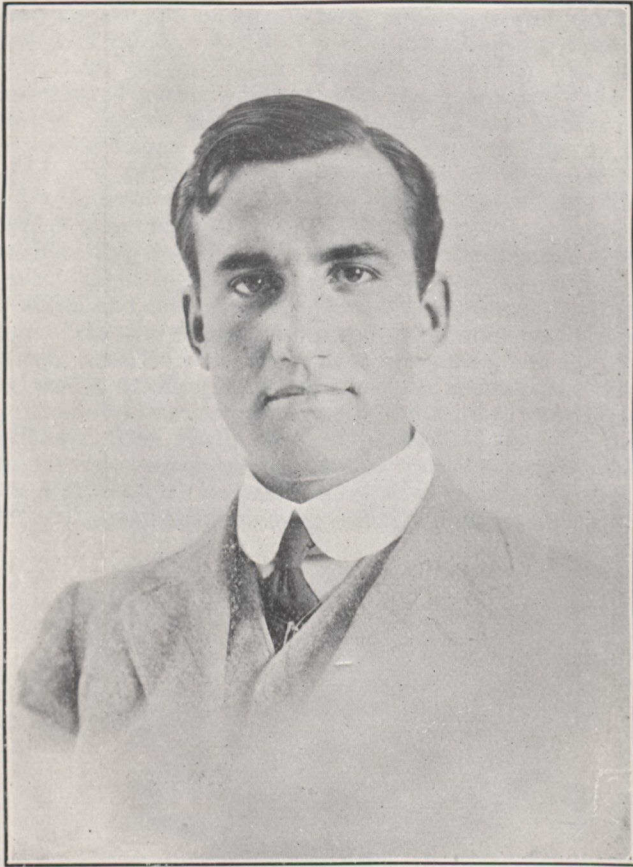


PAGES

MISSING

I want to make the nation more healthy than it is.
The great mass of illness which afflicts us,
weighs us down, and is really prevent-
able. It is a better thing to make
a man healthy than to pay
him so much a week
when he is ill.

Lloyd George, on the British National Insurance Bill.



C. GORDON HEWITT, D.Sc., F.E.S.
Entomologist to the Canadian Government.

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Special Articles

MUNICIPAL SANATORIA

By JOHN W. S. McCULLOUGH, M.D.

CHIEF HEALTH OFFICER OF ONTARIO

About sixty years ago an immortal Englishman, a lover of his fellow-men, especially of those who from poverty, disease or other untoward circumstance were handicapped in the race of life, thus graphically describes in the story of Nicholas Nickleby the disease Consumption:

"There is a dread disease which so prepares its victims as it were for death; which so refines it of its grosser aspect and throws around familiar looks, unearthly indications of the coming change; a dread disease, in which the struggle between body and soul is so gradual, quiet and solemn and the result so sure that day by day and grain by grain the mortal part wastes and withers away so that the spirit grows light and sanguine with its lightening load, and, feeling immortality at hand, deems it but a new term of mortal life; a disease in which death takes the glow and hue of life, and the gaunt and grisly form of death; a disease which medicine never cured, wealth never warded off nor poverty could boast exemption from; which sometimes moves in giant strides and some-

times at a tardy, sluggish pace, but slow or quick, is ever sure and certain."

This description in its essential features will be readily recognized by almost anyone. It is a classical picture of the advanced case of Consumption, and, while no less true of such cases in the present day, some consolation at least may be had from the fact that the number of such cases is not so great as formerly, and that increased knowledge in respect to this disease—as to its cause, the methods of prevention and the care of advanced cases—has in the last three generations materially lessened its ravages.

In England in the year 1851 the death-rate from Consumption was 247 per 100,000 of population. This has so far been reduced that fifty years later it was 136 per 100,000. In Germany during the period from 1877 to 1881 the death-rate was 357.7 per 100,000. From 1897 to 1901 it was 218.7, and in 1902 it had dropped to 190 per 100,000. In the adjacent State of New York the rate for the year 1890 was 205 per 100,000. Ten years later it was 158 per 100,000, and for a period of

25 years previous to 1909 the percentage of all deaths was 11 per cent., in 1909 10 per cent., and last year 9.5 per cent.

Tuberculosis is still, however, a most formidable scourge. More people die from it than from any other disease. Each year sees it destroy 1,995,000 of the world's population. In the United States the yearly deaths amount to 100,000. This means 3,000 a day, or two persons in every minute. In Canada it is estimated that 13,500 persons die from Consumption each year. In this Province 2,511 persons died from the disease in the year 1909, and 1 death in every 13 is chargeable thereto.

These are but a very few of the ascertained facts in relation to the ravages of this disease. The former opinion respecting the heredity of the disease is now disproven. It is the unanimous opinion of physicians that the disease is communicable from the sick to the well largely by means of the expectoration of the careless consumptive. Just as we are able to prevent the spread of other communicable diseases by isolation or segregation of the ones affected, so can the spread of this disease be controlled.

Professor Wilcox of Cornell University says: "A decreasing amount of tuberculosis appears in connection with an increase in the proportion of advanced cases segregated in hospitals or other institutions, and this almost regardless of any and all other factors. A stationary or increasing amount of tuberculosis appears in connection with a failure thus to segregate advanced cases in hospitals or other institutions, and this almost regardless of any and all other factors.

Dr. Arthur Newsholme, one of England's greatest statisticians, says: "No influence except that of institutional segregation has appeared in actual experience in a constant relation to the amount of tuberculosis, and it must therefore be accepted as having been the predominant influence."

Countries like England, Germany and the United States, where the greatest advance has been made in Sanatorium Treatment, show the greatest decline in the death-rate. Ireland, on the other hand, without, until very lately, facilities for the care of its large proportion of tuberculous cases has an increasing death-rate. This

leads us at once to the consideration of what is nowadays regarded as one at least of the most important plans of treatment of this disease, viz., by means of the Consumptive Sanatorium.

What are the objections urged against sanatoria? It is said that they are the newest fad of a profession of faddists. This argument falls to the ground when we recollect that in 1747 a Scottish physician in the Highlands of Scotland writing to his friends in London advised that Consumption should be treated in the open air and with a generous diet—the underlying principles of sanatorium treatment.

To a Warwickshire physician, Dr. George Bodington, is ascribed the honor of establishing in the year 1840 the first Sanatorium for Consumption in the world. Like many other new and valuable discoveries in our profession, this plan of treatment met with such determined opposition that Bodington was obliged to abandon his system of treatment and the earliest sanatoria became an insane asylum.

The idea of this English pioneer was taken up by Dr. Brehmer, who nineteen years later (that is to say in 1859) founded the first German Sanatorium for Consumption at Görbersdorf. So that, while Germany is popularly supposed to have the credit for the earliest sanatorium, such credit really belongs to Great Britain.

It is therefore quite clear that the use of institutions for the treatment of Consumption is not a new fad, but, on the contrary, has been in existence for nearly three-quarters of a century, or since the time when the death-rate from this disease began first to decline.

It is claimed that the results obtained in sanatoria do not justify their existence as a special plan of treatment. There are two functions fulfilled by sanatoria:

- (1) Their value in limiting the spread of the disease.
- (2) Their value in its cure.

As already stated, Consumption, being an admittedly communicable disease, isolation of its victims is as rational as the isolation of scarlet fever, diphtheria, measles or smallpox. No one will seriously question the value of the segregation of the various so-called infectious diseases. It is the well-established and universal

method of their control.

Consumption is not only communicated by the victim of this disease, but the danger to his family and to the community is far more prolonged and far-reaching than that of the zymotic diseases. Consequently, if we take him from his family and in a sanatorium teach him how to live so as not to be in the future a menace to his family or to the community, it must be admitted that the sanatorium represents an exceedingly valuable educational feature, the benefits of which cannot at first sight be adequately estimated. He becomes an apostle of hygiene. His well-trained manner of living after his return home is perhaps the greatest achievement of the sanatorium. Such patients not only improve the sanitary conditions of their homes, but are, in addition, a valuable object lesson to the whole community.

With respect to the cure of the disease, it has been firmly established that the earlier Consumption cases are sent to the sanatorium for treatment, the larger will be the percentage of cures. Cure of the disease may practically be based upon the capacity for work enjoyed by those who have had the treatment, as well as upon the length of time which has elapsed since leaving the institution. Between the years 1899 and 1903 there were treated in German sanatoria about 70,000 cases. In these five years the percentage of cures ranged from 72 per cent. to 80 per cent., increasing as the years went on. This increase is an indication that as the value of the treatment was demonstrated a larger number of cases in the earlier stage were received.

The permanency of the cure may be judged from the fact that from 92 per cent. to 94 per cent. of these cases retained a full working capacity after two years.

Riches' table given herewith indicates the after histories of cases during one to nine years after cure, as measured by their working capacity:

Year.	Total no. of persons treated.	Years after discharge.	Persons enjoying working capacity in 1904 for	
			Full work.	Light work.
1895	56	9	45.5	7.3
1896	146	9	61.2	12.2
1897	218	7	59.2	13.4

1898	251	6	53.7	14.5
1899	306	5	55.7	14.9
1900	296	4	61.0	20.9
1901	215	3	51.6	20.0
1902	175	2	65.5	17.5

These figures indicate not the percentage of those cured, but, of all patients treated whose working capacity was preserved. The fact that eight years after discharge from sanatoria 73 per cent. of those treated were still able to work and 61 per cent. retained a full working capacity must effectually confute the assertion that the clinical results of sanatoria treatment do not justify their existence.

A third objection raised against sanatorium treatment is that it does not pay. Perhaps as good a reply to this objection is the position taken by industrial insurance companies in Germany. These were established about the year 1881 for the purpose of providing relief for German workmen afflicted with illness. After a few years it was found that, out of the total payments made on account of illness of persons of 30 years of age, more than one-half were due to Consumption. The insurance companies, in order to decrease the large draft thus made upon their resources, undertook the treatment of such cases in consumptive sanatoria, with the result that in the years from 1886 to 1901 the annual death-rate in Germany from Consumption fell from 310 per 100,000 to 190 per 100,000, and during the period from 1898 until 1904 83,000 persons received this form of treatment at the hands of the industrial insurance companies.

The companies then took up the question of sanatoria of their own. Careful investigation showed that, if out of 500 consumptives 140 could be so far restored as to do without sick pay for a year, this would recoup the company for their cost of treatment in a sanatorium and for the erection and maintenance of one of its own.

Examples of the action of the companies are seen in the fact that the Regional Insurance Society has spent on special hospitals a sum of £1,650,000, and that a few years ago representatives of thirty-seven insurance companies met and decided to spend £2,000,000 sterling in erecting and providing sanatoria for their clients.

In addition to the foregoing facts, it may be of interest to cull a few opinions of responsible people as represented by their policy in respect to institutions of this character.

I quote from Dr. David Lawson. The King and Queen of Sweden in 1905 donated for a consumptive sanatorium for consumptive poor £100,000, this being the sum presented to them to commemorate the silver jubilee of their reign. The Queen of that country has, in addition, lent her patronage to the establishment of a children's sanatorium, containing 100 beds, and in 1897 a sanatorium for the Dutch poor was erected and opened under her auspices. His late Majesty King Edward devoted the whole amount of a gift of £200,000 received from Sir Edward Cassell for the purpose of a consumptive sanatorium in England. In 1894 the Emperor and Empress of Austria were largely instrumental in the establishment of the Alland Sanatorium, near Vienna, where the poor are treated free of charge. All over the world philanthropic men and women are giving of their means towards the establishment of sanatoria for this disease.

The Government of Germany makes an annual contribution of £7,000 towards the cost of erecting new sanatoria in Germany. The Governments of the United States, New Zealand and Australia, as well as our own Province of Ontario, all contribute to the erection and maintenance of consumptive sanatoria.

The Maryland Tuberculosis Commission reported that the establishment of sanatoria has proved most valuable in the treatment of this disease.

The Government of the United States has established a sanatorium for the treatment of its soldiers, and also one for the treatment of its sailors afflicted with Consumption.

In New Zealand the M. H. O. has power to compel local authorities to erect sanatoria wherever he thinks desirable. One-half the cost of such is paid by the local authority and the other half by the Central Government. In addition, the Government of New Zealand in 1901 bought 1,000 acres of land and upon this erected a sanatorium for the poor, making a charge only for those who are willing and able to contribute something towards their sup-

port. In respect to the care of consumptives, as well as in other matters of benefit to its people, this progressive portion of the British Empire is a shining example to the rest of the world.

Previous to ten years ago the mortality from Consumption in Norway and Sweden was steadily increasing. Since that time the death-rate has steadily decreased, falling in some portions of the country by 50 per cent., and over the whole country 15 per cent. The Government Medical Officer, Dr. Somme, states that the causes of this substantial reduction in the death-rate may be ascribed to:

- (1) Tuberculosis laws.
- (2) Nursing Homes.
- (3) Consumptive Sanatoria.

Switzerland had as long as ten years ago five sanatoria for its consumptive poor. The number has largely increased since then.

Denmark is at present the only country in the world where the provision of sanatoria is now considered fully equal to the demand.

Australia, Spain, Portugal, Roumania, Italy, Egypt, Belgium and Bulgaria all possess sanatoria supported partly or completely by the state funds. Here in Canada there are at least between twenty and twenty-five institutions of this character which are more or less in the receipt of Government aid.

It would seem that these facts show that Governments, the reigning heads of various countries, reputable individuals and responsible bodies all over the civilized world have been for years alive to the value of sanatoria in the care and treatment of victims of this scourge.

What has been the attitude of municipal bodies in respect to this great question? Moscow, in Russia, provides for the maintenance of the sanatorium for the poor of that city. The same is true of Paris, of Belfast, of Newcastle, of Birmingham, and of Liverpool. The public councils of the three southern counties of Scotland have combined to provide for and maintain a consumptive sanatorium for the poor of their counties. The list might be greatly multiplied were it necessary to convince you by any further evidence of the recognized value of these institutions.

In response to the public appeal of Eng-

lish workmen sufficient money has been subscribed, largely due to the efforts of H. R. H. Princess Christian, to equip a sanatorium of 200 beds at Beneden, in Norfolk. Forty thousand members of the Postal Union have voluntarily taxed themselves to the amount of two shillings per year in order that, should necessity arise, they might have advantage of sanatorium treatment.

It will be readily recognized that the directors of an insurance company are not liable to be swayed by any emotional feelings or any interest beyond the securing of dividends for their shareholders. When we find such men spending millions of pounds in supporting their tuberculous clients in sanatoria, we are fairly justified, I think, in assuming that such directors have concluded that sanatorium treatment pays and that in these institutions they have found the most powerful instrument at their command for enabling them to achieve the end they have in view.

In Britain ten years ago there was but one consumptive sanatorium. Now there are over sixty, and the cry is for more. What does this mean? It means that medical men, sanitary students and the general public have learned the practical value of such institutions and that, in addition, they have realized the truth of von Leyden's words: "There is no specificity in the part of any particular climate in the cure of Consumption, but I think it very essential that the majority of tuberculous patients be treated and cured in the climate in which they have afterwards to live and work."

To come home, I wish to repeat that in the Province of Ontario there died of tuberculosis disease, in the year 1909, 2,511 persons. The average age at which death occurred was, roughly speaking, 30 years. According to the period of average expectancy of life worked out by insurance companies, there was in each instance a loss of life period of about 33 years. The Labour Bureau of the Province tell me that the sum of \$400 per annum is a low average earning power of adult individuals. At this low estimate we are losing in earning power each year a sum of \$100,000. Multiply this by 33 and we have the total loss of earning power of one year's deaths from this disease—the

sum of \$3,300,000. This surely is bad enough. We are justified in considering, in addition, the additional expense of, in many instances, years of incapacity, of medical care, of nursing, all of which combined total up an enormous loss to the Province, all or nearly all of which may by proper care and treatment of such cases be prevented.

The Government of the Province of Ontario has provided for the establishment of municipal sanatoria to the extent of \$4,000 in each case. In addition, \$3 per week per patient is allowed for maintenance and municipalities are empowered to add \$3.50 per week per patient.

Under this plan four municipalities have already availed themselves of the provisions of the Act respecting Consumptive Sanatoria. There are at the present time twelve sanatoria in the Province and five dispensaries.

The only objections urged in respect to such sanatoria established within the limits of or adjacent to a city or town are:

(1) that they are a danger to the community,

(2) that they injure business,

(3) that they depreciate the value of property. These objections have no real basis. It is a matter of almost universal knowledge that as a rule business is improved, the population increases, and there is less tuberculous infection in communities adjacent to sanatoria than anywhere else.

Taking thirty-three institutions in twenty-two States in the United States, it is conclusively proven that in 67 per cent. the surrounding property has increased in value. In 23 per cent. the assessed value increased and in over 50 per cent. new residents were attracted. In no instance has it been shown that property decreased in value or population decreased from this cause. There is no place so free from infection as a well-conducted sanatorium for Consumption. In nineteen years no servant, nurse or attendant at Trudeau has contracted the disease. The fact that meat, milk, butter, eggs, cream and other first-class foods are consumed therein in large quantities is surely an argument in favour of, rather than against, business interests.

The existence of a well-conducted sanatorium is a gratuitous advertisement of the city or town as a health resort. It becomes a school of hygiene prophylaxis and treatment, an educator in respect to this malady of which only those who come in closer contact with it are fully aware.

The best evidence of all against these objections is the long-continued existence in many instances of such institutions within the limits of cities and towns without any evidence of danger to the community, any deterioration of business or injury to property values. There are several in Canada. The Brompton Hospital, in London (England), has been in existence since 1841 and there are many others in the various large cities of Great Britain. In New York City the House of Rest for advanced consumptives has been in existence since 1869, and there is, in addition, accommodation for about 1,500 cases of Consumption in sanatoria or homes within the City of New York. The same is true of other portions of the United States, and there is yet to be advanced the slightest evidence that these institutions have any but a good effect in the neighborhood where they are established.

The advantages are: The patient, not being deterred by a long railway journey, goes to the sanatorium earlier and has, consequently, a better chance of cure. The expense of travel being eliminated, he is thus enabled to make a longer stay. He has the comfort of being able to see his family and friends oftener. They, too, benefit by seeing the conditions under which the patient lives. They see him in pleasant surroundings and their natural prejudices are removed. Their intelligent co-operation is secured. The patient, because of the fact that he can see his friends frequently, does not suffer from homesickness. His increased length of stay prevents his going to work too soon. He does not have to adjust his life to a change of climate. Above all, the local institution is a practical example to his friends and the whole community and will often prove of value to other victims of the disease.

There is no great necessity for elaborate buildings. The patients in the Kendall

pavilions at Gravenhurst, where in the severest weather both men and women sleep by preference in what is practically the open air, has convinced me that expensive buildings are not a necessity in the treatment of Consumption.

I have shown, I think, that there is none of the popularly supposed danger to the community from an institution of this kind; that, on the contrary, it is a distinct benefit to any community and one at least, if not the greatest, factor in the care of this disease.

Education of our people about Consumption is of the greatest value. Even members of our profession have none too much knowledge regarding it. But people must be educated in a rational manner. It is a mistake to frighten people, to create a panic in respect to Consumption. The Provincial Board of Health Exhibit is endeavoring in some measure to disseminate such rational teaching. We hope to improve as time goes on. This association has the same object in view. All agencies in the Province should co-operate in so far as possible in this matter, the one aim being to lessen the ravages of this disease, to make the way of the poor consumptive easier, to cure as many as possible, and, above all, to prevent the infection of future generations, the ultimate ideal being to make the disease in Canada as rare as typhus, cholera or malaria. With this attainable ideal before us let us hope that the interest of the Government, of this association and of all who have an interest in this subject will have no relaxation until the happy result shall have been attained and the people of this great Province, as is fit and proper, shall be an example to the world as at once the healthiest and happiest of all.

"From statistics just published in the new Tuberculosis Directory of the National Association for the Study and Prevention of Tuberculosis, it is ascertained that over 600 cities and towns of the United States, besides about 100 in Canada, are engaged in the war against Consumption, and that on April 1st there were nearly 1,500 different agencies at work in the crusade, an increase of nearly 700 per cent. in the last seven years. "The new directory lists 421 tuberculosis sanatoria, hospitals and day camps;

511 associations and committees for the prevention of tuberculosis; 342 special dispensaries; 68 open-air schools; 98 hospitals for the insane and penal institutions making special provision for their tuberculous inmates; besides giving an account of the anti-tuberculosis legislation in every State and in about 250 cities.

"The new directory, which is the third of its kind that has ever been published in this country, gives the most complete survey of the anti-tuberculosis movement that can be secured, and shows

the remarkable growth of this campaign in the last seven years.

"The first directory in 1904 showed only 183 organizations and institutions in the entire United States. The second directory in 1908 reported 649 different agencies, as compared with 1,440 in the new book.

"Taking these figures as a basis, the anti-tuberculosis movement has increased in force since 1904 nearly 700 per cent., and since 1908 over 105 per cent."

THE HOUSE FLY IN RELATION TO PUBLIC HEALTH

By C. GORDON HEWITT, D.Sc., F.E.S.

DOMINION ENTOMOLOGIST, OTTAWA.

Some word of explanation is required of the character of this article, which is one of several which will deal with the problem indicated in the title as fully as the character of the Journal requires. An account of the life-history and breeding habits of the fly will be given; the chief experimental and other evidence which has shown irrefutably that the house-fly is an important disseminator of pathogenic organisms will be considered and the means to be taken to abolish the danger. It has not been possible to complete these articles before the present month and the circumstances render a change of sequence advisable. These circumstances are: the immediate approach of the hot weather and the necessity for taking steps now which will make a consideration of remedial measures at the present juncture of greater practical value than an account of the breeding habits and disease-carrying powers which will be given later.

The postponement of the presentation of the evidence now available as to the danger of the house-fly is rendered to a greater extent possible by the fact that the majority of health officers and others similarly interested and engaged, have already been convinced of these facts and

realize that in the house-fly we have an important disseminator of certain zymotic diseases.

The chief breeding places of house-flies are: horse or stable refuse, garbage and privy vaults. The treatment of the fly danger is nothing more nor less than the prosecution of sanitary reform and the substitution of sanitary for insanitary conditions.

The house-fly has been shown to be a public danger, and, therefore, to maintain a breeding place constitutes a public nuisance. The public health by-laws should prohibit, under severe penalty, the maintenance of such public nuisances as is the case in many cities and such by-laws should be enforced in all cases. Until this is done any attempt at sanitary reform and the solution of the fly problem will be almost useless.

Regulations should exist in regard to the proper construction of stables. Plans of stables and the completed structures should be passed in the same manner that plans of sanitary plumbing are passed by the sanitary authority. Such plans and completed structures should include the following important points: a concrete floor and a properly constructed, prefer-

ably cement, receptacle for the stable refuse. This receptacle must be fly proof and dark. This is an urgent necessity, as the one-horse stable, with its exposed heap of refuse, is the greatest public health nuisance in most Canadian cities. The erection of stables should be forbidden unless these regulations are complied with. Regulations should be passed and enforced to compel owners of stables to remove or have removed outside the city limits all stable refuse at least twice a week from May 1st to October 30th to prevent the emergence of any flies should eggs have been deposited on the manure. Regulations of this nature have been passed in the District of Columbia and in many cities. In the meantime, until authorities are able to pass and put into effect such regulations, the exposed manure heaps, garbage and privies should be regularly treated with chloride of lime. In the case of stable refuse, the owner should have a barrel of chloride of lime near or in the stable, and, as fresh manure is thrown on the pile, it should be sprinkled with the chloride of lime. The manure should then be carted away as frequently as possible. This method has been found effectual in stables containing as many as 150 horses. Not only does the reduction of the flies by this means affect man, but it has a most beneficial effect on the horses, which, not having been tormented throughout the night with flies, are able to rest and are fresher and more ready for work on the next morning.

Action in this respect must be taken at once as the present is the most important time.

Garbage, consisting as it does of waste vegetable, animal and other food products, serves as a most suitable nidus for the reception of the eggs of the fly. Further, the rotting material serves as a source of infection, as evidence in a subsequent article will show.

Garbage should be kept in closed receptacles and the civic authorities should see that the collection of garbage in the summer is as frequent as possible; that is, at least twice a week, and thorough. Household holders should be impressed with the necessity of keeping the lid on the garbage can and thus keeping out the flies. As much garbage as possible should be

burnt and buried at home. Where it is possible the garbage can should be kept in a dark or shaded place, as flies will not penetrate a very dark place for the purpose of depositing their eggs.

The garbage should not be dumped on public dumps, as this is nothing more nor less than the maintenance of public nuisances by the civic authorities. Every pound of garbage should be burnt and this can be carried out in the most efficient and economical manner by an incinerator.

Every outside privy within the city limits should be abolished. In most modern cities the by-laws prohibit the existence of privy vaults within the city limits. Such by-laws should be enforced. Winnipeg abolished its last box-closet in 1909. Privies which are indescribably filthy exist within many of our cities and are not only unfit for use, but constitute a most serious menace to the health of the community, which no body of civilized and educated human beings should for one moment tolerate. Where cases or epidemics of typhoid occur, such privies serve as the most frequent sources of infection. Frequented as they are by incipient cases and convalescent carriers they become infected and flies breeding in the infected excreta, or feeding on the same, are infected both internally and externally, as experiments have shown. This infection they carry to the food or milk.

Wherever there has been a typhoid epidemic, the health authorities should immediately make certain that every privy that has been used by a typhoid patient, either before or after the illness, is thoroughly cleansed and disinfected and the contents also thoroughly disinfected. If this is not done or carelessly carried out there is considerable danger of a recurrence of the epidemic during the ensuing twelve months, as the typhoid bacillus has been proved to remain in a viable condition on the walls of a privy for twelve months, and there will be millions of flies bred in such excreta and able to disseminate whatever bacteria are contained therein.

It will be seen from the foregoing recommendations that the solution of the fly problem is nothing more than the substitution of sanitary for insanitary conditions, and, in view of the heavy mortality

which is incident to such conditions, there is no excuse on the part of civic authorities for not taking up this problem, which means the abolition of mediæval systems of sanitation and substitution of modern methods for systems which no modern city should allow to exist.

On page XVI. of the advertising section of this Journal is the copy of a circular which has been issued by the Division of Entomology. It is printed on a card and will be sent to anyone making application to me for the same. Health officers might have similar cards printed for distribution.

MASTICATING

By W. E. WILLMOTT, L.D.S., D.D.S., TORONTO

Masticating is generally considered to be merely the grinding of food into small particles, in order to facilitate swallowing and subsequent digestion.

There are other considerations involved, however:—the partial digestion of the food in the mouth; the development of the muscles of the face, thus affecting the expression; the development of the teeth and jaw bones; the development and nutrition of the throat and nasal passages. Mastication is accomplished by the action of the teeth of the lower jaw against those of the upper. In the carnivorous or flesh-eating animals, the movement of the lower jaw is limited to that of up and down and the food is crushed between the very uneven surfaces of the upper and lower teeth: while in the herbivorous or grass and grain-eating animals, the movement is almost wholly sideways, grinding the food between the comparatively smooth surfaces of the teeth. As man's diet consists of a large variety of foods, we find a modification of these two forms in a somewhat uneven surface of the teeth and a very free movement of the lower jaw, forwards and backwards, and from side to side. When food has been taken into the mouth, the tongue moves it back between the posterior teeth, where it is ground into small particles. The movements of the tongue, lips and cheek serve to retain the food in the proper relation to the teeth until it is sufficiently comminuted and mixed with saliva, when it passes backwards and is swallowed. This should not be done until the food is thoroughly masticated and insalivated.

The value of thorough mastication is threefold:

(1) *Mechanical*—The subdividing of the

food into fine pieces is of the greatest value to subsequent digestion. The indigestibility of many articles of food is due very largely to the facility with which they may be swallowed without being very finely divided. While meat, eggs, etc., are very readily digested by the fluids of the stomach when in small particles, a lump of either will resist their action for a considerable time.

(2) *Chemical*—During mastication the flow of saliva into the mouth is very largely increased by the reflex action of taste and also by the pressure on the salivary glands, of the bones and muscles involved; the flow of the juices of the stomach is also induced. The object of mastication, the trituration and insalivation of the food, is more perfectly accomplished by this action being prolonged and this, "the first process of digestion being thorough, the succeeding ones in stomach and intestines would proceed with greater ease, with a saving of energy and vitality."*

(3) *Physiological*, or the effect on the jaws and surrounding structures—The muscles of mastication are very large in relation to the bony structures in connection with them. The exercise of these muscles largely influences the nutrition and development, not only of the muscles themselves, but also of the important structures near them, such as the jaw bones, the salivary glands, the soft palate, the tonsils and the posterior portion of the throat and nasal passages. The development of a bone depends considerably on the amount of exercise given the muscles which are attached to it. Hence in a person accustomed from childhood to thoroughly masticate, we generally find the jaws large and

* H. Campbell, M.D., F.R.C.P., (Lond.), in "The A.B-Z of Our Own Nutrition."

shapely, as well as the teeth regular, the tongue and salivary glands large, and the nasal and posterior nasal passages spacious and the membranes of the mouth healthy. As the teeth are developed within the jaws they necessarily share in the nutrition and proper development. If these bones are properly exercised during the formation of the teeth the tooth germs will grow and develop more perfectly and the teeth will be more resistant to caries or decay, the best preventative of which is efficient mastication.

The ample development of the jaws brought about by prolonged masticating tends to the regularity of the teeth, thus providing a proper "bite" or the proper relation between the upper and the lower teeth.

Why do the vast majority of people not masticate properly? There are several reasons, the most frequent, possibly, being "soft" or "mushy" food. This is most noticeable in the case of children's diet. Where the necessity of mastication is lacking, the instinct for it gradually disappears and the child acquires the habit of bolting its food and very soon comes to reject the harder for the softer foods. It is very important for the proper development of the jaw bones and of the permanent teeth that a child should be given food which cannot be swallowed without thorough mastication.

Another reason is some defect in the masticatory apparatus, and this is very common in those who have not learned to masticate properly in early life. The defects may be irregularities in the arrangement of the teeth whereby they do not come into proper relation, the upper with the lower, thus largely diminishing the area of the grinding surface, or the teeth may be decayed or loose and painful upon pressure, or some may be lost. Again, many people hurry over their meals, either of supposed necessity or on account of an acquired habit.

What are the evils resulting from improper mastication? Their name is legion. Possibly the most important is the tendency to take too much food. If the food were of a variety necessitating abundant masticating less would be taken, on account of the longer time and the more labor required, but thorough mastication, even of soft foods, "reduces the amount needful, for the more perfectly the

food is chewed, the more perfectly is it digested and the more economically is it disposed of in the system."* An inevitable result of an excess of food or of food insufficiently chewed is a derangement of the digestive tract resulting in more or less serious indigestion or in some cases even in cancer of the stomach or in appendicitis. Again, in those who do not masticate properly in early life the nasal passages and tonsils fail to properly develop, and in later life also, unless mastication is prolonged these parts are deprived of the stimulating effect of increased flow of blood to the parts, brought about by the action of masticating, and hence are more liable to become diseased both in the child and in the adult. There is no doubt whatever that the lack of efficient mastication predisposes the child and the adult to rhinitis, tonsillitis, adenoids and other affections of the throat and nasal passages. "The prevalence of adenoids among moderns must be the result of the modern system of feeding children and the defective mastication which goes along with it."* A sequence of adenoids is "mouth breathing" on account of the posterior nasal passages becoming blocked up. So, also, a sequence of mouth breathing is the predisposition to laryngitis, bronchitis, phthisis, dental caries, irregularity of the teeth, lack of development of the cranial and jaw bones. Another result of lack of abundant mastication is a lack of development of the tongue, salivary glands and jaw bones. The effect on the teeth is very marked. As the circulation in the teeth and surrounding parts is not stimulated, the teeth in infants do not develop properly and after development they are not properly exercised and massaged, while the secretions of the mouth are apt to be scanty and unhealthy. Under these conditions the teeth and surrounding parts are more liable to become diseased. Another result in more mature life is the loosening of the teeth from a disease called pyorrhœa alveolaris or Riggs' disease. Realizing the importance of thorough mastication and the evils arising from the lack of such, what should be done? In the first place, the jaws and surrounding parts should be exercised during their development. As soon as an infant shows any disposition to bite hard substances the instinct should be gratified.

At first, a hard rubber ring may be used, but as the time approaches for the teeth to

erupt a harder substance, as ivory or coral, may be substituted. It is "better, however, to give the child something which is not only hard but nutrient and pleasant to the taste—a chicken bone or a chop bone from which almost all the meat has been removed may be employed. These are not quite as hard as ivory and are, moreover, more attractive on account of the taste."* After the teeth have erupted, the child should still have abundant exercise in chewing, for example, hard toast or hard plain biscuits. Of course other foods will be needful as well, but as this deals only with masticating, mention is made only of the best means to that end.

The same principle should be continued through life, masticating everything thoroughly and at every meal some hard substance.

Once the habit of mastication is acquired the food will not be swallowed before being converted into a fluid. That this habit may be developed and retained through life, it is absolutely imperative that the teeth should be in the proper relation, the upper to the lower; also that they should be free from cavities of decay and firmly fixed in the jaw.

In this connection it should be distinctly understood and implicitly carried out, that every child should make frequent visits to the dentist, and that every one of the first teeth should be filled if decayed, and should be retained in position until the permanent tooth is ready to replace it.

Periodic visits should be made to the dentist by every person and all necessary operations performed in order to preserve the masticatory

apparatus in efficient working condition. Even if one or more natural teeth should be lost they should be replaced by artificial substitutes.

In a word, what does efficient mastication accomplish? It divides the food into very small particles; causes a flow of saliva into the mouth, thoroughly mixes the food with saliva, facilitates swallowing, partially digests the starchy foods; excites the flow of digestive fluids in the stomach; develops the muscles of mastication and those of the face, thus affecting beneficially the expression; influences the nutrition and development of the teeth, the jaw bones, salivary glands, soft palate, tonsils and posterior nasal passages; is a preventative, to a large extent, of decay or loosening of the teeth; cures many cases of indigestion.

Surely a sufficient benefit to recompense for the small expenditure of time and labor necessary to accomplish it.

In another word, in what does insufficient mastication result? The food is swallowed before being sufficiently comminuted or sufficiently insalivated; the habit of eating too much; serious derangements of the digestive tract; may induce cancer of the stomach or appendicitis; lack of proper development of the teeth, of the muscles of mastication, of the jaw bones and cranial bones, thus adversely affecting the expression; lack of proper development of the throat and nose, predisposing to rhinitis, tonsillitis, adenoids, mouth breathing, laryngitis, bronchitis, consumption, dental caries and irregularity of the teeth. Surely a great risk to assume in order to save a little time and trouble.

THE RELATION OF BOVINE TUBERCULOSIS TO PUBLIC HEALTH

By E. C. SCHROEDER

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Mr. President and members of the Canadian Association for the Prevention of Tuberculosis, permit me to thank you and your Board of Directors for your kind invitation to address you. I believe it to

be unnecessary to enlarge on the pleasure it gives me to be here with you, because it is always a real pleasure to meet, and to be among, active fighters for the welfare of mankind. Furthermore, it must

be clear to you, who know how much needless suffering and preventable loss of life are caused by tuberculosis, that it cannot fail to be a gratifying event to have a special opportunity, like that accorded me here, to aid in the fight against the commonest and most destructive among the infectious diseases.

My subject is the Relation of Bovine Tuberculosis to the Public Health, and in dealing with it I will confine myself as much as possible to facts. If I should leave the facts to talk about theories, I will try to make the distinction between the two plain, so that neither shall be taken for the other.

To begin with, we have this fact, that the tubercle bacillus is the primary and absolutely essential cause of tuberculosis. We know, to be sure, that the disease is not observed as often among persons who live wholesome, clean and correct lives as among those who have pernicious habits or are guilty of debilitating excesses, or who, through viciousness, ignorance, poverty or carelessness, violate the laws of hygiene. But it makes no difference how people live, or how much they abuse their bodies or their minds, or how seriously they are exposed to the conditions that are appropriately characterized as the fostering causes of tuberculosis, unless the tubercle bacillus finds its way into and multiplies within their bodies, tuberculosis can not and does not affect them. On the other hand, it is not uncommon for tubercle bacilli to have sufficient virulence to cause fatal tuberculosis, at times rapidly fatal, without the aid of the various conditions that promote its development. Hence, the fight against tuberculosis urgently requires that we should try to destroy, or to control and make harmless, all the sources from which tubercle bacilli, of a kind that may attack persons, are disseminated in a way that leads to their introduction into human bodies.

The expression, "tubercle bacilli of a kind that may attack persons," introduces another fact, namely, that there are different kinds or types of tubercle bacilli, all of which are not equally dangerous to public health.

For some years after the eminent bacteriologist, Dr. Robert Koch, discovered

the tubercle bacillus and demonstrated that it is the indispensable cause of tuberculosis, alike of persons and lower animals, the sources of the tubercle bacilli that are important for public health were believed to be both persons and lower animals affected with tuberculosis. The ideas that were entertained on the relative importance of tuberculous persons and tuberculous lower animals, as sources of infection were not based on a distinction between the types of the tubercle bacilli that attack different species of animals, but simply on the assumption that persons are more directly exposed in a way that explains the commonest location of tuberculous disease in their bodies, to the infectious material that is expelled by persons than to that expelled by animals.

The general belief attributed pulmonary tuberculosis, or consumption of the lungs, to tubercle bacilli that entered the lungs directly with the respired air; and consumption of the lungs was and is the commonest form in which tuberculosis manifests itself. Tubercle bacilli from tuberculous animals can reach the vast majority of persons only in food products, and tubercle bacilli swallowed with food were believed to cause abdominal, but not pulmonary, tuberculosis. Therefore it was concluded that the human source of tubercle bacilli is by far the most important for public health, and this conclusion remains to this day, though not for just the same reasons, the most rational view we can take of the relative importance of the different sources from which human beings become infected with the germs of tuberculosis.

The first evidence to prove that all tubercle bacilli are not precisely alike was supplied by French investigators, who observed, about seven or eight years after Dr. Koch's important discovery, that the bacilli of tuberculosis in chickens, though closely resembling those of human tuberculosis, are not identical with them. For example, while tubercle bacilli from human beings cause rapidly fatal disease when injected into guinea pigs, those from chickens cause at most a strictly localized, non-progressive tuberculosis. On the basis of this and other differences tubercle bacilli were soon divided into two classes: avian, or those that attack birds, and

mammalian, or those that attack animals.

It is not certain that the human race is entirely immune against avian tubercle bacilli; some investigators have obtained results which seem to prove that their virulence for mammals can be greatly increased, but it is safe to say that they have no considerable, direct importance for public health.

Mammalian tubercle bacilli were all regarded as being identical until the American investigator, Dr. Theobald Smith, called attention, in 1896, to differences he had observed between the tubercle bacilli that are more commonly found in human tuberculosis and those that are, with remarkably few exceptions, the cause of bovine tuberculosis. Dr. Smith made a further communication on this subject in 1898, but it was not until 1901, after Dr. Koch announced, before the British Congress on Tuberculosis at London, "that he did not regard human and bovine tuberculosis as identical and that he believed the latter to be a negligible source of danger for public health," that any widespread tendency manifested itself to distinguish between human and bovine types of tubercle bacilli.

Most of us remember the amazement, I may almost say consternation, with which Dr. Koch's London address was received. But I believe we must agree to-day, irrespective of whether we are advocates or opponents of the views he expressed, that the address was productive of much good, because, backed as it was by his great and well-earned authority, it prompted carefully guarded investigations of the most searching kind, which added materially to our store of knowledge about tubercle bacilli and tuberculosis.

The investigations that were at once undertaken proved that Dr. Smith was right when he described differences between the tubercle bacilli that are of commoner occurrence in human tuberculosis and those that cause bovine tuberculosis, but they also proved that human beings are not immune against bovine tubercle bacilli and that bovine bacilli occur too often in human tuberculosis to be regarded as a negligible source of danger for public health.

And with this we arrive at a point where we can state two more facts, with

which our subject must deal: 1, That the tubercle bacilli that attack mammals, including the human species, are of two distinct, but closely related, types, the human type and the bovine type; and, 2, that both human and bovine types of tubercle bacilli are found in human tuberculosis. These two facts rest on the carefully-planned investigations of important and impartial bodies like the British Royal and the German Imperial Tuberculosis Commissions, to say nothing about the work of numerous independent investigators of the highest rank. Together with the two facts previously stated they constitute, for the time being, the fundamental material on which an attempt to measure the direct significance of bovine tuberculosis for public health must rest.

It follows quite naturally, if the tubercle bacillus is invariably the primary, essential cause of tuberculosis, no matter when, where, how or in what species of animals the disease develops, and there are different types of tubercle bacilli, among which one type may with good reasons be called human, and another bovine, that it is fair to assume, when the bovine type of bacillus is found to be the cause of human tuberculosis, that the source of infection was bovine.

On the basis of this common-sense assumption, bacteriologists have examined many cases of human tuberculosis to determine the relative frequency with which human and bovine types of tubercle bacilli are the cause of the disease. The results of most of these examinations have recently been published in an easily accessible form in a fifth volume of collected studies from the Research Laboratory of the New York Health Department. Dr. William H. Park, the director of the laboratory, presents, in the named publication, not only his own work and that of his associates, which forms the largest single series of cases examined with special reference to the types of tubercle bacilli that cause human tuberculosis, but also a careful analysis of the cases examined by others, which his analysis proved to be acceptable as evidence. The cases of human tuberculosis examined by Dr. Park and his associates are especially valuable, as they were not selected, like those of some other investigators, because it seemed

probable for various reasons that infection might have occurred from the bovine source. The following figures are extracted from the work of Dr. Park and his associates:

The total number of tuberculous persons examined in the Research Laboratory of New York City relative to types of tubercle bacilli is 438, and of these 32, or 7 1-3 per cent. showed tubercle bacilli of the bovine type. The 435 persons are divided into three groups, according to age, as follows: 297 persons 16 years of age or older, among whom only one, or less than 1-3 of 1 per cent., showed bovine tubercle bacilli; 54 persons between 5 and 16 years of age, among whom nine, or 16 2-3 per cent., showed bovine tubercle bacilli, and 84 children less than 5 years old, among whom 22, or 26 1-5 per cent., showed bovine tubercle bacilli.

The foregoing cases, with the addition of the total number among those examined by other investigators, which Dr. Park accepted as reliable, after a careful analysis, is 1,038, and of this number 101, or 9 7-10 per cent., showed tubercle bacilli of the bovine type. If the 1,038 cases are divided into three groups according to age we have the following: 686 persons 16 years of age or older, among whom nine, or 1 1-6 per cent., showed bovine tubercle bacilli; 132 persons between 5 and 16 years of age, among whom 33, or 25 per cent., showed bovine tubercle bacilli, and 220 children less than 5 years old, among whom 59, or 26 4-5 per cent., showed bovine tubercle bacilli.

Before discussing these significant figures, as all the cases of tuberculosis on which they are based did not have a fatal termination, it may be well to add the following results obtained from the study of 50 cases of fatal tuberculosis in children under 5 years old. Among the 50 cases, 9, or 15 per cent., were due to bovine tubercle bacilli. The 50 cases included 9 children, who died at the New York Foundling Hospital, and these 9 children, of whom 5, or 55½ per cent., showed bovine tubercle bacilli, constitute a distinct group, which was fed, practically exclusively, on cows' milk.

If we should conclude from the figures I have quoted that the work of New York investigators proves that about 7 per cent.

of all human tuberculosis in New York City is due to infection from the bovine source, or that the combined work of investigators in America and in Europe proves that about 9 per cent. of all human tuberculosis is chargeable to bovine infection, the objection would at once be raised that the designated percentages are unreasonably high because children, among whom clinically observable tuberculosis is a much rarer disease than among adults, formed too large a proportion of the total number of tuberculous individuals examined.

If we admit this objection to be valid, we, nevertheless, have several important facts to consider. First, we have the fact that all the investigations that have been made point directly to tuberculous cattle as the responsible source for about 1 per cent. of all tuberculosis among human adults. Can we reasonably ignore an evil that causes as much disease and suffering as 1 per cent. of the tuberculosis that occurs among adults signifies? Second, we have the fact that the evidence obtained from the investigations points directly to tuberculous cattle as the source of from 16 2-3 per cent. to 25 per cent. of the tuberculosis that occurs among children from 5 to 16 years of age. Take the lower percentage, which is based on cases of tuberculosis that were not selected because it was likely they would show the bovine type of tubercle bacillus, and we have evidence which points irrefutably to tuberculous cattle as the source of one-sixth of all the tuberculosis that develops into clinically manifest disease among children between 5 and 16 years of age. Does this encourage us to look upon bovine tuberculosis as a negligible source of danger for public health? And, third, we have the fact that something more than one-quarter of all recognizable tuberculosis among children under 5 years old is due to tubercle bacilli that emanate from the bodies of tuberculous cattle. To those who love children and believe that the highest duty of responsible adults is to make them happy and to guard them against preventable suffering, it is hardly necessary to say, if there should be an inclination or a tendency to undervalue the amount of suffering one-quarter of all tuberculosis among children under 5

years of age means, that Dr. Park, from whom I have quoted so liberally, makes the following omnibusly significant statement in the last annual report of the United States National Association for the Study and Prevention of Tuberculosis: "When the diagnosis of cases entering the Mt. Sinai Hospital and the Babies' Hospital of New York are examined, it is found that the majority of cases of meningitis supposedly due to the meningococcus are really tuberculous in character. Fifteen per cent. of the cases of bronchopneumonia and marasmus are also found to be cases of tuberculosis."

One fact about the examinations relative to the different types of tubercle bacilli that occur in human tuberculosis merits special attention. If we divide all the tuberculous individuals included in the examinations into two groups, and place those who reached 16 years of age or more in one group and all those younger than 16 years in the other, we practically separate the tuberculous persons in whom the disease, through the discovery of tubercle bacilli of the bovine type is often attributable to infection from the bovine source, from those in whose bodies, with comparatively rare exceptions, only tubercle bacilli of the human type are found. This fact would be less remarkable to me if the frequent occurrence of bovine tubercle bacilli was confined to tuberculous children who have not passed the 5th year of life; that is, to children nearer the age during which milk is the main portion of the currently eaten food, because such younger children may be looked upon as being more intensely and more persistently exposed to bovine infection through the use of milk from tuberculous cows than older children. I have given much thought to this matter without being able to satisfy myself entirely regarding what it teaches about the relation of bovine tuberculosis to public health. We may accept it simply as proving that the human body is vulnerable to bovine tubercle bacilli before it arrives at the age of puberty and then becomes immune against them, or, we may take some other factors into consideration and reach an entirely different conclusion. For example, the undeniable fact that tuberculosis among children, of a kind that does

not develop sufficiently during childhood to show its presence by recognizable symptoms, is very common, and the as yet insufficient, but very significant, observations that have been made on the transformability of tubercle bacilli from one type into another, would give bovine tuberculosis a very different and much more important rank as a cause of human tuberculosis.

I will try to make this last statement a little clearer, and to do so I will call your attention to three more facts: First, we know to-day from tuberculin tests made by such considerable authorities as von Pirquet, Hamburger, Moro, Muller and others that the percentage of children less than 16 years of age affected with concealed tuberculosis is a number of times greater than the percentage of human deaths statistically charged against tuberculosis. For those who may doubt that the tuberculin test is a satisfactory means to discover the existence of concealed tuberculosis in the bodies of children, I will add, that autopsy examinations of the bodies of children who succumbed to other diseases than tuberculosis have given results strongly confirmatory of those obtained with tuberculin tests.

Second, the work that has been done on the types of the tubercle bacilli that occur in human tuberculosis has not only shown human and bovine types, but also types that are intermediate between the human and the bovine; that is, tubercle bacilli which some investigators have given the designation of transition or connecting forms between the human and the bovine types.

And, third, some investigators of no mean rank claim that they have actually succeeded in their experimental attempts to transform tubercle bacilli from one type into another type.

With these three facts before us, and the well-known fact that tuberculosis is usually a slowly progressive, chronic disease, in which the entrance of the infecting bacilli into the body and the development of observable symptoms are events that are very often separated by a long period of time, we may conclude that tuberculosis among human adults, if we except the rarer cases of the disease that develop rapidly after the introduction of the infecting bacilli into the body, should

always show either human types of tubercle bacilli or intermediate or transition types between the human and the bovine. Hence, as most persons who contract tuberculosis, no matter at what period in their lives the disease becomes a recognizable phenomenon, take the infecting bacilli into their bodies during childhood, it is more surprising that about 1 per cent. of tuberculous adults show bovine types of tubercle bacilli than it would be if bovine types were never found in adults. The true conclusion as to the importance of the bovine source of tubercle bacilli for public health would then be, not that it is equal to the percentage frequency of bovine types of tubercle bacilli in human tuberculosis, but that it is measurable by the percentage frequency of bovine types of tubercle bacilli in the tuberculous bodies of persons who have not reached the age of adolescence.

But it does not seem necessary to pursue this portion of our subject farther, because I believe I have sufficiently shown that the facts, the absolutely irrefutable facts, emphatically force us to the conclusion that tubercle bacilli from the bovine source are truly capable of causing human tuberculosis, and that the frequency with which human tuberculosis is caused by such bacilli, especially among children, if we give it the lowest, reasonably permissible valuation, stamps the bovine source of tubercle bacilli as a very serious cause of human suffering.

We must now give some attention to the source from which bovine tubercle bacilli are disseminated in a manner that leads to their introduction, alive and virulent, into human bodies. Meat and meat products do not require special consideration, as they are customarily cooked and so sterilized before they are eaten, and because the proper enforcement of meat inspection laws, such as most civilized countries have, eliminates most of the meat that is dangerously infected with tubercle bacilli from use as food. Hence, we may at once turn to those products from animals, milk, cream, butter, etc., that are extensively used as food in a fresh, raw state, and the sufficient purity of which, without the aid of the tuberculin test, no inspection can insure. I do not believe we will make a mistake if we charge

the tuberculous dairy cow, under existing conditions, with practically all the human tuberculosis that is not caused by tubercle bacilli expelled from the bodies of human tuberculous individuals. There are no animals that are oftener affected with tuberculosis than dairy cows, and there are no animals to which human beings are more intensely or more continuously exposed.

If you stop to think a moment what milk is and how extensively it is used raw, you will realize the truth of this statement. An animal killed for meat has the interior of its body exposed so that a competent inspector can readily determine whether it is, or is not, dangerously tuberculous. Should the inspector be incompetent or delinquent, we would still be protected because our aversion to raw meat induces us to expose it to a degree of heat before we eat it that is in most instances high enough to kill tubercle bacilli. Then, also, whatever danger a tuberculous meat animal may represent is short-lived and is terminated at once by the use we make of it.

The dairy cow, on the other hand, is a daily repeated source of danger through the human food that is twice daily, day after day, sometimes for years, with only occasional short intermissions, drained from her living body. If she is tuberculous, and she may be and may remain so for several years without showing a single clinical symptom of the disease, and fails to expel tubercle bacilli from her body one day, it is no guarantee that she will not expel them another day, and if she expels tubercle bacilli with her milk, or in any way that may lead to their introduction into her milk or into the milk of other cows in her environment, and does so only once in a while, she is a positive danger which the campaign against tuberculosis cannot afford to ignore and must not undervalue.

The material from which the milk of a cow is derived is the food she eats and the water she drinks. In a general way, the passage of this food and water from her mouth to her udder is as follows: After the material is swallowed it passes into the stomachs and intestines, then, after having undergone various changes, it enters

minute blood and lymph vessels and in these is carried onward into larger vessels and through the latter reaches the heart, from the heart it is pumped with the blood into and spread throughout the lungs, from the minute blood capillaries in the lungs it is again collected in larger blood vessels and returned to the heart, and from there it is pumped out into the body generally. That is to say, the raw material which goes into a cow's mouth and which is returned in the form of milk may have been, and most of it probably has been, in contact with every portion of the interior of her body. Now think of this body as containing cheesy, broken-down and degenerated masses of tuberculous matter, and remember that the ease with which we can detect the taste and odor of fresh grass and wild onions in milk does not tend to suppress the disgust engendered at the thought of using milk extracted from a more or less diseased, tuberculous cow as food. Disgust, in this case, is probably a protective instinct which, if you take my advice, you will not seek to suppress for purely economic reasons.

A fairly common belief exists that the kind of tuberculous cows that are responsible for the presence of tubercle bacilli in milk can easily be detected by an ordinary physical examination. The sponsors for this belief are largely persons who wish to defeat the general application of the tuberculin test to dairy cows for the protection of public health. That the belief is wholly unreliable is the only conclusion the facts warrant.

When I learned, through my studies and those of others, how often ordinary market milk is infected with tubercle bacilli, and compared this with the frequency with which I and others were able to diagnose tuberculosis among dairy cows by means of physical examination, I concluded that the occurrence of tubercle bacilli in market milk could not invariably be attributed to visibly, or clinically tuberculous cows, or to cows affected with tuberculosis of the milk-secreting structures. I recalled, however, that I had examined milk from a large number of tuberculous cows, some of which were badly diseased, though they showed no involvement of the milk-secreting struc-

tures, without finding tubercle bacilli in it. This mystified me at first, until I also recalled that I had collected the milk from the cows myself, with careful precautions against its contamination with anything that happened to be in their environment. This led me to undertake two series of investigations with my assistant, Mr. W. E. Cotton. The one series was a careful study of the channels through which tubercle bacilli are expelled from the bodies of tuberculous cows and the stage of the disease at which the expulsion of tubercle bacilli begins, and the other was a study of the extent to which market milk is contaminated with foreign material and the character of this contaminating material.

The results obtained with the two series of investigations may be stated as follows:

1. The commonest channel through which tubercle bacilli leave the bodies of tuberculous cows is their bowels.

2. Tuberculous cows often begin to expel tubercle bacilli with the discharges from their bowels long before they can be proven to be affected with tuberculosis by a physical examination.

3. The commonest impurity in market milk is material expelled from the bowels of cows, and most commercial milk is to some extent contaminated with this impurity.

As these three facts, which explain perfectly why market milk contains tubercle bacilli oftener than the number of tuberculous cows we can discover in dairy herds by physical examinations would lead us to suspect, have met with considerable opposition, it may be well to say that they now have the support of the important group of investigators that has become famous throughout the world as the British Royal Commission on Human and Animal Tuberculosis. The Commission's work on the subject was published as its Third Interim Report.

After having shown that unimpeachable evidence proves that a fairly large amount of tuberculosis among human beings is due to infection from the bovine source, and that the tuberculous cows that are dangerous disseminators of tubercle bacilli cannot always be detected by a physical examination, it seems to me that

very little need be said about the frequency with which living tubercle bacilli occur in milk and dairy products, or to urge that the protection of public health against the bovine source of tuberculosis imperatively requires that the milk of no cow should be used in a raw state as human food until she has been proven by the tuberculin test to be free from tuberculosis.

In a general way, I may say that the milk regularly sold to consumers in the larger cities of the eastern portion of the United States, according to the samples examined, contains tubercle bacilli with a frequency that varies from 5 per cent. in some places to 15 per cent. in others. Tubercle bacilli in milk adhere with such tenacity to the cream globules that cream from infected milk, volume for volume, contains more bacilli than the milk from which it is derived. Butter made from infected cream is not only infected, but tubercle bacilli may live in it and retain their virulence for many months. In one test, made at the Experiment Station of the United States Bureau of Animal Industry, hogs contracted tuberculosis from eating butter made from infected milk; the butter was three months old at the time it was eaten by the hogs and the amount eaten daily for 30 days was no greater than the amount of butter consumed in the same time by an average human adult. Guinea pigs inoculated with butter 5½ months after it was made contracted tuberculosis. There is no better medium for the preservation of the life and virulence of tubercle bacilli than the moist, bland, opaque character of butter offers. In cheese tubercle bacilli are also found, and in it they remain alive and virulent for a long time. Butter-milk may be infected and in either milk or butter-milk tubercle bacilli remain alive a longer time than is required for these articles of food to become so badly spoiled that they are no longer fit to be eaten. And, bear in mind that these statements are not suppositions, nor opinions, nor theories; no, they are facts that rest squarely and firmly on practical tests that have actually been made. They are no more palatable to me than to others, but when danger exists it is better to know about it than to suffer in ignorance.

If you stop to think about it, these facts make the surprising results obtained by various investigators, who have made numerous autopsy examinations to determine the frequency with which human beings are affected with tuberculosis, seem quite reasonable, though the examinations show that less than 10 per cent. of human adults reach the end of life without having been infected to some extent by tubercle bacilli.

Fortunately, there are two ways in which public health can be protected against the bovine source of tuberculosis. One is through the pasteurization or sterilization of all milk before it is used as a beverage or in the manufacture of butter, cheese and other dairy products, unless it is obtained from cows certainly known to be free from tuberculosis, and the other is the application of the tuberculin test to eliminate all cows affected with tuberculosis from use for dairy purposes.

I do not wish to tire you, but I would like to retain your attention a little longer, because there is another side to the tuberculosis question, relative to the occurrence of the disease among lower animals, that must not be overlooked. We know that good food and plenty of it is necessary to give our bodies the power to resist the development of tuberculosis, and, therefore, anything that tends to reduce the human food supply must be regarded as a menace to public health. Indeed, I do not believe that it is an exaggeration to say that the conservation of the human food supply is the most important public health work any nation can undertake.

How much tuberculosis there is among Canadian cattle I do not know; in the United States it is estimated, on the basis of somewhat inadequate data, that about 10 per cent. of all dairy cows are infected. In the older and more densely settled portions of the United States the cattle are more commonly infected than in the newer and less densely populated portions; in Europe, which is older and more densely populated than America, tuberculosis among cattle is much commoner than in America. To me this means that tuberculosis will gradually increase among our cattle as the population becomes denser, until we have conditions like those of

Europe, or even worse, unless we take active measures to prevent the consummation of an evil of this kind. That it is a real, vital evil, with an important bearing on public health, no one can doubt who knows that in some portions of Europe the demand and need for meat food is so much greater than the supply that dogs are actually slaughtered for use as human food.

The time when we will accept dog and horse meat as suitable articles of human food in America may not arrive during the life of the present or the next generation, but we have no right to leave to coming generations the inheritance of a widespread, food-destroying disease among our animals, a disease which not only reduces the food-productivity of the animals, but which is directly transmissible from them to human beings.

When I review everything I know about tuberculosis and its occurrence among different species of animals, I feel that we have good reasons for concluding that the continued propagation of the disease depends practically on three species, the human, the bovine and the galline; that is, persons, cattle and chickens.

Of course, tuberculosis occurs among other species of animals; among hogs, for example, with serious and increasing frequency. It is the commonest infectious disease of human beings; it is also the commonest infectious disease of cattle. It is remarkable that two such dissimilar species of animals as the human and the bovine should share the distinction of being the commonest victims of an infectious disease that may attack a larger number of different species than any other known disease. It is also remarkable that the tubercle bacilli that emanate from the bodies of tuberculous cattle are more virulent for all species of animals, including the quadrumania, or man's nearest zoological neighbors, than those that emanate from the bodies of tuberculous persons. And then, too, it is remarkable that the human race, which shares with cattle the distinction of furnishing the largest numbers of victims of tuberculosis, should be more intensely and more persistently exposed to cattle than any other species of mammals. Hogs, because of the manner in which they live and the food they

eat, next to human beings, are the species that is most intensely exposed to cattle, and hogs take third rank, the highest rank after persons and cattle, as to the frequency with which different species of mammals are the victims of tuberculosis.

And now, unless the observations I have been able to make are exceptionally misleading, hogs have not yet acquired the faculty of perpetuating tuberculosis continuously from generation to generation without the aid of tubercle bacilli that have their origin in the bodies of tuberculous cattle. But what will happen relative to the development of this faculty in the course of time if the increasing frequency of tuberculosis among hogs is not checked indirectly by checking the frequency of tuberculosis among cattle, I am not ready to answer.

I would like to say more on this phase of the tuberculosis question, but I have said more than enough already without going into a discussion that would have to deal, in the light of our present knowledge, largely with theories. Besides, I believe I have shown it to be unnecessary to use theories to prove that bovine tuberculosis is closely related to public health as a cause of serious suffering, first, because it is a direct cause of disease among human beings, and, second, because it is an indirect cause of disease through the increasing amounts of food it destroys and the consequent increased cost of food.

The general conclusions to which I wish specially to call your attention may be briefly stated as follows:

1. It has been proven, absolutely, that bovine tuberculosis is responsible for a not yet well-defined proportion of human tuberculosis, but a proportion that is now known to be entirely too large to be ignored.

2. It has been proven, absolutely, that a large proportion of the tuberculosis that occurs among children is chargeable to the bovine source of infection. And, remember, there are no duties that are more imperative and no obligations that are more sacred than those that concern the welfare of the child.

3. It has been proven that tuberculous cows need not be visibly diseased to expel tubercle bacilli from their bodies in a dangerous way. When it comes to the ex-

posure of food products to persons or animals affected with other infectious diseases than tuberculosis, I don't remember that we ask many questions about the extent to which the individual, or the animal, is diseased. The presence of the infectious disease is accepted as the presence of the dangerous and injurious infectious material that causes the disease, both in the body and in the environment of the victim. We have no valid reasons for making tuberculosis an exception, as is often done, presumably for economic reasons and because it is so widespread and its course, unlike that of more acute diseases, is often drawn out over long periods of time.

4. The satisfactory protection of public health against tuberculosis due to infection from the bovine source requires that we should either pasteurize or sterilize all

milk or obtain it from cows proven by the tuberculin test to be free from tuberculosis.

5. Tuberculosis among cattle, apart from the direct infection of persons with bovine tubercle bacilli, is a condition we must fight early and late, until it has been fought to an end, otherwise we will neglect what the proper conservation of the human food supply urgently demands. This means the control and, eventually, the eradication of bovine tuberculosis, and we can go a long distance and spend much thought and money without even approximating the value of the magnificent returns the accomplished eradication of bovine tuberculosis will give, not alone to those who are interested in different branches of animal husbandry, but to the whole people.



Editorial

The British National Insurance Bill.

Mr. Lloyd George's National Insurance scheme—revolutionary in its scope in placing person above property—is founded on the theory that the only real wealth of a State lies in the number of its healthy lives; and in its present bill form is an acceptable, unique and widely reaching legislative recognition of State responsibility in this direction—providing as it does for insurance, of the individual seeking a livelihood therein, against loss of health and for prevention and cure of sickness and for insurance against unemployment and for purposes incidental thereto. The scheme, because inseparable from the innate democracy of the British people, may be looked upon as having none of the dangers of governmental paternalism, and is so powerfully presented and widely and apparently favorably received, that it seems destined, with efficient medical service as the *sine qua non* of its success, to have a deep and incalculable influence on human progress—and on the future of the world at large in regard to the duties of representative governments.

The British Chancellor has described his bill as intended to effect as wide an insurance, and as progressive, as possible against sickness and breakdown among the working population; and as a preventive measure operating to reduce invalidity and the numbers of the unfit generally throughout the United Kingdom. The collection of the operating fund is to rest partly upon compulsion, it being proposed that the "premiums" shall be collected by progressively small deductions from the income of the employee of whatever nationality under contract of service, whether paid by the hour, day, week, month or year; and in part, in certain cases, by contributions of somewhat similar proportions from the employer. There are occasional exemptions from wage deduction noted in the bill, with cases where the employer alone is responsible for the insurance of his employees. And

so far as the bill does not rest on compulsion, it is proposed to allow all other persons to join the scheme or not as they may choose, provided that they are engaged in some occupation by which they seek their livelihood—contribution to the fund to cease when the insured is 70 years of age.

It is also proposed, under proper safeguards, to hand over the administration of this fund in part to recognized Friendly Societies, either already established or to be established under the Act. All such approved societies will be governed by conditions embodied in the bill and by the regulations for financing the scheme, which will be so arranged that the deficiency inevitable in starting an insurance which includes all ages shall in 15 to 16 years be completely wiped out and the way then opened for reduction of the pension age and for other increased benefits; the minimum benefits now being: (a) Medical attendance throughout the life of the person insured—termed "medical benefit." (b) Treatment in sanatorial or other institutions when suffering from tuberculosis or such other diseases as the local Government Board, with the approval of the Treasurer, may appoint—termed the "Sanatorial Benefit." (c) Weekly payments whilst rendered unfit to provide their own maintenance by some specific disease or bodily or mental disablement, commencing from the fourth day after notice thereof has been given and continuing for a period not exceeding 26 weeks—termed the "sickness benefit." (d) In the case of disablement continuing after the termination of sickness benefit, weekly payments so long as so rendered unfit by the disease or disablement—termed the "disablement benefit." And (e) payment in the case of the confinement of the wife of an insured person who is not herself an insured person or of a woman who is an insured person, of the sum of 30s—termed the "maternity benefit."

At the same time, for the benefit of those persons who fail or neglect to join such societies or are rejected, a Post-office System is to be set up for the collection of funds and payment of benefits; the whole to be governed by a Central Insurance Board.

We believe in this bill; and we believe that in obtaining efficient medical service, the inevitable question of remuneration, for Medical officers employed under the Act whether in connection with the administration of the insurance fund by Friendly Societies or by the Post-office System may be left undoubtedly to the good sense of Lloyd George and his fellow-representatives of the British people. Early regulations possibly antagonistic to adequate medical service, will be rectified; and we believe that this great thoughtful and most praiseworthy piece of social legislation, which means a more complete and natural operation of the efferent and afferent nerves of the nation—originating in the sacrifices and discoveries of our medical confreres—will receive the whole support of that profession, whose first aim is the conquest of disease.

Inter Alia.

Dr. Herman M. Biggs, of New York, of the Commission of Health in that city, and a foremost sanitary expert, has said that any city could buy healthfulness if it were willing to pay the price. "There are three great obstacles to city health", according to Dr. Biggs, "First—The lack of trained men, adequate compensation and permanent tenure of office. Second—Reluctance on the part of financial authorities to make the necessary appropriations for sanitations. Third—The lack of co-operation on the part of the public."

The health officer is often selected—a doctor—without special training in sanitation. He receives no decent salary and must practise medicine on the side. With the first change of the political complexion of the administration he may be displaced and another put in his position. And this, too, when the first officer has hardly had time to learn his duties. How can we tolerate such a condition of affairs. If

come into play a proper education may continue to be the least of the tests for office and sanitary questions continue neglected.

Thomas A. Edison has the right idea about the use of moving pictures in education. He says that in a few years even grammar will be taught by pictures. Geography, botany, zoology, history, biography, art and much more will be pictured to school children, instead of merely told them in an ineffective way. Hygiene and physics will especially be taught in that way. Information about all the peoples and nations of the world could be gathered in the form of pictures for educational purposes. There is great complaint because of the bad effect upon children of the trashy and crime-depicting pictures shown them in the multitude of picture places all over the country. This complaint is a tribute to the educational value of the moving picture. It points the way like a beacon light. The best way to offset the evil effects of poor or bad pictures is to substitute good ones. The good will drive out the poor. They have already done it appreciably. The better pictures always give the higher satisfaction. If our Boards of Education would modernize themselves and make use of this tremendous educating force, they could accomplish wonders in forestalling and offsetting the effects produced by cheap or improper pictures.

The progress of the health of the pupils in the schools of several of our towns is now marked as carefully as progress in any of the classes. It is likely that the day is not far distant when all our schools will pay the same attention to the health of the pupils that they now pay to their mental development.

The need for such supervision is being more and more widely recognized for the protection of the healthy children, as well as for the improvement of the weaker. A sound mind in a sound body is as necessary in a child at school as in those of more mature years. Defective or backward scholars, it is known, are often the result of physical handicaps rather than mental obtuseness. With progress in health an

political influences are to be allowed to integral part of the school marks, the development of healthy men and women will be promoted, the process of education will be made easier for both child and teacher, and the general results will soon convince the public that the extra attention will be worth vastly more than all it can cost.

While health is not the whole end nor aim of life nor of education, it is the essential condition for the realization of ends, some of them remote, some immediate in the career of every individual. Health is the basis of completeness of body, without which there cannot be completeness of mind, and completeness of character.

Teachers and parents may well repeat this question, "What shall it profit a child if he gain the whole world of knowledge and lose his health?"

The people of this country are rapidly awakening to the appreciation of national resources. The most important of the nation's resources is the health of the people, and the most important part of this capital is the health of the children. It is the business of the State, and since the State must work through the municipality, it is, therefore, the business of every municipality to protect from harm at any cost these children who are the heirs of all that the past has wrought out.

During the schooling period, the teachers become, as agents of the State, co-trustees with the parents in the great task of guarding against injury or loss, those upon whom the entire future of the world depends.

If modern education is to fulfill properly its triple task of serving the child, the home, and society, in the relation to health, certain matters of administration, supervision and teaching, are necessary.

First, there is the investigation of health conditions of pupils. This takes on two great purposes, the detection of contagious diseases, and the discovery of physical defects by which children are often handicapped. This should be undertaken in each municipality by regularly appointed and properly paid specialists.

Second, school environment. The school should be made the most sanitary place in the community.

All the features essential to the health of children in the school—its surroundings, construction, furnishings, and equipment—are within the power to provide of practically every municipality in the country.

Third, the teaching of the principle of healthful living, as related to the individual, the home and the community. An effort should be made to inculcate in a pupil hygienic habits so that his conduct may contribute to the healthful and successful living of himself and of those about him.

Fourth, the provision in the schools for physical training of the pupils. The boy scout and girl guide movements are along this line, and include the free play of pupils in play rooms and on play grounds.

Fifth, with more attention given to the method and material of instruction as affecting health.

Happiness is the normal condition of children—happiness makes for health; and a happy frame of mind is the best condition for good mental work. Happiness does not mean levity or purposeless gaiety; but it means interested, purposeful effort and joy in work. This condition, rightly adapted method and material will produce, in normal children, and these we are striving to get.

Library and Laboratory

The Directory of the United States National Bureau for the Study and Prevention of Tuberculosis.

From statistics published in the new Tuberculosis Directory of the National Association for the Study and Prevention of Tuberculosis, it is ascertained that over 600 cities and towns of the United States, besides about 100 in Canada, are engaged in the war against consumption, and that on April 1st there were nearly 1,500 different agencies at work in the crusade, an increase of nearly 700 per cent. in the last seven years.

The new directory lists 421 tuberculosis sanatoria, hospitals, and day camps; 511 associations and committees for the prevention of tuberculosis; 342 special dispensaries; 68 open air schools; 98 hospitals for the insane and penal institutions making special provision for their tuberculosis inmates; besides giving an account of the anti-tuberculosis legislation in every state and in about 250 cities. The Directory, which is the third of its kind that has ever been published in this country, gives the most complete survey of the anti-tuberculosis movement that can be secured, and shows the remarkable growth of this campaign in the last seven years. The first Directory in 1904 showed only 183 organizations and institutions in the entire United States. The second Directory in 1908 reported 649 different agencies, as compared with 1440 in the new book. Taking these figures as a basis, the anti-tuberculosis movement has increased in force since 1904, nearly 700 per cent., and since 1908, over 105 per cent.

The following table shows the growth of the movement along the principal lines of activity for each year since 1905:

Year	Asso- cia- tions	Sanatoria and Hospitals	Dis- pen- saries	Open Air Schools
Established before 1905	18	111	18	
" during 1905	15	18	6	
" " 1906	18	16	14	
" " 1907	46	30	45	1
" " 1908	109	45	118	2
" " 1909	167	67	59	10
" " 1910	117	68	62	16
" " 1911 (April 1)	21	66	20	39
Total	511	421	342	68

—The Tuberculosis Directory is sold by the National Association for the Study and Prevention of Tuberculosis, 105 East 22nd Street, New York City, at cost price, 50 cents postpaid.

School Hygiene.

The current number of *The Medical Record*, of New York, has an article on "The Teaching of School Hygiene," by Dr. James Burnet, of Edinburgh, Scotland. He emphasizes the fact that in the actual teaching of the subject too much attention is paid to unimportant matters, while others of everyday value to the school doctor are passed over. He urges that cleanliness of the skin and of the scalp should be specially emphasized and great attention should be paid to the clothing of the school child as regards its suitability and cleanliness. He indicates the dangers of tight clothing, of garments made of inflammable material and the evils arising from improperly fitting footwear. Attention is called to the necessity for a proper care of the teeth, and it is declared that errors of vision and the causes of deafness are two very important subjects for the consideration of school physicians.

The teaching of school hygiene, though of recent origin, is recognized as of paramount importance in the up-building of a better citizen physically. In all the progressive countries of Europe and in the larger cities in this country, a service of school doctors is being established. The movement began in Boston in 1894, when some fifty medical examiners were appointed to inspect the schools and pupils in that city. Three years later the work was taken up in New York City, and to-day the work of school inspection is extending all over the United States and Canada.

The Hoarding of Eggs.

The recent crusade conducted against the merchandizing of "rots and spots" has revived the old question as to why it seems necessary for business purposes to store or hoard eggs for months, even years, be-

fore eating, instead of placing them on the market in a fresh laid condition. The *Spaulula*, a magazine devoted to commercial interests, in an article dealing with scientific facts about eggs, offers in explanation the assertion that farmers and grocers hold eggs so long in the summer for better prices that "fresh eggs direct from the farm" from August to December are the exception. They come direct, but are far from fresh. They are not held in cold storage. Most of these are classed by the trade as shrunken eggs.

The egg, when laid, is virtually germ free. Seldom has it any bacteria. The egg shell is sufficiently porous to admit germs after the egg has been dropped. The fibre-criss-crossed membrane is germ proof when kept dry. Eggs may be affected by moisture in many ways, when the egg-rotting bacteria may be deposited and interred. The following are the chief classes of egg-rotting bacteria:

1. Black Rots—It is probable that many different species of bacteria cause this form of rotten eggs. The prominent feature is the formation of hydrogen-sulphide gas, which blackens the contents of the egg, giving the characteristic rotten egg smell and sometimes causing the equally well known explosion.

2. Sour Eggs or White Rots—These eggs have a characteristic sour smell. The contents become watery, the yolk and the white mixed, and the whole egg offensive to both eye and nose.

3. The Spot Rot—In this case the bacterial growth has not contaminated the entire egg, but has remained near the point of entrance. Such eggs when broken show lumpy adhesions on the inside of the shell. These lumps are of various colors and appearances. It is probable that spot rots are caused as much by mould as by bacteria, but for practical purposes the distinction is immaterial. The responsibility for decayed eggs is chiefly with the farmer.

There are mouldy eggs, caused by wetting the cases, damp cellars or the sweat of ice boxes. These usually are afflicted with the spot rot. The musty egg is free from organisms.

Eggs should never be stored in musty cellars, or in rooms with citrus fruits, vegetables, fish or cheese. The egg takes on the odor of those products.

Eggs are naturally worth more, intrinsi-

cally, when laid than when they reach the consumer. If marketed as laid, the eater of low grade eggs would eat real fresh eggs, but pay a higher price for them. This would probably force him to substitute other food for his egg diet.

The eggs are gathered by the farmer with varying regularity and are taken, perhaps on the average of once a week, to the local village merchant. This merchant receives weekly quotations from a number of surrounding egg buyers, and at intervals of from two days to two weeks ships his eggs by local freight to such dealers. The dealer buys the eggs "case count", that is, he pays for them by the case, regardless of the quality. He usually repacks the eggs in new cases and may or may not candle them.

This dealer, in turn, receives quotations from city egg houses and sells the eggs by wire. He usually ships in car load lots. The city receiver may also be a jobber who sells to grocers, or he may sell the car load outright to a jobbing house. The jobber recandles the eggs, sorting them into a number of grades, which are sold to various classes of trade.

The jobber grades the eggs as the trade demands. In New York there are as many as seven or eight grades. The finest are packed in sealed cartons. The first class hotels, clubs, restaurants and soda fountains buy the strictly high-grade eggs. The elements of cost for a dozen eggs purchased in New York for 25 cents run about as follows: Paid the farmer, 15 cents; profit to shipper, $\frac{3}{4}$ cent; freight to New York, $1\frac{1}{2}$ cents; gross profit of receiver, $\frac{1}{2}$ cent; gross profit of jobber, $1\frac{1}{4}$ cents; loss from candling, 2 cents; gross profit of retailer, 4 cents. Total, 25 cents. Any increase along the cost line increases price to consumer.

The fact remains that farmers' eggs, whether shipped direct to the consumer or to the merchant, may not be fresh in any sense. They may have lain in the sun or other heat days after having been laid, or may have been kept under unfavorable conditions, until enough were gathered for the market.

School Inspection.

Naturally enough, the innovation of medical inspection in the public schools has provoked considerable opposition on

the part of the parents of children subjected to examination. The parents are apt to contend, not without measurable justification, that, in requiring children in the schools to submit to examinations the expediency of which is questioned at home, the school authorities exceed their powers and trespass upon the rights of individuals. Commenting on this, the *Journal of the American Medical Association*, while assuming that the examinations in question are legitimate, expresses the opinion that it would be well for those engaged in the work to remember that "medical school inspection is at present on trial so far as the general public is concerned, and that lack of tact may prejudice the cause as much as lack of skill, if not more." As a matter of fact, the vital question involved is as to the right of the powers controlling the schools to compel children to submit to an inspection which no power can compel in their homes. It is a matter of surprise that this point has not yet been brought to an issue in the courts. It certainly needs to be, in order that all misunderstanding as to the scope of the authority exercised may be removed and the validity of the system of medical inspection so determined that there will be an end of misgivings and mutiny.

Goitre in Canada.

Dr. Andrew Macphail writes in the *Canadian Medical Association Journal* that some years ago Dr. G. A. Charlton, Provincial Bacteriologist at Regina, spent a summer bicycling over the Island of Montreal, making an unofficial census of the villages in respect to the incidence of goitre. He gained some most suggestive results, says Dr. Macphail, which were duly published at the time. He found that goitre was absent along the shores of the island, and wherever the inhabitants obtained their water from the St. Lawrence or Ottawa Rivers, while it was common in the more centrally situated villages. But here again a distinction was to be made out. Only where water was obtained from shallow surface wells, in sandy soil, did goitre prevail; in villages, where the wells were deeper and in the glacial clay it might be entirely absent. It was not therefore, the underlying silurian rock that was the essential factor, although, curiously

enough, goitre throughout the world is apt to show itself over limestone formations. But something further is necessary, something presumably of organic nature, it being well established that the water of shallow wells is richer in organic matter than is that of deep. These views are supported by the earlier observations of Kocher, that in Switzerland goitre waters are distinguished by their relative abundance of bacteria. Ewald had found that by changing the water supply of one of the villages in the Aar valley in Switzerland, the percentage of goitre among the school children was, in the course of ten years, reduced from fifty-eight to eleven per cent. Dr. Charlton gives a similar instance from the village of Pointe aux Trembles, where goitre, previously prevalent, has disappeared since the water has been piped into the houses from the St. Lawrence.

Along these lines Lustig and Carle in the nineties would seem to have obtained some results by feeding the lower animals with water from goitrous districts, but their results have not been satisfactorily confirmed. Now, the convincing demonstration comes from Cashmere. Two years ago Dr. McCarrison, of the Indian Medical Service, announced to the Royal Society that of thirteen healthy individuals who had taken the suspended matter removed by filtration from known goitrous waters at Gilgit, he himself and three others developed enlargement of the thyroid, which showed itself in from thirteen to fifteen days. In the February number of the "Proceedings" of the same society he gives a further communication, in which he shows that of 23 individuals previously unaffected, given each morning, for from 30 to 55 days, a drink of the suspended matter filtered from goitrous water, six showed enlargement of the thyroid persisting during the course of the experiment, while three others suffered from thyroid hypertrophy of a transitory character.

It is difficult to imagine that a causative agent which is removed by filtration and destroyed by boiling can be of any other than a microbial nature, and in support of this view that we deal with an organism which becomes parasitic in the alimentary canal, Dr. McCarrison gives photographs

of a goitrous youth before and after treatment by the bacillus bulgaricus. The world seems getting very small when the latest fashionable method of employing Satan to drive out Beelzebub is being used upon the natives of Cashmere. It will be interesting to observe what results others obtain by similar treatment.

That there is an intimate association between intestinal disturbances and disorders of the thyroid has been maintained for years before a somewhat heedless public by Dr. W. H. Thomson, of New York. But if this goitre, or, more accurately, diffuse enlargement of the thyroid, is of microbial causation it would seem evident that we do not deal with an ordinary infection or a direct presence of the microbes within the thyroid, and that because we have abundant evidence that early goitres disappear when the affected individual removes to a non-goitrous region. It would seem that we deal rather with some intestinal saprophyte derived from the water, whose toxins, absorbed in the alimentary canal and circulating in the blood, have a specific action upon the thyroid gland. When the patient is removed to another region and gains there a new intestinal flora, or faunathen, these toxic substances being no longer produced, the organ returns to its normal state.

Yet other observations of no small interest have been made during the past year by the state boards of fisheries in New York and Pennsylvania upon the goitrous tumors of fresh water trout. The development of these tumors in the hatcheries has become extraordinarily widespread, and, what is more, as first shown by Plehn, in 1902, in Bavaria, these tumors may eventually infiltrate the surrounding tissue and take on definite, cancerous characters. But in the early stages we deal with merely a simple hypertrophy of the gland. It has been shown very clearly by Marine, that here again the water is to blame. In making a hatchery some clear brook is chosen and its water passes through a series of tanks containing the fry. The disease does not show itself in the upper tanks in which the water is fresh, but becomes progressively more and more marked in the lower tanks. Here with fish we find parallel phenomena; the condition does not show itself where abun-

dant fresh water is afforded, and when the affected fresh fish are transferred to other and healthy brooks the tumors disappear. Evidently we deal with a very interesting border-line condition between simple, functional enlargement and tumor formation.

The Strange Side and Dangers of Expectoration.

The general public do not like, as a rule, to be compelled to refrain from habits which have been acquired, and become customary, even though it is stated that the repression of such practices is beneficial to health. James Scott in *The Sanitary Record*, points out that in the matter of spitting (or to give it its more refined appellation, expectoration) many people fancy that the action of the authorities against the continual pollution of thoroughfares, places of worship and amusement, and municipal conveyances, is simply the result of a faddist idea, based on panic concerning the possibilities of germs. They lose sight, even when confronted with incontestable evidence in support of the assertion, that the whole world is practically governed by its minute atoms.

We know, he says, that the biggest animals, the tallest trees, and the largest of all natural objects, are built up of microscopic cells, each cell originating from a central nucleus of unfathomable mystery. By inoculating a few of these living cells with other and antagonistic items — such as fungi spores — we can start a course of wholesale destruction which may finish with the complete decay of either creature or plant.

The greatest rock or mountain is a compound of atoms, resolvable by means of water, heat, cold, acids, and alkalies, into dust, revealing to a certain extent its separate minute factors. Water of any quantity — a ton, gallon, or pint, say — standing still for sufficiently long a time evaporates; or, in other words, is converted into its original gaseous form, which will, however, recombine to again make water. I refer to these things to show the importance of the minute portions of substance, and their correspondingly minute actions. Tiny things, by tiny efforts, create magnitude.

Coming back to our particular subject, it cannot be too strongly emphasized that

the authorities who are responsible for the attempts to stamp out the widespread and seemingly harmless vice of spitting, are doing the best for the prevention of disease. Sanitarians and medical men are fully alive to the pernicious effects of the minute bacteria and bacilli — the germs, as

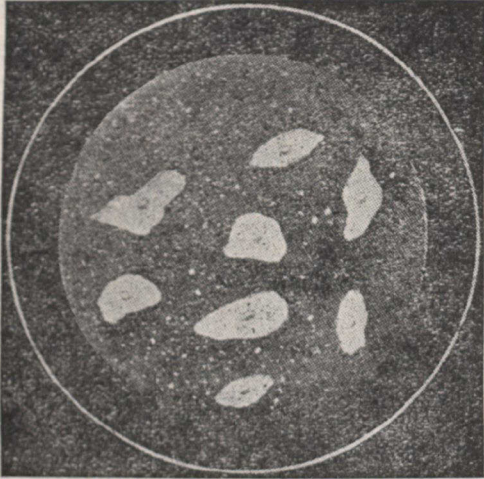


Fig. 1.—The outer circle is a magnified pin-hole. The inner one is a globule of saliva (caught on glass) just as it was spat out with millions of others. The eight white objects are transparent flakes, or cells, of *epithelium*—mucous skin.

the man in the street calls them — of infectious and contagious maladies; and I suppose that it is simply ignorance that causes other persons to rebel against injunctions formulated for the direct benefit of the public.

To spit from the top of a tramcar into the roadway seems so trivial a matter to many men that they call another a crank who objects to the habit; yet if such defilers could see the actual result of this spitting they would be amazed. Stand in a sunbeam, facing the fiery orb, and then spit. Note the millions of specks of saliva that rush along and fall as a shower of spray. Out in the highway a multitude of this kind gets scattered far and wide by the air currents, and the particles may lodge on a hundred pedestrians. In the case of a person suffering from tuberculosis, or some other microbial complaint, try to imagine the havoc he could commit by spitting once only. The practice would be almost equal to manslaughter.

To thoroughly test this subject I sat in the chair by my work table at about 4

feet from the fire-place, into which I spat a few times. While doing so I held a microscopical glass slide in the path of the careering saliva. The result was that several of the floating specks, which are evidently ejected by the force of the movement as tiny spheres of moisture, fell on the glass and were thus conveniently placed for examination. By the way, when a pinch of gunpowder is exploded — it can be tested on glass — multitudes of minute perfect spheres are created. Every grain of the powder is several times larger than these balls into which the material becomes instantaneously converted. It is the same with a bursting soap bubble — the scattering spray consists of hosts of water spheres. Rain drops from homogeneous clouds, bullets made from molten lead falling down inside high towers — these are other and larger examples of rotundity being produced owing to the passage of substances through the air.

By running the slide under the compound microscope we see that each drop of saliva from an expectoration lays as a

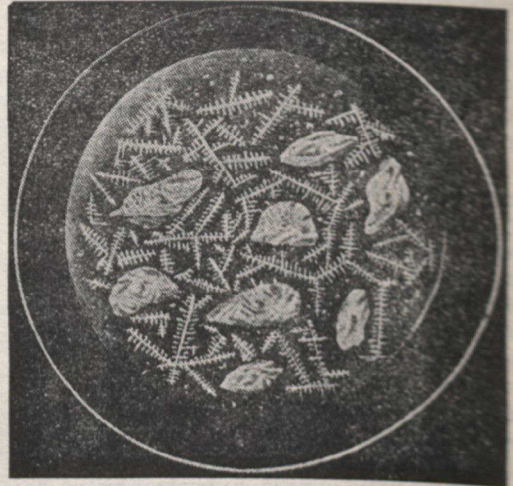


Fig. 2.—The globule shown in Fig. 1 is here depicted a few moments after being captured. As the water evaporates from it the salts spring into view as a delicate filigree and the *epithelium* cells wrinkle and curl up, or go "frizzy."

disc of fluid in which floats a number of nearly transparent, loose scales, each, as a rule, having what appears to be a core in its centre. This is a nucleus, and is the atom whence the scale — or epithelium cell, as it is called — grows or "sprouts" (see No. 1). I will return to this phase again.

Around these scales may be seen several corpuscles, germs, and indefinable specks. At first the objects are so faint and transparent that blacklead pencil marks would be too dark to represent them. In a little while, however, the contours of the scales become more sharply defined, while the in-

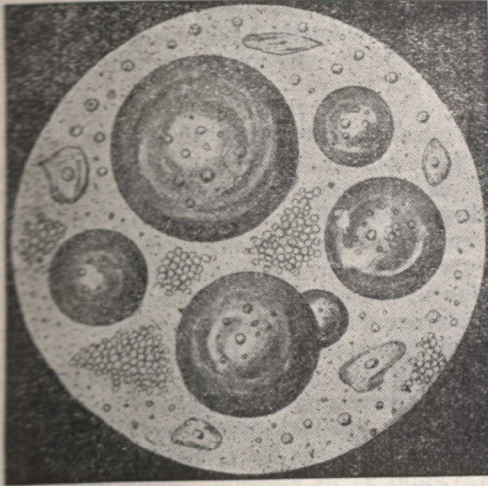


Fig. 3.—A magnified pin-hole view of a drop of saliva, flakes or cells of epithelium, and groups of corpuscular substance. The tiniest dots represent bacteria and bacilli.

terior area of each one wrinkles curiously after having become densely speckled. Various items in the surroundings also become clearer, as the watery part of the drop evaporates away.

Within a few moments from the time of spitting, the captured specks have sunk into little white discs, not unlike those made by house flies on mirrors, etc. Each dot is traversed by beautifully arranged lines and points of white substance, as in No. 2, evidently the salts of the fluid. Sometimes the drop will become entirely covered with this rather elegant filigree, which then obliterates the scales and corpuscles.

The scales are flakes of epithelium, and correspond with the scurf particles that wear off the outer skin—the epidermis. Rubbing one's head hair will often dislodge a shower of such scurf. Epithelium scales retain their shapes intact, because they are bathed in the slimy substances which is the chief component of the mucous membrane, or soft skin lining the mouth and other portions of the alimentary canal. These scales are quite flat, though they are derived from the globular

cells of the under skin. Originally the latter cells are more fleshy, and each has an exactly central nucleus. As the outer layers of the mouth wear away, the under layers rise, and those lower still do likewise. The consequence is that the globular cells are pushed higher by stages, getting flatter and flatter meantime, until they finally appear as loose flakes in the mucous membrane, where they overlap one another, and are as flat proportionately as any of the leaves of this journal are when the thickness is compared with the whole page. The developing cells are called squamous epithelium. The substance of these scales is the basis, after suitable modification, of the hair, nails, teeth, enamel, and eye lens.

To enable the reader to properly realize the significance of the subject, I show in No. 3 a portion of a drop of saliva deposited on a slide without being spat out. Bubbles of air are a notable feature of it, as are also clusters or individual specimens of corpuscles. All these features display their influence in various ways. Warm this saliva gently, and the result

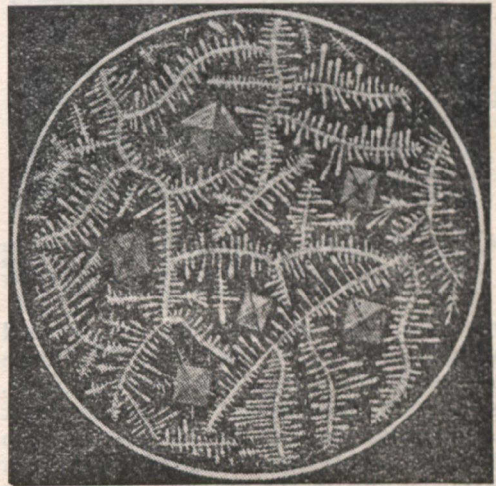


Fig. 4.—A magnified pin-hole, shewing a drop of saliva as it appears after being gently warmed. The "fernery" is due to the salts crystallising. The cubes indicate chloride of sodium, or table salt.

is that the bubbles burst, and the whole film dries to a white film, in which the mineral constituents get arranged as a rather pretty lacework, of the kind shown in No. 4. The lines may be infinitesimally fine or comparatively bold, but in any case they would represent a colony of mi-

crobes the equivalent of a meadow to a herd of cows or a flock of sheep, and would doubtless serve the similar purpose of providing them with nutriment.

Remember that there are myriads of particles of spray in a single expectoration and that one of these particles or drops carries several scales, and then note the following facts:—A tuberculosis bacillus is a transparent, round-ended rod or closed tube, generally holding a few spores or reproductive factors, and averages a quarter, or half, the diameter of a red blood corpuscle, the latter averaging $1/3200$ inch. The white corpuscles are about $1/2500$ inch across. Now, an epithelium scale is $1/300$ inch, or thereabouts,

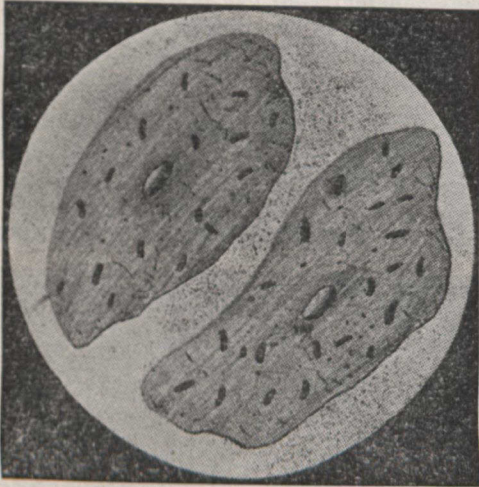


Fig. 5.—A couple of epithelium cells, or flakes, from saliva, on which are shown some stained tuberculosis bacilli. These are depicted in approximate proportions. The cells vary in size among themselves—enormously magnified.

broad, so that one would be quite a good raft for a group of microbes. Miniature and destructive aeroplanes would, perhaps, be a better description. We worry about man-invasion by this means, yet take too little notice of the armies of epithelium scales floating in the air, and really more destructive to us than soldiers would be.

An idea of the matter is conveyed in No. 5. Perfectly accurate delineations are almost impossible, because even minuteness has its differences; and a lot of specks which to the naked eye all seem uniform in size would vary among themselves, as disclosed on magnification, as much as a sackful of potatoes does among its contents.

What a contrast there is between mil-

lions of inhabitants being allowed to scatter every minute of the day their hordes of saliva spheres into the air, and the same people compelled to take other measures with respect to the practice!

I have referred only to ordinary spitting. In cases where phlegm containing dead lung cell debris was coughed up and indiscriminately ejected by a consumptive, the thought of possible pollution of his surroundings is extremely repellent.

The Frequency of Cancer.

Some statistics regarding the frequency of cancer have been published by Dr. Jacques Bertillon, head of the Statistical Department of the Ville de Paris. He states that cancer is more common in towns than in the country, and shows an evident preference for the colder regions. Comparing the statistics furnished by foreign countries, Dr. Bertillon says that northern lands show a much higher percentage. Thus for 100,000 inhabitants there were 101 deaths in the Netherlands, 100 in Norway, and 91 in England, while in the centre of Europe the proportion falls considerably, Austria numbering 78, France 76, and Prussia 71, and gradually diminishes as the Mediterranean is approached, Italy showing 61 deaths, Spain 48, and Hungary 42. Dr. Bertillon further states that the frequency of cancer is on the increase, and that in 1908 there were 30,124 deaths from the disease in France and in 1909, 34,053 in England.

Relatives of Infantile Paralysis.

Studies recently made by C. Levaditi, chief of the research laboratory of the Pasteur Institute in Paris, have had consideration of the latest work in infantile paralysis. The conclusions reached are that there exists a striking analogy between this disease and hydrophobia, of which Wickman has already spoken. These resemblances lie in part in the filtrability of the virus, its progress along nerves, its relations to the central nervous system, and the resemblance of histological and pathological alterations. "Poliomyelitis can be considered a kind of hydrophobia infection," writes Dr. Levaditi, "only different from the latter by its specific pathogenity for men and monkeys and by some other sec-

ondary characters. There are differences and the diseases are of different origins, since monkeys, immune to infantile paralysis, may contract hydrophobia." Dr. Levaditi notes that the mode of contagion and the suggestions for prophylaxis thus far are based on the assumption that it is a virus of the nasal-pharyngeal mucous membrane and that it can penetrate an organism to infect it by the respiratory tract as well as by the digestive. For prophylaxis, isolate first cases and prevent all contact with them, direct or indirect. Secure rigorous antiseptics of the nasal mucous membrane and back of throat, for which hydrogen peroxide is suitable. Serum to-day seems to be of use only in diagnosis of the disease and the discovery of the aborted forms.

As a note along the line of present investigation in this country, Dr. Samuel G. Dixon, State Health Commissioner of Pennsylvania, notes the observation of an organism in the blood from acute cases of poliomyelitis in humans and also from monkeys. "This," Dr. Dixon writes, "is different in morphological characters from any hitherto described, which may or may not on further investigation prove to be the etiological factor in the causation of the disease." When treated with carbolthionin the organism appears as a faintly stained blue rod with regular cell-wall about ten microns long and one-eighth as wide, curved at an angle of sixty to seventy-five degrees at one, sometimes at both ends. At times the curved end is bulbous. The organisms do not take the Gram stain. Bloods from ten cases of children and from thirteen monkeys were examined, and, as a standard, three smears from humans and from thirteen normal monkeys were examined with negative results. These monkeys were afterwards inoculated and were the group yielding the organism. It was not found in the brains or cords of paralyzed monkeys; but from blood treated in different ways, defibrinated, and in cultures, there were increased numbers. No moving organisms have been detected in fresh blood, and success has not yet been attained in isolating the organism.

Experiments were made at the Pennsylvania State Laboratory last year with Ehrlich's salvarsan as a prophylactic and a curative agent, but neither at the time of inoculation with the poliomyelitis nor subsequently did the drug seem to protect the monkey from the disease or lengthen the time of its incubation.

How to Make a Hygrometer.

While it is comparatively an easy matter to provide means of moistening our indoor air, it has not been so easy to determine the degree of humidity. That is, to tell whether the air is too dry or too moist. This is determined by an instrument called a hygrometer. An instrument of this kind that is thoroughly accurate can be made by using the following formula:

Cobalt chloride	5 drams
Sodium chloride	150 grains
Calcium chloride	40 grains
Gum arabic	80 grains
Water	2 ounces

Dissolve carefully and then soak thin, white muslin in the solution and wring dry; when dry cut into strips for use and hang up in rooms where indications are desired. The muslin strips when dry are blue; when moist they are pink or red. If the air in your room contains 70 per cent, humidity, the muslin indicator, prepared as directed, would show pink. If there be only 60 per cent. or less, the color will be blue. If the strip assumes a grayish color, inclining to pink, it would indicate a temperature ranging from 68 to 72 degrees, with a normal and, therefore, healthful degree of humidity in the air.

There is an economic as well as a healthful side to the matter of having the proper degree of moisture in our indoor air. It is a well known fact that a room is more comfortable at a temperature of 68 degrees and a relative humidity of 65 per cent. than it is at a temperature of 72 degrees and a relative humidity of only 30 per cent. In fact, it has been determined that as a rule indoor air contains far too little moisture, probably 40 per cent. less than that found out of doors.

Open Mail

Evils of Dry Sweeping.

To the Editor of The Public Health Journal, State Medicine and Sanitary Review:

Sir:—Sanitation lies in the air. Daily papers print articles on health, city authorities dwell upon the insanitary drinking cups, and health departments are conspicuous in issuing bulletins. The majority of physicians everywhere agree that the great disseminator of disease, the most effective producer of tuberculosis and other infections, is dust.

The ground-up filth, laden with millions of germs of every variety of disease, is swallowed and breathed by the unfortunate persons who are compelled to live in a city where the rudiments of hygiene are left unnoticed.

Why is it that the powers that are beating the drums in collecting funds in order to fight consumption do not bend every energy at their disposal to first do away with the real cause of disease, dry sweeping? Why do cities allow a band of stupid broompushers to stir up clouds of dust which settles upon everything within many yards? Why do authorities permit such farces as fund collections to fight the white plague, and other time and money robbing health measures, so-called, to be enacted, when right before their very doors, dry sweeping is causing more harm in one day than one year of bacteriological work can do good? What do the people care whether laboratory tests reveal a million or more germs in a certain food as long as they have to eat filth, nolens volens? Why not get at the root of the evil? Why not do as every civilized nation should do? Stop dry sweeping at all costs?

Why not stop spitting and impose fines upon violators of this law; and if, as is often the case, an officer is seen to spit in cars or upon sidewalks, make his fine double of what it would be for the private citizen? Enforce these ordinances, not spasmodically, but daily, all the time, year in and year out. Collect the fines and use them to make our towns less filthy.

W. H.

"Tent Life" for the Consumptive.

Sir:—You have asked me to give my opinion and experience of "Tent life" for the consumptive. To be brief, let me say: I have been giving consumption careful study and thought for the past thirty years, and have watched and tried the different forms of treatment, and have come to the conclusion that it is practically useless to attempt the treatment of a case of tuberculosis under a roof that prevents the patient from getting all the sunlight there is. I believe that most cases of consumption are curable under proper hygienic conditions — in the open air and sunshine, but they seldom recover in the ordinary house. When I cannot get patients to go into a tent and stay there, where they can get all the sunshine and fresh air, I decline to take charge of them.

We know that tubercle bacilli will live in a darkened place, in fabrics, carpets, under wall paper, in the crevices of a room, adhere to the woodwork, etc., and we know that a few moments of the heat of boiling water or a short exposure to the direct rays of the sun will kill them, hence a patient in a close room in a house is necessarily reinfesting himself, not only suffering from the tubercle bacilli in the body, but reinfesting himself with every breath, while in the open tent in the full blaze of sunlight, the bacilli are destroyed, he gets pure air, and he has only to contend with the bacilli developed within the body. In this way half the battle is won, more, the danger to nurse and friends is reduced to a minimum, while in a house it is as contagious and more dangerous than small-pox or diphtheria, though slower in its work. In this way it may go through whole families, by contagion from the sick one, or from infected rooms.

It is not hereditary, though there have been instances where the bacilli were found in the new born, but the cases are so rare that it can be classed as not hereditary. The great danger is contact with those affected, inhaling infected air, and in our food supply, and the most potent factor in its treatment is sunlight. It has been said

on good authority that the sun's rays can be concentrated on a part sufficient to take a skygraph of the part. Who can tell how deeply into the tissues they will penetrate to kill tubercle bacilli?

The form of tent I have found most convenient for treatment of consumption, or in fact, many other diseases, is the square or oblong tent. It is made by driving four posts, of two or three inches in diameter, into the ground, say eight feet apart at the head and foot, and ten feet from head to foot, thus making a frame 8 x 10 feet. The two posts for head of tent to be $7\frac{1}{2}$ feet from surface of ground to top of post, and the posts at the foot to be 5 feet, giving a pitch to the roof of $2\frac{1}{2}$ feet in ten. Put small poles or joists on top of the posts for plates, and brace the sides by running a small brace from the top of one post to foot of another. Now cover the top with 8 ounce duck or canvas, and the walls with factory cotton. Let the cover for the roof come down over the foot about 15 inches, and tie it there with cords to the posts. This is for ventilation, and gives an opening of 15 inches by the width of ten, and with the door in front you have a good draft going through the tent above and away from your patient. Cover the floor of the tent with six inches of spruce or fir boughs. This not only prevents the dust from rising, but fills the tent with a balsamic odor that is refreshing to patient and attendants. This can be renewed every two weeks. In this sort of tent you have all the room you want to care for your patient, and it is well ventilated, and there is no flapping of its walls when the wind blows, while with a pitched roofed tent, there is no room to work, the walls are always flapping when the wind blows, and they cannot be ventilated properly, and they are expensive, while the square tent has the advantage of being cheap. For a tent 8 x 10, the cost of material should only be from four to five dollars, which is within the reach of most people. I have never had any success with a pitched roofed tent. They are too hot in the day time, and the breeze makes them flap and disturb the patient from sleep.

Patients do better in tents in the winter than in summer. The colder the weather, and the brighter the sunshine the better they do. They get more oxygen at a low temperature than at a high one, and

that is the thing wanted, and the cold air seems to stimulate the appetite and acts as a general tonic. I find it is sometimes difficult to get a patient into a tent, but when once in a suitable tent for a few days, they do not care to return to the house; they breathe so much freer and more easily, and sleep so much better in the open air, as it really is, in a tent.

For a winter tent I have one made about one foot larger all around, than the summer tent, except at the head, and that is made two feet longer. This is put over the summer tent, the door in it is in the opposite corner from where it is in the inside tent, so there will be no draft. By making the tent two feet longer at the head, it makes a walk between the door of the inner and outer tent.

I have had patients go into tents in hot weather and kept them there all through the winter, and have taken them out of hot rooms in winter, with a zero temperature outside, and put them in tents and had them gain very satisfactorily, one patient gaining 14 pounds in seven weeks; whose sputum was heavily loaded with bacilli on going in, but was completely free from them in three months.

Do not educate the people or patient, as the profession has done in the past, that there is no hope for the consumptive. It is a mistake. Dr. A. VanBreden, of Belgium, says: "Consumption can be permanently cured. Over 75 per cent. of the cases treated at the Bourgoument Sanatorium have continued four years after treatment to improve, and are in a condition to return to the irregular occupations." The German army, by making a campaign against it, has reduced the mortality 40 per cent. in three years. The post office employees of France have reduced it 50 per cent. in three years.

Do not educate the people that sunshine, pure air and food is the whole treatment. I know of no disease that requires more watchful care on the part of the painstaking physician than consumption, and none in which he can do so much for the afflicted. The patient must be put in proper hygienic surroundings, in a tent or glass-roofed room, with plenty of ventilation, and every organ of the body carefully watched to keep them up to standard.

If we would stamp out consumption, which can be done, we must isolate every

case, and watch the food supply, and see that no tuberculosis is present in the cattle that supply us with beef, milk, etc. In this way we can soon get control of it. A tent colony should be established in every municipality for patients who could not be treated at home. It would cost but little, and would prevent the spread of the disease.

As to medical treatment, every case is a law unto itself. A physician has no right to think, because the patient has consumption, that there is nothing to be done but stand idly by and see the patient fade away. He should take hold of the case and treat it to win. Place under proper conditions, assist the weakened organs, regulate the diet, forced feed, baths when necessary, massage, regulating the exercise, etc. It is the minutiae in the treatment of consumption that wins the battle.

I had a number of interesting cases treated along the above lines some four, five and six years ago, all enjoying good health to-day, which proves to me that we need not send our consumptives away from home to be cured.

S. N. MILLER, M.D.

Warring Against Tuberculosis.

Sir:—If every tuberculous rich man could be brought to realize the fact that his disease, in addition to being infectious, was preventable, that in all probability his infection may have come from some tuberculous poor person, and that the problem of preventing the infection in his children and of others is closely connected with the care, treatment and supervision of the tuberculous poor, a great stride will be made in securing the sinews of war for the battle against tuberculosis. For the necessities of this war are mainly depend-

ent upon a liberal supply of money for many purposes.

Further original investigations are necessary, and for this purpose money must be spent in the endowment and support of institutions. The poor consumptive should be taken care of, so that he will no longer be a menace to the welfare of the community. To provide for the care of those who are no longer capable of supporting themselves, but who may yet live years; to give employment to those who have arrested tuberculosis, but remain infertile and will do so for a long time; to return the so-called "cured" cases to usefulness and activity in life, although they may have a diminished earning power; to promote educational propaganda, to advance measures for public recognition and control of the disease—all these are measures that should appeal with the utmost force to men of great wealth, broad culture and high purpose, especially if the wealthy man has in himself or some member of his family a personal object lesson.

Our wealthy men have here a problem to the prompt and proper solution of which they might well turn every atom of their energies and every dollar of their immense wealth.

If in the gospel of wealth there is no doctrine of helpfulness to our fellow men, so much the worse for its disciples. For the touch of the infection upon the pauper to-day is upon the merchant prince or his loved ones to-morrow. In the protecting of the community from its ravages he is ultimately protecting those who are more to him than his millions.

It is the plain duty of our rich men to see that research laboratories are properly endowed and the working scientists properly paid. If love for humanity does not furnish a sufficiently potent argument, selfishness should do so.

W. A., M.D.



Meetings and Reports

DOMESTIC

The Canadian Medical Association.

The following programme has been arranged for the annual meeting of the Canadian Medical Association in Montreal on the 7th, 8th and 9th of this month:

FIRST DAY, JUNE 7TH, WEDNESDAY.

9 a.m.—Registration, payment of fees, and meeting of executive council.

10.30 a.m.—General meeting; installation of president. (1) Calling meeting to order by president. (2) Prayer designated by the president. (3) Address of welcome and response. (4) Report of chairman of committee on arrangements. (5) Reading of minutes of last general session. (6) Report of general secretary of last general meeting. (7) Election of the Association's members to the executive council. (8) Meeting of executive council.

1 p.m.—Luncheon in new medical building.

7 p.m.—Sections of medicine, surgery, obstetrics and gynæcology, laboratory workers, ophthalmology and oto-laryngology, preventive medicine.

9 p.m.—Smoker in the Victoria Rifles Armory.

SECOND DAY, JUNE 8TH, THURSDAY.

9 a.m.—Meetings of sections.

1 p.m.—Luncheon.

2 p.m.—Combined sections: (1) President's address; (2) Address in surgery, Alex. Primrose, Toronto; (3) Paper, W. J. Mayo, Rochester, Minn.

8.30 p.m.—Address in Medicine, in the Royal Victoria College, Sir James Barr. Liverpool.

THIRD DAY, JUNE 9TH, FRIDAY.

9 a.m.—Meetings of sections.

1 p.m.—Luncheon.

2 p.m.—Sections.

3.30 p.m.—Visit to McDonald Agricultural College, at Ste. Anne.

The usual arrangements for tickets have been made, members intending to be present purchasing a one-way, first-class ticket

to Montreal, at the same time securing a standard certificate of such purchase signed by the ticket agent. These certificates must also be signed by a special agent who will be in attendance in the administrative building set apart by McGill on June 8th. Return tickets will be issued only to those who have the standard certificate signed by the ticket agent, countersigned by the secretary of the meeting, and also by the special agent on June 8th, as follows: if forty-nine are present, at two-thirds of one-way, first-class fare; if fifty to two hundred and nine-nine are present, at one-third fare; if three hundred or more, no charge will be made.

The Canadian Pacific Railway Centre of the St. John Ambulance Association.

The following are the excellent rules of the Canadian Pacific Railway Centre of the St. John Ambulance Association:

1. The object in creating this centre is to form local branches at points on the company's system, having members who are qualified to render first aid, and trained in ambulance drill, willing to be placed at the disposal of the Canadian Pacific Railway Company as a supplement to the services of a doctor.

2. The organization of the St. John Ambulance Association on the lines of the Canadian Pacific Railway will consist of a Centre with headquarters at Montreal for the entire road, and a branch centre with headquarters at Winnipeg for western lines, and local branches.

3. Application for formation of local branches should be made through foremen or other officials to the general superintendent, who will notify the general secretary (or assistant general secretary if on western lines), giving name of proposed local secretary who, if approved by

The Editor trusts that all medical officers of health and school medical officers, will remember to forward copies of their reports to The Public Health Journal, 43 Victoria St., Toronto, Ontario, as soon as published.

the general secretary, will hold office until changed.

4. On the formation of a branch centre, one or more classes may be formed on that centre, each class to consist of not less than ten members or more than thirty members over the age of 18 years, willing to become enrolled for ambulance instruction, and should preferably be first established among employees attached to wrecking crews and in division shops. The centres may be of any size and include all classes of employees willing to attend. The classes should number as near thirty members as possible in order to minimize the cost of instruction, and on the formation of a class the general secretary, or assistant general secretary, will arrange for the appointment of a lecturer, on eastern and western lines respectively. The expense of the lecturers will be paid by the railway company and charged to account No. . . . "Injuries to Persons," at points where classes are formed. The general secretary or assistant general secretary will supply the necessary stationery, triangular bandages, etc., for the use of the classes.

5. The course consists of five lectures by a medical practitioner, with an interval of not less than one week between each lecture. The lecture to last one hour, an additional half hour to be devoted to practical work, such as bandaging, application of splints, etc., including ambulance drill by a qualified ambulance man. The examination will take place as soon as convenient after the last lecture. Branch secretaries will furnish a list of candidates to the general secretary, or assistant general secretary, who will make arrangements for examination by an examiner appointed by the company's chief doctor. Two rooms should, if possible, be provided for examination purposes, to enable the examiner to prevent candidates seeing or hearing the oral or practical examination of others. The lecturer and branch secretary, under the rules of the association, are not allowed to be present in the room where classes are held, and examiners are responsible for seeing that this rule is adhered to. The general secretary, or assistant general secretary, will provide examiners with a copy of the rules for their guidance.

6. Candidates must attend not less than four out of the five lectures to enable them

to sit for examination. No candidate who has failed shall be allowed to present himself for a second examination on the subjects in which he has failed before he has attended a fresh course of lectures.

7. Candidates will be examined in the following subjects:—

The neat and quick application of the triangular bandage to any part of the body.

The various methods of arresting hemorrhage.

The first-aid treatment of any fracture or dislocation.

Restoring of the apparently drowned or otherwise suffocated.

8. Candidates who pass in the earlier or practical parts of this examination will receive a certificate. At intervals of one year or more (at times when examinations are held), candidates may present themselves for re-examination as follows:

Voucher. Where candidate has previously passed for a certificate.

Medallion. Where the candidate holds both certificate and voucher.

Label. Where the candidate holds a medallion.

In addition to the above, a qualification badge is given by the company to be worn on the front of the coat or waistcoat, showing that the wearer is able to render first aid, and as a means of identification.

9. The standard for the examination for certificate, voucher, etc., is specified on the examination paper and must be strictly adhered to.

10. Vouchers for second examination, and medallions and labels for third and fourth examinations respectively, will be issued by the general secretary on receipt of report of the examiner.

11. The assistant general secretary, and local branch secretaries, will be responsible to the general secretary for seeing that the syllabus and rules of the association are adhered to.

12. Branch secretaries will furnish the general secretary, or assistant general secretary if on western lines, with copy of form 295 for each accident at which first aid was rendered, giving name of man rendering assistance and how injury was treated.

13. Class expenses must not be incurred without first obtaining authority from general secretary, or assistant general secre-

tary if on western lines.

14. Expenses of lecturers and examiners, including fees and incidental expenses for travelling, will be paid by the Canadian Pacific Railway Company and charged to account No. . . . , "Injuries to Persons," at points where classes are formed.

15. Assistant general secretary, and branch secretaries on eastern lines, will obtain and send to the general secretary a monthly statement showing expenses incurred as charged by the accounting department.

16. Class expenses and requisitions for ambulance supplies required by branches must be approved by the general secretary, or assistant general secretary if on western lines, before being supplied through the company's stores or taken into the company's accounts.

Alberta Educational Association.

At the recent annual convention of the Alberta Educational Association in Edmonton, it was resolved to request the Attorney-General and the Minister of Education to use their influence and do their utmost to have a better enforcement of the law prohibiting the sale of cigarettes to boys.

It was also resolved to ask the Department of Education to encourage school gardens by means of special grants, and to make a systematic attempt to furnish practical instruction in the establishment and maintenance of the gardens. And the suggestion was made in another resolution, that there is a growing importance and need for commercial and technical education in the province; the opinion of the convention being that departments such as commercial, manual training, domestic science, electricity, draughting, and so on, be recognized and encouraged by the Department of Education. Wherever the school board deems it urgent to have such facilities, the teachers hope the board will be assisted to get them by the Department of Education.

President Tory, of the University of Alberta, was elected president of the Alberta Educational Association for the coming year. First Vice-President is W. C. Carpenter, of Calgary; Second Vice-President, J. McCaig, of Edmonton; Secretary and Treasurer, N. E. Carruthers, re-elected.

Canadian Association for the Prevention of Tuberculosis.

No better statement of the results accruing from the fight being waged against tuberculosis could be given than those outlined in the report presented by Dr. George D. Porter, secretary of the Canadian Association for the Prevention of Tuberculosis at the May meeting in London, Ont.

This tells of the awakening interest in the fight being taken by the western provinces. It speaks of the sanatoria and the lowering death rate, which has resulted from proper treatment, and shows that funds are everywhere being raised to combat the disease.

"As will be seen by the perusal of the various reports embodied in our annual report," said Dr. Porter, "much work in the campaign against tuberculosis has been done throughout Canada during the last year.

"Direct reports from nine provinces show that the efforts put forth have increased in nearly all of them.

"In British Columbia the splendid new sanatorium at Tranquille, accommodating 60 incipient cases and over 40 advanced, was formally opened this year. Only those engaged in the arduous task of interesting the public and the Governments sufficiently to raise the necessary funds for such a purpose can form any idea of the labor involved, and the British Columbia society deserves every praise. Besides this, every hospital there receiving Government aid has to receive a certain number of consumptives, thus placing British Columbia in this regard ahead of the other provinces.

"Reports from Alberta show an anxiety on the part of many for something practical being done at an early date, and it is our hope that something may be accomplished during the coming year.

"In Saskatchewan the various local leagues organized during the past year sent representatives to Regina, where a provincial association was formed. It is their immediate purpose to start a sanatorium for the tuberculous, and towards that end the Provincial Government has promised \$25,000. Education by means of lectures and literature has also been carried on during the year.

"In Manitoba, the sanatorium at Ninette has been formally opened, and is now in full running order and receiving patients. In Winnipeg a temporary home for advanced cases is under way and much educational work has been done in the city and throughout the province. We are pleased to have this active association now affiliated with the Canadian Association.

"In Nova Scotia much in an educational way has been done throughout the province. Tuberculosis has now become a notifiable disease in the province. Especially noteworthy is the book upon consumption and its prevention, issued by the Tri-County League. It is their purpose to distribute some 50,000 copies of these books, free of cost, throughout the northern part of Nova Scotia. A new idea for raising the necessary money for the books is the inclusion of local advertisements. Besides this, county and town councils materially assisted in the work. In Halifax a lot has been accomplished in looking after the tuberculous poor, and also in the matter of education by the Halifax County Anti-Tuberculous Society. They are projecting a much needed hospital for advanced cases in that city. In Kentville the sanatorium, which is always full, is proving of much benefit to the community, and we learn with pleasure that it is to be enlarged and better equipped.

"In Sydney, the Ladies' Auxiliary has united with the Daughters of the Empire in supporting a visiting nurse. The various other local leagues are more or less active. Colchester still doing active and most useful work with its visiting nurse and educational lectures and literature.

"In Prince Edward Island the Charlottetown dispensary is operating satisfactorily, and the hope is expressed that some accommodation will soon be provided on the island for the tuberculous.

"In New Brunswick, following the recommendation of the commission appointed last year to study the tuberculosis question, they are planning for a sanatorium in the province. In St. John they operate a dispensary, employ a visiting nurse and have held many public meetings. The local leagues in other parts of the province, Fredericton and Moncton, are also doing something towards helping

needy cases in their localities, and in an educational way.

"In Quebec, besides the institutions at Montreal, St. Agathe and Lake Edward, and the opening of the new dispensary in Quebec City, the most noteworthy thing during the year is the report of the royal commission upon tuberculosis. This report strongly urges a vigorous educational campaign and advocates such measures as obligatory notification, disinfection, rules against spitting in public, isolation, and provision for the sufferers, anti-tuberculosis dispensaries, proper medical inspection of schools and industrial establishments, open air schools, sanitary dwelling and the prevention of alcoholism.

"The work in Ontario has shown a decided advance during the year. That county sanatoria are a necessary part of the campaign is gradually being recognized throughout the province. In Hamilton, Ottawa, London and St. Catharines we have examples of what such institutions may accomplish. Local sanatoria are now projected in Brantford, Guelph, Windsor, Chatham and Kingston and Waterloo County. The dispensaries now open in various parts of the province, with the visiting nurses in connection with them, are proving their worth. An increased interest in the work among tuberculous children is shown. Especially noteworthy is the new preventorium and school for tuberculous children of the Mountain Sanatorium, Hamilton, and the new "Heather Club" pavilion on the Lakeside Hospital grounds, Toronto, while the institution here in London has given a splendid impetus to the cause throughout the province. The Hygienic Nine is also doing a praiseworthy work. We are pleased to note, also that the Toronto Board of Health is taking such active measures against tuberculosis.

In thus briefly reviewing the later efforts of the affiliated societies of the Canadian Association, it must not be forgotten that some of the most substantial work is being done by the older associations, such as those in Hamilton, Ottawa, Montreal, etc., and we should also like to take this opportunity of congratulating the National Sanatorium Association for the great work which it has been carrying on in Gravenhurst and Weston during the past

decade; to extend also to that organization our sympathy for the loss sustained by them in the fire at Weston.

"Under amendments of the Ontario Public Health Act, physicians are now required to make returns to the chief health officer of "all diseases dangerous to the public health." This includes tuberculosis, and the statistics thus obtained should prove useful to the health authorities in working for the control of this disease. The Ontario Government is to be congratulated for its part in educating the public in the prevention of tuberculosis by the traveling exhibit under the Provincial Board of Health. This has been in a large number of towns and villages during the winter, where lantern demonstrations have been given and lectures delivered. The Provincial Government has encouraged the erection and maintenance of county and municipal sanatoria by its generous treatment of such institutions (\$3 per week, instead of \$1.50 per week, being now set aside for the maintenance of those patients not paying above \$4.90). As will be seen in Dr. Bruce Smith's report, 1,372 patients were admitted to the special hospitals or sanatoria for treatment and care for the tuberculous during the past year, besides the many treated in the various local dispensaries in the province. It is worthy of mention also that the public school hygiene has now a chapter upon tuberculosis.

"Throughout the whole Dominion, therefore, interest in the subject has been steadily growing. The question was freely discussed at more than one of the sittings of the Conservation Commission, and we hope that through the Commission the Federal Government will see its way to give yet further material support to the campaign against tuberculosis. Much literature has been sent out by our own association during the year. The new posters have been printed as well as the revised leaflet, of which many thousands have already been distributed.

"Eight thousand of our annual reports in English have been distributed, and also 2,500 reports in French.

"The question of setting aside a special tuberculosis day has again been brought before the notice of the executive, and will be considered.

"We are pleased to note that our presi-

dent, Professor Adami, and Dr. Prevost have been appointed by the Dominion Government, and Dr. Hodgetts by the Conservation Commission, as delegates to the seventh international congress, to be held in Rome from the 24th to the 30th of September, 1911.

"The lectures, 55 in number, delivered during the year by our secretary have, as a rule, been largely attended, as have those also of our French lecturers, Dr. Valin and Dr. Bourgeois. These, together with a list of the new societies organized, are appended to this report.

"Finally, our association desires to thank the press for their hearty co-operation and help in the campaign for which this association stands."

That all these efforts are proving useful cannot now be doubted. The mortality from tuberculosis is declining in at least one province, Ontario—as pointed out by Dr. Porter in the March issue of this Journal. In the decade preceding 1899 the death rate from this disease was on the increase until in that year the figure amounted to 3,405 (a rate of 1.4 per 1,000 living estimated population, or, in other words, 11.8 per cent. of the total deaths.)

During that time there were no institutions for the tuberculous in the province, no dispensaries, no special visiting nurses, no educational agencies at work, no general information regarding the prevention of this disease. In 1899 there was only one institution; now there are 12 of them in the province, and other projected; four dispensaries, and an increasing number of visiting nurses, while a general campaign is being carried on. In 1908 the deaths from tuberculosis were 2,511 (a rate of 1.1 per 1,000, or 7.6 per cent. of the total deaths).

"We think it is only fair to assume then, that this decline from 11.8 per cent. to 7.6 per cent. is due, at least in some measure, to the efforts already put forth to stamp out this disease. And if so, we feel justified in looking for a still further decrease in the death rate, if more accommodation could be provided for the tuberculous, especially the advanced cases, and still more done to enlighten the public regarding the means of preventing this widespread but controllable disease.

The Brantford Board of Health.

The Brantford, Ontario, Board of Health, by the advice of Dr. Pearson, Medical Health Officer, has joined London, Toronto and other centres in recommending that the common drinking cups in schools and public institutions be abolished and that individual paper cups or bubbling fountains be substituted therefore. The Board of Health is also going after the butchers with a view of inspecting slaughter houses where meat offered for local sale is slaughtered, and insisting on having meat sold on the market wrapped in clean paper, rather than in old newspapers as in the past. The board also recommends that the milk standard for butter fat be increased.

The Garbage of Windsor.

The following notice regarding the care of garbage is being distributed by the Windsor, Ontario, public works committee:—

"Under the existing by-law every householder is required to have properly covered galvanized iron cans for depositing garbage in; to contain nothing but garbage. No glass, cans, crockery, etc., and no water. Cans are to be placed conveniently for collectors, preferably at the back fence where there are alleys and in sight of collectors where there are no alleys. Complaints of non-collection are to be made to phone No. 141, city hall, any day between 9 and 10 a.m.

"Papers must be destroyed on the premises or properly bundled if collected.

"Grocers and fruit dealers must take care of and remove their own material of any kind.

"Collections are made twice a week in June, July, August and September, once a week throughout the rest of the year.

"Any person throwing rubbish, etc., in alleys or streets is amenable to the by-law and will be prosecuted.

"Persons guilty of an infraction of the garbage by-law are subject to a fine of not less than one dollar and costs or imprisonment of ten days."

Montreal and Tuberculosis.

Since the first of the year, there have been 323 deaths in Montreal from tuberculosis and 500 cases have been reported

to the authorities. Dr. Laberge, City Health Officer, speaking of the large number, finds that the increase is not so much that the disease is growing, but that the doctors are reporting the cases better than they did before.

London's Health Officer on the Covering of Food.

The practice of provision merchants, fruit merchants, butchers and others in displaying foodstuffs outside their shops on racks has been strongly condemned by Medical Health Officer Hutchinson, of London, Ontario. In a recommendation to the Board of Health, he suggests that by-laws be passed that will prohibit the sale of any food thus displayed. Dr. Hutchinson expressed his views on so displaying goods for sale:

"The dust from the streets blowing on the fish, fruit and vegetables that are displayed outside forms one of the best germ-breeding mediums that could be conceived of," says Dr. Hutchinson. "When the streets are being swept the filth, and dust from the pavements, with the germs that infest it, are naturally thrown into the air and alight on this food. No food of any description should be allowed to be displayed in front of stores where it would be exposed to every disease germ floating in the outside air."

Water Contamination of New Ontario.

A correspondent reports that unless immediate steps are taken there may be a very serious epidemic of typhoid in parts of New Ontario. There is at present no water in any of the settlements in the neighborhood of Porcupine except from wells, and, as analysis has shown, many of these have been contaminated. Golden City, the site that the Government sold, has good water in Bobbs Lake and arrangements should at once be made to pipe it over, the Government contributing. In the meantime, the sanitary inspectors are doing all they can to prevent the accumulation of refuse and are compelling the carting away and burning of all refuse, but without pure water these precautions are not likely to prove effective against an epidemic. Pipes are being laid from South Porcupine to Porcupine River for a temporary supply of water. With the pro-

mise that Porcupine now has of permanency, no time should be lost in obtaining water from the Matagami River.

British Columbia Medical Association.

On August 31, and September 1, 1911, the thirteenth annual meeting of the British Columbia Medical Association will be held in Vancouver. The secretary is Dr. A. S. Monro of that city.

Alberta Medical Council.

The members of the Alberta Medical Council for the ensuing four years are: District No. I., Dr. John Park; District No. II., Dr. F. W. Crang; District No. III., Dr. C. W. Field; District No. IV., Dr. R. G. Brett; District No. V., Dr. C. J. Stewart; District No. VI., Dr. C. H. Malcolmson; District No. VII., Dr. F. H. Mewburn.

Dr. R. G. Brett, Banff, was re-elected by acclamation.

INTERNATIONAL

International Milk Exhibit and Conference of Municipal Health Officials.

One of the most comprehensive milk exhibits ever held was opened in Philadelphia, Pa., on the twentieth of last month under the auspices of the Department of Public Health, the Pediatric Society, the Veterinary Department of the University of Pennsylvania, the Bureau of Municipal Research and other local co-operating bodies. Every stage in the handling of milk from the dairy to the consumer's table or the baby's nursing bottle was shown in the exhibit.

The committee in charge had data showing that not less than one-third of the 250,000 babies under one year old who die each year in the United States are victims of infected milk and ignorant feeding. The exhibit demonstrated that clean milk is one of the best and cheapest of all foods; that dirty milk at any price costs too much; and that every dairyman, transportation company, milk dealer, health official, housewife and taxpayer has a definite responsibility in protecting milk from contamination.

The American Association of Medical Milk Commissions, the Certified Milk Producers' Association of America, and a conference of municipal health officials met in Philadelphia during the holding of the exhibit. The United States Department of Agriculture conducted a milk contest, scoring milk with scientific accuracy. Lectures and demonstrations, with moving

pictures, stereopticon slides, photographs, and other illustrative devices were given daily by leading experts of the United States and Canada.

International Municipal Congress and Exposition.

A United States Government circular of instruction entitled "General Instruction Consular, No. 36," has been issued under the title "International Municipal Congress and Exposition at Chicago," and a copy sent to each representative of the United States abroad. The text of the circular is as follows:

The department is advised by the Chicago Association of Commerce that there will be held in that city from September 18-30 next an international municipal congress and exposition under the auspices of the Association of Commerce.

This congress and exposition will be thoroughly international in its scope, and is the first one of this kind ever held in the United States. It is intended to set forth the advancement of municipalities by showing the possibilities of making city government an asset, and of capitalizing a city's attractions.

It is desired that all cities shall participate in the congress and exposition which have anything to offer of advanced ideas along such lines as charters, forms of government, municipal accounting, parks, playgrounds, health, sanitation, charity

and correction, taxation, home rule, fire, schools, police, and libraries.

It is hoped that each city may be represented by a personal delegation and by some contribution in the shape of models, charts, photographs, and views.

The presence of experts of world-wide fame and known ability will make possible comparisons between communities and cities, thus offering the opportunity of contributing and the privilege of learning.

Formal invitations will be, at a later date, forwarded by the Chicago association of commerce direct. There will be held at

the same time in Chicago an international good roads congress.

While these congresses are not under the auspices of the government of the United States, this government would be glad if the government of the country to which you are accredited would give due publicity to the congresses and recommend the sending of delegates by the municipalities and organizations interested.

You will communicate to the foreign office the invitations to the congresses, and request that due publicity may be given to them.

INTERNATIONAL UNITED STATES

The American Medical Association and an Iowa Plan for the Centralization of Public Health Government.

At the meeting of the American Medical Association, which convenes in Los Angeles this month, Secretary Sumner, of the Iowa State Board of Health, will present a radical system of public health government which, if adopted, would centralize public health matters in a distinct branch of the federal government.

The public health department as outlined by Secretary Sumner, has two departments or functions, executive and legislative.

His plan is to create a federal department of which the surgeon general of the United States Government shall be the chief head. He shall appoint one disease inspector for each state, upon civil service examination, said inspector to hold the place for life or during good behavior. The inspectors shall not remain longer than one or two years in any one state, but shall be itinerant as the bank examiners are.

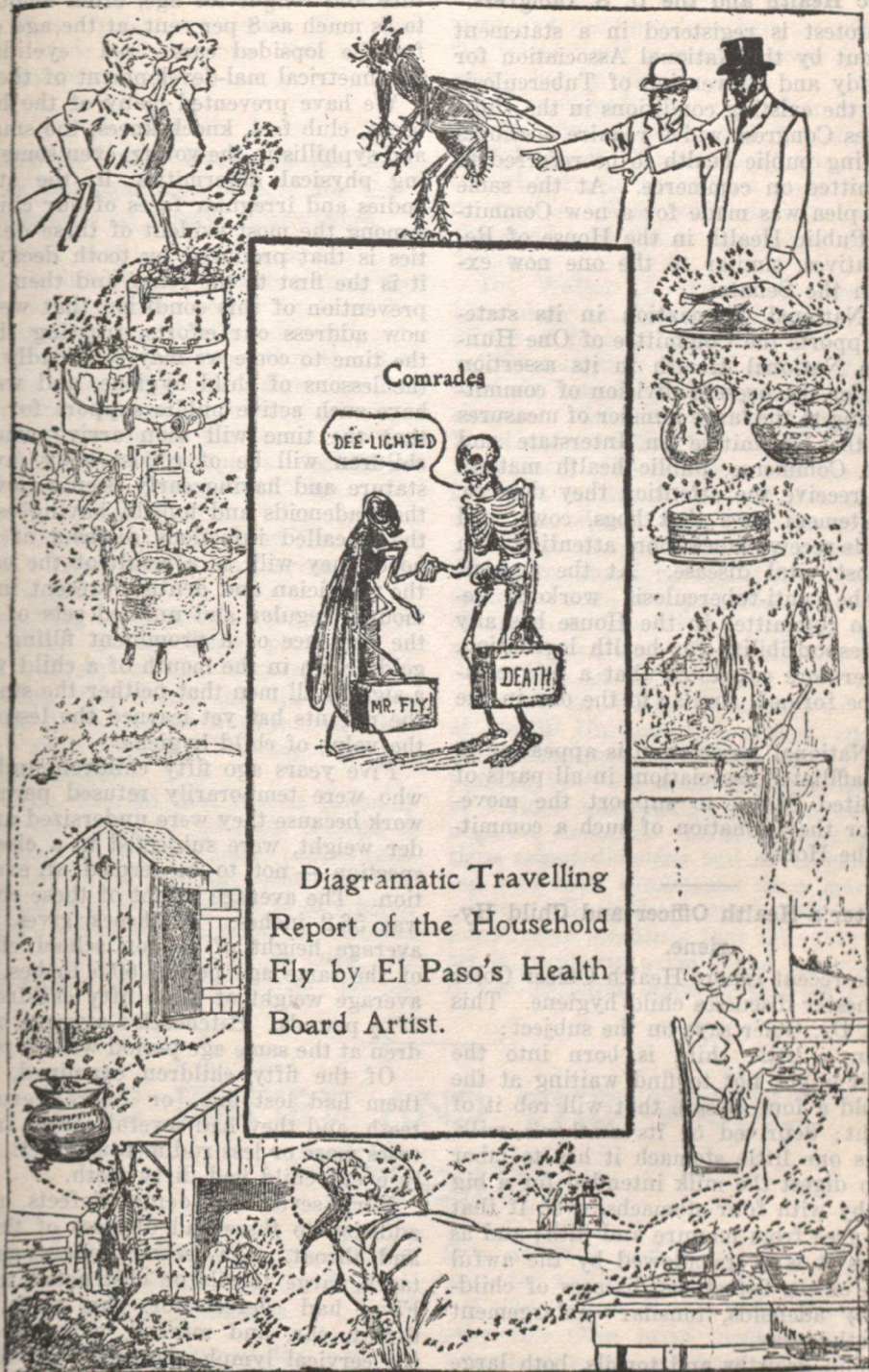
Under the executive department of the health bureau shall be placed the United States Geological Survey, which shall take entire charge of the investigation of the pollution of all the streams of the country.

The Geological Survey is to make its stream pollution inspection with the state boards of health in each state.

The legislative function of this proposed health department shall be centered in a congress composed of the federal disease inspectors, the members of the Geological Survey and the state boards of health. This legislative body shall meet once every year, with the surgeon-general as the presiding officer. It shall formulate and promulgate rules for uniform quarantine, the proper disposal of the dead and the uniform rules for the transportation of corpses, and, in fact, everything relating to the public health of the country. It shall establish a sanitary code which shall affect all states alike and be the law of the land with reference to health matters.

The state boards of health are to be co-ordinate branches of the public health government, the same as state governments are co-ordinate with the federal government, each supreme in its own particular field.

He also provides that there shall be federal sanitary inspection, by this new federal health department, of interstate trains and Pullmans, with state sanitary inspection of street cars, local trains, hotels and depots.



Comrades

DEE-LIGHTED

MR. FLY

DEATH

Diagrammatic Travelling
 Report of the Household
 Fly by El Paso's Health
 Board Artist.

Public Health and the U. S. Congress.

A protest is registered in a statement given out by the National Association for the Study and Prevention of Tuberculosis against the existing conditions in the United States Congress which require measures concerning public health to be referred to a committee on commerce. At the same time, a plea was made for a new Committee on Public Health in the House of Representatives, similar to the one now existing in the Senate.

The National Association in its statement supports the Committee of One Hundred on National Health in its assertion that under the present division of committees, owing to the large number of measures before the Committee on Interstate and Foreign Commerce, public health matters do not receive the attention they deserve. The statement says that hogs, cows, and steel rails receive much more attention than that most vital disease. At the present time, the anti-tuberculosis workers declare, no committee in the House has any direct responsibility for health legislation. It is therefore suggested that a new committee be formed, similar to the one in the Senate.

The National Association is appealing to its 510 affiliated associations in all parts of the United States to support the movement for the formation of such a committee in the House.

Rochester's Health Officer and Child Hygiene.

In his recent report Health Officer Goler of Rochester discusses child hygiene. This is what Dr. Goler says on the subject:

When a little child is born into the world it ought not to find waiting at the threshold a foul disease that will rob it of its sight; deprived of its mother's milk, with its one little stomach it has to labor hard to digest the milk intended for a big calf baby with four stomachs, even if that milk is free from manure and filth; and as it grows it is overshadowed by the awful menace of the infectious diseases of childhood, by adenoids, tonsillar enlargement and tooth decay.

Adenoid growths and tonsils, both large and small, together with the infectious diseases of childhood, are responsible for most of the early tooth decay; for the low sta-

ture and weight for age, often amounting to as much as 8 per cent. at the age of 14; for the lopsided ears, red eyelids and asymmetrical mal-development of the face.

We have prevented many of the hunchbacks, club feet, knock knees, the smallpox and syphilis in the young, even some striking physical deformities in the stunted bodies and irregular faces of our children. Among the most evident of these deformities is that produced by tooth decay, and it is the first to the relief and then to the prevention of this condition that we must now address our efforts, trusting that in the time to come we may so broadly teach the lessons of child hygiene, and we may have such active public support for them, that the time will soon arrive when all children will be of robust body, average stature and having early been relieved of their adenoids and tonsils, having escaped the so-called infectious diseases of childhood, they will, as a result of the care of the physician and dentist, present in their mouths regular and unfilled sets of teeth. the presence of a prominent filling or a gold crown in the mouth of a child will be a sign to all men that neither the state nor the parents has yet learned the lesson and the value of child hygiene.

Five years ago fifty children under 15, who were temporarily refused permits to work because they were undersized and under weight, were subjected to a closer inspection — not to be termed an examination. The average height of these children was 56.2 inches. Hitchcock gives as the average height of Boston school children of the same age period 60.5 inches. The average weight of these fifty children was 77½ pounds. Hitchcock's average of children at the same age period was 94 pounds.

Of the fifty children examined, all of them had lost one or more permanent teeth, and they had several caries, in some cases more or less rudimentary teeth. Nearly every child had dirty teeth.

Forty-seven had dental defects, and in addition to these had diseases of the nose and throat, such as naso-pharyngeal catarrh, large tonsils or obstructed nostrils. Five had defects of the teeth, nose, throat, ear, and marked enlargement of the cervical lymph glands. Four had defects of teeth, nose, throat, and eczema. Five had dental caries, naso-pharyngeal diseases and marked, asymmetry of the

face. Three had tuberculosis. Two had syphilis. One had anaemia. One had St. Vitus' dance.

Questions of Public Health at the Meeting of the American Society for the Promotion of Useful Knowledge.

Declaring that race suicide is due to an increase in intelligence, and theorizing that the human emotions become fewer as human beings become better educated, Dr. Paul Haupt, professor of Semitic languages at Johns Hopkins University, Baltimore, made one of the closing addresses at the last session of the recent meeting of the American Philosophical Society for the Promotion of Useful Knowledge.

Dr. Haupt spoke upon "An Ancient Protest Against the Curse of Eve," and confined himself wholly to observations upon race suicide.

"Reasoning is the simple cure for fear," declared Dr. George Crile, professor of clinical surgery at the Western Reserve University, Cleveland, in his address. Many people hurry to a physician when they are frightened, not knowing what ails them, he thought.

Dr. Crile asserted that fear is probably the most damaging of emotions because of its tendency to grow to large proportions. Neither the brain nor any other part of the human body can respond to any lesser stimulant during the reign of the emotion of fear. The quickest way to cure fear and its effects is to reason with the pa-

tient and convince him that the effects of the fright itself is usually worse than that which has caused the fear.

He explained that when fear grips the human being or the animal the entire body, including all the organs, are suddenly stimulated and the body is ready for flight or terrific battle, whichever it occurs to the mind to adopt as the proper course to follow.

Dr. Walter B. Cannon, professor of physiology at Harvard, also spoke on the effects of fear. He said:—

"Examination of the blood of excited animals reveals the presence of adrenal secretion, which was not present when the blood was examined before the animal was frightened. It is probable that the adrenal secretion continues the excited state. Possibly the adrenal secretion, caused by the emotional disturbances, has some of the effects produced by injection of the substance — such as glycosuria and atheroma of arteries. Two of my students have recently shown that glycosuria can be produced in a cat by fright."

Dr. H. A. Wilson, professor of physics at McGill University, Montreal, spoke on the "Constitution of Atoms." He explained that the atom undoubtedly could be divided into smaller portions known as negative electrons. He said, however, that these minor divisions had never been seen, but had been established as a matter of science. He refuted the statements of some recent scientists that the ether in the air is becoming extinct and asserted that it was becoming stronger than ever.

THE EMPIRE AND THE WORLD ABROAD

Meeting of the Association of County Councils in Scotland and the Sale of Quack Medicines.

At the annual meeting of the Association of County Councils in Scotland, recently held in Edinburgh, the Executive Committee recommended the Association to adopt a resolution to the effect that the

Sale of Food and Drugs Act should be amended and extended so as to provide:

1. That for medicines which are supplied otherwise than upon medical, dental, or veterinarian prescriptions, no condition of sale short of the publication on each packet of medicine of the name and quantity of each of its constituents should be permitted.

2. That the label should be made to constitute a warranty, and that false description, whether on the label or main advertisement, should be made an offence.

3. That the provisions of the Sale of Food and Drugs Acts should be applied to proprietary medicines. It was further recommended that a copy of the resolution should be sent to the Prime Minister, the Secretary for Scotland, the Board of Agriculture and Fisheries, and the Local Government Board for Scotland.

It was pointed out that a gigantic trade was done in secret remedies, commonly known as quack medicines, which the Act did not touch; that the stamp duty on packets of medicine in 1889 was £266,000, and in 1908 £334,000, and the cost to the public over three and a quarter millions. The most exorbitant prices were charged. The British Medical Association had had exhaustive analyses made of these medicines, as the result of which it was revealed what was charged to the public at 1s. 1½d. cost the thirtieth part of a farthing. Not only were the public being swindled, but many of the component parts of these medicines were deleterious, and often diseases which could easily have been tackled by medical science in their earlier stages became chronic and incurable owing to the use of quack remedies. Great Britain was very far behind other countries. There was complete prohibition in some countries on the Continent of Europe, and restriction in others; and outlying countries of the British Empire were following that example. Farmers were prosecuted for having a little additional water in their milk, yet under the present legislation the swindling patent medicine vendor, who was living in luxurious style upon his ill-gotten thousands, was allowed to go free. A county council had to prosecute the grocer who had a little margarine in his butter, but could not touch the medicine vendor who used margarine as a component of the most deleterious compounds sometimes. It was high time the Legislature were taking action in the matter, but it was evident the Central Government would not do so without considerable pressure.

Dried Fish in London, England, as a Cause of Typhoid Fever.

In submitting to the Public Health Com-

mittee of the London County Council a report by Dr. W. H. Hamer on certain localized prevalences of typhoid fever in London in 1910, Dr. Murphy, the council's medical officer, states that during the past 25 years typhoid fever has markedly declined in prevalence in London. A study of the cases in recent years shows that they display a marked tendency to occur in groups, and that, for the most part, localities occupied by the very poor are especially affected. Moreover, the same localities have been in some instances repeatedly attacked year after year. Thus the prevalence of 1910 affected an area in Bethnal-green almost identical in extent with that involved two years before.

In 1900, in 1903, and again in 1908 the consumption of infected fish was suspected as the cause of the prevalence, and the Bethnal-green outbreak was sufficient to enable the question of shellfish, which had complicated the problem in 1908, to be eliminated. An examination of the sources of supply of dried fish to the 49 sufferers from typhoid fever in the affected locality showed that they had, in all probability, obtained their fish from one or other of three shops, two of which had a common source of fish supply. Coincidentally with the outbreak in the specially affected area in Bethnal-green, a number of other localized prevalences of typhoid fever developed in other parts of London generally. It was found that all sufferers contributing to the excessive prevalences had partaken of fish (usually dried fish), and that in all the instances in which information on this head could be obtained small plaice belonging to the category described by dried fish vendors as "late steamer fish" was in question.

Dr. Hamer in his report points out that the kind of fish implicated was plaice (including in this term flounders and dabs); that small plaice were specially open to suspicion; that the question of imperfect cleansing of the fish was important in connection with the communication of infection; and that the fish were already infected before reaching the retail vendor. He draws attention to the fact, established by the inquiries and reports of officers of the Board of Trade, that much of the small plaice sold at Billingsgate comes from an area in which are situated certain "nurs-

ery grounds" not far from the mouth of the Elbe.

Plaice is practically the only fish used by vendors of dried fish which is not gutted as a matter of course at sea, and Dr. Hamer says it is clearly desirable in the interest of the public health that no plaice which has not been gutted should be exposed for sale in the market.

Health Matters in British Guiana.

A Blue Book report of British Guiana for 1909-10, prepared by Mr. J. Hampden King, Assistant Government Secretary, has been received at the British Colonial Office and presented to both Houses of Parliament. The section devoted to vital statistics and public health gives the present estimated population of the Colony as 305,097 — 158,435 males and 146,662 females. The birth rate for 1909 was 29.3 per 1,000 of the population, the mean rate for the previous five years having been 30.4. Of the births registered 3,577, or 40 per cent., were legitimate, and 5,370, or 60 per cent., were illegitimate. The birth rate per 1,000 of the estimated population of each of the different races represented in the community was as follows: Europeans (other than Portuguese), 11.1; Portuguese, 23.8; East Indians, 27.6; Chinese, 32.2; Aborigines, 61.3; Blacks, 30.9; and Mixed Races, 27.5. The death rate was 30.0 per 1,000, as compared with a mean rate for the previous five years of 30.5. The mortality amongst children under one year continues to be high, and the mean rate for the past five years has been 210 per 1,000. The health of this province of the Empire showed no marked improvement over the previous year. There was no epidemic of any dangerous, infectious or contagious disease, though the existence of yellow fever and plague in neighboring places gave rise to considerable anxiety. Malarial fever continues to claim a large number of victims, and efforts are being made by legislative and other action to control the mosquito pest. Quinine is now sold at the district post offices all over the province at cost price, and its use is steadily increasing. In 1909-10 some 2,076 ounces were thus sold. Steps were taken to procure this drug put up in chocolate with a view of increasing its consumption among the children, but this method has

proved too expensive. The Medical Department continues to give attention to the question of ankylostomiasis, and the interest that has been aroused in this connection among the employers of labor on the sugar estates and among the laborers themselves is bearing fruit.

There were a few sporadic cases of enteric and blackwater fevers, but, as usual, the principal causes of death were malarial fevers, diarrhoeal diseases, and phthisis and other forms of tuberculosis. Professor Deycke's system of treatment of leprosy by "nastin" is being steadily followed at the leper asylums on the lines laid down by him. Several cases have so much improved that it is hoped they may shortly be discharged. There are five public hospitals in the principal centres of population, and the outlying districts are served by dispensary hospitals and dispensaries. The immigration law also requires the maintenance of hospitals on every plantation on which there are indentured East Indian laborers, and these institutions are available for the treatment of emergency and pauper cases from the general community. The daily average number of in-patients was 705. There were 1,890 deaths. Out door treatment was given to 74,646 persons.

An ordinance has been passed which gives power to take special measures of precaution in case the province is threatened with an invasion of a dangerous epidemic disease which the ordinary law is inadequate to deal with. The idea is to have the means of at once dealing with any dangerous disease which makes its appearance, instead of having to wait till the legislature can give the necessary special powers, and to avoid a delay during which the disease might make serious headway. It may be of interest to mention that an ordinance has also been passed withdrawing all protection from carrion crows and permitting them to be killed like vermin in any part of the province. Until lately they were thought to be useful as scavengers and were protected from destruction, it being an offence to kill them; but it is now agreed that they are dangerous as disseminators of disease by fouling water, and that any usefulness they possess is more than counterbalanced by the risk of spreading infection.

Amsterdam and the Disposal of Rubbish.

Amsterdam consular reports state that hitherto rubbish collected by street cleaners in that town has been assorted—paper, rags, metals, and glass have been sold to dealers therein, and the residue as manure. The city authorities are now, however, considering converting the street rubbish as a mass into combustible briquettes for heating boilers. They have found that at Southwark, and at St. Ouen, France, street rubbish is transformed into a marketable product. At Southwark all the refuse is crushed to a powder, which is sold as a manure. At St. Ouen the powder thus made, with the addition of combustible substances, is formed into a cheap fuel. The Amsterdam authorities experimented at that place, combining powder made there with coal tar from the Amsterdam gasworks, and pressing the substance into briquettes. The experiment was successful, and disposed the Amsterdam authorities towards establishing a plant for producing briquettes from street rubbish. The quantity of material which can be worked in this city is about 140,000 tons a year. It is estimated that an establishment to work this will cost about \$200,000; that the annual expense thereof will be about \$98,000; that the product will be about 85,000 tons. It is believed that the briquettes can be sold at a profit of over \$20,000 a year. At present the street refuse of Amsterdam is disposed of at a loss of \$18,000 a year. Besides the anticipated financial profit, it is reasoned that the danger in times of epidemic will be much reduced by the transformation of street refuse, which amounts to destruction.

Dresden and the Barbers.

A Consular report on the subject of municipal inspection states that in Dresden last year's inspection of barbers and hairdressers included 39 hairdressers and 549 barbers' shops. This inspection took place by authority of the city council, and was carried out by the police, the regulation having been introduced to limit the

spread in infectious diseases through these channels. In 35 cases it was necessary to report serious defects. There were five cases of insufficient cleanliness of the rooms, six cases of insufficient cleanliness of the instruments, three cases of sickness and insufficient cleanliness of the staff, three cases of violation of the regulations as to the serving of customers, seven cases in which the sign was wanting or insufficient, seven cases of employment of boys without a proper timebook or with insufficient booking, three cases of insufficient sleeping room for the assistants, and in one case insufficient room in the shop. A number of unimportant defects also were discovered, but on notice being drawn to them they were at once removed.

Sanitary Hotels in France.

The first attempt made by the Touring Club of France in health directions, as recently reported, was to insist on the sanitary reform of the hotels that tourists were likely to frequent. The paper in a Touring Club hotel is stripped off the walls and washable paint or distemper is employed instead. The floors are wood blocks polished with beeswax or are laid with tiles. A small rug or two that can be lifted away and shaken alone is allowed on the floor. The numerous culture grounds for infective material provided by the old-fashioned manner of furnishing hotel rooms are thus done away with. Plenty of light and every facility for cleaning are provided and in some cases now the angles between the walls and the floor and ceiling are being rounded off, so that these havens of dust will soon exist no more.

The members of the Touring Club are provided with regular forms, so that they can send complaints to the central office if any hotel fails to keep the rules laid down. These rules relate not only to sanitation, but also to the charges. After thus seeking to improve the hotels, the Touring Club exercises its great influence to maintain the roads by which all the beautiful parts of the country can be reached.