

A STATISTICAL STUDY

OF

TUBERCULOSIS

IN

NOVA SCOTIA

In undertaking an examination of the extent to which Tuberculosis has been a source of loss to the Province some comments on the Vital Statistics of the Province are in order.

1. During the first years of the period considered it is reasonable to assume that the actual rate from tuberculosis was higher than that represented.

A. Diagnosis was probably not so accurate.

B. A large number of deaths were inaccurately reported and therefore had to be included among those "Unspecified or Ill-defined."

2. A fair degree of reliance is to be placed on the population figures of at least the census years. So far as the intercensal years are concerned, the population from which the rates are obtained are estimates which, however, may be considered to be fairly accurate.

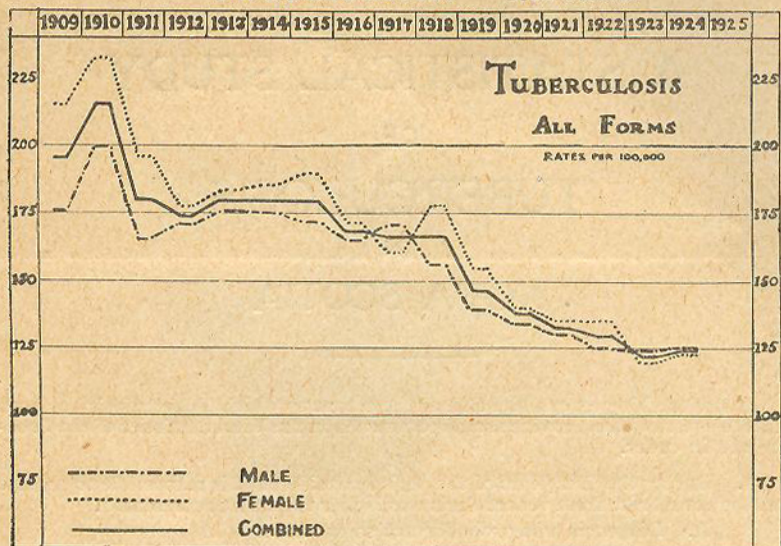
3. There have been during the period two changes in the official nomenclature of diseases used by the Statistical Department. These may have introduced some errors.

4. The division of tuberculosis deaths into those due to Pulmonary Tuberculosis and those due to other forms of Tuberculosis is not entirely satisfactory. For instance, if the two peaks occurring in the charts showing non-pulmonary tuberculosis for the years 1914 and 1917 are examined it will be found that in the first of the years in question thirty deaths from Laryngeal Tuberculosis are included among those of Tuberculosis Other Forms though the average number reported is about six. In the second instance seventy-eight cases of Miliary Tuberculosis were reported, the average being from five to ten.

Improvement.

It will be seen that there has been quite a marked diminution in the number of deaths and a lowering of the rate. In actual numbers, deaths have dropped from nine hundred or more a year to about six hundred and fifty. The improvement during the time studied has been quite regular and sustained so far as tuberculosis, all forms, is concerned. If we classify all tuberculosis deaths as either pulmonary or non-pulmonary we see, however, that the improvement which has taken place is limited almost wholly to the pulmonary form of the disease, little improvement having occurred in respect of non-pulmonary tuberculosis. This is shown best on charts Nos. 13 and 14.

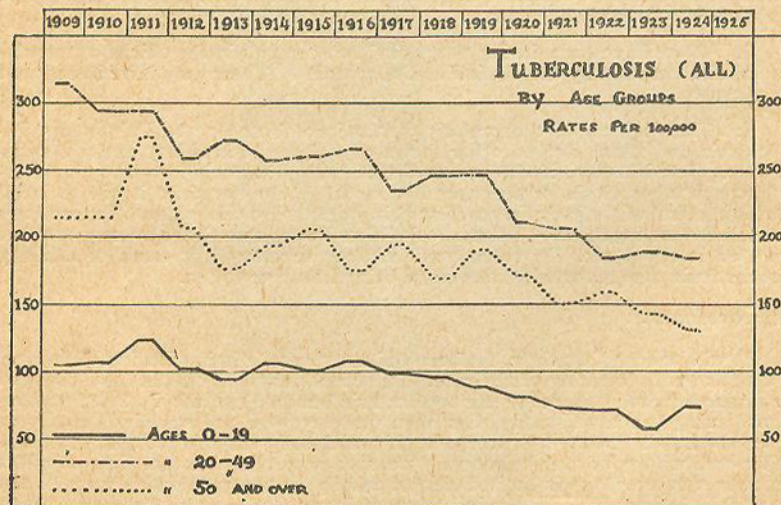
TUBERCULOSIS. ALL FORMS.



(Chart I)

Age Groups.

In what age groups has the greatest improvement occurred? In the chart, which shows the alterations which have taken place in respect of the three age groups, 0-19, 20-49, and 50 and over and for all forms of Tuberculosis, it will be

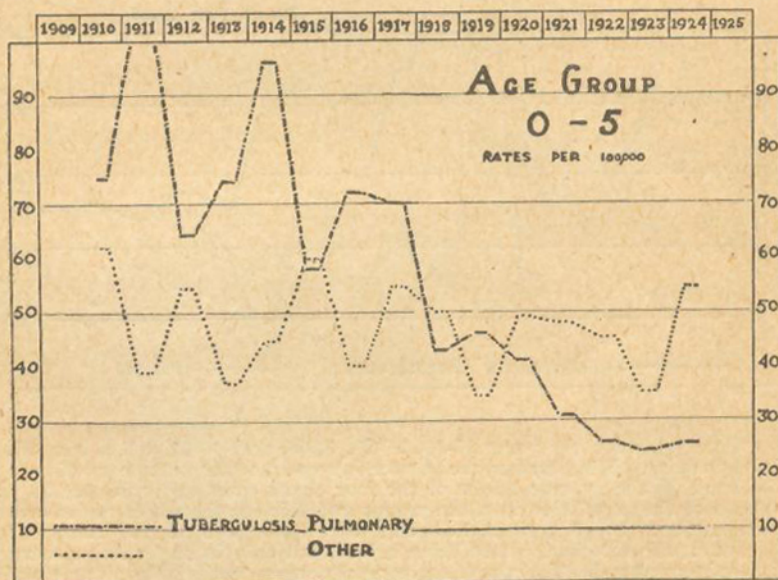


(Chart II.)

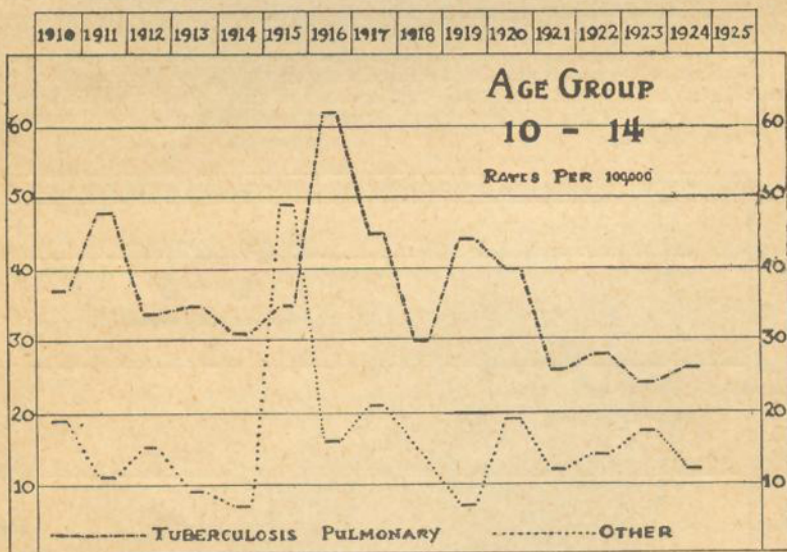
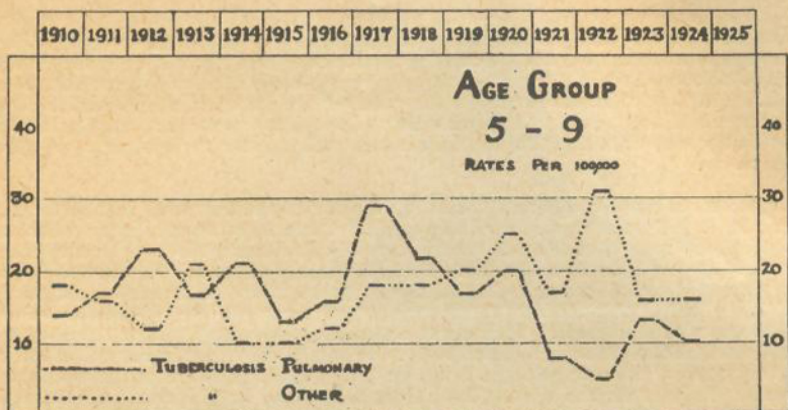
seen that in the first of these age groups there has not been so marked improvement as in the others. According to this chart the central age group (which might be considered the Sanatorium age group) has contributed most to the result. The lack of improvement in the younger age group must be considered to be connected to a great extent with the lack of improvement in respect of the non-pulmonary forms of Tuberculosis which will appear more clearly on other charts.

Considering the different forms of disease separately and in shorter age periods, it will be seen that for the years 0-5 there have been marked changes, especially in respect of the pulmonary form of the disease, the drop in rate being from 80 per 100,000 to nearly 20. Probably better diagnosis has something to do with this, but a better explanation may be improved economic conditions in the home and education in preventive measures. Infants and children especially show the result of these. This chart contrasts most sharply with those of the next two periods, those of 5-9 and 10-14. It will be seen that in respect of either of the forms of the disease there has been little change in either of the two latter charts. In that for the age 5-9, both lines keep along to all intents parallel with practically no improvement shown at the end of the period. Almost the same can be said of the next age, that of 10-14, though here there appears to be some change in respect of the pulmonary form of the disease.

No stronger argument is needed than these two charts for the strengthening of the work being undertaken in the Province towards the establishment of preventoriums or institutions adapted to the needs of children for whom the Sanatorium doors are closed and who may then become infected to become victims in later age periods.



(Chart III.)

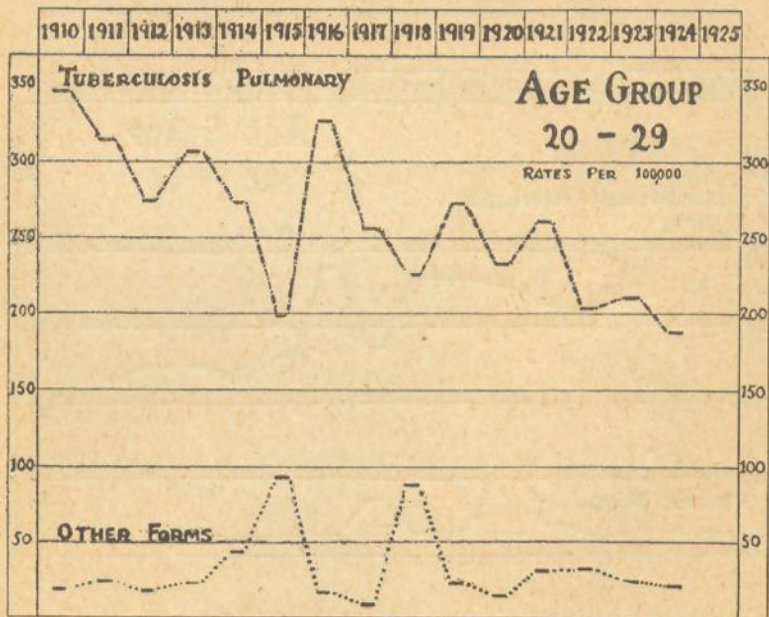
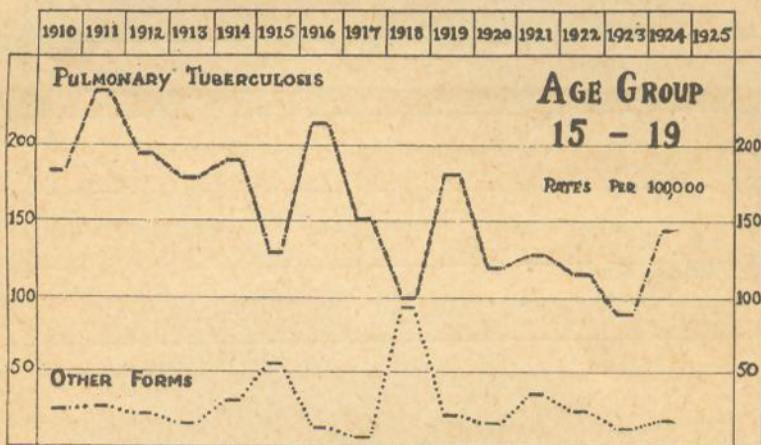


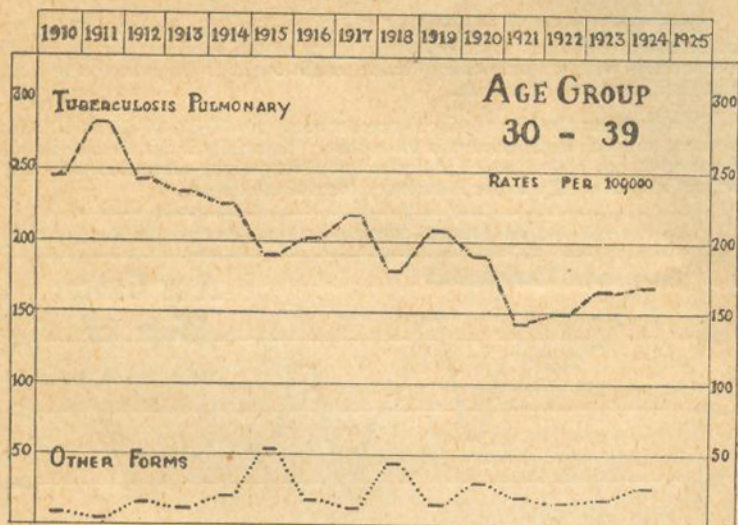
(Charts IV and V)

The charts for the years 15-19, 20-29, 30-39 and 40-49, tell a somewhat different story. What strikes one at once in respect of the pulmonary disease is the fact that the average height of the four charts must approximate 225 per 100,000 of the population in those groups and this for the whole period under consideration. In all periods, however, there have been marked changes for the better, the rate in the first being halved, but only in so far as pulmonary disease is concerned. The rate of the non-pulmonary deaths keeps along practically level, or in some, notably the 20-29 and 30-39 groups, actually appears to be rising.

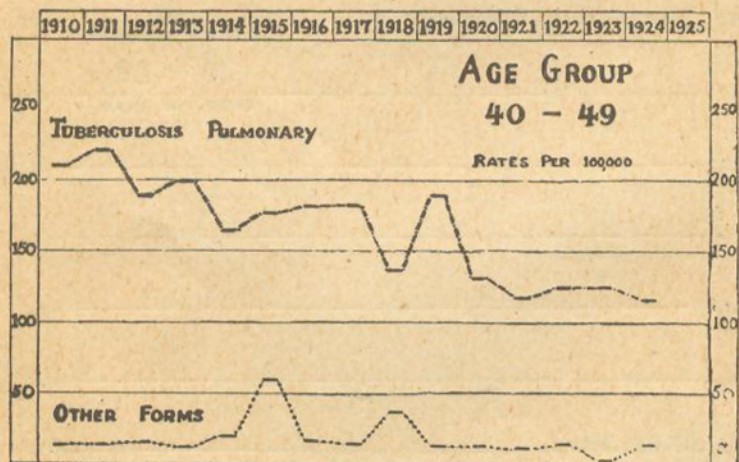
These are it must be remembered the Sanatorium age groups. There can not be much doubt but that for at least some of the improvement observable in connection with the pulmonary disease, credit ought to be given to the treatment facilities of the Province.

In the charts showing the incidence between ages 50-59, 60-69, and 70 and over, not so much improvement is to be seen, Especially is this the case in that of the 60-69 age period, which indicates but a very slight alteration and that confined almost wholly to the Pulmonary form of the disease.

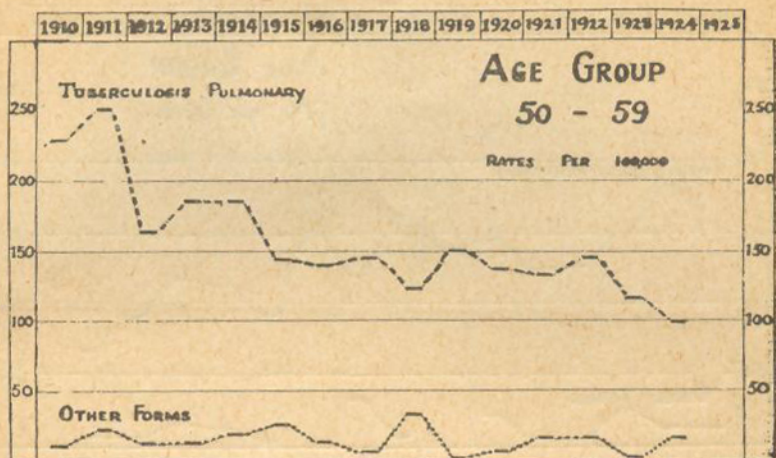




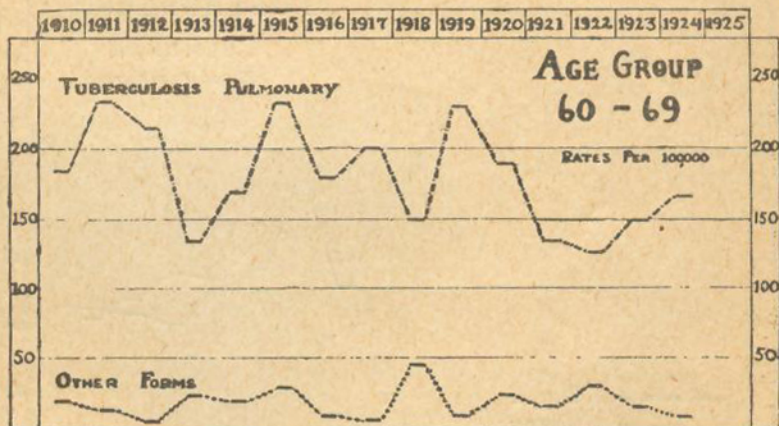
(Chart VIII)



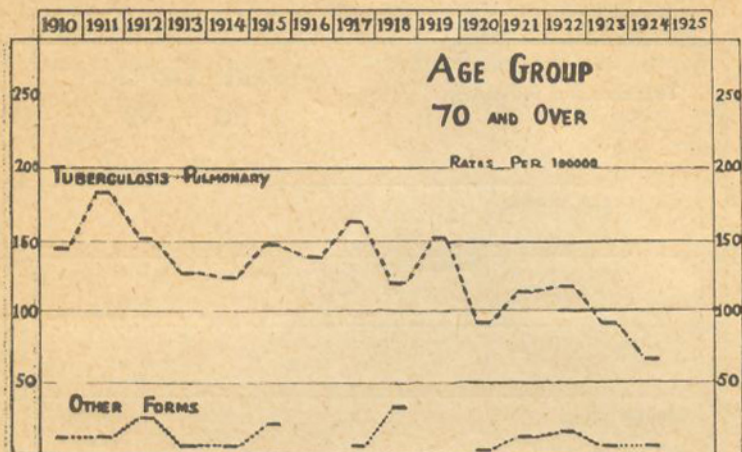
(Chart IX.)



(Chart X)



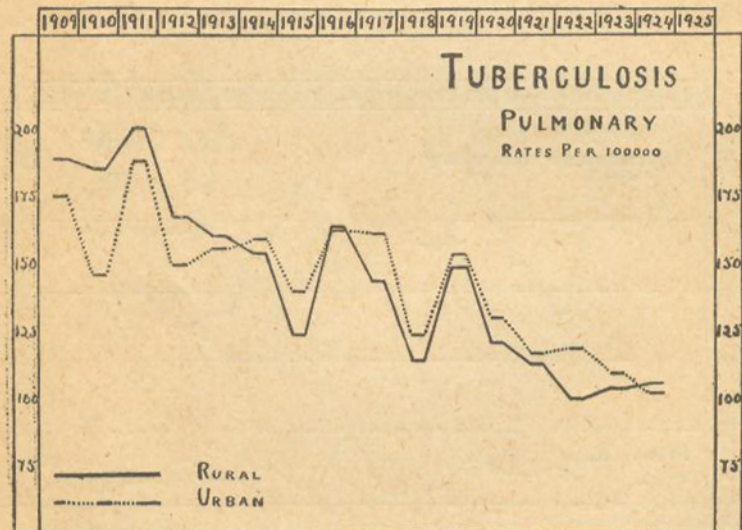
(Chart XI.)



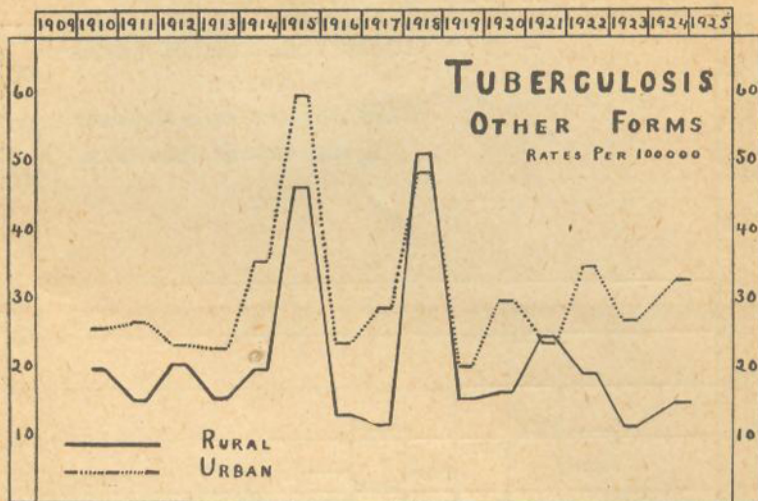
(Chart XII.)

Rural and Urban Conditions.

It will be seen that a marked change has occurred in respect of Pulmonary Tuberculosis. Consistently higher than the urban deaths in the first half of the period, rural deaths during the second period have dropped into second position. This is not seen, however, in respect of non-pulmonary disease, where the rural rate is the higher throughout the whole period. The urban rate appears slightly higher at the end of the period than it was at the first.



(Chart XIII)



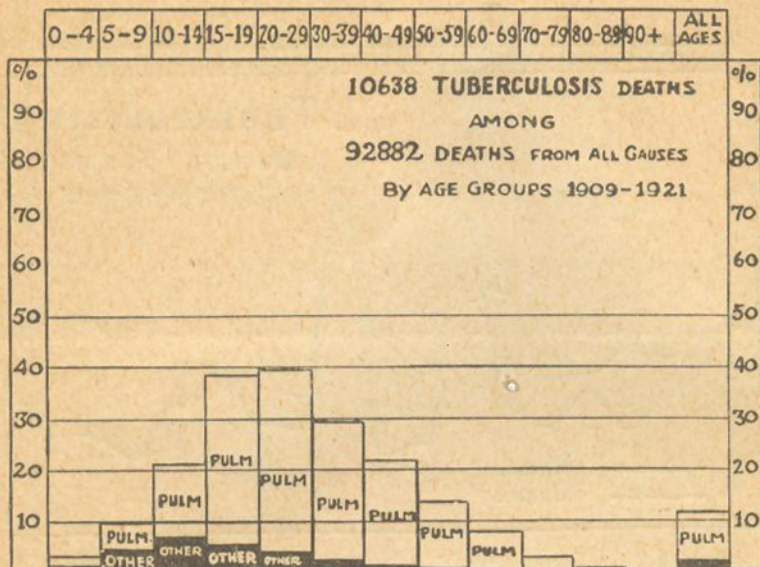
(Chart XIV.)

European writers have advanced an explanation for this phenomenon which may be here applicable. Our towns are growing slowly at the expense of our country population and largely getting the accessions to their population from the rural districts. The incoming element may be "unsalted" that is, not sufficiently tubercularized to be able to resist the city mass infections to which industrialization and housing conditions lend themselves. These environmental conditions are thus able to offset even the advantage of concentrated health work, comparatively more easy to carry out in towns than in rural communities.

Tuberculosis Deaths and All Deaths.

During the period between 1909 and 1921 there were in the Province 92,882 deaths from all causes of which at least 10,638 were caused by Tuberculosis. The accompanying graph indicates the varying percentage both of pulmonary and non-pulmonary forms of the disease, in the different age groups. It will be seen that the ages of greatest loss (not necessarily the ages of greatest infection) are, for non-pulmonary cases, between 10 and 14, and for pulmonary cases between 20 and 29, the latter being followed closely by the age groups 15-19. The percentage as a whole will be seen to be about 11%. That means that during the whole period of every 100 deaths occurring in the Province, about 11 were those of persons dying from Tuberculosis. This of itself indicates how severe our loss has been. When, however, we see that in what must be for us the most valuable age groups, namely, those of young adult life, the percentage is as high as 40% or in other words of every 100 persons dying 40 have died from Tuberculosis we appreciate more fully what it has meant to us.

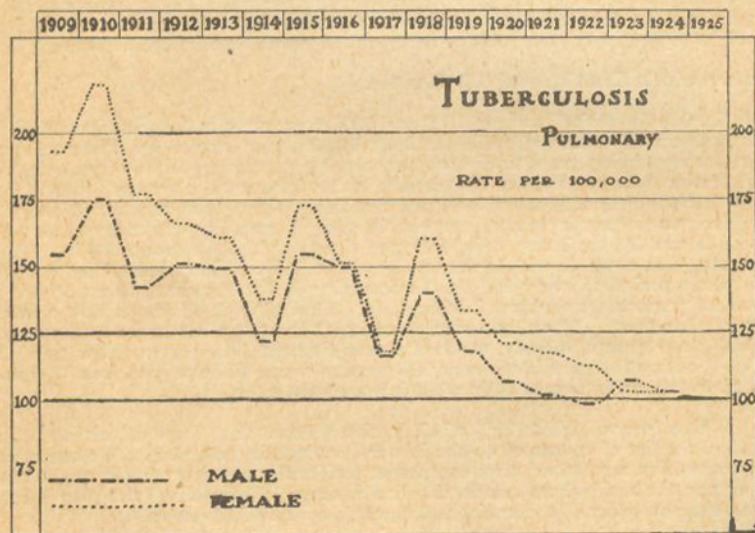
With a loss so high as 11% of all deaths, the fact that Tuberculosis is at the head of the list of causes of deaths in our Province is explicable. We ought in the connection remember that competent authorities consider that it ought not be among the ten highest causes, if full advantage is taken of all the preventive measures now placed at our disposal through scientific advances.

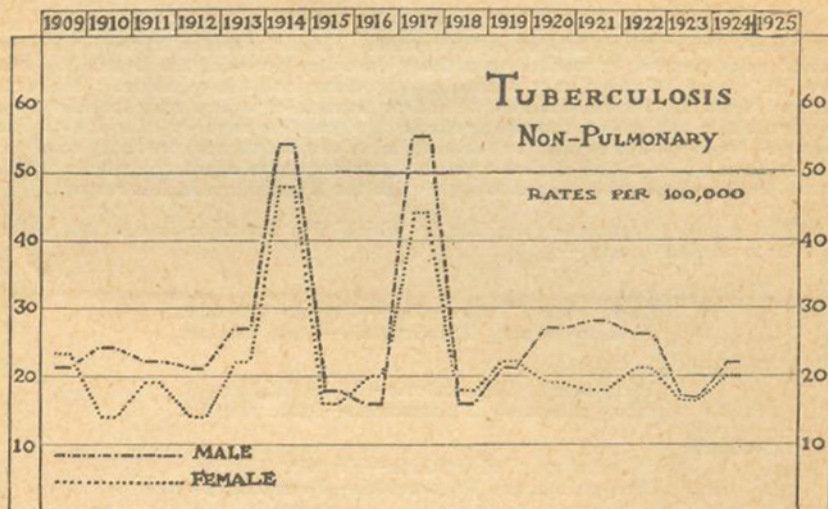


Sex.

(Chart XV.)

If an examination is made of the losses from Pulmonary Tuberculosis according to sex, it will be seen that there has been a well marked difference in favor of the males, who had quite consistently the lower rate. The reversal of the positions for the year 1923 can not be regarded as significant.





(Chart XVII.)

This can not be considered the usual condition, or at least it is not seen in the figures of all countries. In England and Wales, for instance, the male rate for many years has exceeded that of the females. In the Netherlands, however, the reverse is the case, their experience agreeing in this respect with ours. In Sweden for many years the male rate was the greater, but latterly a change has been observed, the female rate now being the higher. So far as this country (Sweden) is concerned, there has been a tendency to consider the industrialization of the nation as a causative factor, there being now a greater number of female operatives in the factories. That may be the case so far as Sweden is concerned, but it can not be advanced in explanation of our experience. There undoubtedly has not been a greater demand of recent years for our population to provide female operatives, and our population when emigrating to other countries do not as a rule emigrate to become operatives as, for instance, French Canadians do to the New England cotton or shoe towns.

It is rather questionable if in this Province the unusually high female rate is not connected with emigration. It must be remembered that emigration is selective, the fittest of our young people going away. Our emigrating males may be more fit than the females. When moving to communities with less tuberculosis infection than that to which they were at home accustomed, the prospects of contracting the disease is to that extent minimized. Or, if males are earliest affected by the emigration urge, they are to that extent less likely to become victims. Furthermore, the lack of accommodation for advanced cases which the Province has always experienced is apt to result in those most apt in the home to be asked to assume the duties of nursing, with perhaps little preparation therefor, becoming most seriously infected, and thus the females may suffer to a degree much greater than those whose contact with the case in the home is not so intimate.

In respect to other forms of Tuberculosis, we see the conditions exactly reversed, so far as sex incidence is concerned. Here the males have the higher rate to a degree quite as marked as in the pulmonary forms of the disease had the females. Here infection may not so greatly enter into the question. The well marked tendency for tuberculosis to follow trauma or injury may explain why the sex most subject to trauma presents the greatest number of cases of the disease. This applies at least to tuberculosis of the bones, and probably to other subdivisions of the classification to such an extent as to affect the whole. The Nova Scotia experience appears to agree with the English one in this respect.

The somewhat unusual position in which this Province is can be better told from the following:—

Nova Scotia:

Pulmonary Tuberculosis—Female Higher.
Non-pulmonary Tuberculosis—Male Higher.

England and Wales:

Pulmonary Tuberculosis—Male Higher.
Non-pulmonary Tuberculosis—Male Higher.

Holland:

Pulmonary Tuberculosis—Female Higher.
Non-pulmonary Tuberculosis—Female Higher.

Scotland:

Pulmonary Tuberculosis—Male Higher.
Non-pulmonary Tuberculosis—Male Higher.

Switzerland:

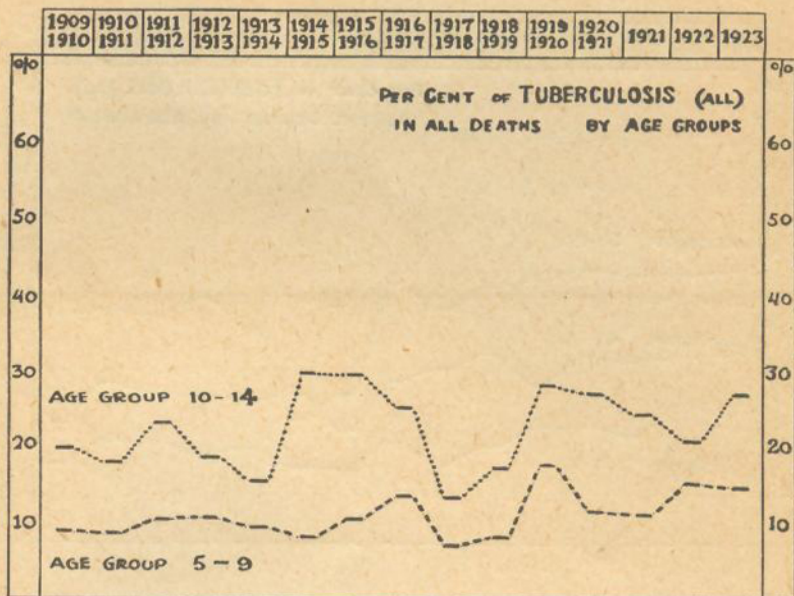
Pulmonary Tuberculosis—Female Higher.
Non-pulmonary Tuberculosis—Female Higher.

Percentage of Tuberculosis Deaths in all Deaths.

It ought to be remembered that there has been a fairly satisfactory reduction in our general death rate during the period, as well as a reduction in the tuberculosis rate. In a general way we may say that our deaths have diminished from about 8000 or 9000 a year to about 6000 or 7000. The Tuberculosis deaths have been cut down approximately one third, roughly from 900 or more to about 625. Improvement in respect of Tuberculosis has accounted, therefore, for only a portion of the reduction observable.

By a comparison of the rates of the various age groups of our population it will be possible to estimate to what extent there has been a relation between the two, or to inform ourselves how the drop in tuberculosis deaths has kept with the other improvement seen. What are the age groups in which tuberculosis control has kept pace with the general improvement?

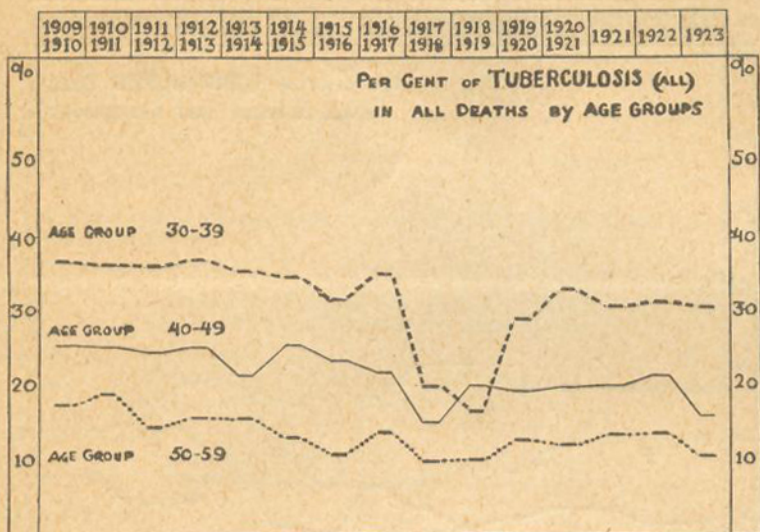
It will be seen that the charts fall into two classes. In that one of the age groups 5-9 and 10-14 it will be seen that the percentages during the years have actually risen. In these age groups we are actually losing a higher percentage of cases now in comparison with all than we were some time ago. By no means so far as these are concerned is the improvement in respect of tuberculosis keeping pace with the general improvement. A large number of deaths in these age groups are due to the acute infections, in the control of which it is quite possible that distinct advances may have been made. With these advances tuberculosis control has not kept pace.



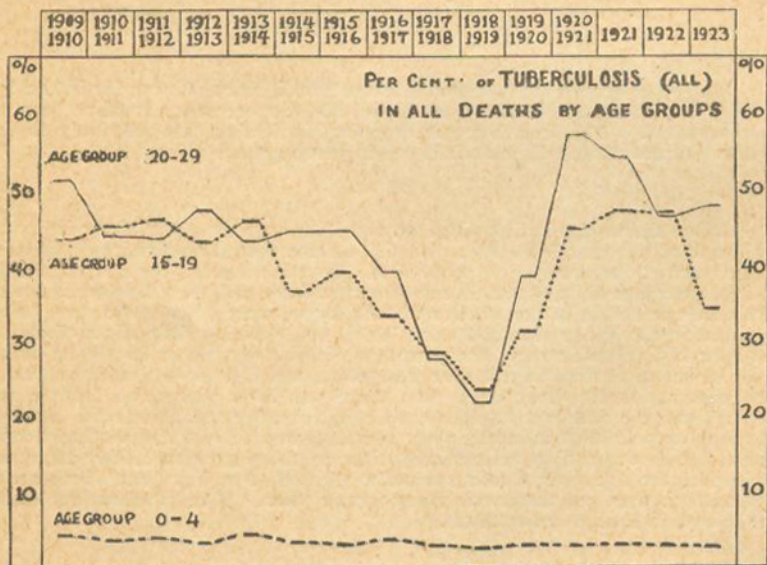
(Chart XVIII.)

The other groups studied show a somewhat different picture, for in the age groups 0-4, 15-19, 20-29, 30-39, 40-49 and 50-59, there seems to have been an improvement. The lines here are dropping, indicating that relatively to the general improvement tuberculosis is making even greater gains.

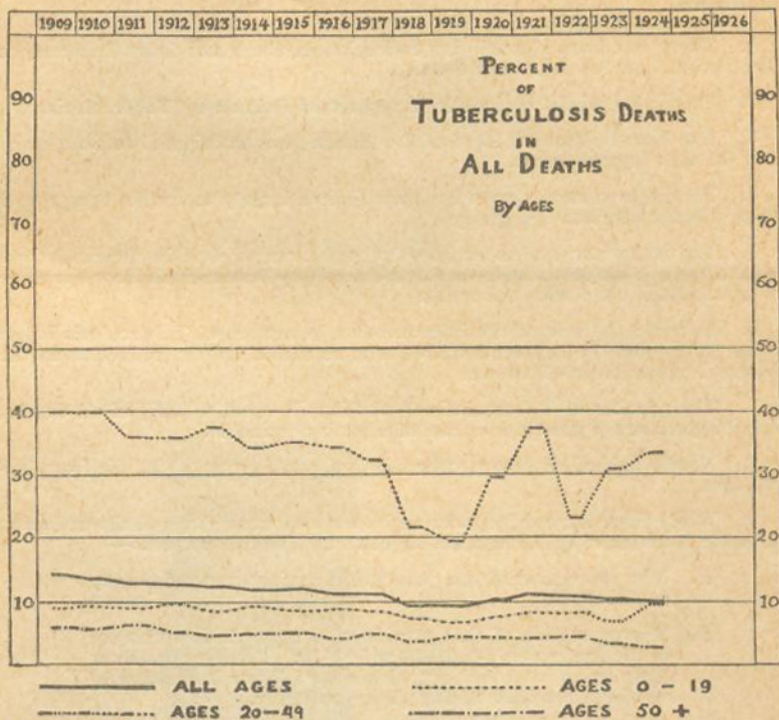
These charts also indicate in a most striking way the effect of the influenza epidemic of the year 1918-1919. It will be remembered how viciously the disease struck at our young adult population. So much was this the case, so greatly was the number of deaths in these age groups increased, that the percentage of Tuberculosis deaths in the whole number dropped very sharply, the drop being greatest in the age groups 20-29 and 30-39, and affecting little those of earlier or later life. Furthermore, the percentage is actually higher in the following year in one age group than it ever was before, which bears out quite strikingly the observation elsewhere made that there was little connection between influenza and the development of tuberculosis thereafter and therefrom. In fact it would appear that influenza most seriously weeded out the relatively unfit from disease other than tuberculosis, since in the year immediately after the epidemic, the age groups most seriously affected lost less from diseases not tuberculosis than was the case in many former years. This is perhaps especially to be seen in the age group 20-29.



(Chart XIX.)



(Chart XX.)



(Chart XXI.)

Tuberculosis Deaths in all Deaths by Age.

In the chart in which is shown the percentages of tuberculosis deaths in all deaths for the age groups 0-19, 20-49, and 50 and over, several important deductions can be drawn. To quite an extent the material used in this chart has been considered in a former one, that of the tuberculosis deaths in all deaths. This one, however, brings the figures down to a later year, and indicates the changes which the passing years have brought. In the first of the period the tuberculosis deaths numbered nearly 14% of all deaths, which percentage has been gradually cut down. It was (as was formerly said) about 11% for the whole period 1909-1921. It can be seen that since then it has been still more reduced, till now it is little more than 10. What is perhaps especially observable, however, is the fact that almost all improvement has taken place in respect to the central or sanatorium age group. In the other age groups the level lines practically indicate, not that no advances have been made, but that the tuberculosis advances have not outstripped the advances made in the control of other diseases, but merely kept pace with them. In the central age group, however, between the ages 20 and 49, the groups for which the Province has made most provision, there has been distinct improvement. This therefore bears out the conclusions which have been deduced from former charts.

Conclusions.

1. There has been a gratifying reduction in the losses from Tuberculosis in the period between 1909 and 1924.
2. This is especially noticeable in respect of Pulmonary Tuberculosis.
3. The Non-Pulmonary form of the disease has participated to little or no extent in this improvement.
4. The improvement shown has been limited largely to certain age groups, notably the Sanatorium age groups.
5. The improvement has apparently been more marked in the rural communities, than in the urban, and—so far as Pulmonary Tuberculosis is concerned,—with the females than with the males.
6. In some age groups the improvement in respect of Tuberculosis is not keeping pace with the general improvement as shown by the reduction in the number of deaths from all causes.
7. The number of Tuberculosis deaths is still equal to 10% of all deaths, which is a percentage greatly in excess of what is obtainable.
8. Nearly half of all persons who die in the age group 20-29, die from Tuberculosis.
9. While there is need for more active control measures, and the extension of existing facilities, special attention ought to be directed towards:—
 - A. The protection of our population against non-pulmonary tuberculosis.
 - B. The protection of that portion of our population who are in the age groups 5-9, 10-14 and 15-19. These groups show little or no improvement, either actually or in relation to the improvement taking place generally.

Prepared by

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