

Special Article

SYPHILIS AS A CANADIAN PROBLEM

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Available sources indicate that approximately 5 per cent of Canada's population have syphilis. This estimation may be roughly confirmed by a study of immigration, by isolated population samplings in the form of venereal disease surveys, and by elaboration of provincial statistics of total patients under treatment. The factors influencing the present prevalence of the disease include the original focus in French Canada after 1500, the gradual endemic spread until the Quebec epidemic of 1773, and the further spread by migration throughout Canada. Additional minor foci have developed in the large seaports on the west and east coasts, in

Montreal and Quebec City, and to a lesser degree in the Great Lakes area. To these foci must be added the large amount of latent and late syphilis brought to Canada by immigration.

In Chart 1 the immigration since 1900 is shown. During this time some four million people entered Canada, of whom over 70 per cent were from Great Britain and the United States, and the remainder largely from Germany, Scandinavia, the Slavic European States, and a minor influx on the west coast from China and Japan. The number refused admission because of syphilis would include only obvious early and late manifestations (10 to 15 per cent), since physical examinations were begun only after 1930, and the Wassermann test has never become a routine. Judging by the total immigration and by the prevalence of syphilis in immigration types in the different countries during the respective time-periods, the total influx of people with syphilis probably approximates 250,000. If this is added to the gradual increase from the original focus before 1900, from 4 to 6 per cent of the total population may be assumed to have syphilis.

In Table I is shown a comparison of four venereal disease surveys conducted in Canada.<sup>1</sup> The prevalence rates per thousand vary from 3.17 to 6.34. These rates compare favourably with similar surveys made in cities of comparable size in the United States, in which localities the incidence of syphilis had been estimated at 10 per cent, and with prevalence rates from 6 to 9 per thousand. The incidence of syphilis

CHARTS 1, 2, 3 AND 4

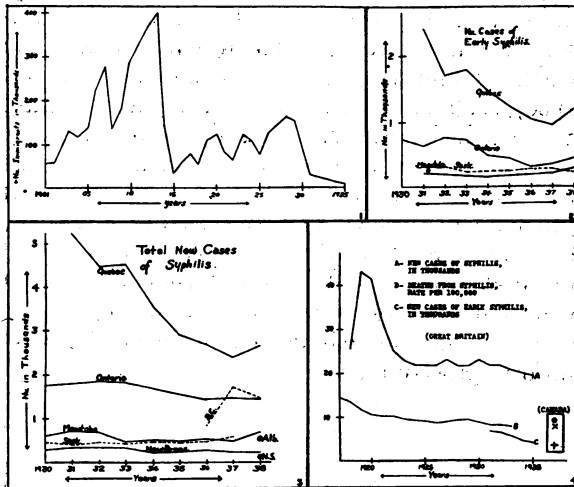


TABLE I.

COMPARISON OF VENEREAL DISEASE SURVEYS IN CANADA

	Year	Total cases	Treated by physicians	Treated by clinics	Males	Females	Early syphilis	Prevalence rate per 1,000
Province of Manitoba	1931	838	525 (62%)	313 (38%)	570	268	352 (42%)	3.17*
Toronto.....	1930	2,968	1,286 (44%)	1,682 (56%)	2,075	1,564	908 (30%)	4.9
Toronto.....	1937	3,639	978 (27%)	2,661 (73%)	2,075	1,564	373 (10%)	5.6
Ottawa.....	1937	1,033	254 (25%)	779 (75%)	477	556	185 (17%)	6.34

\*Refers to Winnipeg—76 per cent of all patients were from Winnipeg. One day surveys will detect from 1/3 to 1/2 of the number of cases found by a Wassermann dragnet. Wassermann dragnet surveys must be multiplied by from 5 to 10 to secure the actual incidence of syphilis in the population. These prevalence rates compare to rates of 6 to 8 in representative American cities, in which the incidence of syphilis in the population has been computed at from 9 to 10 per cent.

TABLE II.  
REPORTED INCIDENCE OF SYPHILIS IN CANADA

Province	Population 1935	Total cases reported	Reported by private physicians	Percentage population under treatment	Treatments		Number public health clinics	Deaths noted
					Total number	Average number (clinics)		
Quebec . . . . .	3,062,000	5,800*	479 (indigents)	0.26	114,480	15?	None†	339
Ontario . . . . .	3,596,000	8,751	2,415	0.24	(clinics) 79,091 (private) 78,550	12?	19	283
British Columbia . . . . .	735,000	2,180	1,050	0.29	(clinics) 41,180 (private) 30,000	31?	8	118
Alberta . . . . .	780,000	1,079	196	0.14	18,710	17	4	49
New Brunswick . . . . .	429,000	1,004	(?) 480 positive Wassermanns	0.23	17,527	17	11‡	18
Manitoba . . . . .	739,000	713?	167	0.09	16,719	22	1	47
Saskatchewan . . . . .	978,000	1,115	187	0.11	13,610	11	5	45
Nova Scotia . . . . .	527,000	250?	12	0.05	7,925	31?	5	36
Prince Edward Island	80,000	55?	....	0.06	1,115	20	2	8

\*Represents estimate from total visits. Actual total probably about 8,000.

†Public clinics are run by municipal and private hospitals, with anti-syphilitic drugs supplied by the Dominion and Provincial Governments.

‡Includes physicians, subsidized to give free treatments in small centres.

is probably somewhat smaller in the Canadian cities, varying between 5 and 6 per cent.

In Table II the reported incidence of syphilis in Canada is shown.<sup>1</sup> These figures are below the actual totals, since only in Ontario and in British Columbia are private cases reported to any extent. The percentage of the population under treatment is nearer 0.5 than 0.25. The total cases under treatment, according to authoritative surveys in the United States,<sup>2</sup> must be multiplied by ten to obtain the actual incidence of syphilis. Thus, one arrives at a total of 5 per cent of the population of Canada infected with syphilis. The table shows that the average number of treatments given in a year's time are relatively few.

Most provinces have an adequate number of public health clinics. There is only one public health venereal disease clinic in Manitoba, while in the Province of Quebec there are none. In Quebec indigent patients are treated in municipal and private institutions. The expense of treatments is largely borne by these institutions, only the anti-syphilitic drugs being furnished by the Provincial and Dominion Governments.<sup>12</sup>

The total reported deaths from syphilis in the year 1937 were 943, or 8.5 per 100,000 population; for cardiovascular deaths the rate was 238, for cancer 107, pneumonia 69, tuberculosis 58, and nephritis 58.<sup>3</sup> Syphilis would seem to be relatively unimportant as a cause of death. However, when further estimates are made of hidden deaths from syphilis, a much higher figure is determined. During 1937 there were approximately 26,052 deaths from cardiovascular disease. Assuming that only 5 per cent of these were due to syphilis there would be 1,326 deaths from cardiovascular syphilis alone. On the basis of a 5 per cent incidence of syphilis in the general population of Canada, from scattered statistics on sectional groups and from comparisons with studies made on a large series of cases in Great Britain and the United States 7 per cent of stillbirths (434)<sup>3, 4</sup> may be caused by syphilis; 290 deaths from syphilis in the first year of life were reported,<sup>4</sup> and 740 additional deaths in infancy due to syphilis. Here are 1,454 additional deaths, most of which are not recorded. Syphilis of the central nervous system causes many hidden deaths yearly. Instead

of 942 deaths during 1937 at least 3,000 deaths may be due to syphilis. The actual figure, according to Fleming,<sup>5</sup> is probably much larger. The death rate for syphilis, therefore, must approach that for tuberculosis in Canada.

In Chart 2 is shown the number of cases of early syphilis,\* and in Chart 3, the total new cases of syphilis.<sup>6</sup> Unfortunately, the figures were not available from certain provinces. There were 2,500 reported cases of early syphilis, while the total number of new cases was about eight thousand for all provinces in 1937, or 1938 when available. The graphs represent chiefly clinic patients. The marked increase in British Columbia during 1937 is due to the active antivenereal campaign rather than to an actual increase in the incidence of the disease. The largest number of cases in each group occurred in Quebec, although syphilis is rarely reported by private physicians. The comparative numbers of cases of early syphilis were, New Brunswick 4.3 per 10,000 population, Manitoba 3.9, Quebec 3.5, Saskatchewan 2.8, Alberta 1.6, Ontario and Nova Scotia 1.1. Figures could not be obtained from Prince Edward Island and British Columbia.

There is abundant proof that the reported incidence of syphilis in the different provinces is below the actual total. For example, in 1937 92 new cases of syphilis were reported to the provincial department of public health from the Royal Victoria Hospital. A special investigation revealed 342 cases actually found, and serves to indicate the amount of existent unreported syphilis. At the General Hospital, Saint John, N.B., about 7 per cent of the ward patients have positive blood Wassermann reactions, indicating a fairly high prevalence for that section.<sup>7</sup>

Syphilis was probably increasing in Canada until about 1920, since there was no systematic plan to control the disease until that time. The amount of early infective syphilis probably increased until 1920, became stationary until 1930, with a moderate decrease to date.

Further confirmation of the decrease of recent syphilis may be found in studying the results of Wassermann tests on the wards of the Toronto General Hospital. From 10 per cent in 1916

there was a gradual reduction to less than 2 per cent in 1935. This decrease represents recent rather than old syphilis and may be confirmed by prevalence surveys conducted in Toronto in 1930 and 1937.<sup>1</sup> The prevalence rate in 1937 was actually higher than in 1930, indicating that the problem was largely that of latent and late syphilis. The incidence of early syphilis is apparently diminishing in the Province of Quebec, but late syphilis little, if any. A previous survey by the author on the incidence of cardiovascular syphilis in necropsy material at the Royal Victoria Hospital from 1900 to 1934<sup>8</sup> showed no reduction since 1900. A further study of the incidence of general paralysis in hospitals for the insane showed that in two large mental institutions in the Province of Quebec the incidence of neurosyphilis was approximately 6 per cent. The corresponding figure for Alberta was 3.6 in 1928, but this included asymptomatic neurosyphilis. In other provinces in 1928 the incidence varied from 0.23 to 1.8 per cent.<sup>9</sup>

Chart 4 shows the number of new cases of syphilis, the total number of cases of early syphilis, and the deaths from the disease, in Great Britain.<sup>10</sup> In the right lower corner are the corresponding figures for Canada. The circle with the enclosed period indicates the reported deaths per hundred thousand in Canada. While this is far below the actual deaths, it is higher than that in Great Britain, irrespective of the marked difference in population. The upper cross represents the cases first seen in 1937 in Canada and the lower cross the cases of early syphilis in thousands. These are both proportionately much higher than the corresponding figures in Great Britain.

#### COSTS OF TREATMENT OF SYPHILIS IN CANADA

In Table III the comparative costs of syphilis to the different provinces is shown.<sup>6</sup> The total Dominion and Provincial cost was approximately \$350,000 during 1938. Of this amount, \$50,000 was contributed by the Dominion and the remainder by the provinces. The actual amount spent is somewhat higher than this figure, since this does not include the cost of laboratories, which may be \$100,000 or more, and the cost of treatment of private patients. Since the problem of syphilis in Canada is largely an urban one, it seemed desirable to correlate the amount of money spent by the provinces in

\* Both primary and secondary cases were considered as early syphilis although a small proportion of the latter, including (early) mucocutaneous, neuro-relapse, and visceral relapse, may occur after the first year.

TABLE III.  
COST OF TREATMENT OF SYPHILIS IN CANADA

<i>Province</i>	<i>Year</i>	<i>Population 1935</i>	<i>Urban population 1935</i>	<i>Cost to province without laboratory</i>	<i>Cost to Dominion 1938</i>	<i>Amount per 1,000 urban population by province</i>	<i>Amount yearly 1919-30</i>
British Columbia.....	1937	735,000	395,000	\$82,344	\$ 3,131	\$116	\$110
Prince Edward Island.....	1938	89,000	20,000	2,041	278	115	23
New Brunswick.....	1938	429,000	129,000	10,255	2,337	97	91
Saskatchewan.....	1937	978,000	291,000	23,620	2,991	90	114
Manitoba.....	1938	739,000	315,000	24,557	2,695	86	66
Alberta.....	1937	780,000	279,000	18,000	3,952	78	90
Nova Scotia.....	1938	527,000	232,000	14,521	1,886	70	110
Ontario.....	1938	3,596,000	2,095,000	102,000	16,193	42	50
Quebec.....	1938	3,062,000	1,813,000	49,000	16,533	27	51
Total costs.....				\$326,338	\$50,000		

Cost of treatment of private patients ?

relation to their total urban population. These figures compare favourably with the average amount spent yearly during the intensive campaign conducted by the Dominion and Provincial governments from 1919 to 1930,<sup>11</sup> with the exception of the Provinces of Quebec, Nova Scotia, and to a lesser degree Alberta and Saskatchewan. The total amount of approximately \$450,000 for control measures spent by the Dominion and Provincial governments is actually a very small sum in comparison with the cost of syphilis. In a survey conducted by the author,<sup>12</sup> the cost of syphilis for the city of Montreal alone was over \$300,000 for one year. This cost was largely due to hospitalization of patients with late syphilis.

#### COMMENT

Incidence surveys would be of value for a more accurate determination of the actual amount of syphilis in various parts of Canada, especially in Quebec and the Maritime Provinces, in Manitoba and in Saskatchewan. More adequate legislation for the control of syphilis is needed in Quebec, as this province has no law\* which compels a patient to take treatment. This law has been enacted in the remaining provinces for many years, and in this and in other countries has proved itself to be of great value in the control of relapsing patients. Further

\* To date of writing.

legislation regarding routine pre-marital examinations and serological testing, and routine serological testing of every pregnant woman, are to be desired in all provinces. There is needed a more adequate notification of cases by private physicians, and this should be made obligatory and drugs furnished free of cost, with the possible exception of those patients able to pay standard private fees. Serological testing should become a routine procedure, not only by general hospitals but also by insurance companies and in industry. Organized public health clinics are needed in the Province of Quebec, with trained personnel, consultant epidemiological service, and an adequate social service organization.

In but three provinces are there adequate educational measures, either lay or professional. The public must be aware of the syphilis problem and must submit to, and even ask, for routine examinations by their own physician or by the neighbourhood clinic. Public education is a duty of the Department of Public Health, or of a sister organization, and should be under the direction of a trained educator with adequate assistants. Only in British Columbia, Alberta, Ontario, and to some extent in Manitoba, is there any systematized attempt to educate the public. Education of the medical profession could also be greatly improved. In only three of the nine Canadian universities is there a co-ordinated, adequate course of instruction to undergradu-

ates in syphilis. This is partly due to the unwieldy system of trying to teach and to treat syphilis in several departments. The status of graduate education in syphilis in Canada is even more unfavourable. No planned courses are available for physicians, and in only a few of the larger clinics can a man of consultant calibre be trained. There is, therefore, a shortage of available men, even in the provinces where the organization of clinics is excellent.

#### SUMMARY

1. The incidence of early syphilis has been reduced.
2. The total number of new cases coming under treatment is diminishing but little.
3. Many treated cases are developing late complications because of the low total number of treatments, and the incidence of late debilitating syphilis is decreasing but slowly.
4. The deaths from syphilis are comparable to those from tuberculosis.
5. Existing needs are summarized.

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## Men and Books

### THEODORE KERCKRING AND HIS "SPICILEGIUM ANATOMICUM"

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Theodore Kerckring was a notable man in a notable age. During his lifetime many important contributions were made to scientific progress. In England during this period we meet with such names as Boyle, Willis, Lower, Needham, Glisson, Grew, Mayow, Wren and Hooke. There the researches were largely concerned with physics, physiology, mathematics, geometry and astronomy, and only to a minor extent with anatomy. On the continent of Europe, however, study was directed mainly to anatomy and histology, and we owe to the savants there many important discoveries in connection with the human body. Among Kerckring's eminent contemporaries may be mentioned Thomas Bartholinus, who claimed priority for the discovery of the intestinal lymphatics and their connection with the thoracic duct (also described by Rudbeck); Jean Pecquet, who discovered the thoracic duct and the receptaculum chyli; George Wirsung, who described the pancreatic duct; Johann Conrad Brunner, of Brunner's glands fame; Regner de Graaf, who

gave the first correct account of the ovaries and Graafian follicles; Athanasius Kircher, microscopist; Marcello Malpighi, the "Father of Histology"; remembered for his work on the finer structure of the kidney, spleen and capillaries of the lung; Johann Conrad Peyer, who discovered the lymphatic "patches" in the intestine called after him, and so closely associated with typhoid fever; Francesco Redi, who powerfully attacked the then current doctrine of spontaneous generation; Frederik Ruysch, the anatomist, who advanced the art of preparing museum specimens; Niels Stenson, or Steno, who discovered the parotid duct; Jan Swammerdam, who made the important observation, of medico-legal import, that an infant's lungs after respiration has taken place will float in water; and, perhaps as great as any, Anthonj van Leeuwenhoek, the microscopist. An august list, and Kerckring has a fair claim to be included in the goodly company.

Theodore Kerckring was born at Hamburg, some say at Amsterdam, in 1640. The story of his life is not known in great detail but enough has been gathered to reveal the character and accomplishments of the man. He was a scion of a noble family of Lübeck. At the age of eighteen he made rapid progress in Latin at Amsterdam under the renowned Spinoza and