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CANADA HEALTH JOURNAL

A Monthly Review and Record of

SANITARY PROGRESS

——EDITED BY——

EDWARD PLAYTER, M.D.

Public Health and National Strength and Wealth.

For Contents see next page.

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VOL. XII. SEPTEMBER, 1890. No. 9.

CONTENTS

CANADA HEALTH JOURNAL.

A Monthly Record of Sanitary Progress.

VOL. XII. SEPTEMBER, 1890. No. 9.

THE ENORMOUS ECONOMY, AND THE SUFFICIENCY, OF ABSTINENCE FROM FLESH FOOD.

IF the millions of hard working people who labor ten or more hours a day, year after year for decades, and can only earn enough to keep their family from month to month and are never able to save enough to get a home of their own would give up the use of animal food, life for them would be vastly easier, pleasanter and more "worth living." In point of economy in living, abstinence from animal food is enormous. It has been estimated that a given acreage of wheat wil feed at least ten times as many men as the same acreage devoted to the growth of beef and mutton.

There are two points in relation to flesh meat diet upon which there are erroneous views, and to which we desire to draw attention: one, that abstinence from it is too much of a deprivation to the palate or taste—that it is a luxury that one cannot be expected to deny one's self; the other, that a diet excluding flesh meat is not sufficiently nourishing and sustaining, especially for laborious occupations.

As to the first, we may as well quote the words of a clever writer in the last number of the New York Medical Times, in an article relating to an animal diet and insanity: He says, "There is an aversion against the very idea of quitting eating meat, because of the deprivation imagined to be involved in the measure. But such deprivation is a very unnecessary fear. Nature is more accommodating than man believes her to be. Meat-diet, and still more the frequent concomitant condiments, dull the gustatory nerve. A palate which is all day excited not only by meat-juice, but pepper, pimento, theïn, nicotin and alcohol, must call rice insipid, and will consider a dish of spinach with potatoes a poor dinner. But a palate which is never stimulated, but restored to its natural susceptibility, enjoys a piece of brown bread and a cup of milk as hugely as any *gourmet* his *paté de foie gras* and *sillery*. And then there is the comfort of an easy digestion. The vegetarian, not excited by over-stimulation of the palate to over-repletion, manages easily to always have appetite to spare, and to enjoy his very digestion after meals." Very savory and delicious dishes are now made from the cereal foods—wheat, corn, oats, &c., and with the improvements which of late years have been made in the preparation and cooking of these foods, they may be now so served as to be not only as easily digested, in most stomachs, as even a simple steak, but to many people as palatable as flesh food. It is, in fact, nearly all in use—habit.

As to the second point, the nutriment and sustaining value of a vegetable diet: everybody knows that the cereals contain much more nourishment, pound for pound, than does flesh meat, that whole nations, and vigorous, subsist almost entirely upon them, without flesh food, and that the strongest men in the world eat no flesh meat. Furthermore, some very eminent men have been long abstainers from flesh and found their brain the clearer and more vigorous by such abstinence.

It seems not to be questioned that flesh meat tends to create a desire for alcoholic stimulants and that a vegetable diet will lessen or even cure such desire, while tendency to the universal practice of over-eating is much increased by the use of flesh.

Finally, some of the most eminent physicians of the day—Sir Henry Thompson, Prof. Dujardin-Beaumetz and, others—recommended abstinence from flesh in ad-

vanced life for lessening the effects of age, in certain cases of insanity, and in many derangements of the nutrient and excretory organs. Animals at death—after being slaughtered, retain in the fluids and tissues of the carcase a large amount of excretory matters which, it is probable, give rise to the poisonous ptomines so soon formed after death; and which would soon have been eliminated by the excretory organs of the animal—the kidneys, skin, liver, etc.—had it not been slaughtered. Dujardin-Beaumetz, in a recent lecture in Paris, said: "As soon as death smites the living being, and at the very instant when death appears, the ptomines manifest their presence. At first non-toxic (non-poisonous), they become toxic from the fourth or fifth day which follows death.....As man consumes a great quantity of animal substances whose time of killing often goes back to eight or ten days, it is easy to understand what a fruitful source of poisoning may be here found; this danger is avoided by those who adopt the vegetarian regimen." By toxines the Dr. does not mean active poisons, but such as produce a gradual deleterious effect upon the human organisms. He continues: "Hence, a vegetable diet becomes obligatory whenever, by the bad functioning of the kidneys or digestive tube, the toxines may accumulate in the economy." This diet "reduces to a minimum the toxines which enter the economy by the food. The affections of the digestive tube or of the stomach, to which it is applicable, are numerous."

"To sum up, and as the conclusion of this lecture, I would say, if from an anthropological and physiological point of view, man is omnivorous, and may, according to climates and according to his necessities, live on a flesh diet, or on a mixed diet, or a vegetable diet, from a therapeutic point of view the latter regimen, as applied to our climates, constitutes a very important method of treatment, which is demanded in a great many gastric and kidney, as well as general diseases.

HOW ABOUT YOUR NEIGHBOUR?

"MIND your own business" are words conveying most excellent advice in nearly all circumstances, but what one's own business always really is, has never been, it appears, very clearly defined, and there is one condition or relation in which one is not only justified in prying a little into one's neighbour's affairs but in which this becomes an indispensible duty. No matter how healthy and vigorous you may habitually be, "dear reader," or how judicious, sensible and careful you may be in relation to your own individual health, and that too of your family, a careless, selfish or ignorant neighbour, if not closely looked after, may inflict you with a most malignant or fatal disease. You may even suspect such a neighbour, and avoid him and strive to keep your children away from him and from his, but unknowingly you may seat yourself on the cushioned car or cab seat which he has just infected by sitting on it for a time or you may stand beside him in a shop or market-place long enough for him to infect you; he may, all unintentionally, infect your well, or you may buy from some such one infected food. Your children, in spite of your utmost care, may chance to play or be long enough in contact with his to become infected with a fatal type of scarlet fever or diphtheria. You must, therefore, to a certain extent or in certain circumstances, mind your neighbour's business, or you may suffer terribly for neglecting to do so. In other words, what should be your neighbour's business becomes in these circumstances your own business.

In well organized communities special health officers, called inspectors, are employed to look after the neighbours. The position or function of an inspector is an exceedingly important one, therefore, and a man of special fitness, special ability with tact and good common sense, must

be selected for it. Without a first-class, suitable man, many causes and sources of disease, and its spread, may be overlooked. For safety, every home in the community in which you live, at least, however humble it may be, must be in as good a sanitary condition as your own ; hygienically all must be as perfect as possible. To get the best men for such positions the pay must be liberal. Often municipal authorities do not pay such officials well, because the people—their supporters, will not sustain them in so doing. Wise supporters, or electors, will take care that the health officials, the most important officials of the municipality, whether city or town or only village or township, are so paid that they may have the "heart" to do their work well—to be "up betimes" and "vigilant in their calling." And indeed, at best, every man should, himself, take heed, a little, judiciously, to his neighbour's sanitary condition, even before the sense of smell is affected, and so aid the health officers, remembering that "eternal vigilance" is, too, the price of cleanliness and health.

THE CHOLERA AGAIN. WHAT THE LEADING MEDICAL JOURNAL SAYS.

THE British Medical Journal of August 16th, says: "Now that the cholera, which has been slowly advancing—as in all epidemics prior to 1865—by the North Persian and Euphrates Valley routes, has suddenly appeared on the Red Sea littoral, there is no longer any good ground for entertaining the hope, even should the present epidemic in Spain not spread beyond the Peninsula, that Europe generally will escape, though from the lateness of the season the brunt of the attack may, as in 1865-6, be postponed until next year." In referring to America, it continues: "It is notorious that that continent has been involved in all epidemics, even those in which, as in 1871 and 1875, Great Britain has escaped."

And again: "It is true that for five-and-twenty years we have in our own country (Great Britain), with the simplest system of detention and inspection of infected or suspected ships and persons, enjoyed entire immunity, *thanks to our good sanitary arrangements*, especially as regards water supplies, which the remarkable exemption of Seville and one or two other Spanish towns, and of Rome, have proved to be the most powerful factors in the propagation of cholera."

Now what of the future? What is the plain duty of every health organization in Canada? Our reply is, to prepare for a possible, indeed probable, visit from this dreaded disease next summer; and that it is not too soon to commence preparations *now*—to commence preparations for a pure water supply and for thorough drainage and cleanliness. In many cases, next spring will be too late to make thorough and complete preparations. There are a great many of the smaller towns throughout Canada which, depending now on more or less contaminated, dangerous wells for a water supply, are in much need of a better system; many in which the more prudent and thoughtful, those with due regard to their health interest, would like a better system, but in which the "majority", that often too mighty, because mislead, irresistable force, is opposed to such improvement, as being unnecessary. Now is the time to move in such towns. The near approach of well defined danger will change many votes in this respect. The systems in some of the larger towns and cities are not so safe as they should be, and in their present state might be the means of the distruction of thousands of human lives. The Queen City, Toronto, seems to have but a very unsafe, treacherous supply, which should be put in much better shape before next summer. It is, depend upon it, high time now to begin this sort of work and, too, to make provision for improved sewerage, "all along the lines."

NOTIFICATION OF INFECTIOUS DISEASE AND MISTAKES IN DIAGNOSIS.

THE practice of notification to the health authorities of all cases of infectious disease with their immediate isolation is obviously of such great value as a prophylactic that it is becoming almost universal. In England, the optional act, which only came into force less than a year ago, has been voluntarily adopted by authorities which have jurisdiction over about 12,000,000 of people. This, with the compulsory act applied to London, and with those fifty-six towns or localities which had previously obtained powers of compulsory notification by special local acts, makes compulsory notification now practiced with respect to about 20,000,000 of people. In Canada, we learn that the practice is generally very fairly carried out. A few fines for neglect, in certain places, have been imposed. With the tremendous gain to the public conferred by this practice, great responsibility is thrown upon medical practitioners, especially from possible mistakes in diagnosis. Some practitioners in the United States have encountered actions for heavy damages from mistakes in this way, and there has been some serious trouble of a like kind in this country. Such mistakes are liable to occur to almost any physician, especially without the utmost skill and care. According to Dr. Russell, medical officer of Glasgow, of 1,499 consecutive cases admitted to Belvidere Hospital as suffering from infectious disease, 114, or 7·6 per cent., did not suffer from the disease which they were supposed to have when they were sent in; and of that 114 no fewer than 85, or 5·7 per cent. of the total cases, had no infectious disease at all and ought not therefore to have been removed.

There are two principal remedies for the troubles to practitioners liable to arise from errors of this kind in the practice of notification. *First, physicians wherever the* practice is enforced or carried out, should insist on having provided, in connection with the isolation hospitals, observation wards for the reception of cases of doubtful diagnosis. Physicians have generally "taken kindly" to this practice of notification for the public good, and the least the public can do is to afford this protection, where possible; and it could usually be made possible. Such provision obviously provides also for the public safety, and it is little short of criminal neglect when such wards are not provided.

The other remedy we will but merely name: it is better facilities for the study, and closer study by students at the schools, and even by physicians at past-graduate schools, of clinical cases of infectious disease, in order that the greatest skill may be brought to bear on diagnosis. This is strongly urged by Dr. Russell.

CRIME AND THE PUBLIC HEALTH AGAIN.

OUR esteemed cotemporary, the British Whig (of Kingston, Ont.), which has long been one of the foremost Journals on the continent in the discussion of health subjects, although "in accord with many suggestions" of this Journal, thinks the suggestions relative to physical exercises in the public schools in the August issue "not practicable." It must be observed that we did not mean or suggest that just such physical training as employed by Dr. Wey in the Elmira (N.Y.) Reformatory should be practiced in the schools, but "*some such*" "*according to circumstances.*" The British Whig says, "Crime comes to some as a heritage, the legacy which dishonored and disreputable parents leave to the young, to whom their example has been all along degrading; to others it comes as a sort of disease, which is contracted from evil associations from which parents and guardians take no special pains to protect them." Exactly; or almost: we would omit the words, "to others." *Crime comes largely, chiefly* as a "heritage" of "disease." It is to

remedy, to prevent the individual increase of, such disease that we suggest special physical training or culture in the schools. Of about half a million pupils in the schools of Ontario, clean and unc ean, not nearly half it appears receive any physical education. As the Whig says, the "schools have been established for purely educational purposes." Every body now admits that both mental and physical education should,—must, to be successful—go hand in hand together. And what sort of physical culture do the nearly forty-five per cent. of the Ontario pupils receive, now, amid the mental gorging with inassmilable food? Such as it is,—good enough probably so far as it goes, good enough of its kind—it is given to all alike; alike to those with a heritage of disease inclined to criminality and to those with a heritage of a well organized physical structure inclined only to honest purpose. Is this the right sort of physical culture? We contend that it is not; and that if the state undertake to educate the young, it should, in common fairness to the people, educate properly. The dull or stupid boy, the slow, stooping, shuffling boy with soft flabby muscles, the boy with a face indicative of criminal tendencies, should receive special physical culture not at all required by the other boys; and why should not the dirty boys be washed and made clean? as they are in some of the public schools in London and on the continent of Europe. Is there a public school in Ontario in which the atmosphere soon after the pupils are assembled does not indicate that some of the pupils need a good washing—a hot and a Turkish bath? If the twelve men criminals upon whom Dr. Wey performed his reformation experiments, as mentioned in our August issue, had been so fortunate in early life as to have had similar, physical culture to that to which they were subjected in after life at Elmira, and which made as it were new men of them, it is not at all likely they ever would have become criminals. And in such subjects in early life, the culture could be simpler and would, in this susceptible period, be productive of still better and more marked effects.

Furthermore, we contend that such physical culture in the schools would be a great preventive of the insanity which seems to be everywhere on the increase, a subject to which we purpose alluding in the next number of the Journal. The time is probably not far distant when the prevention of both crime and insanity will be regarded as directly associated with public health regulations.

CYCLING, ITS DANGERS AND HOW TO AVOID THEM.

ANYTHING which induces persons of sedentary occupations to excercise out of doors should receive every possible encouragement. Cycling is comparatively a new form of excercise and is not without its dangers. But little has been written on this continent to guide cyclists in the hygienic bearings of the excercise. We fail to find anything of this sort even in the "Talk on physical culture" recently given at the Health Officers Convention at Owen Sound Dr. B. W. Richardson, of London, Eng., has written a good deal on the subject. In the last issue of the *Æsclepiad* he admits that since he first warned the public years ago of the dangers of immoderate cycling changes have taken place in the construction both of bicycles and tricycles which materially modify the old drawbacks. He is still of the opinion that cycling should never be practiced by boys and girls, since it differs from other exercises in the fact that it molds the bodily frame work, as it were, to its own mode of motion; and riders in course of time almost invariably acquire what he calls "the cyclist's figure," which is not graceful and indicative of the possession of perfectly balanced powers. Of two things, at least, he is satisfied. They are that the temptation of competition is to an earnest and practiced cyclist

a " demon of danger ; " and that the systematic pursuit of cycling should never be fully commenced before the age of twenty-one years. As stated in the Iowa Board of Health Bulletin, almost all children who use the bicycle much—especially taking long rides—become deformed, and in walking assume what is known as the "cycler's posture." If any one will observe a large number of bicyclers in a parade it will be seen that nearly all if not all assume a position of stooping, a drooping of the shoulders, in a degree more or less marked which, if in children is practised much, becomes a fixed posture, compressing and narrowing the chest and developing the limbs of the body abnormally. "It has been demonstrated repeatedly that girls and women who run sewing machines are always more or less injured thereby —the injury being largely proportionate to the amount of such exercise. If it is true that the light exercise of the limbs, combined with the sitting posture required in the use of the sewing machine is injurious, how much more injurious is the severer excercise of propelling oneself on a bicycle, or even on a tricycle, especially up hill." Eminent physicians, and careful observers like Dr. Richardson, have already met some forms of disease that are peculiar to this unnatural mode of exercise. It is said to be specially trying upon persons with heart trouble, and even those who have never been regarded as suffering in this way find palpitation and other functional heart difficulty in riding up-hill, or even rapidly on the level.

While it should not be indulged in much by children, adults are recommended to combine with it walking up hill, and in long trips that at least one mile should be taken on foot for every seven on the cycle.

The British Medical Journal (Aug. 16 '90) in an article on Cycling and Hernia says : A somewhat unnecessary amount of alarm may possibly be created on the subject of cycling by some recent correspondence, especially as a statement purports to have been made by more than one medical man that cycling predisposes to hernia. It has not been our experience that any increase in this affection is attributable to cycling. One correspondent appears to attribute all harm to sitting too high on the machine.

If danger exist it is due rather to the fact that scarcely 5 per cent. of the riders make any attempt to fit themselves to their machine. As a rule the handles are far too low and the seat rather too far back or forwards. Of the comfort of sitting up with the handles in such a position as not to necessitate bending the back nearly double, we can speak from personal experience. No one who has once got the handles high enough, the feet in the right position, and the seat at a proper angle, will ever ride the machine so as to strain the legs, bend the back, or bruise the perinenum. We would earnestly urge cyclists then to give due attention to the points above indicated for ensuring safety in this pleasant exercise.

NON-COMPULSORY VACCINATION IN MICHIGAN.

AT the last year's meeting of the Michigan State Medical Society Dr. Hemenway offered a resolution : " That, in the opinion of this Section, the public good demands compulsory vaccination by State law." On motion, of Dr. Baker, Secretary of the State Board of Health, the resolution was laid upon the table for one year, in order that preparation could be made to discuss the subject. At the recent meeting, for the current year, Dr. Baker read an exhaustive paper in opposition to compulsory vaccination. He said : " I suppose it is true that many physicians favor compulsory vaccination. How is it, then, that one, who for the last seventeen years has been constantly employed in studying out the best methods of restricting and preventing small-pox and other diseases, has come to question the utility of compulsory vaccination ? I believe this is one of the many instances in

which a pet theory does not "work" as it should when an attempt is made to put it in practice. We all know, that is, the medical profession knows, that vaccination and revaccination are preventives of small-pox, and that, as a rule, those who have small-pox are those who have not been recently vaccinated or revaccinated. In Michigan the intelligent classes are more generally vaccinated than are the ignorant and improvident. If all persons could be vaccinated and revaccinated about once in five years, small-pox would be prevented, seems to me to be extremely probable. Where, then, is the objection to compulsory vaccination? I will try to explain. In my opinion, there is a fallacy in the assumption that a State law theoretically compelling vaccination will actually result in securing vaccination more general than can be secured by educational methods. My objection, then, to a State law for compulsory vaccination is, that vaccination would not be so generally performed where it was most needed under a compulsory law as it may be under the present law.

Mr. Simon, many years a leader in public health work in England, once feared that the people might mistrust a gift which the law would compel them to accept. Dr. Baker said: "To present to a man facts and reasons, relative to vaccination, as abstract proportions is one thing; he may thus be convinced; he may be convinced also as applied to his own child; but tell the same man that the law says that he himself must submit to having inserted in him a virus that will work a change in his blood, probably make him slightly sick for a few days; then his feeling of repugnance may be sufficient to prevent him from accepting any evidence of prospective good which can be put before him.

"Compulsory vaccination of an intelligent adult person is such an interference with the liberty of the individual relative to his own person, as in my judgment is not for the public good. I think the final result will be better if the natural risk of the death penalty by small-pox be permitted to each responsible person. There can be no doubt that intense feeling or emotion powerfully influences the acceptance or non-accceptance of evidence, by even the most intelligent persons. The anti-vaccinationists have had the aid of such men as Herbert Spencer—perhaps the greatest philosopher of our age,—and of Alfred R. Wallace who shared with Darwin the honor of first publishing the principle of natural selection. Mr. Wallace does not stop with opposing compulsory vaccination, but attacks the principle of vaccination itself, as do most of those who oppose compulsory vaccination.

"One of the strongest reasons why I do not favor compulsory vaccination is that such a law at once leads the people to discuss the subject of the interference with their own persons, and to decline to listen to facts and reasons supporting the belief in the beneficence of vaccination.

Of course Dr. Baker favours vaccination, and after quoting statistics from the New York health department, he continues: "Without doubt, prompt notification and isolation, and thorough disinfection are important measures for the restriction of small-pox, but in such instances as the one just quoted, it is vaccination that prevents outbreaks from becoming epidemics. . . . Michigan is greatly more than England endangered from small-pox through its spread by immigrants and travelers, yet during the ten years, 1878-1887, while the State Board of Health has been trying to secure vaccination through the educational and advisory methods of the present law, the reported mortality from small-pox in Michigan has averaged only about 13 annually per million inhabitants, while in England in the same years it has been about 54, or a little over four times as great. We must admit, however, that much of the recent immunity from small-pox in Michigan has been due to prompt notification, isolation and disinfection, and that the vaccinal protection of the inhabitants of Michigan is not what we could wish; for the public good vaccination and revaccination should be much more general; and I appeal to the medical profession to give its support to the present law, and to do what it can to disseminate among the people knowledge of the importance, and beneficence, of vaccination and revaccination, without which knowledge no law on the subject will be useful to the people of this free country.

Meat Inspection.

At the forty-ninth annual meeting of the British Medical Association, which was recently held at Birmingham, Mr. Thomas Walley (Principal, Royal Veterinary College, Edinburgh) said that the subject of meat inspection might be considered under three heads; (1) The necessity for the adoption of a system of meat inspection in this country; (2) the best method of carrying out meat inspection; (3) the principle that should guide using and condemnation of meat. The following are his remarks under the two first heads: (1) Meat inspection was necessary for the reasons (*a*) that the British were the greatest of flesh eaters in the world; (*b*) that the vast majority of the flesh-eating portion of the public were utterly ignorant as to the characters which distinguished good from bad meat; (*c*) that through the medium of animal flesh many lives had been lost, and many people had suffered injury to their health; and (*d*) that the flesh eaters had a right to protection from such dangers, and from the evil designs of those who profit by the trade in bad meat, and also by the fact that there was no law to compel them to declare from what source the flesh they sold had been obtained, nor to declare the nature of the disease from which an animal had suffered. (2) In order that meat inspection should be properly carried out three things were necessary, (*a*) that all animals intended for human food should be examined, prior to slaughter, by competent persons; (*b*) that not only the carcases but the viscera of all animals intended for food should also be examined; (*c*) that those persons whose duty it was to carry out such inspection should possess the neccessary knowledge of their work to enable them to discharge the duties devolving upon them in an efficient manner. Inspection of all animals prior to slaughter could not be carried out in all cases, for example, in those instances in which as the result of accidents it was found neccessary to slaughter animals in places other than abattoirs, and also in the case of dead meat from foreign countries; but where animals were killed on account of injuries or sudden illness, the internal organs should be sent to a licened abattoir or receiving house with the carcase for inspection and as a guide to the inspector in his work; further all private slaughter-houses should be abolished, or where, as in small villages or towns, a public slaughter-house could not be supported, they should be licened and placed under the direct control of the sanitary authorities. He held that in all abattoirs there should be one or more lay inspectors, but they should not be empowered to condemn flesh; for this purpose a sanitary board (consisting of a medical officer, a veterinary officer and a lay inspector) should be established in connetion with every abattoir; but inspectors (lay or professional) should only be appointed after submitting themselves to examination by a competent examing body, and the decision of the sanitary board should be final. The microscope should be brought into requsition in dealing with the flesh of animals that had suffered from micro-parasitic or parasitic disease.

Singularites of Diphtheria.

At the Manchester Meeting of the British Medical Association, Aug 1st, the Medical officer of that city, Dr. Hill, in his opening address in the section of public medicine, said: The fact that diphtheria is unlike typhoid fever, increasing instead of diminishing in the large towns is very remarkable, and at present inexplicable; for although there is good reason to believe it is dependent on emanations of an impure character, to some extent from sewer and drains, but more especially from soil charged with organic matter in a state of putrefactive change; and although it is observed to be very generally, if not invariably, associated with dampness of the dwelling and soil, either with or without concomitant fungoid growths, its causes are not made out with any certainty or definiteness. Its conveyance through the medium of milk is a feature interesting in ieself, though not peculiar to this disease, and its suggested connection with the diseases of certain domestic and domesticated animals is a question of equal interest and importance, offering a wide field of investigation. The former principal incidence of the disease upon country districts

and its recent increase in towns is a point of much interest. With regard to this incidence upon town populations during recent years, I may point out a very remarkable exception which this city affords where, since 1873, the diphtheria mortality has gradually fallen from 0.31 to 0.11 per. 1,000, or to about one-third, while in twenty large towns during the same period it has as gradually risen from 0.09 to 0.27, or three times as many. This exceptional position of Birmingham may possibly be owing to geological and geodesic conditions, though it is difficult to believe that this is the only explanation.

Important Communications on Sulphur Disinfection.

The following from the American Journal of Medical Sciences, will be valuable to all concerned with disinfection :

Lansing, Mich., August 23, 1890.—E. B. Fraser, M. D., Secretary of the State Board of Health, Wilmington, Del.— Dear Doctor : Your letter of August 18, acknowleding the receipt of a copy of my letter to Dr. Duffield (giving results of experience of health officers in Michigan, and an account of the experiments by Pasteur, Roux, Dujardin-Beaumetz and others relative to sulpurous disinfection), is before me. You ask me for further opinion, and refer to the report of the Maine State Board of Health for 1889, page 251, and Dr. T. Mitchell Prudden's estimate of the want of value of sulphurous disinfection. There are at least two valid objections to the acceptance of Dr. Prudden's conclusions to which you refer : (1 His experiments dealt with a micro-organism which seems to be different from the one most generally accepted as the probable cause of diphtheria. Therefore, he may not have been dealing with a micro-organim causing diphtheria. (2) The quantity of sulphur burned—the strength of the sulphurous acid fumes which he employed—is not stated. It having been proved by actual experience with disease, and by other laboratory experimenters (Pasteur, Roux, Dujardin-Beaumetz, Vallin, Legouest, Polli, Pettenkofer, Dougall, Fatio, Pietra Santa,) that sulphurous acid gas is not always a disinfectant when employed in small proportions, and that it is a disinfectant when employed in large proportions, such as result from burning of three pounds of sulphur to each thousand cubic feet of air-space, no different conclusion should be reached from Dr. Pruden's experiments as published. You mention that Dr. W. H. Welch, of Baltimore, "enters his protest" against disinfection by sulphurous acid gas. I respectfully submit that entering a protest should count for very little in science as against results of actual, practical experience in the restriction of diphtheria ; it should not even take rank with definite statements of results of laboratory experiments. Laborrtory experiments are very valuable, but they need to be repeated by the same observer and by other observers, in order to eliminate errors due to accidental or incidental conditions. Micro-organisms which, after subjection to a disinfectant, may yet have sufficient vitality to reproduce in a laboratory where the most favorable conditions are supplied, couldnot possibly do so in the human throat, or elsewhere in the human body, because of the well-know power of the fluids of the body to destroy micro-organisms, as proved by Dr. Prudden's and other laboratory experiments following, but not confirming, Metschnikoff's doctrine of the phagocytes.

Practical health officers need to employ a gaseous disinfectant that shall at once reach all surfaces, ledges, cracks, drawers and receptacles of dust, wherever it may be, in a room, that shall permeate all articles sufficiently permeable to admit disease-causing micro-organisms ; that will not necessitate too much labor in the removal of furniture or other articles, and that shall have power to destroy or sufficiently weaken the vitality of the "germs" of such diseases as diphtheria and scariet fever, and occasionally small-pox, as they are usually distributed in the sick-room, and that shall not destroy family portraits and similar articles. Only two such disinfectants are prominently before us for choice—chlorine and sulphurous acid gas. Of these two, sulphurous acid gas is made in proper quantity, with more certainty and less trouble than is chlorine gas; and, at present, I regard the weight of evidence in its favor as equal to that relative to chlorine gas, concering which not so much evidence has been published. Practical experience in Michigan proves that by isolation of first cases of diphtheria, and disinfection of premises after death or recovery by burning sulphur, etc., four-fifths of the cases and deaths which would otherwise occur from that disease are prevented.

Sunlight and Sick Rooms.

In an exhaustive address by Dr. Robert Koch, at the Berlin International Medical Congress last month, in referring to the destructive effects upon bacteria of heat, cold, &c., he said: Among these factors, light appears to me to be one of the most important. As to direct sunlight, it has been well known for some years that it kills bacteria with tolerable quickness. I can affirm this as regards tubercule bacilli, which were killed in from a few minutes to some hours, according to the thickness of the layer in which they were exposed to the sunlight. What seems to me, however, to be particularly noteworthy is that even ordinary daylight, if it last long enough, produces the same effect: cultures of tubercle bacilli die in five to seven days if exposed at the window in compact masses. Dr. B. W. Richardson, in a recent lecture on "Disease, and How to Combat it," remarked: Still a custom prevails, despite all our sanitary teachings that the occupant of the sick room in the *private house should be kept at all hours* in a darkened room Not one time in ten do we enter a sick room in the daytime to find it blessed with the light of the sun. Almost invariably, before we can get a look at the face of the patient we are obliged to request that the blinds may be drawn up, in order that the rays of a much greater healer than the most able physician can ever hope to be may be admitted. Too often the compliance with this request reveals a condition of room which, in a state of darkness, is invariably one of disorder everywhere; foods, medicines, furniture, bedding misplaced; dust and stray leavings in all directions. In brief, there is nothing so bad as a dark sick room; it is as if the attendants were anticipating the death of the patient; and, if the reason for it be asked, the answer is as inconsistent as the act. The reason usually offered is that the patient cannot bear the light; as though the light could not be cut off from the patient by a curtain or screen, and as though to darken one part of the room it were necessary to darken the whole of it. A more injurious practice really could not be maintained than that of darkness in the sick room. It is not only that dirt and disorder are results of darkness; a great remedy is lost. Sunlight is the remedy lost, and the loss is momentous. Sunlight diffused through a room warms and clarifies the air. It has a direct influance on the minute organic poisons, a distinctive influence which is most precious, and it has a cheerful effect upon the mind. The sick should never be gloomy, and in the presence of the light the shadows of gloom fly away. Happily the hospital ward, notwithstanding its many defects (and it has many), is so favored that it is blessed with the light of the sun whenever the sun shines. In paivate practice the same remedy ought to he extended to the patient of the household, and the first words of the physician or surgeon on entering the dark sick room should be the dying words of Goethe, "More light more light."

Disinfecting Powder of Chloride of Lime.

The Abstract of Sanitary Reports publishes a translation from the Central blatt fur Bakteriologie und Parasitenkunde, as follows (in Sanitary News):—Contrary to the previous statement of Kock, Sternberg, and, later, Jager, found that chloride of lime possesses decided germicide power. In consequence of these contradictory results, Nissen undertook, at the suggestion of Koch, a new experimental research to decide the question. The result of this shows that, as a matter of fact, chloride of lime has very great disinfecting power. At first micro-organisms without spores, and having comparatively little resisting power, were tested, in bouillon culture, by Esmarch's method. A chloride of lime solution gives an abundant precipitate with bouillon, the cultures were first diluted. The chloride of lime solution was added either filtered or not filtered. The result was the same in either case. The bacillus of typhoid fever was destroyed in bouillon cultures, at the end of five minutes, by 0.12 per cent. of chloride of lime; the cholera bacillus and anthrax bacilli without spores by the same proportion usually in one minute. Anthrax spores of moderate resisting power (killed in three minutes by flowing steam), dried on silk threads, were destroyed in fifteen to thirty minutes by a 5 per cent. solution of chloride of lime. . . . Putrid fluids and feces were very quickly disinfected by the addition of chloride of lime. Bouillon which had become putrid was, as a rule, thoroughly sterilized in five minutes by the addition of 0.1 per cent. of chloride of lime, either in solution or as a powder, destroyed the typhoid bacillus inside of ten minutes. Nissen thinks, therefore, that chloride of lime is especially suitable for the disinfection of bed-pans.

ON THE CAUSES AND PREVENTION OF TUBERCULAR CONSUMPTION IN MANKIND AND THE DOMESTIC ANIMALS.

GENERAL AND INTRODUCTORY.

Tubercular consumption is such a terribly prevalent and fatal disease in almost every country in the world, in both man and animals, that hardly any question can be of greater importance than that which relates to its prevention. It is a question which concerns every individual, of every age, high, low, rich and poor, almost alike, for no one is exempt from the disease and its influences. Moreover, the disease seems to be every where on the increase; which fact makes the question a still more serious one.

That the disease as found in man and in the lower animals is identically one and the same and that it is infectious and intercommunicable between man and the lower animals—from man to animals and from animals to man—is now universally conceded by all authorities. Moreover, the disease is now universally regarded by the medical profession as a preventable disease, just as much so as typhoid fever, and the subject of its prevention becomes one of very great practical importance.

A great many people, even amongst the more intelligent classes, look upon consumption as something to which human beings are so naturally subject that they are powerless to prevent it; yet, when once symptoms of its presence become manifested in the body of any one, there is not the slightest hesitation in at once resorting to means for its cure.

Any one of ordinary intelligence who will examine into the now well known causes of consumption cannot fail to readily see that it is not only a preventable disease, but that it may be more easily and surely prevented than the more actively infectious diseases which prevail epidemically; because its prevention is more largely in the hands of the individual. It is most strange, considering the great fatality of this malady and the large proportion of sickness and of deaths it is continually causing in almost every civilized country, that more general attention has not heretofore been given by sanitarians to its prevention. Those interested in public health proceedings have perhaps naturally enough bestowed their thoughts and time chiefly on those diseases which prevail epidemically and in a short period of time destroy many lives, or which, prevailing only endemically or to a much less extent, destroy life much more rapidly.

GENERAL PREVALENCE OF THE DISEASE IN MANKIND.

The record of deaths in the province of Ontario shows that many more deaths are caused by consumption than by any other disease. It causes on an average more than one-tenth of all the deaths registered in the province. We have no record as to its mortality in the other provinces. From the data obtainable, however, in Canada, in the United States and Great Britain, on the continent of Europe, and elsewhere it causes from one-fifth to one-tenth of all the deaths which take place throughout the civilized world.

At least twelve thousand, doubtless, and possibly fifteen thousand, human beings of all ages die every year in Canada from tubercular diseases, chiefly pulmonary tuberculosis, or consumption. Besides, as it has been estimated that for every one who dies of the disease, three others are the subjects of it, there are probably not less than forty thousand people in this Dominion *constantly* suffering from tuberculosis. Furthermore, from the long period of debility, sickness and inability to work which invariably precede death from this disease, the actual money outlay which it causes in the country, aside from the deaths, is vastly greater than the cost of any other disease; the proportionate loss to communities from it, in comparison with other diseases, being much greater in relation to the sickness than to the deaths.

PREVALENCE OF THE DISEASE IN ANIMALS, ESPECIALLY COWS.

George Fleming, F. R. G. S., &c., &c., who is I believe recognized as the best English authority, in his Manual of Veterinary Science, vol. ii, says: "Tubercular Phthisis probably prevails among the domesticated animals over the entire globe, though its frequency will depend upon various external influences, as well as upon the constitutional tendencies of different species and breeds. In some countries it is enzootic and very destructive. Such is the case in densely populated districts and in unhealthy climates, or in regions where animals are improperly fed and housed. In Mexico, for instance, it is very common, and causes much loss, about thirty-two per cent. of the animals slaughtered for food being found affected. In Europe, particularly in the cow-sheds of the large towns and cities, it is extensively prevalent; and in this country [Eng.] it has long been recognized as a common disorder among animals, but more especially as effecting the bovine species."

The British Medical Journal, in a recent editoral on this subject says: When we find that in one town 17.5 per cent. of the cattle are suffering from the disease, that in another 4.5, and that in others where the inspection is extremely inadequate, and where thousands of cases never come under the inspector's eye, the precentage is almost as great, it can be readily imagined how widespread is the disease. In Germany, where the inspection has gradually become more thorough, the number of cases of tuberculosis reported has rapidly increased from a very small percentage to 20 per cent. in some districts. The same has been the experience of other Continental countries, and so we are convinced it will be in this country (Eng.) if the Board of Agriculture will but take adequate measures to bring about a proper and complete inspection.

At the meeting of the British Medical Association in 1888, Dr. Alfred Carpenter said it had been his duty to hear evidence when application was made for the condemnation of tuberculous carcasses, and that if all such meat were prohibited it would be impossible to feed such a population as that of London. One of the principal inspectors of the largest meat markets in London, he said, stated in the evidence that sometimes as much 80 per cent. of the meat on sale was so affected.

In the United States the disease appears to be becoming very common. Mr. Salmon, Chief of the Washington Bureau of Animal Industry, at the meeting of the American Public Health Association last year, ('89) declared that from "an inspection of about half a million" cattle, the "widespread prevalence of the disease is certain." In the second report of the Maine State Board of Health (for 1887) is given in detail the history of the destruction by this disease of two very valuable herds within the past two years; one, the Orono herd in Maine; the other, that of the Willard Asylum Farm, New York. At a meeting a year or two ago of the Butchers' Association in California, the agent there of the Bureau of Animal Industry spoke strongly of the increased prevalence of the disease—of the "rottenness" of the cattle—there.

The New York Times, during this year (1890), published an extract from a paper by a Mr. Francis Blake, of Boston, who described an outbreak of the disease in his dairy of ten cows. A veterinarian, calling to prescribe for one of the animals, found it tuberculous, and upon examination found six of the ten animals to be suffering from tubercular consumption. Mr. Blake said, I had supposed that I had as fine and healthy a lot of animals as could be found in the State. None of them, to the layman's eye, had any outward symptoms of the disease; in fact, a skilled veterinary surgeon who had been familiar with the stable for years had not suspected trouble until a few days before. The autopsies disclosed a state of physical rottenness, most alarming to me, as the milk from two of the worst cows has been constantly used in my household up to the day of inspection. This experience led one of his neighbors to inquire as to the condition of his own cows, with the result that

the disease was found in three out of seven of them. From what I hear, said Mr. Blake, it is hard to find a herd of cattle kept for the sale of milk, in which there are not cases of tuberculosis. A number of cases of a like character have been reported.

AS RELATES TO CANADA.

In the report published last year of the Committee of the House of Commons on tuberculosis in cattle it is stated that, "We in Canada have reason to congratulate ourselves that our cattle are much more healthy" than those in Europe and the United States. "Even on the assumption that our farmers and medical practitioners have not had their attention specially drawn to this trouble," the report continues, "We can undoubtedly believe that this insidious and fatal disease is not so prevalent with us." Still, plainly, the disease does exist in Canada in many localities and, it can hardly be doubted, will spread if means be not adopted to check it. At the opening of the Montreal Veterinary College, in October, 1887, Mr. McEachren, Chief Veterinary Surgeon of the Dominion, said, he was aware that the disease was "on increase among cattle in Canada as elsewhere." In the ninth annual report of the Agricultural College and Experimental Farm, Guelph, Ontario, it is stated that "the extent to which this disease exists amongst the better breeds 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. From an economic standpoint the outlook is serious, as the annual loss must be very great."

The President of the New Brunswick Medical Society, Dr. P. R. Inches, at the annual meeting in 1888 of the Society, after alluding to a number of outbreaks of the disease, and to the danger to the public health therefrom, said: "Since writing the foregoing, I have learned from a reliable source of the existence of the disease in this neighborhood. Cases are met with not unfrequently, and it is only a few days ago that the termination of one of those cases took place. The animal, a Jersey cow, had been ailing for quite a time, and was examined by a leading veterinary surgeon, who diagnosed the case as one of tubercule." The animal was isolated, quarantined, and kept under observation. After death an examination took place, which verified the diagnosis in every particular. The case was reported to the Department of Agriculture. The veterinary surgeon tells me, said Dr. Inches, that "such cases are not rare." About two years ago I sent out questions to a large number of veterinary surgeons throughout Ontario, with the special object of finding out the facts as to the frequency or otherwise of cases of the disease in this province. I received a good many replies, although not so many as I had hoped for. Collectively these went to show that, in the opinion of the writers, the disease was not very common, but that on the whole there were a good many cases of it. Some of the respondents mentioned recent cases observed, while others wrote that although few cases had come under their own observation, other veterinary surgeons, they were informed, had observed many cases. One wrote, in affect, that he had reason to believe the disease common, but that stock owners wished to keep it quiet: and he expressed the wish that his name should not be publicly mentioned in connection with this information.

RELATING TO THE AGES &C., of cattle in which the disease is most noticeable, the following official statistics from the public slaughterhouse of Augsburg will be of interest:—During 1889, of 23,592 calves slaughtered, only one (an animal 3 weeks old) was found to be tuberculous. Of 13,679 head of older cattle, 612, or 4.4 per cent. were tuberculous. Of 8,537 oxen, 167, or 1.94 per cent. were tuberculous; while of 5,008 cows, 445, or 8.88 per cent., were affected with that disease. In 4 cases, or almost 1 per cent. of the cows, the udder was the seat of tuberculosis. In 67 of the

612 cases in which disease was discovered, the flesh was declared unfit for food on account of generalised tuberculosis and destroyed.—(Brit. Med., Jour., June 1890.)

OF THE OTHER DOMESTIC ANIMALS,

The feathered race appear to be most prone to this disease; especially the common fowl, pigeon, partridge and other grain-eating birds. Dr. T. W. Mills, Professor of Physiology, McGill, University, at the last December meeting of the Montreal Medico-Chirurgical Society, exhibited specimens from a tuberculous pigeon, a white Jacobin, bred by himself, which had died two days previously. The bird had been ill only three weeks, and was fairly well-nourished at death. The tubercles were very widly distributed, the organs inflamed, and bound together by recent adhesions. Owing to enlargement of the organs and pressure, the apex of the heart was squeezed to such an extent that it must have become functionless.

Tuberculosis is not common it appears in horses, sheep and swine.

NATURE AND CHARACTERISTICS OF THE DISEASE.

This disease is characterised by the deposition in the lungs and other organs of what is called tubercular matter, with wasting of the tissues. Usually its progress is slow and its commencement insidious. It appears that in animals it invariably terminates fatally.

The tubercle when recently formed is a little nodule, usually spherical when isolated, varying in size from a very minute point to that of a millet seed. It is usually dense, tenacious, and difficult to crush or tear; at first grayish white, and semi-transparent, but when fully developed it is of a somewhat yellow color, and opaque. Large masses are formed by the aggregation of these miliary masses. In the progress of the disease the bodily tissues and organs seem to gradually waste away and be replaced by this morbid product. The tubercular masses sometimes become so numerous and developed in the bovine species as to increase the lungs to thrice, and even five times, their natural weight—the diseased organs sometimes weighing from forty to sixty pounds. The liver, spleen, kidneys, and various other glands, and the intestines, frequently contain large deposits of tubercular matter. The muscles, or flesh, are rarely affected in this way. There is also a general wasting of all the bodily tissues, familiar to all, as the parasitic product increases, or the disease progresses.

The disease has been known by different names. In the human body it has long been commonly called consumption—pining and wasting—or phthisis, the Greek for wasting away; in the lower animals, as the grapes or pearl disease, and sometimes the animal has been called a "waster." These are now all known to be one and the same disease, although long thought to be distinct.

That the immediate cause of the disease was a specific poison or infection capable of producing the malady when inoculated into a healthy body was first made known in 1843, by Kleucke, and still further corroborated by Villemin in 1865. In 1881 Dr. Robert Koch isolated and cultivated this poison or infection and clearly demonstrated that it is a living vegetable organism or parasite of the lowest form of organic life, called a bacillus (little stick); each bacillus being about one seven-hundredth of an inch in length, or about as long as the diameter of a blood corpuscle, mostly straight, with somewhat rounded ends. Under a powerful microscope, when stained with certain dyes, it often presents a dotted or beaded appearane, indicative of the production of spores, like the moulds and mosses; the spores being analogous to the seeds of the higher vegetable organisms, and by which the bacilli multiply with marvelous rapidity. The number of beads averages about six to each rod or bacillus.

The spores, it must be noted, have greater vitality and are much more difficult to destroy than the parent rod; just as the seeds of most plants will withstand a temperature and other conditions that would destroy the life of the plant itself.

These organisms, from the sputa of men suffering from the disease, and from other sources, have been cultivated in certain fluids, as ox-blood serum, and the bacilli thus cultivated or grown introduced into the bodies of various animals, as rabbits and guinea-pigs, and the disease thereby set up in the animals; the disease being characterised by the usual progressive formation of tubercular nodules. Tuberculous matter probably consists chiefly of disintegrated tissue cells; and it always contains the characteristic bacilli. In later stages of the disease it may become softened and easily broken down by the fingers, like a piece of chesse—caseous tubercle. Still later, it may become quite soft and creamy in consistence.

But very few if any authorities now question the correctness of Koch's theory,—that without the tubercle bacillus there is no tuberculosis. Whether the bacillus be the immediate and direct cause of all the peculiar symptoms of the disease through exhausting the vital powers and tissues of the body by means of the enormous multiplication in it of the parasite, or whether it be that it gives rise to a toxic substance which gradually poisons and destroys the tissues, this bacillus is now almost universally believed to be the specific, immediate cause of tuberculosis, and that a case of the disease will not develop without the bacillus germ any more than a stalk of wheat or corn will spring up without the parent grain in the soil.

The greater vitality of the spores and the viability of the rods are points of the utmost importance, which must ever be borne in mind; since, if the mucus saliva or expectoration of an animal or human being suffering from the disease be dropped or cast upon the ground, or floor of a room or stable, it is obvious that such secretions after becoming dry may be a source of danger to other animals or human beings who may accidentally take up the poison.

The disease commences in a very insidious manner, both in man and the lower animals, making the early conditions and symptoms very obscure and inappreciable: and it may have been in existence for months before the earliest outward manifestations can be fixed upon. Reynal says, those who are in the habit of visiting slaughter-houses will often have occasion to note the presence of tubercles in the lungs of cattle which, during life, would not have been suspected of suffering from an incurable malady. When living they must have appeared perfectly healthy, and have fattened as if nothing had been amiss with them.

A FEW WORDS ON THE CONTAGIOUSNESS OF THE DISEASE.

From the period of the earliest records in the history of medicine, the contagious nature of tubercular consumption has been believed in by physicians of the highest repute. Over two thousand years ago (400 B. C.), Hippocrates, the "father of medicine," believed in it. Aristottle (330 B. C.) wrote that the Greeks in his day believed in it; and he asks why consumption, "sore eyes" and itch are common to persons who associate with others suffering from these affections. Later (A. D. 180), Galen wrote that it is dangerous to pass the whole day with a consumptive person. Coming down to much more recent periods, Morton, over two hundred years ago, wrote of consumption that "a contagious principle often propagates this disease, for, as I have often found by experience, an affected person may poison a bed-fellow by a kind of miasm like that of a malignant fever." Riverius, about the same period of time, believed contagion to be the "chiefest" cause of consumption. "We may observe women to be affected by their husbands," he wrote, "and men by their wives, and all the children to die of the same, not only from infection of their parents seed, but from the company of him that was first infected."

The eminent Italian physician, Valsalva, a professor of Bologna, in the early part of last century, was himself predisposed to consumption, and avoided being present at dessections of the lungs of persons who had died of the disease. Valsalva's illustrious pupil, Morgagni, professor in the University of Padau, declared that he

had never dared to make more than a few *post-mortem* examinations of persons who had died of this disease for fear of contracting it. A law once existed in Itlay by which the proprietor of a house in which a consumptive had died could claim payment for his furniture, which was burnt. It was often difficult there for a person supposed to be consumptive to obtain lodgings.

Over a century ago a reaction regarding belief in the contagiousness of consumption commenced to show itself. Eventually, in Northern Europe and America especially, doubt developed into general disbelief. In the warmer latitudes however the opinion favorable to contagion never lost its hold; and the reaction and more recent general beleief in its contagiousness have paved the way to more rational and accurate views, based on modern scientific investigations, which will be generally accepted. The recent investigations of Kock have resulted in making belief in its contagiouness quite irresistable.

Dr. Wm. Budd in an article on the nature and propagation of phthisis (Lancet, Lon. Oct. 12, 1867), took strong ground in favor of contagion. He concluded that "tuberculosis is a true zymotic disease of specific nature, in the same sense as typhoid, scarlet fever, typhus, syphilis, etc., are: and that, like these diseases, tuberculosis never originates spontaneously, but is perpetuated solely by the law of continuous succession. The evidences of this he finds in,—(*a*) Considerations based on the pathology consisting in the evolution and multiplication in the organism of a specific, morbid matter. (*b*) Actual instances in which there is evidence to show communication from one to another. (*c*) The geographical distribution of phthisis, past and present, and especially its fatality now in countries which were entirely free from it when first dicovered by Europeans. (*d*) Its greater prevalence in low levels and crowded communities, and entire absence, except by importation, at high levels. (*e*) Its high rate of prevalence in convents, harems, barracks, penitentiaries, etc., the same conditions known to propagate zymotic disease.

When the South Sea Islands were first discovered, Dr. Budd says, there was no phthisis there; but since the aborigines have come into contact with Europeans, the disease has become so wide-spread as to threaten their extermination. The late Dr. Rush, of Philadelphia, who made accurate inquiries, satisfied himself that there was no phthisis among the American Indians when America was discovered, whereas now it is very common and very fatal among them. In Africa, everywhere along the sea-board, says Dr. Clapp, where the blacks have come into constant and intimate relations with the whites, there has been a large mortality from the disease; but in the interior, where there has been only occasional contact with a few great travellers, the disease has not been found. Of this fact Dr. Livingston and other African travellers have given Dr. Budd positive assurance.

Both in Canada and the United States many cases have been recorded most strongly and clearly corroborating the correctness of the theory of the contagiousness of the disease; while scores of scientists in Europe have proved it by recent experiments of inoculating various animals with tuberculous matter, both from other animals and from man.

The tubercle bacillus is doubtless somewhat peculiar, requiring a more special soil for its development than the infections of many other diseases, such as small-pox, scarlet fever, &c., thus making consumption contagious in a much less marked degree than these epidemic diseases. The infection of tuberculosis will only take root, or develop and grow, in a specially susceptible subject, while it does not, it appears, as does the infection of typhoid fever, and of some other epidemic diseases, develop at all outside a living body. The soil must be fertile or the bacillus will not take root and grow.

(To be continued.)

ELSEWHERE is given in this number of the JOURNAL a portion of a new edition of a pamphlet "On the Cause and Prevention of Tubercular Consumption in Mankind and the Domestic Animals," compiled and written by the editor of this JOURNAL. Although we have already given much on this subject, the pamphlet alluded to contains all that is practically useful in relation to it, up to date, including some quite recent knowledge, and we think it will prove acceptable and useful to our readers. It will be completed in the two or three next issues of the JOURNAL.

DR. KOCH at the Berlin Congress, relative to the prevention of tuberculosis, said that after a long search for growth-hindering remedies he has at last hit upon a substance which has the power of preventing the growth of tubercle bacilli, not only in a test tube, but in the body of an animal. I can only say this much about them, he continues, that guinea-pigs, which, as is well known, are extraordinarily susceptible to tuberculosis, if exposed to the influence of this substance, cease to react to the inoculation of tuberculous virus, and that in guinea-pigs suffering from general tuberculosis even to a high degree, the morbid process can be brought completely to a standstill, without the body being in any way injuriously affected.

DR. KOCH regards his discovery as only a therapeutic agent, and not it appears as a substance to be inoculated with the view or hope of "conferring perfect immunity against the disease," as the New York Medical Record reports it. He only claims "the possibility of rendering pathogenic bacteria in the living body harmless without injury to the latter." This is a very great deal, to be sure, and is of vast importance. We are inclined to think this is all that scientific investigation need or should aim at. We believe in the principle of complete prophylaxis—prevention—the *destruction* of the bacillus—the infection, outside the body when possible. Dr. Koch's discovery will probably aid greatly in making this possible.

HOWEVER HARMLESS a foreign enemy may be, we prefer that he remain in his own country and not invade ours. So with the infections of disease. We would prefer to keep them outside our body and for this we must destroy them. The time will come when even vaccination for small-pox will not be necessary—the infection will be virtually destroyed—the disease stamped out.

RELATIVE to other diseases which run a more rapid course Dr. Koch is not so hopeful. He says: "It is true, I look for relatively smaller therapeutical results in the case of diseases with a short incubation period and a rapid course. In these diseases, as for example in cholera, the chief reliance will always have to be placed on prophylaxis. I am thinking more of diseases of less rapid course (like tuberculosis), as these offer more points of attack to therapeutic enterprise.

ON INFECTIONS of many other diseases Dr. Koch's remarks are interesting. Lamenting that in many infectious diseases "bacteriology has left us completely in the lurch," he says: We know nothing as to the generating factors of influenza, whooping cough, yellow fever, cattle plague, pleuro-pneumonia, and, it appears, scarlet fever, measles and small-pox and many other undoubtedly infectious diseases... I am inclined to think that in the case of these diseases we have to deal, not with bacteria, but with organized generators of disease, which belong to quite different groups of micro-organisms. This opinion is all the more warranted by the fact that peculiar parasites, which belong to the lowest order of the animal kingdom—the protozoa have recently, as is known, been found in the blood of many animals, as well as in the blood of human beings suffering from malaria.

M. OLLIVIER has recently reported cases of contagious tuberculosis at Neuilly. A family of seven occupied a house on Rue du Pont. In two years, five out of the seven were attacked with tuberculosis; two are dead and three seriously ill. Inquiry showed that the house had formerly been occupied by a family suffering from tuberculosis. In 1887 a child died in it from that disease; the first case, supposed to be the origin of contamination. Dr. Ollivier concludes from this, and other cases, that it is dangerous to inhabit a house which has been previously inhabited by tuberculous patients, unless it be thoroughly disinfected.

THE British Medical Journal reports the following: On February 19, while Dr. Gutzman was holding an autopsy in the case of a patient who died of acute miliary tuberculosis, the nail of his right middle finger was slightly raised from the matrix. A pricking sensation was experienced at the tip of the finger, but no wound could be seen. The hand was thoroughly disenfected in a sublimate solution and alcohol, and the incident forgotten. On March 20th the

end of the finger became painful, a small abscess being found under the nail. This was opened, and the pus removed, which on being examined by Ehrlich's method, was found to contain three tubercle bacilli. The cavity was cleaned out and disinfected with alcohol. So far there have been no general symptoms.

In a paper by Dr. Thomas More Madden, of Dublin, for the recent meeting of the British Medical Association, he said: As I formerly pointed out, and the observation is now more applicable than was the case ten years ago, the acute forms of tuberculosis common during childhood resemble the infective diseases in their origin from a specific germ, whether generated in the body or introduced from without. The latter is probably the case in the tubercular diseases prevalent among the children of the poor, in whose dietary various forms of preserved foods now enter largely, as it seems difficult to conceive any certain guarantee that the cows furnishing the supply may not, in some cases, suffer from tuberculosis, this disease being very prevalent and not materially affecting the quantity of milk.

The N. Y. Medical Times says: The fact that the bacillus of putrefaction is destructive to other forms of microbes, is said to do away with the generally accepted theory that infection from the air and water of cemeteries is to be dreaded. According to the National Druggist, Esmarch concludes after thorough examination, that no form of pathogenic microbe now known, survives for any length of time in the dead body, and the more active the putrefaction, the shorter the survival of the microbe.

As further light on sulphur disinfection, referred to elsewhere, Dr. Baker, secretary Michigan Board of Health, has written to the health officer of Detroit a letter, called forth by a rumor that the latter was about to dispense with the use of burning sulphur in the disenfection of the rooms and appurtenances of persons affec ed with diphtheria. It will be remembered that the efficacy of such fumigation has lately been denied in case the sulphur fumes are not mingled with the vapor of water. Dr. Baker maintains that the few laboratory experiments on which this contention is founded should not be held to outweigh the experience of health officers in the restriction of diphtheria. He states, moreover, that it is not necessary to use water with the sulphur, but that the essential thing is to use enough sulphur—three pounds for each thousand cubic feet of space, at least.

In Boston the process of disinfection is to close up the apartments to be disinfected, tightly, and to burn *four pounds* of sulphur to each 1,000 *cubic feet* of space, evaporating water with the heat of the burning sulphur, and keeping the room closed for ten hours. In case of small-pox this is all they ordinarily do; but in case of diphtheria, scarlet fever and typhoid fever, where the sputa or some other of the secretions may have become fixed and dried upon articles or surfaces in the room, and, moreover, where a stronger germicide is required for the sporebearing germ which is likely to become so fixed, they rub the walls, floors, and other hard surfaces with a solution of bichloride of mercury—1 to 500—and boil one hour articles of clothing and bedding.

On the Etiology of Diphtheria, Dr. Thursfield read a paper at the recent Congress of the Sanitary Institute of Great Britain, in which he showed that there had been a steady increase in the mortality from this disease, due apparently to its greatly increased prevalence in large towns. The death per million from diphtheria had risen in London to 346, and in the twenty-seven other largest towns to 162, while in rural England, which formerly suffered more than the towns, it was 159.

Dr. Thursfield while admitting that the majority of cases of diphtheria are to be traced to direct infection, considers that in a certain proportion of the outbreaks the disease is evolved under favourable circumstances from sore throats of a catarrhal nature, and apart from any influence of what were known as the filth nuisances. *Structural dampness of habitation* is the condition of all others most favourable to the incipience, the severity, and the spread of diphtheria, and to the persistent vitality of the germ of the disease. As to the last point, he had repeatedly found, when there was no evidence of importation, that there was a history of a previous outbreak in the same house, often with a long interval of years, and he therefore hesitated to put a limit to the time beyond which revivification of old germs should be considered improbable.

On typhoid fever, and its so called spontaneous origin, Dr. Thursfield, at the meeting last month of the British Medical Association said Although it is only on inferential evidence that cases can be said to owe their origin to the revivification of old germs, in many such cases the evidence is overwhelming, whilst in others such a source can only be suspected. I am confident that this is a much more frequent source of outbreaks of typhoid fever than is

generally suspected, and that it is the true explanation of many of the so-called spontaneous cases.

FOR EXAMPLE, a boy aged 11 years, got thoroughly wet through going to school, and was allowed to remain all day at school until his clothes had dried on him. Eighteen days after he sickened with typhoid fever. The house was in every way unobjectionable from a sanitary point of view, and here was a case in which the popular explanation, so commonly volunteered, that the fever came from catching cold, would seem to be the only one admissible. This family, however, had only lived in the house four months, and three years previously a case of typhoid fever had been imported into the house. The cottage had been disinfected by sulphur fumigation and lime-washing "as far as applicable," but the wall paper in the bedrooms had not been stripped, and there or elsewhere about the premises the infection had remained, and had revived under favourable conditions of season and subject.

THE Sanitary Inspector, the official organ of the Maine State Board of Health, says: According to the Canada Health Journal the death-rate among the members of the House of Commons of the Dominion has been for severa years, at the rate of over twenty per 1,000, [three times higher than the mortality in adults in public institutions,] "which fact should be an influential lobbyist whenever the Canadian Parliament is called upon to consider practicable and reasonable methods of leading their people generally, themselves included, to live natural healthy lives.

JUST SO. Dr. S.S. Burt (Med. Rec.) says that phthisis pulmonalis is an infectious disease, only the soil must be fertile or the bacteria will not take root and grow; that the inheritance of the affiection is simply the descent of the degraded cells presenting the vulnerable points for a possible encounter with the vagrant germs. That all specific treatment is futile, in view of our present knowledge; and though persistent destruction of the infectious matter is our best means of prophylaxis, yet to restore the vitality of the lung tissue is a important as to destroy the tubercular bacilli.

THERE is a popular belief, says the British Medical Journal, that cut flowers and plants in living or sleeping rooms are apt to be injurious, owning to the continuous exhalation of carbonic acid gas from them. A writer in Amateur Gardening has recently shown that the air of a closed greenhouse, where more than 6,000 plants were growing, exhibited only 4.03 parts of carbonic acid per 10,000 (very little more than the normal amount) this being the average of three experiments made early on three different mornings after the greenhouse had been closed for more than twelve hours. There was usually a slightly larger quantity of CO_2 gas present in the air by night than by day.

WHETHER cut flowers have a greater effect in producing carbonic acid than living or pot plants, the writer does not tell us, continues the Journal, but it is reasonable to suppose that some of the injurious influence attributed to flowers exhaling heavy or sweet perfumes in sleeping or sick rooms is really due to the concealment by these perfumes of the accumulated offensive products of respiration or transpiration, which leads those who are exposed to their influence, or the attendents on the sick, to believe that the atmosphere of such rooms is fresh and wholesome, and therefore, to neglect the usual methods of ventilation.

CHICAGO leads in the appointment of women as health inspectors, having appointed five intelligent women, at a salary of $1,000 each, the same amount paid to men for the same work. The duties of the women "are to inspect places where women and children are at work, and if unsanitary conditions are discovered, they are empowered to order necessary changes. In many places the conditions they found were "sickening." Much good has already come from their work.

DR. TUCKER, analyst of the N. Y. State Board of Health, finds the cream of tartar sold in drug stores uniformly pure, while that sold by the retail grocers was pure in only twenty-six per cent. of the cases. Some of the samples were entirely fictitious; acid phosphate of lime being most common.

GUM-LANCING we have always been averse to. Dr. Forchheimer (Archiv. Ped.) says of it: 1. It is useless (*a*) as far as giving relief to symptoms; (*b*) as far as facilitating or hastening teething. 2. It is useful only as a blood-letting, and ought not to be used as such. 3 It is harmful, (*a*) in producing local trouble; (*b*) in producing general disturbance on account of hæmorrhage; (*c*) in having established a method which is too general to do specific good and too specific for universal use. 4. It is to be used only as a surgical procedure to give relief to surgical accidents.

THIS is the way they try to make the people respect health regulations in France (Brit. Med. Jr): Madame Romagne (a Spanish lady), her

son and maid, who recently neglected to notify their arrival in France from Spain, according to the decree of June 28th, 1890, were condemned to three days' imprisonment, with a fine of 5 francs. Senor Yorrono, for the same offence, was sentenced to three days' imprisonment, with a fine of £2.

In a recent communication to the Academie de Medecene, Paris, M. Laboulbene stated that trichinæ are easily detected in meat; the smallest section made in the direction of the fibres reveals the presence of the cysticerci. The muscles of the head and neck, and the intercostal muscles are the most easily examined.

From Munich Dr. Osler writes to the New York medical Journal that within the past ten years Munich has gradually acquired a thorough drainage system, and he was shown a set of *charts in course of preparation for the Berlin* Congress, illustrating the remarkable reduction in the number of cases of typhoid fever In certain sections of the city, formerly much affected, the disease is now almost unknown. The chart showing the hospital experience during this period follows the same falling curve. Munich is now one of the healtiest of the continental cities, whereas it formerly had an exceptionally high death-rate. particularly from zymotic diseases.

Dr. A. L Loomis, one of the leading physicians of New York, says that, when he first visited the Adirondack forests twenty-eight years ago he was suffering from what was regarded as a hopeless case of pulmonary disease. After an eight months residence there he returned home perfectly restored. Since then he has constantly sent patients to this region, and from this experience he is prepared to maintain that no other such health resort exists. For this reason he is especially active in preserving the forests for this purpose. He wants the German forestry system practically applied to to the Adirondack region. Let us have many such preservations in Canada.

To the importance of light on health we have referred on another page. Most persons would say that the outside light is two or three times as strong as that within our houses. It is now scientifically stated that persons strolling on the seashore in sunny weather are in a light not two or three times, but 18,000 times stronger than that in the ordinary shaded and curtained rooms of a city house, and. that those walking along the sunny side of a street are receiving more than 5,000 times as much light as they would receive indoors in the usually heavily curtained room.

It is believed (N. Y. Med. Times) that if a scarlet fever patient be sponged with some strong antiseptic solution from the beginning to the end of the desquamation, spread of the contagion will be prevented.

An epidemic of lead poisoning caused by flour is reported. Analysis revealed the presence of three milligrammes of lead to every kilogramme of flour. The miller confessed that one of his workmen had stopped some holes in his mill with molten lead. The writer of this has seen lead in holes on the surface of turned up mill-stones—on the surface which grinds the flour.

The British Medical Journal, with the enterprise worthy of the leading Medical Journal of the world, the organ of the British Medical *Association, publishes in its last issue portraits* of eight of the "leaders of German Medicine," at the Berlin Congress.

The Prince of Wales has accepted the post of president of the International Congress of Hygiene, which will be held in London in 1891 to be opened probably in August.

The National Women's Health Association of America was organized in Philadelphia July 23, with Caroline Dodson, M D., as president; Its object being to bring the laity and the medical profession into closer relations.

The Russian government has enacted some very stringent laws against the adulteration of food and drink. Any person guilty of the act will be liable to a fine of $200, or imprisonment for three months, for the first offence, double this penalty for the second, deprivation of all rights as a citizen for the third.

The Massachusetts Board of Health has examined 76 samples of water 336 samples of ice from 58 localities. Clear ice from polluted sources may contain but a very small proportion of impurities, yet it is dangerous.

At the recent annual meeting of the British Medical Associatton a resolution was passed that the Bills Committee approach the Government, with a view to obtain the abolition of private, and the establishment of public, slaughter-houses, with skilled inspection of meat."

At a meeting recently held under the presidency of the Bishop of Marlborough, recently it was resolved that a Church league should be formed to move the nation to take up the question of the dwellings of the poor.