. Gases as such do not generate infectious disease. I repeat, the spreading causes of contagious disease are particulate and nonvolatile. They are not indefinite; they are something you can catch hold of, and, like the grains of wheat in an ear of corn, they have an end.

Volatile products, such as sewer gas and foul smelling gases of all kinds, may produce unhealthiness, may give rise to unsoundness, may promote a low condition of general health, and may increase

the chance of the easy spread of the infectious disease by rendering a people prone to take on such. But they cannot set up some of the diseases unless a particle of similar matter is brought from elsewhere, and spread by some special cause among the people. Sewers may spread some kinds of epidemic diseases when they are badly constructed, when they are sewers of deposit in which excreta are retained. Let the secretions of a typhoid or scarlet fever patient be retained in a badly constructed sewer, let the contents of the sewer be in a state of fermentation from fungal growth, let it be so arranged that the sewer gasses find their way into the living rooms of the people, or, still worse, into contact with the food they consume or the water they drink, and sewer gases will spread the disease as well as cases of the disease themselves. In this way badly-laid sewers may and do spread epidemics, and germs of infectious disease may be distributed throughout a given district by underground means. This applies most certainly to a large class of the diseases with which you have to contend, but I very much doubt if it applies to all. It is quite possible for conditions to arise in a district, and for fevers to follow as a matter of course, although no foreign germ from another case has been imported into that district.

There is a difference in this respect with regard to the class of fevers which are called typhus or famine fevers. Given a sufficient amount of overcrowding, want of ventilation, and insufficient or bad food, and typhus is sure to arise. The reason for this is not far to seek. The germs which set up typhus in a convenient soil are always present among us. They only require the concurrence of circumstances such as I have mentioned, to enable them to increase and multiply at the expense of the now emaciated and weakened body. We know how some forms of fungi appear whenever they find a fitting place upon which to vegetate. Deposit a piece of bread or cheese in a dimly-lighted and damp place, and a green mould is sure to appear. Mildew and smut show themselves in certain seasons on corn; the fungus called mucor is sure to grow upon rotting mushrooms, decaying fruit, or an exposed pot of jam. The germs from which these forms of fungi appear must be always present either in the atmosphere or in the materials themselves, and they grow as a matter of course when the conditions which encourage such growth come together. I think the germs which are able to set up typhus fever may be always amongst us. Those germs are a natural part of animal life, and they only wait for the conditions which are required for active development, they then assert their individuality, and by so doing produce epidemic disease.

Providence never intended that human beings should herd together like sheep or pigs. Whenever such a condition of things is brought about, and is accompanied by the natural sequence, foul air, then the great army which is spoken of by the prophet Jeremiah puts in an appearance, and carries off by pestilence a large portion of the offenders. There is a survival of the fittest, as Darwin expresses it, and by the removal of one of the causes, viz, the overcrowding, the effect ceases.

I have shown you that disease spreads by means of particles of living matter. I will now detail their chemical characteristics. They are organic, and as such easily destructible if proper means are taken for the purpose. No organic matter can act upon the human body as they do. Arsenic or phosphorus kills by acting chemically upon the constituents of the tissues. Inorganic matter depends for its effect upon the consequences of the dose; and if it is not large enough, no effect follows. This is not the case with the organic particles about which I am speaking; a single granule of small-pox matter may produce sufficient of its kind to inoculate the whole human race, whilst no amount of arsenic can reproduce a single particle of extra matter of the same kind. It grows, therefore.

The next important point is that it is nitrogenous, and as such requires nitrogenous matter for its growth and reproduction. This exists in the particle in the albuminous form. Albumen is a constituent part of its body; just as every seed in every form of plant life contains some albumen in its structure, so every germ or atom of a contagium particle has some albumen as a part of its material structure.

We need not stay to enquire how this albumen acts upon the body when it sets up disease. But it is important to know that if it be coagulated, its chemical state is altered, and its vital power is lost. No seed will grow after the albumen contained in it has been coagulated, and no power on earth can get a chicken out of a boiled egg. Whether the contagium particle be animal or vegetable, whether it act by chemical or vital means, is of no moment to you; the result is the same; and in a very large proportion of cases, though not in all, the life of a contagium particle is lost if it be exposed to a temperature of 212° , provided the heat is continued long enough to penetrate the envelopes with which it is covered. I shall have something further to say upon this point when I come to the details of prevention.

I have shown you that the contagium particle is a solid, that it is albuminous, and that it requires nitrogenous matter for its reproduction. What is your duty with regard to it? It is, first, to destroy the particle itself by coagulation if it finds its way into your district; and, secondly, to see that organic matter in a state of change shall not exist in those positions in your district into which it is possible for the contagium particle to be transplanted. It may not be possible for you to destroy all the germs given off by a particular case, but it is your duty to get them diminished to the smallest possible amount by the means that I am about to detail to you. It will also not be possible for you to remove all nitrogenous matter in a given district, neither will it be necessary. Disease particles do not feed upon living and growing substances, but they increase and multiply upon the excreta of living bodies; upon the used-up material which living substances have done with, and upon those substances themselves when any part of them has lost its vitality. Your duty will consist in giving orders for the removal of the excreta

which have resulted from all kinds of animal life, and for the removal of all decomposing albuminous matter of all kinds, so that any contagium particles which may have escaped direct destruction may have difficulty in finding a suitable soil in which it may produce more evil. At the same time you may bear fully in mind the dictum of an old statesman that 'dirt simply consisted of matter in the wrong place,' and whilst it is fair actually to destroy the germs of disease it is not right to destroy albuminous matter, which, if it be transported to its proper position, may be utilized and made serviceable to humanity.

I have told you why it is necessary to destroy the contagium particle; the next point is to show you how to find it. There is an old proverb, 'That where the carcass is, there will the vultures be gathered together.' I may assume that you will know full well the place at which the vultures are likely to assemble, and the germs of infectious disease are very like to vultures in one sense. If anyone told you, as you left this room, that typhus fever had appeared in your district, you could run over in your mind in a few minutes the places in which it would be found, and if by any chance contagium particles were distributed wholesale, you would at once know where they would grow, just as a police detective could tell where to look for the hidden culprit. What you want to know is the fact of its arrival.

An imported case may be isolated and its effects scotched, as it were, in the onset, and a serious epidemic may be thus prevented. We know how the destruction of a queen wasp in the spring prevents the formation of a wasp's nest and destroys a swarm, so a case in a new district isolated and properly treated in the onset may be the means of saving many lives and a vast amount of serious illness. Examine the medical officers' returns frequently, be in friendly communication with dispensary and club surgeons, get returns as frequently as possible from all public hospitals and infirmaries. Don't spare a little trouble in visiting elementary schools, and you will be on the trail of epidemic disease, and have no difficulty in finding out when a new case does appear among your people.

Let us now suppose that a case of infectious disease has been discovered in some particular neighbourhood. The first and most important work is to procure the isolation of the patient. Unless he is separated from the rest of the family, and from intercourse with other people, it is certain that the disease will not be limited in its operation to that case. Urge upon the friends the duty of removing him to the infectious wards of the district to which he belongs. I assume that every board of guardians has a building or buildings set apart for such a purpose. No board has done its duty which has failed to provide this important adjunct with the infirmary for the treatment of the sick poor, and no matter how severe a case may appear to be, it is far better to expose it to the increased risk which arises from removal if it cannot be isolated at home. The case cannot be properly nursed, and in that event the future advantages will

far outweigh the disadvantages of removal. For cases in which removal produces no risk, the advantages are so great that it ought not to be delayed for a single day. If isolation can be procured, and the case placed under the care of one or two responsible nurses, removal may not be necessary, but it is criminal to neglect the removal. The isolation must be complete, or it is useless. I recollect, some years since, visiting a large school belonging to a number of boards of guardians, which had been erected for the education of pauper children, and in which purulent ophthalmia prevailed. I said to the superintendent, 'I suppose you are aware that the disease is infectious?' He said, 'Oh! yes; we take measures to prevent it from spreading from child to child.' He took me into one of the wards, a room some 60 feet long, and showed me a class of about thirty children under verbal instruction at one end of it, and told me that those were infected children. At the other end of the room was another class of the same age and standing; he pointed them out as healthy, and said, 'We don't let the classes mix at all.' Now, this was his idea of isolation. He did not understand the object to be effected, and as a consequence his isolation was perfectly useless. The disease continued to spread, as a matter of course, and the managers wondered why ophthalmia always existed in their school.

You will find objections made by some persons to removal to a pauper establishment. It is an objection which is worthy of some consideration. If the friends can provide isolation, well and good; but if not, the welfare of the the state is of more importance than the dislike of the patient.

(*To be continued.*)

SUNLIGHT AND SOLARIZATION IN HEALTH AND DISEASE.

BY E. C. ANGELL, M.D., NEW YORK from the *Sanitarian*, Concluded.

The famous Florence Nightingale ranks light as second only in importance to the sick to fresh air, and says, in her 'Notes on Hospitals': 'Direct sunlight, not only daylight, is necessary for speedy recovery, except perhaps in certain ophthalmic and a small number of other cases. Instances could be given, almost endless, where, in dark wards or in wards with northern aspects, even when thoroughly warmed, or in wards with borrowed light, even when thoroughly ventilated, the sick could not by any means be made speedily to recover. Window blinds can always moderate the light of a light ward, but the gloom of dark wards is irremediable. We can generate warmth; we cannot generate daylight or the purifying effects of the sun's rays.'

Further testimony as to the therapeutic value of sunlight is borne by the 'Dictionary of Materia Medica' of Murat and DeLens, which says: 'We cannot doubt that the influence of light is one of the conditions most indispensable to health, and that it may consequently be usefully employed by the therapist. It acts as a

powerful excitant of the organism, and particularly of the functions of the skin, in cases of general atony, of chlorosis, of lueophlegmasia, of scurvy; in rickets, in scrofula, in chronic engorgement of the viscera; it is, above all, highly useful in convalescence.'

A recent and practical English writer, in A. Winter Blyth's 'Dictionary of Hygiene and Public Health,' treats this question as follows: 'The direct rays of the sun are great remedial and preventive agents in certain diseases, such as scrofula, phthisis, rickets,' etc.

Among the records of particular cases, a striking one is furnished by the celebrated Baron Dupuytren. A Parisian lady who had many physicians, none of whom could cope with the complication of diseases which afflicted her, applied to the Baron as a last resort. Being unable to suggest any drug treatment which she had not already tried in vain, he contented himself with directing that she be removed from the dark street and dismal rooms in which she had been living to a brighter part of the city, and exposed as much as possible to the light. The result of this, as related by Dupuytren, was the rapid improvement and ultimate complete recovery of the patient. . . .

Cavin quotes Professor Dubois, as saying, when some miserable little wretches had been brought by their parents before the class for treatment: 'Take these children to the country, feed them as well as you can, but above all roast them—roast them in the sun.'

The late David Urquhart, through whose instrumentality Turkish bathing was reestablished in Western Europe, was also a believer in insolation, and has recorded the case of a woman who was abandoned to die of consumption by her physicians, but whose health was restored by divesting her of tight and dark clothing and making her lie in the sun every hour that he shone. The latter years of Mr. Urquhart's life were passed in the Swiss Alps in endeavouring to ameliorate the suffering incident to insufficient sunshine. It is well known to visitors of those regions that in the deep valleys the sun shines only a few hours each day, and, as a consequence, the inhabitants suffer terribly from scrofula and other diseases incident to poor nutrition. The women, almost without exception, are deformed by huge goitres, which hang pendulous from their necks unless supported by slings. A considerable portion of the males are idiots. Higher up the sides of the mountains the inhabitants are remarkably hardy, and are well developed mentally and physically. The only difference in the mode of life is in the greater amount of sunshine, and when these poor unfortunates below are carried up the mountains they improve with great rapidity.

The beneficial effects of sunshine are remarkably illustrated in the experience of Dr. Warren, as recorded by himself in *Public Opinion* of August 8th, 1863. He says: 'Exclusion from sunshine is one of the misfortunes of our civilized life. The same causes which make the potato vines white and sickly when grown in dark cellars, operate to produce the pale sickly girls that are reared in our parlors. Expose either to the direct rays of the sun and they begin to show color,

health and strength. One of the ablest lawyers in our country, a victim of long and hard brain labor, came to me, a year ago, suffering with partial paralysis. The right leg and hip were reduced in size, with constant pain in the loins. He was obliged in coming upstairs, to raise the left foot first on every stair, dragging the right one after it. Pale, feeble, miserable, he told me he had been failing several years, and closed with, 'My work is done. At sixty I find myself worn out.' I directed him to lie down under a large window, and to allow the sun to fall upon every part of his body--at first ten minutes a day, increasing the time until he could expose himself to the direct rays of the sun a full hour. His habits were not essentially altered in any other particular. In six months he came running upstairs like a vigorous man of forty, and declared, with sparkling eyes, 'I have twenty years more of work in me.' I have assisted many dyspeptics, neuralgic, rheumatic, and hypochondriacal people into health by the sun cure. I have so many facts illustrating the wonderful power of the sun's direct rays in curing certain classes of invalids, that I have seriously thought of publishing a work to be denominated the 'Sun Cure.'

Dr. Hammond, in a paper published in the first volume of *The Sanitarian*, arrived at the following conclusions: 'Care should be taken both in health and disease to ensure a sufficient amount of light, and it is impossible to rear well-formed, strong, and robust children unless attention is paid to this requirement. Sun baths, or apartments in which the solar rays can fall upon the naked body, are highly advantageous to health, and rooms for this purpose could easily be constructed in most of our city houses. Let us then to use the dying words of Humboldt, have 'mehr licht.'

Dr. Emmett strongly advocates sunshine, and observes that the tonic advantages of iron are greatly augmented by direct exposure of the body to the solar rays.

Dr. J. H. Kellogg, in a suggestive volume on health recently published, says: 'Sunlight surpasses all other agents in restoring color to the blanched and ghost-like face of long-housed invalids, and sunbaths, rightly used, are powerful remedies for disease.'

Among the attractive features of that excellent edifice, the New York Hospital, is its *solarium*, situated on the top of a portion of the structure, and enclosed in glass, serving also the purpose of a conservatory.

My own personal observation of the efficacious results of the therapeutic use of the solar rays extends over a period of fully twelve years, and embraces a considerable variety of diseased conditions, for the most part chronic.

In dyspeptic conditions I have observed the very best results from frequent and prolonged insolation. I recall in particular the case of a young Englishman who had been a great sufferer from dyspepsia, and had derived only limited benefit from a long continued course of general treatment, but who speedily acquired, by regular exposure to the sun, the health, development, and vigor of an accomplished

athlete. Another Englishman, who had been steadily losing strength and weight, in spite of various remedial measures—his trouble being in part mental—gained ten pounds in three weeks by daily insolation, and remained heavier and stronger for the next twelve months.

Still another case of dyspepsia, with much emaciation, gained twenty pounds in six weeks by the same treatment. In regard to increase of weight, it should be observed that the first effect of insolation is to reduce weight, as a stout person accustomed to solarization may lose two, four, six, and even ten pounds in a single prolonged exposure, and gain correspondingly in buoyancy and vigor.

A gentleman from the British provinces, suffering from partial dementia or incipient insanity, was so greatly benefited by a course of judicious insolation that in a few weeks his melancholia was completely routed, and he was enabled to return to his friends and business.

A lady of middle age, suffering from chronic bronchial catarrh, found great improvement from each insolation, and before she had taken twelve this disability was entirely removed; but what surprised her most was the fact that hay fever, from which she had suffered the five years preceeding, did not return. The treatment of this case involved on each occasion one hour under colored glass and a half hour of direct insolation, accompanied with anointing of the entire cutaneous surface.

It is hardly essential to cite further authorities or cases to prove the feasibility and value of the therapeutic employment of the sun's rays. Something should be said, however, of the curious development of solar therapeutics which has taken place outside the profession as a result of what is known as the "blue glass theory." Setting aside the effect on the patient's imagination, which is often a potent element in new remedies, if not in old ones, whatever good may have been accomplished by the use of blue glass as a remedial agent is of course due to the solar rays. And we can well afford to pass without criticism the questionable facts, and still more questionable philosophy, of the military gentlemen who originated the blue glass mania, in view of the good service he has done in turning the attention of the public and the profession to the real value of sunshine.

The same useful purpose served by blue glass goggles in case of weak eyes may be served by blue glass screens in case of bodies too weak to bear a free exposure to the solar rays. And as it is desirable to dispense with such goggles as soon as practicable, it is equally desirable to lay aside the blue glass screen, and submit the patient as soon as may be to the full force of the sunshine.

I have found it almost impossible for sensitive patients, suffering from nervous affections, to remain long enough under white glass, or without glass, to be in any material sense benefitted from the intensity of both light and heat. Under blue glass, however, both are so modified that the same persons may remain almost indefinitely with pleasure and profit, and I am fully satisfied, after a considerable experience with this agent, that by its introduction into solar therapeu-

tics the sun's rays may be safely and profitably administered to even the most delicate and nervously susceptible of patients. I might almost say that there is no morbid condition in which sunshine, modified by blue glass, is contra indicated.

Dr. Ponza, an Italian physician, found blue light soothing to the insane; and by violet light, in one instance, a crazy person was in one day cured. In some extreme cases, even behind blue glass, eye shades and thin coverings for the head might be advantageous, as they generally are in direct insolation. To secure the best effect, however, the entire body should be exposed to the light. When the direct rays are employed, a preliminary anointing of the entire surface of the body with some simple unguent is advantageous, especially if the skin is eruptive, inert, or sensitive; and if the exposure is prolonged and the sun in full force, it is generally advisable to repeat the inunction every half hour or oftener.

It is important that the solarium should be well ventilated, and the best results, it will be recalled, are recorded of open-air insolation. Modern costume deprives the body so much of light and air that the skin lacks sensibility as well as tone; and there is not only great advantage to be derived from the sun, but there is often much benefit received from exposure to the wind.

The sun alone reddens, the sun and wind conjoined magnificently bronze the exposed surface in a manner that the winter months will not efface, while the benefits and strengthening effects are still more lasting. Insolation under glass, however, whether white or colored is a bleaching process, in which there is neither burning nor discoloration.

The construction of a *solarium* is very simple. Its situation, in cities should always be at the top of the house, and a high house at that, that it may admit air, light, and sunshine from all sides. The roof should consist of sash and glass—an outer layer of white glass and an inner layer of blue glass—with an air space of an inch or more between. The sides should have double sash as well as double glass, and may be ornamented with varied colors and figures to amuse the eye and please the fancy. This mode of construction will diminish the intensity of the heat in summer and the cold in winter, and practically makes the structure available for every day in the year on which the sun shines.

Leading from the apartment already described should be another, with enclosed sides of lattice, consisting of revolving blinds. This room should be open at the top, and would only be available during the warm season. The use of the blinds are threefold—to screen the inmates, to regulate light and shade, and to temper the winds to the nude tenants.

In conclusion, I will not go quite as far as Voltaire, who advised two dull actors to plant themselves out in the sun for six months; but I will take the liberty to urge an increased attention to solar therapeutics on the part of the medical profession, for the sun's rays may be employed with absolute advantage and with as absolute safety.

ON THE CONSTITUTION AND FUNCTION OF A MINISTER OF HEALTH.*

By Dr. B. W. RICHARDSON, F.R.S

Dr. Richardson observed that health formed now the leading topic of social discourse throughout all society, and he gave some instances of his experience in remote villages to show how the current of popular opinion runs at present on the subject, and affords at one and the same time a reason and an excuse for the zeal and enthusiasm of those who are in the first rank of the sanitary advance. 'Nothing,' he remarked, 'has so much forwarded the great progress we have witnessed during the past quarter of a century as the perfect freedom of action which has been permitted; and, secondly, nothing more disastrous at this stage of our course, or possibly at any stage, could occur, than the interposition of a central authority that should attempt to enforce even the wisest of rules on the community by serving it with a subpoena to attend even to its health. The reasons are simple because the problem of health is simple; because so very little requires to be done to reach what is perfect; and because all that has to be done is so easy to be done that to inflict on the most willing people any heavy yoke of authority would be the exercise of an unwarrantable and complicated instrument of force. When at this very time we, as practical sanitarians, look at the conditions of our houses and towns and at the social state of the masses of the people, and when from that picture we turn to the tables of mortality, our wonder is, not that we suffer so much, but that we are half as healthy as we are. With that wonder we take in at a glance an appreciation of the fact that the extension of the most obvious and childish rules of self-preservation would accomplish almost everything that could be accomplished, and that what is demanded now, when the weight of superstition is removed and every man feels that disease is a burden he carries on his own shoulders, is education, with time to give it room to turn in and freedom to give to it readiness and facility of action.' But, he urged, there was nothing in these views opposed to the establishment of a Minister of Health, for whose creation, indeed, there was overwhelming argument. Such an officer, placed in a central position, 'must be an authority, not a disciplinarian; a judge and a director, not a commanding officer; a collator and teacher of all learning relating to health, not a dogmatic professor. The basis of a Ministry of Health, is already laid. There cannot be two opinions on the subject, that the basis lies with the office of the Registrar-General. That office, amended in name and in function, supplies all that is required as a nucleus. The work of estimating life and death which now goes on there is the true basis of all our efforts. It is by modification of and additions to this department as it now exists that the new official and govern-

mental institution should be established. The modifications and additions are not after all many, and they are, I believe, all practicable. They would introduce nothing actually new, but would bring together what is already extant. The department would be no longer a mere registration, but would include all that relates to health. Correctly renamed, it would be a Ministry of Health, or a State Department for Health.' The speaker then proceeded to sketch out a plan for the construction of this Ministry of Health, and described the duties which would fall to the office for the organization proposed. The Minister of Health ought not to be troubled with the active strife of parliamentary life. He, of all others, should not be a busy party man. He should not be an administrator at all, but a director and adviser of the Government, of whatever party it might be composed. In conclusion Dr. Richardson said, "We sanitarians 'serve and wait,' and therewith are content. We grudge no Prime Minister, no Cabinet, the endless honour and gratitude that would be earned by the device of a method that shall make the health and thereby the wealth of the nation a primary and special care of the Government. We ask only that we may be permitted to see the desire of our hearts, from which our labours have sprung, recognized, and that we may be the first to salute the political leader or leaders who shall embellish this present reign by the construction or introduction of a great measure for the health of the commonwealth.'

HYGIENE OF THE DINNER.

The question of dinner-table hygiene practically divides itself into two, (*Medical Examiner*). First, how are we to secure that each day's dinner, whether taken at home or abroad, shall do us no injury? and, secondly, how are we to derive from each dinner the greatest possible amount of good? The ideal dinner is not simply that which supplies a man's tissue-waste, but that which places him altogether in a happier and better frame of mind. Regarded in this light a dinner may be made the means not only of bodily, but of mental edification. To this end the body or the dinner must be placed under such conditions that the function of digestion can be carried on with the least possible strain on the general nervous force, while his whole environment must be such as to conduce to a cheerful and contented frame of mind. Much might be written as to the preparations and antecedents necessary to a healthy meal, but it will suffice here to say that all forms of appetite-coaxers, such as alcohol in its various forms and bitters, are likely to do more harm than good, and should be rigidly eschewed by the philosophical diner. The two most important preparations are a moderately long fast, and a period of complete mental and bodily rest before dinner. Afternoon tea is utterly antagonistic to a successful meal, and any worry of mind or fluster of body is equally to be avoided for at least half-an-hour before the dinner-hour.

The fixing of this dinner-hour is, perhaps, one of the most important points in the whole question. The desideratum is, that a sufficient interval be secured before dinner for perfect appetite and a sufficient interval after it for perfect digestion. The great fault of modern dinners is that they are too late. The diners go to bed as a rule with their stomachs half-full of undigested food, and as a consequence they derive the full benefit neither of their meal nor of their sleep, but rise after a troubled rest with a headache and a feeling of weariness, which do not wear off until the next day is half over. In other cases this error has been known to give rise to nocturnal flatulence and acidity, and even to obstinate diarrhœa. These troubles are easily remedied when once the cause is found, but in the opposite event the tissues may in the end suffer most serious damage. To be on the safe side, one should interpose an interval of four hours between the end of dinner and the commencement of sleep, and any arrangement which only allows for an interval of less than three hours stands self-condemned. It is economical in the end to provide the best of everything. Next in importance to purity comes good cookery, which is, perhaps, the most difficult to obtain of all the requisites of a healthy dinner. Variety is the next important matter. We think that on the whole the appetite should be satisfied on one article of food, the preference being given to a cut from a joint plainly cooked. But this should be partaken of only in moderation, and the adjuncts to it in the way of vegetables should be strictly limited both in number and quantity. It is better, if possible, to make separate courses of the different kinds of vegetables, so that the stomach is filled gradually; and it is as well, for the same reason, to interpose a short interval between each course. Of *entrées*, the cautious diner will take only one, choosing that which is most simply prepared.

We must add a few words on the general surroundings of a dinner. What is required is to secure that the main supply of nerve-force shall be concentrated on the digestive organs, while at the same time the mind is pleasantly stimulated. The dining room should be kept cool and well-ventilated; otherwise the blood is drawn away from the stomach to the surface-capillaries, while an extra strain is put upon the lungs by the respiration of vitiated air. The light should not be so brilliant as to over-excite the nervous system. A subdued light of a reddish shade is, perhaps, the most pleasant to dine in, red being believed to have the most enlivening effect upon the sensorium. Flowers and scents, and even the splash of water, or the sound of distant music, are important accessories to the ideal dinner, but are not absolutely necessary to a healthy meal. Lastly, pleasant converse is, perhaps, the most important condition for securing the requisite mental attitude. We would venture to say that no solitary dinner can be a perfectly healthy one, but even that is, perhaps, better than forced and uncongenial conversation. Many an indigestion, we fancy, has owed its origin to an unresponsive neighbour.

HOW TO LIVE LONG.

It has been estimated that in all countries and in all latitudes, the well-to-do live longer than the poor by an average of eleven years. This shows the deleterious influence of an anxious mind on the bodily health, the anxiety for to-morrow's bread. Pensioned persons live indefinitely long; poor-houses of Great Britain can any day turn out a large army of men and women among the eighties and nineties who have been in those institutions for twenty and thirty years, owing in great part to an habitual feeling of confidence that ample provision is made for the future, and the mind is at rest; but it must not be forgotten that the cleanliness, the plain food, and the regular habits, compulsory in those institutions, contribute greatly to the end.

As a moral to the above it may be well to suggest—Don't pension your mother in law, and above all, avoid being poor. A friend of the late Fletcher Harper once asked him to give him the rules that he had adopted through life to make him successful. In reply the great publisher sat down and wrote as follows: "Fear God, pay cash, and keep your bowels open." Three sterling rules, which, if faithfully followed, will doubtless assure happiness, wealth, and possibly longevity. Try them.

DEATH IN THE DISH CLOTH.—Dishcloths are not always what they should be, and may very likely not unfrequently be a source of disease. The *Canada Medical Record* says:—A lady correspondent of the *Rural World*, having been startled by *typhoid fever* in her neighbourhood some time ago, gives the following good advice about dishcloths: If they are black and stiff and smell like a barnyard—it is enough—throw them in the fire and henceforth and forever wash your dishes with cloths that are white, cloths that you can see through, and see if you ever have that disease again. There are sometimes other causes, but I have smelled a whole house full of typhoid fever in one "dishrag." I had some neighbours once—clever, good sort of folks; one fall four of them were sick at one time with typhoid fever. The doctor ordered the vinegar barrels whitewashed, and threw about forty cents' worth of carbolic acid in the swill-pail and department. I went into the kitchen and made gruel—I needed a dishcloth and looked around and found several, and such "rags!" I burned them all, and called the daughter of the house to get me a dishcloth. She looked around on the table. "Why," said she, "there was about a dozen here this morning," and she looked in the wood-box and on the mantel-piece and felt in the cupboard. "Well," I said, "I saw some old, black, rotten rags lying around and I burned them, for there is death in such dishcloths as those, and you must never use such again." I took turns at nursing that family for weeks, and I believe those dirty dishcloths were the cause of all that hard work. Therefore, I say to every housekeeper, keep your dish cloths clean.

THE WORK PROGRESSING.

The annual address of the President, Dr. Workman, before the late meeting of the Canada Medical Association at Hamilton, is indicative that the subject of public health is working up to its proper position as a branch of Medical Science. The greater part of the address was upon the subject of public health, while at previous meetings, Presidents, in their address, as a rule, only briefly referred to it. We have space for only the following extracts; omitted, through an oversight, from our last:

‘The last report of our Provincial Registrar gives evidence of fair progress in the statistical returns which it exhibits, and it is much to be desired that so valuable a publication may undergo continuous improvement and enlargement. We are still without the benefit of a Central Board of Health and its tributary organizations, but a vigorous committee of the Legislative Assembly, during the last session, devoted much attention to the subject of sanitation, and availed itself of the opinions of numerous experienced physicians; we may reasonably trust that in the next session our expiring Parliament will place on the Statute Book an Act which will prove that they duly value the great national blessing of public health.

‘There is, however, one most important provision, which unless the subject be strenuously urged upon the consideration of Government, will be overlooked, if not, indeed, dignifiedly ignored. I allude to the direction by the central Board, of all matters relating to the health of our large public institutions, embracing, as such a provision should do, the selection of proper sites, the erection of substantial and truly economic buildings, securing of salubrious air and reliable abundant ventilation, adequate sewerage without detriment to the health of neighbouring localities, a sufficient supply of pure and serviceable water, advantageous positions for obtainment and delivery of all sorts of supplies, and prompt recruitment of the service staff.

It is my conviction, not founded on vague conjecture, (for I know whereof I speak,) that not merely would the authoritative guidance of an efficient board of health, invested with the powers above instanced, have saved to the public, in the last thirty years scores—aye hundreds of thousands of dollars, but, (which is even more important,) it would have prevented the erection of some of our most valuable institutions in unhealthy, unseemly, or very disadvantageous localities. Those of our members, who were old enough to remember that plover and snipe preserve, in the west end of Toronto, which was chosen as the site of the Provincial Lunatic Asylum, will assuredly not say that it was an eligible location for so large an establishment. It could never have been approved of by any body of men, large or small, who understood practical hygiene.

‘Is it not high time that the medical profession should come to the front, and honourably proclaim its disapproval of this sort of murderous and costly quacking? Are we never to acquire consciousness

of our own real strength, but forever to cringe cap in hand, and with shaking knees, before the men we could put into power, or turn out of it, did we earnestly and unitedly set to work? Did the medical profession of Ontario but justly appreciate its own popular influence and collective strength, and judiciously and honourably put forth that strength, when its own proper interests, or those of the public are at stake; I should like to see the ministry or the parliament that would snub us. What then, in the name of manhood, is it that we lack? Simply and solely that noble *esprit de corps*, which should actuate every honourable brotherhood.'

DISEASE GERMS AND THEIR DESTRUCTION.

The admirable article in this number of the Journal, by Dr. Alfred Carpenter, on 'Preventing the spread of infectious diseases,' should be carefully read by every one. The causes of disease of the zymotic class especially are explained in a most simple, intelligible and interesting manner. He compares disease germs to such living organisms as mildew and mould, which grow and multiply in a manner somewhat similar to the growth of the yeast plant in sweet wort. 'Deposit a piece of bread or cheese in a dimly-lighted and damp place, and a green mould is sure to appear. Mildew and smut show themselves in certain seasons on corn; the fungus called mucor is sure to grow upon rotting mushrooms, decaying fruit, or an exposed pot of jam.' The food for the growth of disease germs in the body 'is material which is not proper to the human body; it is something extraneous, and not necessarily a part of it. It is the retention within the blood of some used up or absorbed material which ought not to be there, and which is the result of some insanitary state of the body itself, or of its surroundings.' Of want of care of the skin or inaction of the excretory organs, it may be. 'Providence never intended that human beings should herd together like sheep or pigs. Whenever such a condition of things is brought about, and is accompanied by the natural sequence, foul air, then the great army which is spoken of by the prophet Jeremiah puts in an appearance, and carries off by pestilence a large portion of the offenders. There is a survival of the fittest, as Darwin expresses it, and by the removal of one of the causes, viz, the overcrowding, the effect ceases.' As to the destruction of the disease germs by heat, Dr. Carpenter says: 'The next important point is that the germ is nitrogenous, and as such requires nitrogenous matter for its growth and reproduction. This exists in the particle in the albuminous form. Albumen is a constituent part of its body; just as every seed in every form of plant life contains some albumen in its structure, so every germ or atom of a contagium particle has some albumen as a part of its material structure.' Heat, it is well known, coagulates or curdles albumen, as the white of egg. It is important to know that if the germ be coagulated, its vital power is lost. 'No seed will grow after

albumen contained in it has been coagulated, and no power on earth can get a chicken from a boiled egg.' Finally, 'disease particles do not feed upon living and growing substances, but they increase and multiply upon the excreta of living bodies; upon the used-up material which living substances have done with, and upon those substance themselves when any part of them has lost its vitality.' And thus we may know where to find disease germs. 'Where the carcase is there will the vultures be gathered together.'

IN THE REPORT OF THE SELECT COMMITTEE on public health of last session of the Ontario Legislature, among many other useful suggestions were the following:—Means should be taken to disseminate information and to educate the individuals of each local community in the knowledge of such modes of living as conduce to health and prevent causes of disease. Besides personal cleanliness and correct moral habits each person should be further made to understand in what way he may, through ignorance or thoughtlessness, be injuring the health of his own family, or of his neighbours, and by what means within his reach he would be able to prevent this. With a more intelligent and general knowledge of the causes which are constant in injuring the public health in every locality of the Province, and with better information as to the measures for their removal or prevention, the health of each local community will be sensibly improved. A more effective system of administration for securing this should be applied, for the returns from the different municipalities sufficiently show how inefficient are the present agencies, both in the exercise of responsibility and in their practical operation for improving and maintaining the public health. All agencies will fail to secure this unless they are so constituted that their work will be carried on intelligently and with continuous activity and sufficient firmness. The Public Health Act, Revised Statutes of Ontario, Chap. 190, contains the principal legal provisions under which at present the different sanitary authorities are constituted, but further provisions are necessary to make these authorities more efficient, as well as to enforce such regulations as will better secure beneficial results.

THE STAFF OF LIFE AGAIN.—There is a little good bread made in Toronto, but not much. Nine-tenths of it is hardly fit to eat, and the source of much of it is simply disgusting. We have visited several of the bakeries, and they are hardly in a fit state for the manufacture of food for domestic animals, so unkept and filthy are they. The only way to be anything like certain of getting perfectly clean, pure bread is to get that made by machinery, which is most likely pure, or at least free from the perspirations and other personal dirt off the perspiring bakers. The ærated bread, manufactured by Mr. Nasmith, is essentially made by machinery, and is clean and wholesome, and a beautiful article. Fermented bread may be made by machinery, but it is not usually so made. Most of the bread is made from inferior, low priced flour.

PUBLIC HEALTH IN ONTARIO.—In the *Canada Lancet* (for Oct. '78) is the following on this subject:—We notice elsewhere, the report, recently printed, of the Public Health Committee of last session of the Ontario Legislature, from which it appears that the country is in anything but a good sanitary state, and is very liable at any time to be visited by epidemics of the worst type. It will in truth be little less than criminal, for those high in authority to delay taking some action with the view of improving the sanitary condition of the whole province, whereby many valuable lives may be saved, and much sickness and distress avoided. In our opinion the public health question is one of the first importance, and any effort made by the Legislature with the view of preventing disease, involving a moderate expenditure, will be well received and appreciated by all intelligent people. It is confidently hoped that, during the next session of the Legislature, an act will be passed for the better protection of public health.'

ON THE INTERVENTION OF PHYSICIANS IN EDUCATION.—In a paper read before the section on state medicine and public hygiene, American Medical Association, at Buffalo, (from the *Sanitarian*,) Dr. Sequine concluded a paper as follows: The irrepressible want of modern times is that all men be educated; all educated men must work; education must prepare them to work at their natural best; this preparation is obtained best by a physiological training; physicians alone can carry that training and give a scientific authenticity to its record; it must be done, therefore they must do it; because—above other causes—the folly of to-day is the wisdom of to-morrow. A word more and I close this invitation to physicians to take their natural part in education. Some put the riches of this country in its mines, some in its commerce, some in its manufactures, some in its immeasurable breadstuff, some in its inexhaustible herds; but do not believe them. The true riches of this country—without which all others are like chips in the mouth of the hungry—are our children, if physiologically educated.

WELL DRAINAGE.—Every one knows (says *The Health Reformer*) that a hole sunk in a boggy place, or in the wet sand by the seaside, soon fills with water by draining the surrounding earth or sand. In exactly the same manner, every well drains a considerable extent of soil about it. Careful experiments have shown that for every foot of depth a well drains a radius of three feet. According to this law, a hole one foot in depth would drain a circle six feet in diameter. A well twenty feet deep would drain an area one hundred and twenty feet in diameter; and a well three times that depth would collect the water from an area of about one hundred thousand feet of diameter. By way of experiment, some creosote was poured into a trench situated two hundred yards from a well. In a short time, so much of the poison had found its way into the well as to be very readily perceptible to smell and taste.

HEALTH OF PARKDALE—AND OTHER TOWNS.

As was stated in the last number of this JOURNAL, Parkdale has most excellent natural advantages as regards health ; and it rests with its people to make it a perfect model of a healthy town, and one of the most attractive places in Canada, and without great trouble or expense. But the natural advantages must not be entirely relied upon. After draining and filling in the few natural water basins, which contain more or less standing water, unfavorable to health (and it is gratifying to see that something is already being done in this way), the great thing will be to *keep the suburb clean* ;—not to let it become dirty. The soil and the natural facilities for drainage are most excellent : but by drainage we do not mean sewerage. There is a vast difference between drainage and sewerage, though there are many who seem not to notice the difference. Drains, for simply draining the soil of superfluous water, and keeping it dry, should be porous, in order that the water may find its way into them ; while sewers should be as impervious to water as possible, or the soil in the vicinity will soon become very foul. It will be a good thing for Parkdale if it never has a sewer. Its now clean virgin soil might be kept pure, and it would never be infected with sewer gases, one of the worst banes of civilization. But all excrement and filth of every sort must be removed from it a safe distance, in some way. A very large proportion of the causes of disease arise from the imperfect manner in which the waste or excremental matters from the bodies of men and animals are disposed of ; from more or less of these, waste matters being conveyed back into the human body again, and chiefly along with the air and water consumed. So it is of the utmost importance that these excremental matters be promptly removed to a safe distance.

It is not premature to draw attention to this most important matter now, and what may be said in reference to it will be applicable to other towns in Canada. Early attention to this is vastly more important than grading streets and making sidewalks, however desirable good streets and sidewalks may be. The present earth sidewalks are not dirty. The soil is not dirt, or if it is, it is clean dirt, and will not cause sickness. The prevention of typhoid and diphtheria—the prevention of a death—every death, be it remembered, represents a vast amount of sickness in those who do not die—will repay the cost, ten, twenty, or an hundred fold, of prevention. So it is to be hoped that among the first matters to receive attention by those who will soon be called upon to exercise authority in Parkdale, this one of the removal of excrement will hold place.

In many towns and large parts of cities in Great Britain sewers are disapproved of, and the whole of the excrement, solid and liquid, is removed, carted away, daily, or from once to thrice a week, and used as manure. This may be done in connection with earth closets, or with the pail or tub system. In some cases the tubs contain a little

disinfecting liquid; in others they are lined, temporarily, by compression, with some dry absorbing material—chaff, saw-dust, straw—which leaves the tub clean when emptied. It is found to work admirably. By all means, the usual concomitants of ordinary privies, cesspools, etc., should not be allowed to accumulate for a single season.

We know of many towns and villages in this otherwise fair provinces, in which the death rate might be reduced from 25 to 50 per cent. by simply *cleaning* the place. In some towns in England the mortality from typhoid fever has been reduced from 50 to 75 per cent. by this means alone. When shall such work be commenced in Canada?

In this connection, while noticing with much pleasure the first number of the *Parkdale Journal*, which we hope to see well patronized, we desire to draw attention to an apparent slight misconception, on the part of our esteemed contemporary, the Editor of that Journal, in reference to our remarks on the health of Parkdale, in the last number of the SANITARY JOURNAL. Parkdale, as we said, is on the most windward side of the city, and will only very rarely at most suffer from the emanations of the ten thousand pest heaps of the latter place. But when Toronto ceases to wait for Legislative action, and employs one or two efficient medical health officers, and one more active commissioner, to attend to its sanitary condition, and is induced to spend more money on the removal of filth, even if it spends less on beautifying, we trust soon then, to see it very much improved in this respect. It is as much capable of, as there is room for, improvement.

THE AMOUNT OF FOOD REQUIRED BY MAN.

To the Editor of the SANITARY JOURNAL.

SIR.—The amount of food necessary to sustain vigorous life: In reference to your article on this subject in the October number of the SANITARY JOURNAL, a personal experience of my own may be appropos. I was a sufferer from chronic dyspepsia for two or three years, until I adopted the plan of living on from fourteen to sixteen ounces of solid food daily, weighed carefully with the scales. The result of a few months' adherence to this regimen was a marvellous increase in the tone and digestive power of the stomach, and a practical cure of the dyspepsia. My life was an ordinarily sedentary one, with a moderate amount of exercise. I could perceive no decrease of either mental or bodily vigour during this severe prescription—as I thought it: but Dr. Nichol's experience throws it entirely into the shade. I was often hungry, and only the stern logic of the scales could have kept me to my purpose. Such an experiment of course necessitated a careful selection of food—brown bread, lean meat, etc.

To dyspeptics and bilious people, I would say, buy a pair of scales, and do likewise.

Yours truly,

Toronto, Nov. 9th, 1878.

SCRIBBLER.

OUR DAILY MILK AND BREAD.—These are the staff of life of young and growing children, and form a large part of the diet of adults. When good, they approach nearer to perfect foods than any other articles of diet. Yet what is the quality of the supply of these most important foods in the towns and cities of Canada? For the most part it could hardly be worse. Tradesmen furnish them as they see fit; in a way in which they can make the most money out of them, regardless of the health of consumers, who don't know what they take into their stomachs when they eat these articles. Surely it is high time that some system of inspection were established, in reference to milk and bread. For the most part, in this country, the flesh meat is good, and vegetables are unsurpassed; and the best flour can be made from Canadian wheat. If two of the most important food-stuffs are so far from being what they should be it is chiefly the fault of the people—of the people who buy and consume them. With many, no doubt, it is their misfortune rather than their fault, because they do not know when they use these foods whether the articles are good or bad. Is it not the duty of those who do or should know, of those in authority especially, to see that those who do not know, are not imposed upon, swindled, or manslaughtered, by purchasing such stuffs?

MILK TYPHOID.—Hardly a week passes in which a case of outbreak of typhoid fever from infected milk is not reported in some one of our British exchanges. These outbreaks are certainly becoming very common. But they are at once investigated, and means are used to prevent their recurrence. In Canada there is no one—no organization, for the purpose of investigating the causes of outbreaks of typhoid or other diseases, and consequently the people have no knowledge as to how many cases of typhoid arise through the use of infected milk. Milk is well known to be very prone to absorb poisonous effluvia—foul gases, contagiums, etc.; and when a case of typhoid fever, diphtheria, scarlet fever, or the like, occurs at a dairy supplying milk to the public, as may not unfrequently happen, the disease germs—the contagion particles, may readily find their way into the milk—a choice vehicle for them—and be distributed to scores of unsuspecting families. We have repeatedly endeavoured to draw attention to the necessity that exists for some system of milk inspection in the cities and towns of Canada. Better nourishment for children may be secured and many lives saved thereby.

HOW TO PREVENT EPIDEMICS.—Mr. Earnest Hart, writes:—I have just returned from a distant part of the country where I was summoned to investigate an outbreak of zymotic disease such as that which a Ramsgate correspondent and others publicly deplore. It is the third lamentable outbreak of the kind which has been brought under my notice this season. In each case the cause was the same; reflux of infected sewer gas through the soil-pipes forcing the traps. The remedy was therefore simple—effectual 'disconnection' and ventilation of the house-drains and soil-pipes.

MICHIGAN STATE BOARD OF HEALTH.—We have been favored with the report of the last quarterly meeting of this Board, held Oct. 8th. It is certainly a very active and efficient Board, and must be of great service to the State. Communications, and reports by the several committees, were read, on such important subjects as ventilation, diphtheria, opium eating, etc. The report of the secretary showed that besides the distribution of many copies of the vital statistics of Michigan, and the report of the State Board, 20,000 copies of an 8 page pamphlet on the Restriction and Prevention of Diphtheria had been printed, and were being distributed in the State. It was reported that there were known to be 1,313 habitual opium-eaters in the State. A resolution was adopted for a memorial to the Legislature in favor of an immediate topographical survey of the whole State for sanitary purposes. The secretary read a communication from Dr. Topping, of Dewitt, based on recent experiences in an epidemic of diphtheria, in which he traced about 70 cases to one first case.

ON TOBACCO DEAFNESS.—Tobacco must be classed with alcohol. Like it, even in small quantities, it causes marked functional disturbance in the organs of hearing. Often deafness depends entirely on its use. Its effects are most marked on the middle ear, the muscles of the palate, and on the nerves of these regions. Smoking is, in this respect, more injurious than chewing or snuffing. Those who expel the smoke through the nostrils bring it in direct contact with the Eustachian tubes, so long as they remain unclosed. If the smoke be forced through a cambric handkerchief, the solid particles it contains will form on it a dark stain. These particles adhere to the mucous membrane, as is proved by the fact that the odor remains in the breath long after the person has ceased to smoke.

The angina of smokers is characterized by swelling, redness, dryness and insensibility of the mucous membrane of the palate and the pharynx. The redness is not that of an acute affection; it is a congestion, rather than an inflammation. The dryness of the throat is marked, and the epithelium is smooth and glossy. The patients suffer no pain; they generally seek to be relieved from the ringing and deafness. Patients fix the origin of their trouble at a very remote period, so that we may conclude that it is the continued use, rather than the abuse of tobacco, that is its cause. The disease is always curable in the early stages; but never when there is permanent thickening of the ligaments of the muscles of the ossicula, or a sclerotic condition of the membrana tympani. A cure is never effected unless the use of tobacco is abandoned.—Dr. Ladriet de Lacharriere, *Annales des Maladies de l'Oreille*, etc.—in *The Proceedings*.

SURVIVAL OF THE 'FITTEST.'—Under this head a London paper announces that Conduit Street, formerly the residence of Astley Cooper, Eliotson, and a number of other medical celebrities, has been recently occupied by tailors, who have completely driven off the sons of Esculapius.

BOOKS AND PAMPHLETS RECEIVED.

ELEMENTS OF PHYSIOLOGY AND HYGIENE, by R. T. Brown, M.D. Cincinnati: Van Antwerp, Bragg & Co.

This is intended as a text book for schools, and is quite a model of neatness, being well printed with clear type, on very good paper, and with good engravings. As we advocate strongly the teaching of physiology and hygiene in all public schools, we are always glad to welcome works of this kind. But we beg to give a few words of kindly criticism on this one and shall be glad if they have a good effect on future editions. We know something about what it is to write amid the many and irregular duties of a medical practitioner, and we would suggest to the Author a careful revision of the work. While it contains all that is necessary for a pupil to know, and a satisfactorily liberal space is given to the important subject of hygiene, the text or composition is often obscure, and much is left for the youthful reader to conjecture. A careful revision might remedy this. For example, in section 43, to what does the first word in the second sentence, 'If,' refer? Of course it is intended to refer to the left ventricle, but grammatically it refers to the blood. 'This is health,' last words on page 13:—what is health? Is it defined in the previous sentence? The pupil is told, page 40, that 'the left side of the heart is engaged in the distribution of blood to all parts of the body, for *its* nutrition.' Not the nutrition of the heart, certainly. Again, that 'blood is forced into the ventricles through three triangular folds of membrane;' that all the veins 'form *one* great trunk, the vena cava;' and that blood is 'returned to the heart by the pulmonary vein;' one vein? We believe these must arise through want of careful revision. We do not understand sentences one and three of section 50, on the absorbents. Finally, is power or force *distributed* to every organ by the nervous system, or does this system bring the forces, the potential energies in the organs, into play, and guide them? We shall hope to see a second 'revised' edition.

A CASE OF ENDOTHELIOMA OF THE INTERVAGINAL SPACE OF THE OPTIC NERVE. REMOVAL WITH ATTEMPT TO PRESERVE THE EYE-BALL. SUBSEQUENT ENUCLEATION ON ACCOUNT OF UNCONTROLLABLE HEMORRHAGE. REMARKS. By Dr. Adolf Alt, M.C.P. and S.O., of Toronto. Lecturer on Ophthalmology and Otology to the Trinity Medical School. New York: William Wood & Co.

A CASE OF CLEFT PALATE, WITH ACQUIRED DEAF-MUTEISM, STAPHYLOPHRY, RECOVERY. By Dr. Ad. Alt, M.C.P. and S.O., of Toronto, Lecturer on Ophthalmology and Otology to the Trinity Medical School. New York: William Wood & Co.

RELATIVE TO THE WORK OF HEALTH OFFICERS AND OF LOCAL BOARDS OF HEALTH. State Board of Health, Michigan.

THE VEST-POCKET ANATOMIST. (Founded upon "Gray.") By C. Henri Leonard, A.M., M.D. 20th enlarged edition. Detroit: Corner Gratiot and Woodward Avenues.

MEDICAL MISSIONS AT HOME AND ABROAD. By J. C. Kerr, M.D., twenty-three years Medical Missionary in Canton, China. San Francisco: A. L. Bancroft & Company.

RESTRICTION AND PREVENTION OF DIPHTHERIA. Document issued by the State Board of Health, Lansing, Michigan.

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