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Canada's Tuberculosis Problem.

BY DOCTOR J. H. ELLIOTT.

ADDRESSING the Canadian Club on the subject, "Canada's Tuberculosis Problem," Dr. J. H. Elliott said:

Mr. President and fellow members,—Our Canadian Clubs have no more important questions brought before them for discussion than those relating to public health. Should a text be necessary as a basis for a short address, no better one can be found than the two short sentences, "In Canada last year there were 13,000 deaths from tuberculosis," "Tuberculosis is a preventable disease."

When one begins to make a careful study of the tuberculosis morbidity and mortality throughout Canada, he is at once confronted with a great difficulty, in that we have no general scheme of vital statistics. Such statistics are Provincial records, and with the exception of Ontario, registration is very incomplete, or has only been recently adopted. For a study of disease throughout Canada we have to refer to the figures of the decennial census, and this takes us back to 1901.

In 1901 we had a population of 5,371,315. A careful estimate for this year places our population at 7,500,000. In 1901 the number of deaths from all causes was 81,201, the deaths form tuberculosis were 9,709, i.e., 1 in 8.3, or 12 per cent. of all deaths were due to tuberculosis. For the present year we must estimate the deaths at 13,000. Let us look at it in another way. If one in every eight dies of tuberculosis, it means that of our present population of seven and a half millions, nearly one million will ultimately die of tuberculosis. Knowing it to be a preventable disease should these facts not stir us to action?

Tuberculosis is the most frequent cause of death in Canada, no other single disease approaches it. Though it attacks man at all ages, it is less frequently a cause of death in childhood and old age. Its most terrible harvest is reaped during the most active working years. Will it surprise you to be told that of all persons dying in Canada between the ages of fifteen and thirty-five, over forty per cent. die of tuberculosis, while of the deaths occurring in the age period thirty-five to forty-four, over twenty-five per cent. are due to tuberculosis?

Dr. J. H. Elliott, now in practice in Toronto, was for nine years Physician-in-Charge of the Muskoka Cottage Sanitarium. He is Secretary of the Toronto League for the Prevention of Tuberculosis and also a member of the Executive Council of the Canadian Association for the Prevention of Tuberculosis.

The average age at death of our consumptives is thirty-five years, perhaps the most productive age. The life expectancy at this age is about thirty years. This means that 13,000 Canadians dying each year of tuberculosis lose each 30 years of life. If we eradicate tuberculosis, the average age at death of those dying of all causes will be three and one-half years greater. Prof. Irving Fisher has estimated for the United States that the average age at death of males would be increased by three years, of females three and two-fifths.

The productive working period of life is generally accepted as from 17 to 60 years. What do we lose annually in working years through consumption? Each year 13,000 lose 30 years of life. Let us allow in these a lessened life expectancy—say 24 years. Sven years of this will be years before 17, and after 60. This leaves 17 years as the average loss to each—17 years of useful industrial life. Distribute this over our whole population, and we arrive at the conclusion that *with no consumption* the average working years would be increased by 2 years in males and 2.3 years in females.

Tuberculosis frequently has a rapid course—a few weeks only, on the other hand many will live twenty, thirty years or longer with the disease. Taking a large series of consumptive patients, we learn that there is an average period of four years' illness preceding death. This is made up of one year of failing health, while still at work, followed by one and a half years of partial disability, and this in turn by one and a half years of complete disability. In our study of economic loss due to tuberculosis, these years must be also considered. With an average of four years' illness to each of the 13,000 dying each year, we must recognize that at any one time we have at least 52,000 in Canada suffering tuberculosis, and who require treatment.

We cannot attempt to estimate the amount of disappointment and unhappiness, the pain and weariness, the trials and deprivations of fifty thousand consumptives and their friends. The burdens usually fall on three or four others near the sick one, who must share his worry and mental anguish—there are one hundred to two hundred thousand on whom this falls, while another two hundred thousand must with these mourn loved ones.

The money loss is made up in part, of (1) loss of wages during periods of partial and complete disability, (2) cost of maintenance during a prolonged illness. The first is primarily a loss to the patient, but also may cause severe suffering to the family. The second loss falls upon his savings, and lacking these, upon friends or the municipality, in either case bringing suffering and deprivation to the family.

It is surely a conservative estimate to place the *average* earnings of those concerned at $700.00 per year. The loss may be summed up thus:

Loss of wages, 1½ years partial disability......	$525.00
1½ years complete disability..................	$1,050.00
The illness costs some one one dollar a day, say..	$550.00
	$2,125.00
Add to this 17 lost years of working life at $700 a year,—(capitalized and discounted at 5 per cent.) say..............................	$7,000.00
Making a *miminum* money cost for each life, of..	$9,000.00

But we have each year 13,000 deaths. This represents an *annual* loss of $117,000,000.00. This annual loss capitalized at 5 per cent. represents a capital sum of $2,340,000,000.00 which should be considered an offset against or deduction from our national resources.

If by instituting a few simple effective measures against tuberculosis we could save one-quarter of this, what a great work we would have accomplished. We cannot compute *in cash* the pain and suffering caused by the illness, nor the other sentimental values of life.

At the present time every civilized country has an active National Association helping to mould public opinion, and to lead the work of education. In Washington in 1908, the International Congress on Tuberculosis, convened with 7,000 delegates present, representing every part of the world. This congress meets next year in Rome, and we hope that Canada will again be represented. As an evidence of the universal crusade I may mention that in the United States since May, 1909, eleven legislatures have been in session, and every one has considered and enacted some law with reference to tuberculosis. The afternoon would suffice for only the barest sketch of what is being done throughout the world. The Board of Estimate and Apportionment of New York City, during the month of December, voted $2,150,000 to the Department of Charities for the erection of further hospital buildings for tuberculosis. From Brazil, Uruguay, Japan, Australia and every part of the civilized globe interesting reports are available.

We speak of tuberculosis as a preventable disease because,

(1) We know the cause—the tubercle bacillus—and where it may be found.

(2) We know how to treat and handle existing cases of tuberculosis and can thus prevent infection of others.

Tuberculosis in man is contracted always from a person who has the disease, either by intimate contact with him or in his absence, from his expectoration, which contains the infectious organisms—usually it is a house (home, office, workshop) infection, rarely if ever contracted out of doors. A few cases in children, principally tuberculosis of the glands are due to infection from milk, butter or cream from tuberculous cattle.

I cannot dwell on medical treatment other than to say that in the earlier stages the disease is generally readily controlled. When advanced we can, generally speaking, look for relative cure in some cases, absolute cure in but few, but in the vast majority with advanced disease, we must confess our inability to secure other than temporary improvement. We can readily institute measures to make these cases no longer a source of infection to those about them.

In recent years preventive medicine has made great strides. It is through preventive measures, rather than treatment, that leprosy has become a disease rarely seen, that hospital gangrene no longer is dreaded by the surgeon, that the plague which has caused millions of deaths is under control as is cholera, neither of which will ever again cause a worldwide epidemic. We know the cause of malaria, and in tropical cities where the inhabitants were recurringly ill with this infection, it is now practically stamped out by thorough organization. Hydrophobia in England, from 1880 to 1890 caused 20 to 60 deaths yearly—was it exterminated by treating those diseased? No. The dogs were muzzled and the disease *prevented*. Immediately the deaths fell to 8, then 7, then 6, then 4, with the orders relaxed the number rose to 13, then 20, but by consistent and persistent enforcement the number declined, and for twelve years there have been no deaths. Muzzling is no longer needed, for the disease died out when there was no longer means of transmission. There is a similar history to be written of puerperal fever, smallpox, malta fever and other diseases.

Tuberculosis can similarly be controlled if we but apply our knowledge of prevention. In handling this disease medically, and as a problem in public health, we approach it from two standpoints, first the treatment of the case in hand, second the prevention of the infection of others. The first is a purely individual (and family) question. The second is broader and involves the health of many others, and it is only by attention to the second that eradication may be effected.

Our hope of eradication is based on facts, not on theory. Our experience with other diseases suggests it, but certain facts loom large. The first great fact is that under different conditions of race, hygiene, housing, climate, habits, and exposure to infection, we find a varying mortality from consumption, e.g., the death rate from consumption of the lungs per 100,000 inhabitants, is, in New Zealand 56, Australia 88.9, Canada 153, Austria 334. While even within Canada the mortality rate from tuberculosis (all forms) varies, from 162 per 100,000 in Ontario, to 217 in Prince Edward Island, in the United States pulmonary tuberculosis varies from 90 in Michigan to 181 in Maryland.

The second fact which speaks for eradication, is that with the institution of anti-tuberculosis measures, there has already been a marked decrease in the death rate. In England the ratio has fallen 50 per cent. in the past 35 years. In New York, where a vigorous campaign has been carried on for years, there has been no increase in the annual number of deaths even though the population has increased seventy per cent. in the same period.

What are the means by which this great annual loss of life and money caused by tuberculosis may be reduced?

Time will not permit discussion of this question, but we may generalize, and say we must recognize the disease early and institute personal precautions early, we must enact and enforce notification of cases, prohibit indiscriminate expectoration, disinfect the premises occupied by infective cases, prevent overcrowding, forbid the building of houses which contain windowless rooms (and get rid of the hundreds of windowless rooms now existing even in Toronto) secure better ventilation of our workshops, schools, offices, public buildings, and private residences, cleaner streets, our food kept from street dust and other impurities, purer food, especially milk, meat, butter.

We need more general education in hygiene, our architects should build us houses, every room of which can be readily ventilated, and every householder should know how to ventilate his house properly. We must establish higher health ideals, both public and personal.

And among our specific measures, we need more sanatoriums for our curable cases, hospitals for those more advanced, dispensaries with physicians and trained nurses attached for those who need advice and those who must remain at work.

In Canada we need a Bureau of Public Health. The medical profession have been advocating this for some time. There are many departments of much less importance under a minister, yet we find the health agencies of the Federal Government scattered in the various departments. The administration of our pure food laws (the Adulteration Act) is under the Department of Inland Revenue, controlling the Dominion Analyst and his laboratories. The Minister of the Interior looks after medical inspection of immigrants. The Department of Indian Affairs, under the same Minister, looks after the health of our Indians. The Director of Public Health is under the Minister of Agriculture, as is also the Veterinary Director-General. Let us have these scattered agencies under one responsible minister who shall develope public health legislation. We have a Federal Bureau for the control of disease in animals. Why should we not also have one for man? We are told our government is handicapped by the provisions of the British North American Act which provides that all questions of public health, hospitals, asylums, etc., are provincial matters,—yet *by consent of the provinces* the health of animals is delegated to the Federal Government. Surely if they so desired, our law makers could also arrange to delegate the health of Canadian citizens to the Federal Government as a question to be dealt with there, or at least in conjunction with the provinces.

I have been unable to get the figures for recent years, but it is a fact that ten years ago we were spending $25,000 yearly to combat tuberculosis in animals—and $1,000 for the prevention of tuberculosis in man. Last year with 100,000 Indians $2,500 was spent on the prevention of tuberculosis; for 70 times as many whites, $5,000 was voted the Canadian Association for Prevention of Tuberculosis to carry on a campaign—but the Indians are wards of a paternal government. Ten years ago to get in 65,000 immigrants we spent $450,000. Last year to *save* 13,000 of our best citizens we spent $5,000. Ought we not to do something to lessen this yearly emigration?

The provinces are awakening to the importance of the problem before us, but so far it is a case of "many are called—but few get up." Nova Scotia with a population of half a

million has a provincial sanatorium of 25 beds, built to be practical illustration of the out-of-door treatment. New Brunswick is about to be awakened. Quebec has given two grants of land, has an excellent Public Health Act (were its provisions enforced) and has now a Royal Commission on Tuberculosis, composed of the best men available, which hopes soon to bring in recommendations as to the best method of dealing with the problem in Quebec. Manitoba opens this year a sanatorium for 60 patients. Saskatchewan and Alberta care for tuberculosis patients in special wards, pavillions or tents on hospital grounds. British Columbia has a sanatorium near Kamloops.

Ontario has made more progress than the sister provinces. Our government is encouraging the erection of local sanatoriums with a grant of $4,000 to each municipal sanatorium or hospital when erected, and a grant of $3.00 per week for each patient treated. In 5 years $100,000 has been paid out in grants. And last year 839 patients received the statutory grant of $3.00 per week. Eight sanatoriums have received this assistance. Yet with our progress, our legislature has twice refused to consider a bill for notification which is one of the first steps in eradication of the disease.

The development of the sanatorium movement in Canada has been interesting to watch. The first step was undertaken by the present President of Toronto's Board of Trade. Aided by the late Hart A. Massey, Mr. Gage formed the National Sanitarium Association, and in 1897 the Muskoka Cottage Sanatorium was opened with about 35 beds. To-day there are 75 beds. In 1902 the same association opened the Muskoka Free Hospital for Consumptives with 40 beds, and this accommodation has been increased to 140.

To make provision for the tuberculous poor of Toronto, in the advanced stages of the disease, Mr. Gage undertook the building of the Toronto Free Hospital for Consumptives. With the assistance of the late H. C. Hammond and others this institution has been extended until it now cares for 100 patients.

The next local sanatorium movement began in Hamilton, when the Hamilton Health Association built its sanatorium on its farm on the mountain, opened in 1906. To-day this association has in addition, a hospital for advanced cases, a dispensary for the examination of applicants and treatment of those at work, and maintains a visiting nurse.

During the past three years notable progress has been made. There has been opened in rapid succession, the King Edward Sanatorium at Weston, the St. Catharines Sanatorium for the City of St. Catharines, the Lady Grey Hospital, at Ottawa, for advanced cases, the Alexandra Sanatorium near London, for patients from the City of London and County of Middlesex, and the Minnewaska, a private Sanatorium, at Gravenhurst. In these various institutions there are now 550 beds. This looks well, yet it means accommodation for only 5 per cent. of our consumptives in Ontario. Kingston proposes to build the Sir Oliver Mowat Memorial Hospital, Windsor, Brantford, Berlin and other municipalities have places under discussion.

The first dispensary in Canada was that of the Montreal League, opened in 1904, which has now become the Royal Edward Institute, with splendidly equipped quarters, the gift of Col. Jeffrey H. Burland, and his sisters. This institute was recently opened by His Majesty, by direct cable connection. Toronto has two special tuberculosis dispensaries. Hamilton, Ottawa, Winnipeg, St. John, Charlottetown, each have one. London will open one this year. Visiting nurses are attached to each of these dispensaries, and others are maintained by various associations.

There is a central organization, the Canadian Association for Prevention of Tuberculosis, Ottawa, which is stimulating local endeavor. This association maintains two active secretaries, one of whom as travelling lecturer and organizer is visiting this year every province in the Dominion. All our larger cities, and many towns are taking up the question locally, and a healthy interest is being aroused. The Toronto League for the Prevention of Tuberculosis has its office in the City Hall, where any communications on the subject will be attended to. This league is particularly anxious to learn of cases amongst the poor, and of homes where proper precautions are not being observed. An active educational campaign is being planned.

I have found it difficult within the limits of the luncheon hour, to give an adequate idea of Canada's tuberculosis problem, and what is being done to meet it. I hope, however, that I have been able to stimulate some interest, even enquiry. Canada has made a beginning. The Canadian Clubs are interested. Local societies are rapidly increasing. If our people can be aroused, our governments, federal, provincial, and municipal, induced each to do its share, we shall soon see a marked decrease in the enormous death rate from this disease, which

causes annually such great economic and industrial losses, and is the source of untold misery and suffering through the prolonged invalidity and illness due to it.

If we proceed now to make practical application of our knowledge of the means of prevention, we will soon reach the goal for this disease which the immortal Pastor has claimed for others. "It is within the power of man to cause all germ-borne diseases to disappear from the earth."