

13047
49

A
THESIS
ENTITLED
Socio-economic Aspects of Tuberculosis
in the City of Minneapolis.
presented to

The Faculty of the Graduate School
of
The University of Minnesota

In partial fulfillment of the
requirements for the degree

MASTER OF ARTS

by
Chester Roy Adams
of
Austin, Minnesota

May 2, 1910.

T A B L E O F C O N T E N T S .

Chapter One "Tuberculosis, A Curable and Preventible
Disease-----pp 1--11

Chapter Two "Minneapolis' Provisions for caring for
Tuberculosis"-----pp 12--16

Chapter Three "History of the Policy of the City Health
Commissioner in dealing with Tuberculo-
sis" -----pp 17--28

Chapter Four "Tuberculosis by Age Periods" pp 29--40

Chapter Five "Tuberculosis by Occupations" pp 41--64

Chapter Six "Mortality from Tuberculosis" pp 65--67

Chapter Seven "Field Work"-----pp 68--79

Chapter Eight "Visiting Nurses of the Associated
Charities-----pp 79--89

Chapter Nine "Policy of Reconstruction" pp 90-116

Bibliography-----pp 117-126

AUG 12 1910 25-10

I N T R O D U C T I O N .

The precise extent of tuberculosis has not been known. Various organizations, the most prominent of which has been the Anti-tuberculosis Committee, have attempted to deal with the problem. Work has been done along lines that seemed most advantageous. The Anti-tuberculosis Committee has felt that it was ^{not} accomplishing very much. Accordingly the following investigation was undertaken, with a view of ascertaining the exact nature of conditions, and to present some suggestions as to the next step to be taken. To do this the work was divided into two parts. An analysis was first made of what statistics could be obtained. Attention was then given to observing general influences at work in the city.

Necessarily statistics have been used. There are many who protest against this course, affirming that the dangers which beset one make it extremely hazardous. This must be admitted, but the difficulty is not insuperable. Statistics cannot be made to tell the whole truth to all, but they can be made to convey a part of that truth to

some people who can make an intelligent study of them.

At the outset, error will creep into almost any form of figures. It is difficult to eliminate this ever present evil. The data collected by the different agencies in this city are very incomplete. Variations in their form and character make organization very difficult. It is not possible to be sure that the same item on two different systems means the same thing. On account of these difficulties many items have been omitted, and only positive influences have been followed. It is hoped that this method has eliminated many errors of the data themselves.

Special gratitude of the author is due Dr. John H. Gray, of the University of Minnesota, for his kindly suggestions, ready assistance, and effective diplomacy in overcoming difficulties. The author is generally indebted to all members of the faculty of the Department of Economics for valuable suggestions from time to time.

Chapter One .

"Tuberculosis, a Curable and Preventable Disease".

When one begins the study of tuberculosis, he starts a sketch of the pangs of life---the agony of those whose earthly existence is slowly shortening. As the picture approaches completion the extent of this disease becomes^s more and more apparent.

But we are not able to comprehend the awfulness of the "white plague", until the final touch has been given, and the grim, glowering faces of those thousands who have succumbed to the tubercle bacillus confront us. Indeed, we are not able to understand the seriousness of the situation, until we review that almost endless parade of those whose "untimely end" is directly attributable to this cause. The problems raised by the presence of tuberculosis are stupendous, and they require giants to solve them.

It is necessary for us to understand thoroughly

that tuberculosis is distinctly a disease to which all people are susceptible. This means that no class of persons is immune. It exists among the rich as well as the poor. It is present in the office as well as the shop. It lingers among those of leisure, as well as the toilers. It is to be found everywhere, and in every form. But the greatest problem centers around what is known as pulmonary tuberculosis.

This disease is historic. It has existed for centuries, silently reaping its abundant harvest. As far back as the time of Hippocrates*, we find it baffling physicians. But these realized its infectious character. They attempted to protect the public by special provisions. They burned the patients' personal effects after death. And strange to say, the world soon forgot these helpful provisions. Attention was drawn in other directions. Religious wars, national expansion, the establishment of colonies, the temporary supremacy of one nation and the

*Huber. "Consumption and Civilization". P-48
Read Chapter called "Historical".

subordination of others----innumerable things served to attract attention from those simple provisions for safeguarding health. After the disposal of all these matters of seemingly supreme importance, the world was ready to turn its attention to health problems. But Alas! consumption was increasing enormously. The provisions of the past had been neglected. Those visited by the dreaded plague thought it was the dowry of their inheritance. Hopeless and fatigued, they submitted to fate.

It was not until 1881 that this ignorance was to be dispelled. In that year, Dr. Robert Koch, of Berlin discovered the bacillus which is the specific cause of the disease. He worked on the theory that "the micro-organisms must be found invariably in a given disease and in no other, their numbers and distribution conforming to the lesions of the disease".* He believed he could take these micro-organisms from the lesions and reproduce them. By the resulting organisms he could inoculate

*Huber. Ibid p 54.

a susceptible animal which would generate artificial lesions containing the specific organisms. By means of this method of inoculation and reproduction of the germs, Koch absolutely proved the cause of tuberculosis.

This wonderful discovery was given to the world, but the scientific agnostics failed to grasp it. Considerable time was required for it to be understood. The experiments were often repeated. Different men tested them, but every one confirmed Koch's statement. Agnosticism gave way, and a firm belief in this work has apparently diminished the mortality from the disease.

Since the time of Koch the world has profited by his work. Ignorance and superstition have been replaced with reason and knowledge. Where men have silently yielded to what they thought was fate, they now endeavor to submit to the means of cure built upon the foundation laid by Koch. But this feeling is not so extensive as one would imagine. There are many who resent it because it is new and was not tried by their forefathers. These are, however, rapidly decreasing in numbers.

Koch proved that tuberculosis is a curable and preventable disease. This fact has since been abundantly demonstrated. Because of it, many men are bending every effort to give what aid they can to the tuberculous. Altruism has re-enforced the natural instincts of man, promoting educational institutions, hospitals, day and night classes, and economic reforms,-----all to help stamp out the disease. Religious, legal and political influences have been potent factors in stimulating philanthropic activity. Men are realizing the common purpose of society and the mutual responsibility of its members. Men are now willing to co-operate in bearing the common burden, but they are not properly impressed with the necessity of preventing the spread of infection. One careless individual can endanger the lives of countless others. All must realize the seriousness of the situation.

The difficulty of preventing the spread of infection is engaging the attention of men today. But this problem is not a simple one, for the agents that spread

the disease involve many complicated relations. It requires considerable ingenuity to deal with so complex a problem, but with our advance in the knowledge of the facts,---which are within easy reach---there is ground for hoping that the problem can be met.

The causes of tuberculosis depend upon a variety of circumstances. Probably no one statement will describe all cases. But there is one element which is common to all. An infection must precede the course of the disease. There are three means of becoming infected; (1) Inhalation, (2)Inoculation, (3)Ingestion. This means that one can be infected by inhaling the germs that float in the air, or by having them enter some sore or ebrasion of the skin, or by eating them. Almost universally these germs are taken into the system because some person has been careless, in disposing of sputum. This is peculiarly dangerous because the bacilli retain their virulence for many days. Especially, if they fall in dark or damp places, they have been found virulent after 100 days.*

*Sixth International Congress on Tuberculosis Vol.1 p.22

Such a marvelous power to preserve life, means added danger from this source. If, however, the germs light in sunny places, they die very soon.* Sunlight is fatal to them. It is for this reason that all persons should be in the sun as often as possible.

Indiscriminate spitting is a most prolific source of infection. It is not possible to estimate the great damage done in this way,---it has been so extensive. Many cities have controlled the danger from this source on the streets, but they have not been able to invade the sacred domain of their citizens' homes. It is necessary to create a strong antipathy against this vicious habit. No person ought to spit in any place but a proper receptical for that purpose. This is a requirement every decent man or woman ought to respect.

Tuberculosis is a communicable disease, that is the infection can be transmitted from one person to another. It is the entrance of virulent tubercle bacilli

*Sixth International Congress on Tuberculosis. Vol.1 p31.

into the body that we call infection. No matter what the parentage has been modern thinkers disclaim any belief in heredity. The disease cannot be transmitted from parent to child in any other way than by direct infection.*

"The direct transmission of tuberculosis from parent to child may occur before birth, either germinally--a very rare phenomenon--or during intra-uterine life, a more common, but still rare event."† Concerning this point, Robert Koch in 1901 said, "great importance used to be attached to the hereditary transmission of tuberculosis. Now, however, it has been demonstrated by thorough investigation that, though hereditary tuberculosis is not absolutely non-existent, it is nevertheless extremely rare, and we are at liberty, in considering our practical measures to leave this form of origination entirely out of account.‡

* Knopf, S. Adolphus. "Tuberculosis, a Preventable and Curable Disease". p--18.

† Newsholme, Arthur "The Prevention of Tuberculosis". p--182

‡ Quoted from reprint in Newsholme, "Tuberculosis, a Preventable and Curable Disease. p-188

A weak constitution may be inherited from tuberculous parents, but this is not tuberculosis. This is what has been called a "predisposition". Such an individual is more susceptible to the attack of the tubercle bacillus, and consequently requires special care. These persons must avoid any circumstances that tend, in the least, to break down their physical resistance. These are predisposing factors. With these factors, tuberculosis is almost sure to ensue. These factors are (a) Malnutrition, (b) Alcoholism, (c) Unhygienic homes and workshops, (d) Long continued stress and strain. If a "predisposition" to tuberculosis has been demonstrated, we are sure of a larger number of persons who are susceptible to the disease, than we could infer from any other considerations. "The existence of this larger number of susceptible people would call not for the neglect but for a more careful enforcement of the precautions by means of which susceptibility is prevented from developing into actual infection."*

* Ibid p 189.

The world has grown so strongly into the habit of taking drugs for ailments, that there is considerable difficulty in making people believe that drugs will not cure tuberculosis. This difficulty is being gradually overcome, though not so rapidly as one would imagine.

The friends of patent medicines still go to the corner drug store for their remedies. They attempt to substitute these remedies for the only effective one---Nature. In many cases they are not helped, and they turn to a physician as a last resort. They end by taking the course which they should have taken at the beginning. As a result many physicians have to attempt to patch up the mistakes of the past. That they fail in this stupendous task in many cases is no mere conjecture.

If tuberculosis is to be cured, it must be taken in the early stages. No amount of endeavor will cure the average advanced case. Some escape here and there, but these are the exceptions. A true realization of this fact will greatly facilitate prevention.

It is to be hoped that every person will cheer-

fully co-operate in eliminating spitting and in securing an early diagnosis. It is only by this method that any substantial progress can be made. If every one will obey the simple rules laid down by public health authorities, every community can decrease the number of tuberculous cases by a larger number.

Chapter Two .

Minneapolis' Provisions for caring for Tuberculosis.

There are three factors necessary for tuberculosis to develop . These are, (1) the susceptible organism, (2) the vegetable parasite, (3) the necessary opportunity to infect. In order to prevent tuberculosis, all three of these factors must be eliminated, so far as possible. The handling of tuberculosis is, therefore, bound up in the improvement of conditions under which men live and work. This includes "housing reform, child labor legislation, the regulation of women's work, factory acts, employers liability acts, the suppression of proprietary and patent medicine evil, small parks and large ones, the school, the trade union, the church, the organization of charity, whatever in fact helps to build up a sound body and a sound mind".*

*Kennaday, Paul "Effective Methods of Educating the Public" Pamphlet----Lancaster, Penn.

The basic principles of prevention are (a) Hospital care for advanced cases, (b) Sanatoria for incipients, (c) Reporting and registration of all cases, (d) Disinfection of the premises of all cases, (e) Tenement inspection and regulation, (f) Abolition of all spitting, (g) Regulation of milk supply, (h) Dispensaries and home treatment, (i) Day and night camps, (j) Outdoor schools and camps, (k) Education and legislation.

The work of caring for tuberculous cases in Minneapolis is divided between the City Hospital, Hopewell Sanatorium, The City Health Department, The Anti-Tuberculous Committee, The Visiting Nurses of the Associated Charities, and the two special nurses supported by George H. Christian. A special plan of co-operation has been devised for the mutual helpfulness of these organizations, though it is not always possible to carry it out with requisite spontaneity.

The city hospital has given a ward in the building for contagious diseases, where advanced cases are very

inadequately cared for. There is good ground for severe criticism of this arrangement, but it was the best to be found at the time the need for it was realized. There is always a possibility of mixed infection with these provisions, and besides, there are no means of adapting the building to the special needs of a tuberculous patient. Viewed from the medical or social standpoint, this building is improper for tuberculosis. Minneapolis needs a new hospital for this purpose. At present, it is possible to accommodate twenty-five persons here. As will be shown later in the chapter on "Study of death records", Minneapolis has an average death rate of approximately three hundred. It is evident that these provisions should be increased tenfold. There is immediate need for improvement here.

Hopewell Sanatorium will accommodate twenty incipients, but it is now being enlarged to accommodate one hundred. It is built on the "shack Plan", having a great many windows and plenty of room for securing the benefit of fresh

air and sunshine. This institution is maintained by the city under the direction of the board of Charities and Corrections. The city health department now proposes to erect small shacks upon the sanatorium grounds to accomodate several other patients. The department expects to co-operate with the board of Charities and Corrections in accomplishing this very laudable work. The shacks are to be erected by private subscription and incipients are to be permitted to live here under the care of a nurse. In this way a number of poor families will be accomodated without entirely destroying their family life.

The city health department has a system of compulsory registration. To facilitate this work, the department employs an expert bacteriologist, who makes free sputum examinations for anyone. It also attempts to disinfect. The milk supply is repeatedly tested and regulated. A tuberculosis dispensary is maintained at the city hospital, which is supposed to be a clearing house for all tuberculous cases in the city.

The Visiting Nurses of the Associated Charities do

not devote their entire time to tuberculosis. They are, however, doing a large and important work among charity patients. They co-operate with the nurses maintained by the Christians, in attempting to eliminate duplications. Though the latter are now under the control of the health department, which uses them to follow up all cases desiring a nurses assistance, there is no conflict in the work, of these two nurses associations.

The Anti-Tuberculous Committee has confined its functions almost entirely to (1) Agitation for reform, (2) Distribution of supplies (mostly Milk) to worthy patients and (3) education of Minneapolis citizens in respect to the nature and prevention of the disease.

Altogether, Minneapolis has made a very satisfactory beginning. The plans need some amplifications and the works needs enlargement. This will undoubtedly come as the people demand more careful attention to the measures designed to prevent the further spread of the disease. Many hope this time will not be long in coming. Additional measures to be undertaken are suggested in the last chapter on "Policy of Reconstruction".

1. This reference is to the two nurses supported by Mr. and Mrs. Geo. H. Christian as per page 85

Chapter Three .

History of the Policy of the Health Commissioner in dealing with Tuberculosis.

No very set policy for combatting tuberculosis existed before the present health commissioner took charge of the City Health Department office. There had been sundry efforts to abolish spitting about 1898, but this movement was not confined to Minneapolis alone. Almost every large city became alarmed at the prevalence of spitting, and the resulting unsanitary condition of streets and public places. The realization that such a condition existed in Minneapolis led to the passage of an ordinance in 1897 prohibiting indiscriminate and careless spitting in Street cars. Later in the same year this ordinance was amended so as to include spitting in any part of a public hall or building, or any sidewalk in any public street.

It need hardly be mentioned that the prohibition of this nefarious nuisance is, and probably was, a great step toward preventing the spread of tuberculosis. Public attention was attracted to the signs and the public mind was instructed by the discipline. Men were made to realize the infectious nature of the habit. It was precisely this step that may be said to have formed a large part of the foundation for the campaign against this disease. It was a foundation in preparing public opinion for the measures that were to follow.

In 1899, Dr. A. K. Norton, then commissioner of health, said in his annual report, that consumption "still claims the attention of all people to prevent its further spread, and with this in view, I had xxx cards printed and mailed to the Physicians of the city, also to all the families where cases of consumption existed".*

*Minneapolis Annual Reports 1899 pp--526

On these cards were instructions for caring for sputa; advice as to the best place to live; and sanitary conditions of the home.

Evidently tuberculosis had shown such an alarming growth that urgent measures were needed. This information, imparted freely at the time, surely served as an important medium for educating the public mind. It was an innovation, but in this case the innovation proved of great benefit,--a benefit that was not to be fully realized until the power of the City Council had been invoked to aid the health commissioner. However, in 1900 the same commissioner tells us in his annual report, that this card had been favorably received,* "as evidenced by the large number of fumigations the department has been asked to do, and the very many inquiries made as to further precautions to be taken". Dr. Norton then urged that the reporting of all cases be required(not for publication)that every assistance possible may be given to prevent further contagion.

*Minneapolis Annual Reports

1900 p--532

He ventured to hope that state legislation could be secured that would have in view the stamping out, or at least better control of this disease.

So far three things had been done:

1. Anti-spitting ordinance had been secured.
2. The necessity for compulsory reporting had made itself evident.
3. The public mind had been gradually educated in some of the fundamentals.

In 1901 the present city health commissioner took office. He thus states his position on the condition of tuberculosis in Minneapolis: "public recognition at the hand of the health boards, of this disease, has not served to lessen its ravages. The most that can be hoped for, is to educate the people to the recognition of the contagious nature of the disease, and to instruct them in properly protecting themselves in their own homes." It would seem at this time that he believed that no administrative measure could effectively mitigate the evil effects of this disease. At any rate he began with a campaign of education. This

report does not indicate what definite means were used for giving that education.

Again in 1903, he said, "One of the great, if not the greatest sanitary problem that confronts us in the future, will be the fight against this dread disease. The measures recognized and used for its suppression in the larger cities of our country are: acknowledgement of its communicability; the issuance of pamphlets containing suggestions and advice, to both patients and members of a household where a case exists; the thorough cleaning up and renovation of infected premises following death, or the removal of a patient; the inspection of cattle for bovine tuberculosis, in order that the milk supply furnished may be good; and last, but not least, the abatement of the filthy habit so many citizens indulge in, of spitting on the sidewalks, street cars, and in public halls and buildings".* It seems fair to say that the publication of these methods by the health commissioner shows, or tends to show, his approval of them.

* Minneapolis Annual Report

1903 pp----550

The report itself does not furnish evidence of the carrying out of this particular policy, and, consequently, it is difficult to understand the precise one the commissioner followed at this time.

In 1904 the Anti-spitting ordinance was again amended so as to include spitting "upon walls, floors, stairways, or any part of any depot, market, theatre, church, or place of public amusement, or upon, into, or through any grating, area, or stairway, in under or upon, any sidewalk of any public street in the city."* With this additional protection against spitting, the work of the health department was re-enforced in this same year by the passage of an ordinance compelling reporting of tuberculosis. This ordinance declared tuberculosis to be an infecticus and communicable disease. It required physicans and those maintaining any hospital, or private institution, to report cases to the health department. The health officers then had authority to have the premises cleaned and disinfected.

* Minneapolis Annual Report 1906 pp----385

Upon this ordinance the present policy of the health department is largely built. To promote the scheme, free sputa examinations were offered as an inducement to report cases. Though this latter plan seems to have been begun before 1904, it has been used as an effective agent in support of the ordinance. Examinations have been made and records of the cases are filed in the office. The following data show to what extent the health department claim to be conducting this part of the work. The figures are taken from the 1906 report p--386.

1903-----	369
1904-----	536
1905-----	730
1906-----	946

The table shows a constantly increasing number of cases sent free sputum examination. There is, however, no reason to suppose that this increasing number of cases represents all, or even an approximation to all the cases in Minneapolis. Many physicians do not report cases at all, and we are led to believe that many do not report cases or

TABLE TAKEN FROM THE MINNEAPOLIS ANNUAL REPORT
 :Total No. of deaths:deaths from T.B.:% of whole:

Year	Total No. of deaths	deaths from T.B.	% of whole
1890	2,460	231	9.39
1891	2,177	237	10.88
1892	2,258	233	10.31
1893	2,223	228	10.25
1894	2,069	243	11.74
1895	2,057	234	11.37
1896	1,917	215	11.21
1897	1,837	234	12.73
1898	2,052	257	12.52
1899	2,082	248	11.99
1900	2,188	240	10.97
1901	2,349	248	10.55
1902	2,108	244	11.52
1903	2,300	279	12.13
1904	2,058	256	10.89
1905	2,122	252	11.87
1906			

send them for free sputum examination.

At the time of writing, the health department has two Visiting Nurses directly under its supervision. It has opened a special tuberculosis clinic in the city hospital dispensary. It is making sanitary inspections of Lodging Houses, and removing and dangerous cases it may find. By means of the tuberculosis clinic, the department has planned on treating a large per cent of the poorer strata of the population, besides furnishing treatment to those cases that cannot be cared for in hospitals. The department has persistently urged more hospital accommodations.

An interesting point may be noticed before leaving ^{the} ~~this~~ table. ^{page 20.} According to the table there were in 1905, 252 cases of tuberculosis. By comparing this table with a statement found on page 523 of 1905 Vol. of Minneapolis Annual reports, there will be found a statement that in 1905 there were 730 sputum examinations made by the laboratory assistants of the health department, out of which, there were found 184 positive cases; that is 184 cases of tuberculosis, as found by the presence of the bacilli in the

sputum. Taking the total number of cases sent for examination, based on the figures of the health department, 74.79% are negative cases* The figures show for that year, on the table above, that there were 252 deaths in Minneapolis from tuberculosis: while the records of the laboratory of the health department show that there were 184 cases of tuberculosis found reported on their records. This means that the sputum of 25.58% of the cases that died in that year was not examined by the laboratory of the health department during that year, including altogether the living cases. The report for that year does not indicate the number of cases that were reported by physicians. This point is not mentioned in the report. The whole

* It has been the policy of the health office to discard all cases not found positive. This means that whenever the examination has failed to reveal the tubercle bacillus in the sputum, the case is not filed and no record is kept. Usually the department has asked for another sample of the sputum. In this way they get a line on cases that do not show any positive results, and as a result they try to make examinations until they are convinced that the patient either has or has not the disease.

report is based only on the cases examined by the laboratory and the number of deaths from the disease that year. These figures, based entirely on the deaths reported and the sputum samples given to the health department, show such a wide discrepancy in the number of cases handled by the health department and those actually existing in Minneapolis that it is difficult to even make an estimate of the number of cases not handled. However, this point will be considered more at length in another connection. So much may be said. Undoubtedly the health department is not handling even an approximation to the total number of cases in the city. More detailed reasons for this statement will be given in the chapter on Reporting of Cases.

The policy of the health commissioner has been traced from 1897 to the present. This policy has revealed a progressive method of handling the disease. There is no doubt but that every method has been carefully weighed by the department, besides giving due consideration to any new plan that has been suggested. Whether the plan is

actually coping successfully with conditions to-day remains
to be seen.

C h a p t e r F o u r .

Tuberculosis by Age Periods.

A Study of Living Cases From the Reports.

Recognizing that tuberculosis is very inadequately known, I have compiled the statistics for representing the age periods which show the distribution of cases at different ages. Before any concrete work can be done on the problem itself it is necessary to understand the nature of the individuals with whom we must deal. An understanding of the age periods at which the disease will most likely occur, will materially assist in our effort to comprehend conditions.

Because the individual is unable not only to diagnose his own case, but even to recognize the oncoming of the disease, the problem is difficult, and will continue to be difficult until men are taught the value of a medical examination. It is quite uniformly recognized that the disease can be arrested if taken in time, but the problem

is to find the individual at a time when this can be successfully accomplished. It is believed that an understanding of the age periods at which the disease predominates will help to produce the proper understanding of the situation.

In order to show what the statistics reveal in this connection, I have compiled two tables of data with curves to explain each. In plate (1) there is a comparison between the cases found on record in the City Health Commissioners office and those found on the Visiting Nurses records of the Associated Charities. In each case the age given is the age at the time the case was reported. Neither of the tables represent all of the cases in either office, but they may be taken as fairly representative. It may be said, however, that the cases considered here do not represent all of the cases examined in either office; for many of the records gave no age, while other records were clearly mere guesses. The tables are based on what could be consistently accepted in all cases, as the age of the patient as given by himself.

Plate showing percentage of cases by Age periods.

PLATE I

Age periods:	Total cases:	% of whole:
10--14	2	.450
15--19	46	10.520
20--24	112	25.627
25--29	86	19.635
30--34	59	13.500
35--39	52	11.921
40--44	31	7.093
45--49	20	4.576
50--54	15	3.433
55--59	8	1.831
60----	4	.910
70----	2	.450
Totals	437 cases	99.945%

Data of this table based on City Health Commissioner's records. Data of this table are represented by line-----

5--9	6	1.530
10--14	18	4.591
15--19	41	10.459
20--24	63	16.071
25--29	67	17.091
30--34	54	13.775
35--39	31	7.903
40--44	46	11.709
45--49	32	8.163
50--54	14	3.571
55--59	8	2.040
60----	3	.765
70----	5	1.275
Above 70	3+1	.765
Totals	392 cases	99.708%

Data of this table based on Visiting Nurses records. Data of this table are represented by line-----

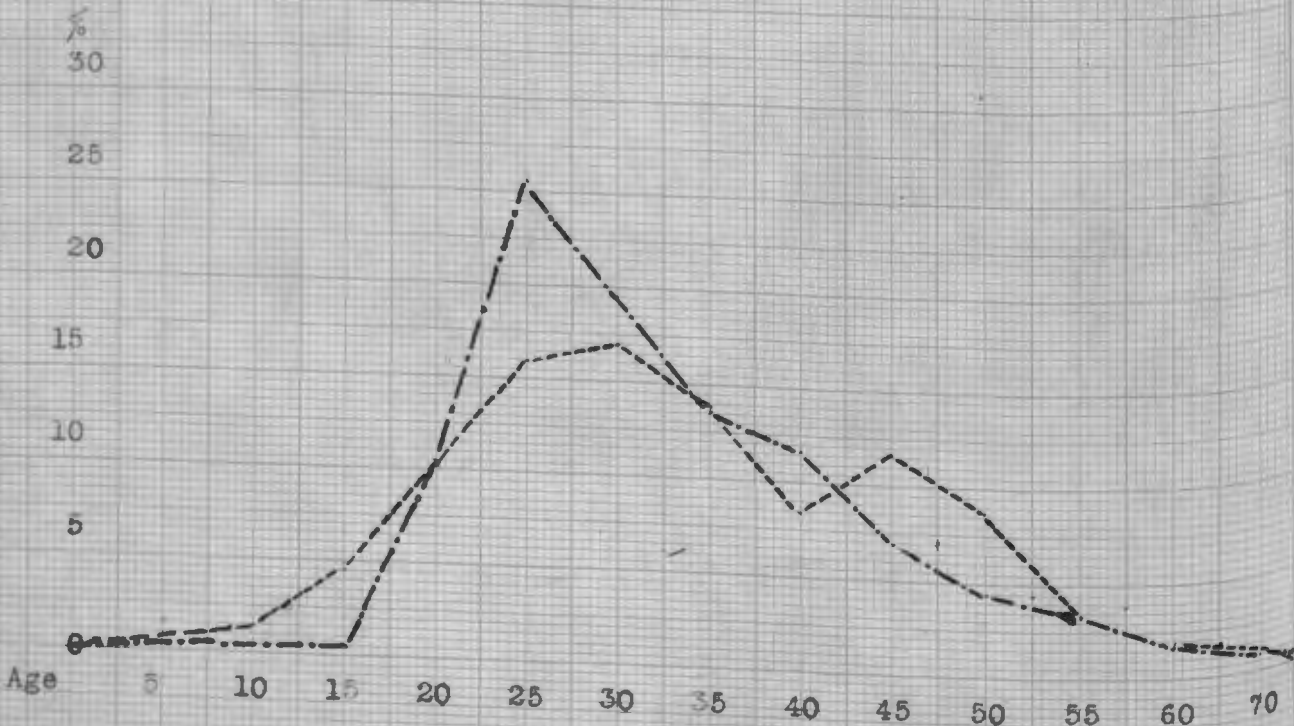


Plate (2) represents all records of living cases to be found. It shows the main tendency in Minneapolis, besides giving a foundation for a statement based on a larger number of cases.

Consideration of Plate (1).

This plate shows a remarkable divergence between the records of the Health Commissioner and those of the Visiting Nurses. The curve of the first ascends very abruptly, in the age period 20--24; rising respectively from 10.520% to 25.627%, while the curve from the second named office ascends in the same age period from 10.459% to 16.071%, a difference of 9.556%. A second remarkable difference lies in the next age period, from 25--29. The Health Office curve descends from 25.627% to 19.500%, while in the same age period the Visiting Nurses curve ascends from 16.071% to 17.091%. It will thus be observed:

1. The Health Commissioners Records show the larger number of cases between 20--25.
2. The Visiting Nurses records show the larger number of cases between 25---29.

The two curves meet at age 35. At this point there are 13.5% in the curve representing the Health Office cases, and 13.775% in the curve representing the Visiting Nurses records at this age. There is a consistent descent in the curve representing the City Health Commissioner's cases from ages 35 to 70. The other curve shows a very abrupt ascent from 40--45, and a broken descent from 45 to 55. From 55 to 70 the curve is quite consistent.

Before passing on to a consideration of plate (2) we may direct our attention to some of the more interesting details of these two curves.

1. Period 1 to 15.

The Visiting Nurses have succeeded in performing a valuable service. They have discovered quite a number of tuberculous children. As the plate shows, they have 4.591% as against .450% on record in the City Health Commissioner's office. This is quite an important work because children are supposed to be tuberculous in larger numbers than the records have revealed in the past.

Many medical men hold the opinion that a large part of the adult tuberculosis have contracted the disease during childhood. If the records of the Health Commissioner can be accepted as indicative of the situation here in Minneapolis, the curve tends to show that the physicians are not giving as much attention to tuberculosis children as to adults. At least they are not reporting cases in the same proportion as the Visiting Nurses are discovering them. The Visiting Nurses, however, have an opportunity of discovering these cases in their daily rounds, while physicians rarely, if ever, have an opportunity of making examinations on children in the homes in which they have patients. There is another factor that sometimes enters in; a physician rarely does more than the particular thing for which he is called, while those physicians who have a large office practice have no opportunity for examining other persons in the same home. This may account for some of the differences in this case. Consideration of the Age Period 15---25.

In both curves a large increase in the number of

cases is made between the ages 15--25--a much larger percentage between 20--25 than between 15--20. The maximum limit is reached between 20--25, in the curve representing the Health Commissioners Office, while the maximum limit is reached in the age period 25--30 in the curve representing the cases of the Visiting Nurses. This difference must be fundamental. It appears as a difference due to a variation in the class of cases represented. One class at least must be representative of the average population. The other must be a class having distinct characteristics.

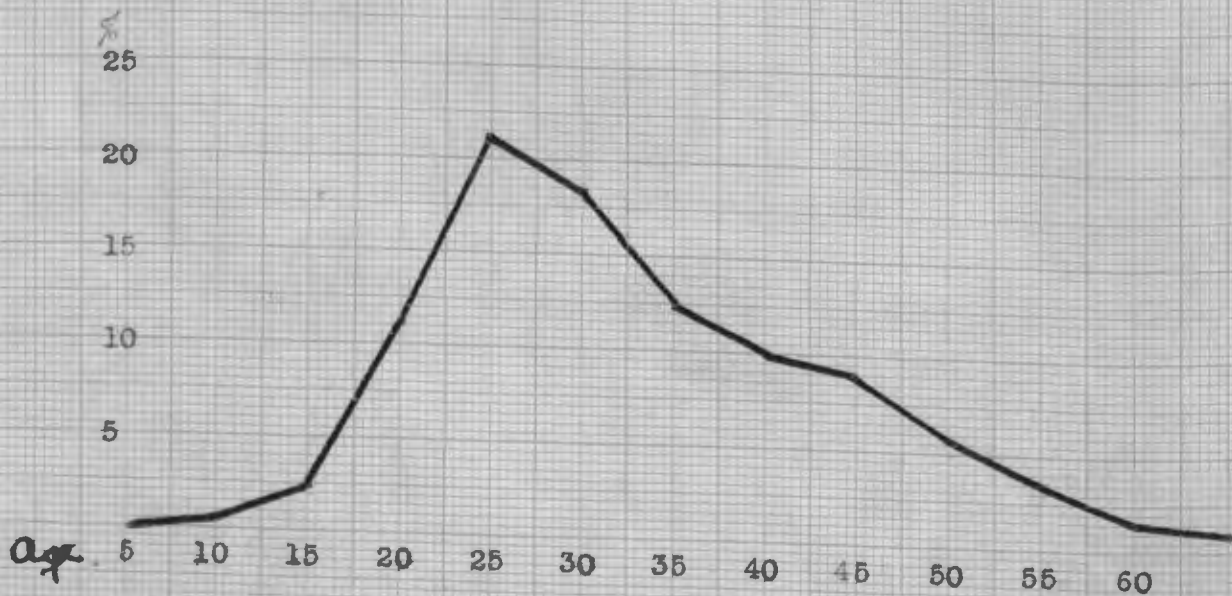
The class of cases treated by the Visiting Nurses are generally charity patients. Though this is not always true, the number of cases of which it is true, is so large as to more than overbalance the rest. In consequence the charity patients determine the class characteristics. It then remains for us to discover the characteristics of this class.

As strongly as charity desires to soften the hardships of man, there has, as yet, been found nothing that will serve as a palliative to the broken spirit of a

PLATE II

Plate showing percentage of cases by Age periods.

Age periods:	Total Cases:	% of whole:
5--9	7	.679
10--14	25	2.384
15--19	119	11.205
20--24	223	20.998
25--29	196	18.445
30--34	141	13.371
35--39	108	10.169
40--44	96	9.048
45--49	62	5.838
50--54	37	3.482
55--59	22	2.070
60	12	1.129
" 70	14	1.138
Totals	1063	100.00%



fighter for self dependence. Suffering and agony go on within the reach of help, but the spirit that refuses to seek relief continues in suffering. On the other hand, however, there are those who find considerable pleasure in regularly reporting at places where charity is dispensed. Between these two classes of cases, as far as we are concerned, the larger percentage is of the first class than of the second. In consequence they appear at charity offices as the last resort. It can easily be seen that tuberculosis could be far on its way before the individual would be discovered. In other cases the disease has already reached an advanced stage before the Nurses ^{housewife} are called. As a result, the discovery of the disease is somewhat later than that of persons examined by, and under the care of, a family physician. This may also partially explain the rapid rise in the percentage of cases between 40 and 45 in the Visiting Nurses records.

There is also this other fact that affects this class of cases. Most of the cases on the Visiting Nurses records are those of Housewives, and of these very few

are reported tuberculous after 45 years of age, while many are reported between 20--30. It is to be regretted that we have not more detailed knowledge of this class of cases. The explanations offered may throw some light on the reasons for some of the differences, but obviously, they do not explain all. It is disappointing not to have more complete information on this particular point at hand. Plate(2).

This plate shows that the general average of cases increases more rapidly between 15 and 25 than at any other period, and that there are more tuberculous individuals between 15 and 25, than between 25 and 35. It shows that the critical period for every individual is between 20 and 25, while thereafter there is a constantly decreasing chance of having the disease. It also shows that there are more chances of having the disease between 15 and 25 than between 1 and 15, or between 25 and 70.

Indeed it seems from these facts that it is extremely difficult to ascertain when the ravages of the disease begin. Because the individual has not been

educated up to the point where he can diagnose his own case---chiefly because of the newness of our knowledge regarding it ---, and because the symptoms in the early stages do not often alarm the individual, the bacillus has oftentimes gained a firm grip before the case is recognized.

CONCLUSIONS.

Since tuberculosis is most prevalent about 25, that is the time the individual ought to be periodically examined. This examination should be made some time before and continued sometime after, the age of 25. Special attention should be given those who work in places that probably render ^{them} more susceptible to the bacillus. But obviously, the individual must be taught the essentials in this matter, before he can be induced to submit to an examination. It is right here that all of the forces must be focused. No material progress can be made until a large majority of people realize the importance of a medical examination. Not until the places and sources of the disease shall have been discovered, can we hope to elimi-

nate it. From the very large number of tuberculous before 25, it would seem as though there must be infection during the period of childhood. If there has been such an infection, it usually does not show itself until about 25. This question, however, resolves itself into a discussion of the sources of infection, and it is a subject no layman can handle satisfactorily.

However infected, if the forces producing tuberculosis at this critical period could be eliminated, an enormous amount of suffering would be prevented. The plan for accomplishing this will be taken up in another connection. But the average case in Minneapolis arises at a time when the individual is about to enter, or has already just entered, the period of productivity. It is at this period that many are entering the industrial world, and it is then that they have many chances of contracting tuberculosis. Just at the time the individual can begin to repay society for its expenditure upon him, he is made incapable of doing so by the inroads of this disease. This question, as it relates to occupation and

the loss to society by industrial inefficiency, will be taken up more at length in the chapter on Occupations.

Deaths by Age periods.

While the living cases are reported tuberculous at or near 25 years of age, the deaths are increasingly greater from 25 to 30--- a difference of about 5 years between the two.

A glance at plate III shows 5.79% of the total number of deaths from tuberculosis occur before the 4th year, while only 3.61% occur from that time until the end of the 14th year. At the 15th year there is a large increase in the number of cases. At that age there are 10.23% of the total number of cases. At 30 there are 15.94%--an increase of 5.71% between 15 and 29 years of age.

The red curve placed upon plate III shows the striking differences between tuberculosis at the time of reporting and the time of death. Beginning with about 13 and continuing until 33, there are more cases reported than actually die. But beginning with the 33rd year there appear to be more deaths than tuberculous cases actually

reported. Evidently, if this plate reveals a true situation, there must be more attention paid to the tuberculous case after the 33rd year. It is, however, quite gratifying to notice that the excess of reported cases over that of deaths comes at the more dangerous period. This tends to show that Minneapolis is actually doing more in preventing tuberculosis at the most critical age, than any other study seems to indicate.

Chapter Five . Tuberculosis by Occupations.

It is commonly supposed that tuberculosis is an industrial disease. In the following chapter some data are presented to show what occupations reveal dangerous characteristics which tend to produce the disease.

The materials of this chapter are 1st. the data on record in the various offices which have anything to do with tuberculosis in Minneapolis. The bulk of the material, however, has been secured from the City Health office and the Nurses records. 2ndly, visits have been made to a number of factories that accurate judgments might be formed as to the exact conditions in every industry. Homes have been systematically canvassed where it was possible to gain access to cases. The chapter is based upon reports of living cases. Consideration of deaths and industry will be taken up in the last part of the chapter.

Special attention must be given to sanitation,

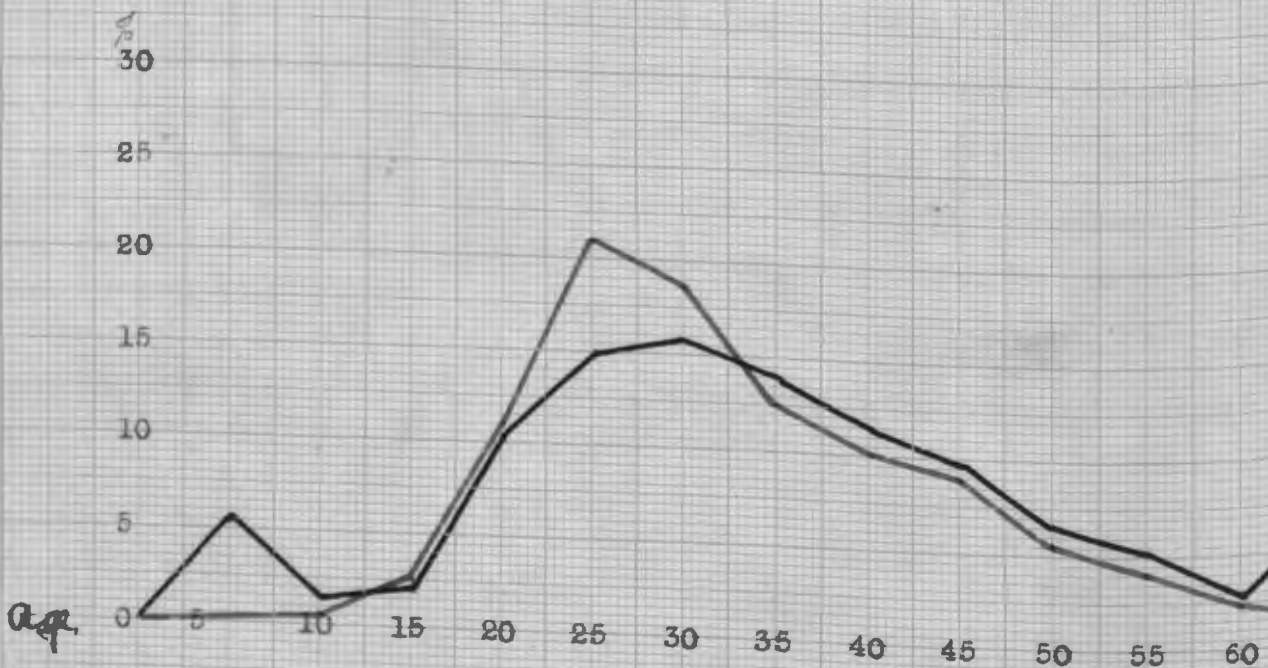
light, and general conditions of the home and the workshop, if tuberculosis is to be successfully handled in any community. One of the startling facts, connected with a consideration of the causes of this particular disease, is that improper sanitation and poor ventilation are powerful factors in breaking down the individuals physical resistance. This point is certainly to say the least, profoundly impressive, when we study the records of Minneapolis. For, if our assumption be true, there are certainly reforms to be inaugurated in the homes of our city. Out of 919 cases examined, 227 were housewives varying from 18 to 76 years of age. There were more cases between 20 and 30 years than at any other period, and still more cases about 25 than at either 20 or 30. (This list does not include the poor and dependant alone, but is representative, in that it is made up of the average tuberculous patient.) Over half of the cases considered hired their own private physican to care for them, while a little over 48.1% were cared for by charity organizations. In general then, it would seem that poverty had little relation

Tuberculosis by Age periods. Death Records.

Age periods:	Total cases:	% of whole:
0---4	136	5.79
5---9	36	1.53
10--14	49	2.08
15--19	240	10.23
20--24	348	14.84
25--29	374	15.94
30--34	315	13.85
35--39	272	11.59
40--44	232	9.89
45--49	155	6.60
50--54	115	4.90
55--59	73	3.11
	2345	100.35

Above 60--161 cases.

Living cases ~~_____~~
 Death records _____



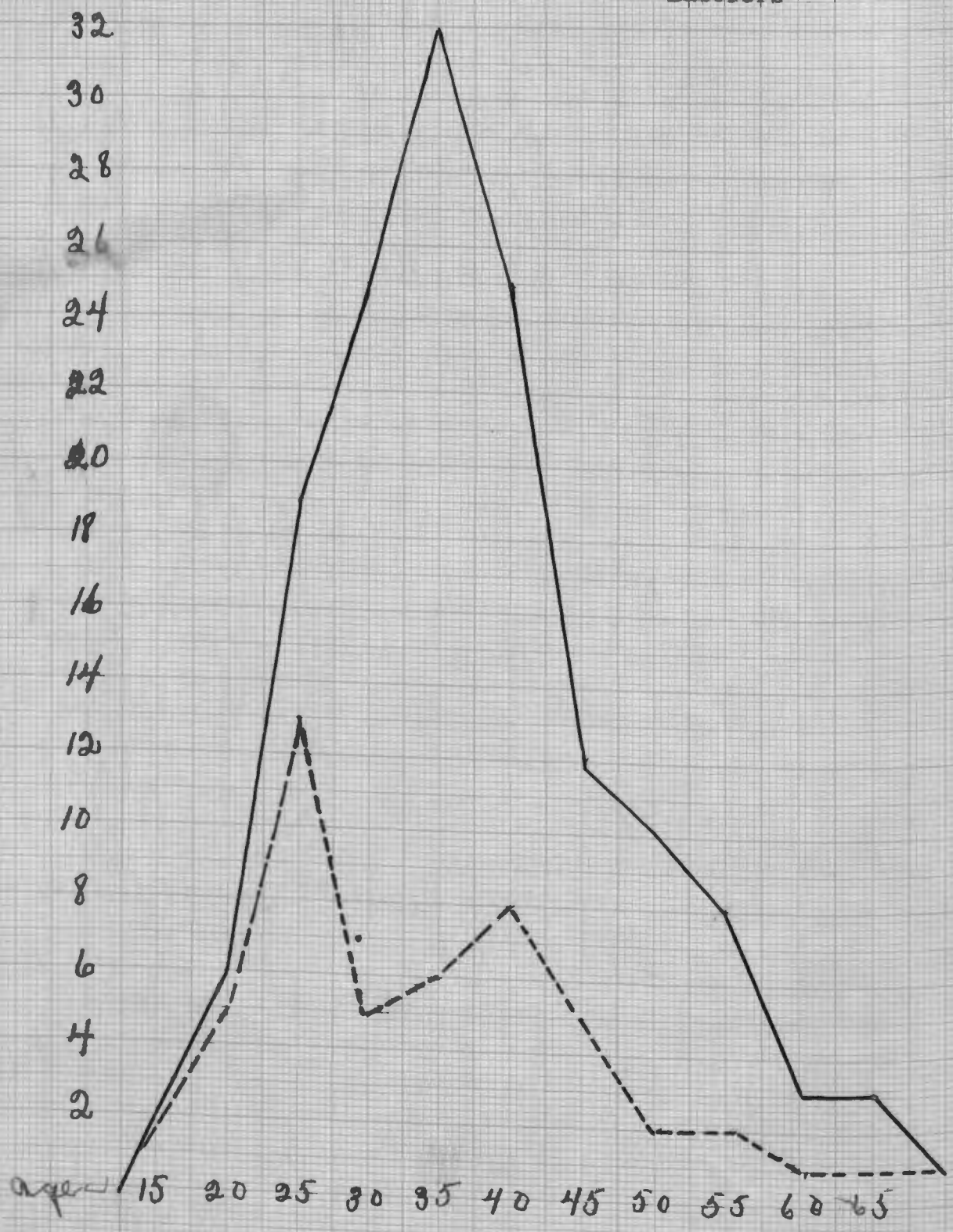
to the prevalence of the disease. If we are to take the average case, the majority do not come from the poor, but from those who are comfortable, or fairly so. This, indeed, is a startling revelation, for almost every investigation has shown that the poor are more susceptible to the disease than any others. Yet, this fallacy is shown by a consideration of the occupations in which there are the greatest number of cases. These are as follows:

Housewives-----	227
Laborer-----	111
Clerks-----	54
Factory-----	33
Seamstress-----	<u>26</u>
Total-- -- -- -- --	451

Consideration of the above table shows that 4 out of the 5 occupations are the most poorly paid of any considered. I need not mention how low the wages of laborers, clerks, factory hands, and seamstresses are. It is well known that they are so low that the persons so employed have difficulty in sustaining life decently. It would be

Plate showing age periods of Laborers and Housewives.

Housewives _____
Laborers - - - - -



interesting to note the incomes of these persons, but the data do not give enough information on this point to make it worth while. It is to be noted, however, that out of the 227 housewives reported tuberculous, 121 were under the care of the Visiting Nurses of the Associated Charities. This would imply that many of them were not able to secure treatment from a private physician. But when we come to consider the Clerks we have a still different problem. Only 14 of the 54 were treated by the Associated Charities, while 40 were given treatment by private physicians. Among the laborers, the condition is more perplexing. Fifty eight, out of the 111, were cared for by the Visiting Nurses of the Associated Charities, while only 43 were cared for by private physicians. The peculiar thing here is almost the inexplicable. This is that so large a number of the poorest paid class of workmen are providing for their own care by hiring a private physician. And yet, this seems to be explained by the fact that many prefer such a course of treatment to that of the Visiting Nurse, while their wives accept the services of the Nurse gladly. There is a natu-

ural prejudice among this class of people against the Nurse. Especially is this true of the men. There is no particular motive for it, and it is not difficult to overcome, when the case is handled tactfully.

Among the cases of factory hands and seamstresses, a very difficult problem is again suggested by considering the office who had charge of the case. Of the former, 19 of the 33 were cared for by the Visiting Nurses of the Associated Charities. Of the latter, 10 of the 26 were cared for by the same people. In the former case, they cared for more than half, and in the latter case, they cared for less than half of the total number of cases.

Out of the total number of cases on this table, 222 were cared for by the Visiting Nurses of the Associated Charities, or a little less than one half, while a little more than half were cared for by private physicians. Here we have another striking commentary on that much asserted statement, that poverty is one of the most powerful causes of tuberculosis. It is to be noted, however, that it is not poverty itself, but distinctly the consequences of

of poverty that do much to propegate the disease. So far as the statistics show, it is neither of these that causes the larger part of tuberculosis in Minneapolis. It rather seems to be unsanitary homes which are the results of ignorance, rather than a lack of means, which often appear as such causes. However, it is entirely possible that a large percentage of the cases in existence may not be upon the records. This may change the situation somewhat. But a careful canvass of a large percentage of the homes of the cases reported, fails to reveal any large number of cases in which there is depressing poverty. It is to be borne in mind in this connection, that we use the term poverty here in a very liberal sense. There were a few cases visited which showed bad management, and consequently, they were living in hovels for homes. These cases had developed moderately advanced tuberculosis, but it is extremely difficult to discover whether poverty preceded tuberculosis or tuberculosis preceded poverty. However, it is safe to say that the poverty of these cases is a material detriment to their ability to recover; for as long

as they eat poor food and live in an unsanitary home, there is very little hope for them.

The striking commentary that the conditions in Minneapolis reveal on the question of poverty's affect on tuberculosis is that the larger number of cases do not appear among the poor. In spite of the fact that almost every other investigation has shown that there is a very real connection between them, it must be remembered that almost without exception, those investigations have been conducted more largely among the poor than among the comfortable or rich. The assumption has been that the people of means will take care of themselves, and consequently most of the attention has been devoted to the poor. As a result most of our information is based on data of this class. This investigation has not been confined to such narrow limits and in consequence we have obtained some results from a fairly representative population. This will help to account for this difference in results.

There were 41 cases listed as having no occupation. Some of these were retired and some were so far advanced

that they had been able to engage in any occupation for some time. It is extremely difficult to tell which of these alternatives is true in any given case, as judged by the records. On checking up the cases in the field, it was discovered that many had disappeared or had died. As a result, no definite conclusion could be formed for the condition of the class. It is possible to conjecture, but conjectures are only valuable as such.

The following is a table showing the next highest number of cases to that already given.

Servants-----	23
Carpenters-----	22
Students-----	22
Book-keepers-----	20
Farmers-----	15
Cooks-----	13
Tailors-----	12
Teamsters-----	11
Machinists-----	11
Saloon Men-----	10
Laundress-----	8
Washwoman-----	7
	<u>174</u>

The above table needs no special comment, beyond mention of the fact that the three highest numbers come

from indoor occupations. The large number of servants and students who are tuberculous is no exception to the results of other investigations. This seems to be true in many communities, but it is a thing that is to be deprecated in the strongest terms. However, in the case of the students 20 of the cases were reported by private physicians to the city board of health, while only two were cared for by other agencies. The Visiting Nurses of the Associated Charities have provided care for a number of school children. These are not included in this list, although they may be so included so far as the classification involves them. The remainder of the occupations which show cases of tuberculosis are as follows:

Lecturer	1	Engraver	2	Collector	2
Clergyman	2	Carriage trimmer	2	Painter	6
Brassmoulder	2	Stage hand	1	Messenger	2
Mailcarrier	1	Furrier	1	Switchman	2
Baker	4	Telephone line		Fireman	4
Printer	5	man	1	Actress	1
Railroading	3	Bell boy	2	Prostitute	1
Elevator attndt	2	Teacher	6	Copyist	1
Envelope maker	1	Watch maker	1	Telegrapher	1
Candymaker	4	Milliner	4	Plumber	2
Tailor	12	Shoe maker	1	Brakeman	2
Furniture mkr	2	Wrestler	1	Real Estate	1
Motorman	2	Barber	5	Mechanic	4

Merchant	8	Police	1	Decorator	1
Miller	9	Resturant	3	Beltmaker	1
Physician	3	Druggist	2	Photographer	1
St.- Ry. Cdr.	2	Nurse	3	Peddler	1
Telegh-Optr.	3	Broom maker	1	Harness maker	2
Auto-agt.	3	Taxidermist	1	Boiler maker	2
Stone Cutter	5	Baggagemen	1	Bridge builder	1
Bricklayer	2	Pickler	1	No record Ass. C.	68
Plater	1	Janitor	6		
Mason	2	Night Watch			
		Man	3		
Travlg Salesman	4	Glass Polish-			
		er	2		
Steam Fitter	2				
Cigar maker	3				

Tuberculosis as an occupational disease shows no alarming aspects in Minneapolis, so far as we are able to judge by the data collected. By a careful study of the occupations enumerated, it can easily be seen that a large number of them include persons of means. Very few indicate poverty, although it may exist in many cases. However, supposing that some poverty does exist, it does not follow that it is of the depressing form. Indeed, poverty in Minneapolis is not common among the residents. The worst form of poverty, so far as we have been able to observe, exists among those people who have just arrived, or who are temporarily stopping here. Some few families show cases

of very distressful circumstances, but these are by no means common. Yet we must not forget that the two most serious problems in Minneapolis concerns tuberculosis among housewives and laborers. Undoubtedly in these two fields, poverty has played a very important part, and in some instances we have been able to trace the cause of the disease directly to the consequences of poverty. This factor must not be forgotten, altho in general it is not the principal element in a majority of the cases.

With the above facts clearly before us, it now remains for us to consider some of the attendant circumstances of Laborers, housewives, factory hands, clerks and seamstresses.

Considering housewives first, we find that according to the investigators, 54% have plenty of light in the home, 52% are clean, and 58% have plenty of ventilation. About 83.22% have improper methods of disposing of the dust in the home; it being common custom to allow the dust to rise while sweeping and settle afterwards. 79% had lived at one time or another with tuberculous patients,

either relatives, or members of their own families. Some of these had cared for tuberculous patients while in the last stages. Many had been associated with them, either as home associates or as friends.

It is extremely difficult to prove infection from any source in the cases under this heading. There seem to be many contributory circumstances. Undoubtedly improper precautions for protecting their health have resulted in some of these cases. The dust in the home, contact with tuberculous patients, probably also infection from the work-shop brought by the husband, undervitalization, in the case of the poor, lack of plenty of fresh air, have been potent forces in producing tuberculosis among housewives. The problem needs a strenuous campaign of education. This only will be effective in eliminating many of the causes.

LABORERS.

It may be well at the outset to describe more accurately just what is meant by the term laborers.^{here}

It is naturally supposed that laborers are of the

class who do odd jobs,---that is they have no set occupation. As the term is used here it has not been confined to these limits. Anyone who is not skilled^a artisan has been put in this class. While this is not a desirable classification, it has been used by the different observers in many instances. There is no definite information on the data by which we can check up each case to find the exact occupation. In some cases this would be desirable, but in all instances where the case has been checked, it was found that there was no violence done the term by including the individual in that category. So then with these ideas in mind, we may consider the occupation as one in which the individuals have a fairly uniform characteristic.

There are a number of circumstances which act as contributory causes for producing tuberculosis among laborers. Among these may be mentioned(1)the nature of their occupation; (2)the lack of proper facilities for personal hygiene;(3)the nature of their home, (a)the nature of the lodging houses to which they go; (4) their habits, and (5)the unstable character of their residence.

The cases in Minneapolis show that many laborers work in or about factories. There seems to be a constant tendency toward shifting from one occupation to another. Some of the cases reveal as many as four different occupations during the year. Of the laborers who are unmarried a large number of them appear in the city during odd months, when the logging camps break up, or when there is a decrease in business. And it is at this time that Charity organizations have the largest number of cases from this class. It is to be remembered, however, that laborers, as a general rule, are the bulk of that portion of our national population who feel the slightest variation in market conditions the most keenly. As a result, the tendency is for them to shift to places that will afford better conditions during these depressing periods. The nature of their work makes it extremely difficult to continue in any one place for any length of time. In many cases their work is seasonal---like that of woodsmen. During the dull season, they tend to congregate in the city. This means that many stop at lodging houses reek-

ing with filth and stagnant air, besides coming in contact with many chances of infection. The many cases coming from the lodging houses furnish reason to believe that a large number of them are never discovered. In spite of the fact that there are opportunities for free examination at the City Hospital, and the University Free Dispensary, there is no doubt that a large proportion of these cases come here from logging camps with infection, and are never examined. There is no method of telling whether these men have tuberculosis or not, under the present system of lodging house inspection. Some of the cases do not seem to have been discovered until death has brought them to light. This condition is deplorable, but more than that, it is absolutely inexcusable in any civilized community.

An inspection of these lodging houses revealed an unbearable condition. They are situated in the section of the business district where it is impossible to get good air, namely--in what is soon to be the Gateway Park and north and south of Hennepin on Washington. They are nothing but old store room buildings which have been long dis-

carded for business purposes converted into sleeping rooms for what one of the managers said were the drunks and hoboes of the down town district. For the sum of \$.15 they are given an old cot with dirty bed clothing, placed in a room where the smell is unbearable, with an amount of air space less than that required for the working man in a factory. In the morning they are hustled out as soon as they can be made sober, hurried down to a filthy lavatory which is supposed to be used for washing, and compelled to dry themselves on towels which are black and wet from having been used by an indefinite number of men previously. The rooms are thick with cheap tobacco smoke, and thicker with the stench from filthy bodies and filthy clothes. With the windows wide open at the time the visit was made, the stench from the building was unbearable.

In those lodging houses where cubicles are used the conditions are just as bad as where the cots are made up in the open. They are worse in respect to ventilation, for the space which is taken up by the cubicles themselves reduces the air space by several cubic feet. At 207

Nicollet there is an air space of 290 cubic feet for each individual assuming the room to be empty. Put in to that room the cubicles and the beds, and there is less air space per individual than the state law requires for factory hands. With these ideas in mind, it is no wonder that tuberculosis exists among these houses. The only wonder is that it does not become epidemic. The laborers who live in the city permanently present a somewhat different problem. While many have the same characteristic emphasized above, namely, a shifting of occupation, nevertheless their home life affects not only themselves but their wives and children. This is also the case of any factor that affects them while at work, for that factor indirectly influences the family. In these two respects we have here a different problem from that of the single men who live in lodging houses.

The average home of the laborer in this city is not ideal by any means, nor on the other hand is it the worst that could be imagined. We have no very serious tenement house problem, and yet we have a distinct tenement house problem that is an outgrowth of the peculiar-

ities of the city due to the growing business district and the shifting residence district.

Not all tenements visited were found sanitary, while many were found so constructed that the sanitary arrangements were decidedly bad. In one flat building, the toilet was found in a dark, dirty part of the hall. There was no air inlet except thru a transom. Absolutely no light ever got to the place. In some of the older houses on 7th Ave So. between 4th and 5th St. garbage had accumulated in the back yard and the empty houses visited showed very dirty conditions on the inside.

Minneapolis is a young city yet, but it's distinct tenement house problem lies in the fact that it is fast becoming a commercial center. Business is moving, and the old residences are becoming valuable as tenements. In many cases these are running down very rapidly, although as yet not many of them appear as serious obstacles to health. If business conditions grow as they have in the past five years, there will be need of some distinct action along the line of providing for the proper main-

tenance of these places. For as they become valuable, overcrowding will soon ensue. With this condition there is a distinct need for health protection by every possible means.

The habits of life among the laborers is most distressing to him who would prevent tuberculosis. Almost invariably they use tobacco and alcohol, both of which are dangerous enemies to the health of a tuberculous patient. Generally the people as a class are willing, but they lack information. They are undervitalized and consequently seek stimulation. With the onset of the disease this stimulation breaks down tissues instead of building them up, and consequently the bacillus has just so much more of an opportunity of consuming the individual*. The following table reveals some statistics on this point.

Number of cases where alcohol was used-----	63
Number of cases where tobacco was used-----	76
Number of cases where tobacco and alcohol both-----	47
Total number of cases-----	<u>118</u>

Out of the total of 54 clerks listed a majority came from one or two retail stores in the city. A visit

*When tuberculosis is far advanced, we speak of it as consumption, or consuming.

to these stores soon revealed the reason for this. In the first place the help was underpaid, and secondly, the ventilation was extremely bad. In these stores sales and special sales called large numbers of people. They flocked into the building in such numbers that it was impossible for anyone to have sufficient air. The constant inflow and outflow caused the movement of a very large quantity of dust which could be seen to be constantly in the air, consequently endangering everyone with whom it came in contact.

I cannot believe that all of the tuberculosis among factory hands is on the records. Nor can I believe that even one half of the tuberculous individuals among millers have been listed. Such conditions as exist in the mills of Minneapolis could hardly fail to produce tuberculosis among the employees. There are a large number of cases listed from the North Star Woolen Mills. These are mostly girls who have run the weaving machines. The constant odor of this mill, the overheated air, the exceedingly poor ventilation, can hardly fail to break down

physical resistance to the incursion of the tubercle bacillus. On Oct. 21, 1909, there were 125 males and 100 females working in this big mill. In the basement there is a large laundry for washing blankets after they are made. On this date the thermometer registered 114 in this basement. The state labor inspector had ordered a large fan placed in the room. This order had been obeyed, but the fan was perfectly still. In the weaving rooms the machinery constantly threw off dust. The room was filled with dust which was kept in motion. The windows were dusty---so much so that artificial light had to be used in the middle of a sunny afternoon. Most of them were closed.

In the flour mills worse conditions than those of the Woolen Mills were found. Basements and even sub-basements were discovered where the men were overseeing the running machinery. A constant stench from flour damp greeted one where-ever he turned. Every room was packed with machinery, and the millers were sweltering away in this dusty, dark place making the wherewith for our bread.

FACTORY HANDS.

Factory conditions in Minneapolis are far from ideal. It is no wonder that tuberculosis exists among Millers, cigar makers and the employees of the North Star Woolen Mills. The conditions in these mills are simply intolerable. The air is heavy; foul smells permeate every nook and corner; and the ventilation is exceedingly inadequate: in the North Star Woolen Mills, there are approximately 225 employees, about half being women. Dust is in constant circulation. The women have no opportunity of sitting, though the state law requires seats for them. The windows are generally closed.

We have seen that tuberculosis exists among the indoor occupations to a larger extent than the out door ones. We have also seen that conditions of the home have an important influence on the individual. It has been shown that where the homes are fairly good, the factories, or workshops, are bad. The conclusion to be drawn from this set of facts is that an effort must be

made for educating housewives to their perilous position with an accompanying recommendation for a change in methods. The conditions of cheap transient lodging house must have better supervision. Factories must be thoroughly inspected for defects in sanitation and ventilation by experts, who have authority to compel the instalation of proper facilities for protecting the health of the laborer. Down town stores must be put in the same category as other large commercial institutions. They too should have a proper method of ventilating, but still more important they should devise some method of fanning the dust off from the floors and into a proper receptacle. These things are not impossible, nay more they are very practical. What many of the commercial blocks need is to have their whole system revised. This can be done effectively by a hearty co-operation of all interests concerned. We hope that such a result will not be long in coming.

DEATH RATE BY YEARS AND MONTHS/.

#	1902	1903	1904	1905	1906	1907	totals	Average
Jan	28	27	31	23	32	32	173	28-5/6
Feb.	17	34	27	20	20	29	147	24-5/6
Mar.	28	38	21	30	37	35	189	31.5
Apr.	31	22	24	23	33	22	155	25-5/6
May.	28	23	31	33	33	39	187	31-1/6
June	23	20	22	20	21	27	133	22-1/6
July	32	30	25	31	26	28	172	28-2/3
Aug.	21	21	29	14	24	16	125	20-6/6
Sept.	15	26	29	25	18	20	133	22-1/6
Oct.	24	22	20	24	23	25	138	23
Nov.	21	30	25	26	26	27	155	25-5/6
Dec.	24	32	26	28	24	24	155	25-5/6
	<u>302</u>	<u>310</u>	<u>325</u>	<u>294</u>	<u>316</u>	<u>324</u>	<u>1862</u>	

Average death rate per month-- 25

#Data taken from the State board of health.

Comparison of death records of City & State Health Boards.

	State	City.
1904	310	256
1905	294	252
1906	316	273
1907	324	287
1908		299
1909	##	357

The records for 1908 and 1909 were not examined in the State Office. This was because they were placed in with all other death records from Minneapolis, and time would not permit sorting them.

DEATH RATE FROM TUBERCULOSIS.

	No. of deaths.	population	per 1,000
1900	342	202,718	1.68
1901	331	213,857	1.54
1902	302	255,714	1.39
1903	310	237,571	1.34
1904	325	249,428	1.32
1905	294	261,974	1.12
1906	316	274,487	1.15
1907	324	285,000	1.14
1908	299	300,000	.996
1909	357		

C h a p t e r S i x .
Mortality from Tuberculosis.

The mortality from tuberculosis has varied from time to time. A study of the death records from Minneapolis in the State Health Office showed large differences between the total mortality of any one year compared with that of another. But by securing statistics covering a period of years, it was evident that the city has an average annual death rate of three hundred from this one disease. Though individual years show a decrease or an increase in deaths, a computation of the number of deaths per year compared with the total population for that year, reveals a constantly decreasing percentage. While the absolute number of deaths has considerably increased, the percentage of deaths has decreased during the last ten years approximately one half, as shown by the table on the opposite page. In 1900, the mortality from tuberculosis was 1.68 per thousand population. In 1908, it was .996 per thousand population, a decrease of .784 per

thousand population.

The average monthly death rate from tuberculosis is twenty-five--an average computed on a six year basis. The month in which the largest number of deaths occurred in these years was March, having an average for the six years of 31.5. Table I of this chapter shows these figures. A glance at that table will show the total number of cases for six years, average monthly death rate, and the yearly death rate including 1909.

We may now pass on to a consideration of tuberculosis by nationality. .558 per cent of all deaths in Minneapolis, or 1166, have been among American born, but 519 of them were children of foreign born parents. Considerably over three-fourths of the children of foreign born parents are Scandinavians*.

Minneapolis has indeed a most difficult problem: for the Scandinavians usually resent the sanitary and ventilating systems required by a proper precaution for protecting the health. They bring to this country the customs of their fatherland, and thus house themselves in an improper manner. Fresh air is not generally

*There are no accurate records of the percentage of population by Nationality.

TUBERCULOSIS BY PLACE OF BIRTH.

Place born :	Number	Per cent	Am. b. foreign parents	Per. b. Am. par ents.
Americans	1166	.558		
Norway	365	.173	225	3
Sweden	323	.154	257	2
Germany	85	.0406	5	5
Canada	72	.0344	22	4
Ireland	58	.0282	3	1
Denmark	17	.0081		
Finland	13	.0062		
England	16	.0076	6	8
Russia	14	.0067		1
Austria	23	.011		
Scotland	9	.0043	2	1
Wales	4	.0019		
Negroes	2	.00019		
Mexicans	2	.00019	1	
France	2	.00019		
Cuba	2	.00019		
Switzerland	2	.00019		
Italy	2	.00019		
Poland	7	.0033		
Hungary	3	.0014		
Bohemia	5	.0024		
Totals	2089	100.00%	519	25

sought by them. Especially among those who have not adopted American customs, the habit of sleeping with tightly closed windows, and of avoiding the hot rays of the sun prevails extensively. In many cases they may have contracted tuberculosis from the ship in which they traveled to this country. In others they probably were infected in Scandinavia. At least, there appears to be no other nationality in Minneapolis which suffers so extensively from the ravages of the tubercle bacillus. There are more Scandinavians reported tuberculous than any other nationality. Similarly, there are more deaths among these people than among any other nationality.* As a result, most of the efforts toward prevention must be concentrated on this nationality. The tables of this chapter need no further explanation. It may be said, however, that tuberculosis costs Minneapolis \$750,000 in deaths and \$1,250,000 in economic loss caused by sickness from the disease.

*The Scandinavians are supposed to comprise more than half the population of Minneapolis.

Chapter Seven.

Field Work.

The field work of this investigation was divided into two parts. The first included an intensive study of the milling district, where 432 persons were interviewed, and 369 visits were paid to the homes of the workers. The second part included a medical examination of reported cases and personal visits to suspicious residence districts.

Part I.

It was thought advisable to concentrate some attention upon the average workingman. In choosing a field, none seemed so representative as the mills and factories; for here there seemed to be a greater opportunity of discovering tuberculosis cases. The mills were systematically canvassed from sub-basement to garret, and every third employee was interviewed. They were encouraged to advance information regarding (a) sanitary conditions, (b) the affect of the work on them, whether it was break-

ing down their physical efficiency, (c) susceptibility to any peculiar disease. Their confidence was solicited in a number of ways, by means of which endeavor was made to secure complete information.

In inspecting the mill, two points were considered, (a) ventilation, (b) dust and odors. Information regarding the first was secured from the superintendent or head-miller, and verified by personal observation and subsequent conversation with the workmen. Our personal judgment was solely relied upon for the data on the second point.

Almost universally, the millers and factory hands, in the milling district of Minneapolis, are satisfied with the sanitary provision of the mills. Considerable care seems to have been taken at some time in the past to improve this factor in factory construction. Indeed, many of the mills have very adequate facilities. The North Star Woolen Mill is the grossest offender on this score. Not a single convenient toilet facility was found in the whole mill. The floors are greasy from

the wool, and the air was laden with a heavy, depressing odor. Some radical innovations are needed at once in this mill. The milling district is characteristically dusty, due to the fact that the elevator and cleaning machinery is on the upper floors. The fine dust from the grain is cast into the open and settles to the ground. Open windows are good receptacles for it, and on windy days a considerable accumulation may be found where glass is broken or where the windows have been open. As a result, many millers prefer to have the windows closed. And as a matter of fact, very few ascribed the depressing ^aeffect of their work to a lack of fresh air. While many admitted that their work was breaking down their physical efficiency, very few realized that this was a necessary factor for sustaining it. Many openly confessed that they needed a vacation in the open.

The flour mills are filled with "flour damp"-- an explosive element in the air. It permeates every nook and corner. Special laws have been enacted to prevent the explosion of this very dangerous element but no

effective effort has been made to eliminate it. It has a very irritating effect on the nose, throat, and lungs, and induces a feeling of fatigue. It is a powerful factor in impairing the health of the workers. Due to the close air and the presence of this element, the millers have difficulty in maintaining physical efficiency. While very few have been in the mills long--due to the fact that the recent strike replaced many old workers with younger and newer men--the effect of the occupation is plainly shown by a mere glance at the men. Universally, they show the deteriorating effects of the work. But conversation with them revealed the fact that many feel their vitality weakening and they realize the need for some stimulant.

Out of a total of 432 persons interviewed, 133 were found to be suspected tuberculosis cases, judged by diseases to which they were susceptible and present physical condition. Accordingly, they were referred to private physicians, and to a special physician engaged for making medical examinations of such people.

The results were obtained in various ways. One was by consultation with the patient and later with the physician. The other was by exclusive consultation with the patient, when it was found that the case came to the public records.

The results of this work gave 38 persons who showed signs of tuberculosis. To make the statistics correct these 38 persons were used as a basis of finding the percentage of tubercular cases probably to be found in the mills. For this purpose, we found what percentage the 38 persons was of 432, giving a net result of .0903%. In this way we attempted to eliminate any possibility of having chosen a selected group.

The milling district then may be safely said to contain about 9% of its population as tubercular patients. But this is not at all surprising when an inspection of the mills is made. Ventilation is not only inadequate. There is none to be found. Absolutely stagnant air abounds in many departments. The odor from spoiled grain, flour damp, and innumerable other things is con-

stantly present in almost all parts. With no way of escape, the millers are compelled to breath impure air. It is surprising that tuberculosis is not more extensive than it is.

And yet there are many good reasons for the lamentable situation here. Until the cleaners and elevators are prohibited from casting dust into the air, there can be no adequate ventilating system installed in any mill. No screen is small enough to prevent this fine dust from being drawn through it, and fanned into all parts of the building. Today, a ventilating system is worse than none; for the dust is simply distributed by that agency, to every work-room. The conditions of the rooms, crowded with machinery, and the unbearable heat, together with inadequate ventilation, tend to destroy what physical efficiency normal conditions could easily maintain. The present system is wrong and needs immediate remedy. A ventilating system is a primary necessity, if any progress is to be made in eliminating the heat and odors. But the work on ventilation should be

accompanied by an effort to eradicate the obnoxious odors constantly arising.

P a r t I I .

Medical examination of patients already under the care of some physician, or a visiting nurse, was the most difficult part of the investigation. The sensitiveness of the medical profession made itself evident at every turn. The utmost diplomacy was required to meet the various contingencies incident to this work. However, considerable progress was made in securing a medical examination of the patients, cared for by the visiting nurses of the Associated Charities, and some of those under the supervision of the Christian Nurses.

In each case, the home was visited; notations made of the general condition of surroundings, and the patient and each member of the family was examined, if they would submit. Some flatly refused, but co-operation was easily obtained in a majority of cases by careful, tactful conversation. For this purpose each one was told the

idea in mind, and offered a free examination. In some cases, this appealed to them, but in others, different means were found necessary.

Altogether, calls were made at 66 homes and 109 persons were examined. This number includes only those who appeared upon the records of some office. Out of the 109, sixty seven were found tuberculous and 42 gave no signs. Among the 42, there were cases of convalescence from Pneumonia, Typhoid, Grippe, and Bronchitis--- all of which are considered predisposing causes to tuberculosis. In three cases, Bronchitis alone existed; there being no signs of tuberculosis. These cases were under the care of the Associated Charities, and were very properly cared for under the circumstances.

Five homes were visited where a tuberculous case had resided before the patient moved in. There was no evidence to show that the patient had contracted the disease in any other place but the home. Eight cases showed tuberculous fellow workers, though the homes were in very good condition. Three cases were found where tuberculo-

sis existed both at home and among the fellow workers.

As the best homes were not open to the investigators, the sanitary conditions were very poor,--sometimes going as low as 45 to 50%. Fresh air and light seemed to be the things to be avoided in 63% of the cases, while cleanliness in the home existed in 11.2%. There were no records on the other cases.

The work done in the poorer residence districts consisted in canvassing a whole block; interviewing as many persons as possible, and securing medical examinations. Some of the investigators were not very successful in this work. However, some progress was made last fall. The results of this work showed by medical examination, 173 persons examined,--those not on record at that time---- and 58 showed signs of tuberculosis. Time did not allow a more extended investigation, but there are grounds for believing that more than 30% of tuberculous persons are not reported, nor do they visit physicians. Evidently, the campaign of education must still be further extended to make people realize the fatal onset of this disease.

Minneapolis has been asserted to be destitute of a tenement house problem. But to him who has visited the Eastman flats of the Island, and the old houses south and north of Hennepin Ave, there is a serious housing problem,-----a problem probably demanding a corrective policy immediately. These buildings harbor the more unfortunate population who are crowded together in these unhealthful rooms. If there is any place in Minneapolis which deserves immediate attention, it is the Eastman Flats, and the older houses of the city. There ought to be a systematic and vigorous inspection of all these tenements and some rigid regulations enacted.

Visits made to the homes of people living in this district, revealed the following results:

Visits made.	No. dirty walls.	No. per room.	Dirty houses
327	306	2 6	297
No ventilation.	Sanitation imperfect.		
213	327		

A special study of the most serious problems by occupations was made of housewives and clerks. The results are contained in the Chapter of "Tuberculosis by

Occupations".

The results of the field work plainly show that Minneapolis has not met the problem of tuberculosis, as yet. The evils shown before, need remedying. These are places to direct attention. The plan of reconstructing the work is discussed in Chapter Nine.

Chapter Eight .

The Visiting Nurses of the Associated Charities.

Perhaps one of the most helpful organizations in Minneapolis in the fight against tuberculosis, is the Visiting Nurses Association of the Associated Charities. Although doing their work under the direct supervision of this organization, and consequently superimposing the charity view point, these sisters of mercy have relieved a great amount of suffering. They have been constant agitators for better conditions, besides actually teaching many families the essentials for maintaining health. While they have been hampered on many sides, the nurses have overcome many obstacles, and the results of their work eloquently attests to their efficiency.

Unfortunately, the nurses have had to spread their efforts over an extensive territory. They have been compelled to meet all forms and kinds of diseases, and they have honestly endeavored to meet every situation. But they have not only had disease to combat. Many

instances of obstinance overcome are evidences of their patient tolerance. They have been firm and yet kind, but their supreme endeavor has been to bring order where disorder prevailed. Minneapolis owes much to the leader of these Nurses.

There is not much to be said of the work this organization performs. It is important, but it has been all covered by other studies. In such a situation duplication is wasteful. There are, however, one or two things that may be mentioned briefly.

The following table shows the work with tuberculosis by years:

1904	41
1905	103
1906	99
1907	119
1908	152
1909	151
Total	<u>665</u>

The Nurses have been dependent upon three sources for information leading them to tuberculous patients: (1) The Associated Charities office, (2) The dispensaries (3) Upon what information they collect in their daily rounds.

This information led them into all parts of the city. Where-ever aid was needed, they have cheerfully given it. One of the chief difficulties has been in securing information about patients.

The policy of the nurses has been carefully to teach each patient the exact nature of the disease; to furnish sputum cups, if needed, and to provide such indispensable requisites as could be furnished by the Associated Charities. They have negotiated with state and city officials for placing incipients in Sanatoria, and for placing advanced cases in hospitals. In some instances, they have secured funds for placing cases in private hospitals. When the cases have been dismissed from hospitals or Sanatoria, they have followed them up, and have kept them under observation for some time. In this way they have endeavored to keep in close touch with each patient until beyond the danger line.

One of the most important functions of the nurses is the securing of data. Each nurse is provided with blanks to be filled out as they interview the

patients. These are filed in the office and represent the materials on which the statistical analysis of this office has been made. The data are quite satisfactory--the cards being as complete as could be expected in ordinary circumstances. The one criticism that must be urged is that too general terms have been used in many instances. It is always advisable to reduce the co-efficient of error to as small an amount as possible. This cannot be done when sanitary conditions are described in as indefinite language as "poor", "fair" and "good", nor when the same terms are used in estimating income. A uniform system of percentages would remedy this evil. The records in some cases are very ambiguous, depending upon whether or not they have been completed when the case was discharged. For statistical purposes such data are very inadequate.

When the emphasis has been laid on administration, it is not surprising to find this condition. The keeping of good records is an item that requires considerable attention. Furthermore, persistence in tracing down the important items is a very necessary requisite

for performing this function.

On checking up the records in the field, a large number of cases were found where it was evident that the patient had falsified. This fact, however, is supposed to be quite common among charity patients. Not enough cases were visited to secure any basis for a statistical estimate on this point.

It is very unfortunate that the work of this organization has not been better organized. This is not a fault of the workers, but rather a difficulty of the system. There has been no adequate medical services at the command of the nurses. They have been compelled to beg and entreat city health and hospital authorities for these. In many cases they have received good promises, but no services. Efficient nursing cannot be carried on under such a system. This separation of the nurses from a medical staff has resulted in many embarrassing situations. This is not only true of tuberculous cases, but it is also true of many others. Urgent demands for medical and hospital services have been repeatedly ignored. Effec-

tive work cannot be accomplished from such a system.

Necessarily, the nurses have had to confine their attention almost entirely to charity patients. This has led them into a work that is not only distinctly valuable in itself, but it has slowly but surely educated Minneapolis citizens in the art of maintaining proper sanitary conditions. This education has not only affected their patients but it has gradually passed into the ranks of the wealthier citizens. These have taken it up and have tried to devise ways and means for bettering conditions. Many a valuable movement in Minneapolis has had its inception in the work of these nurses.

As a result of this work among a special class of people, we must expect results peculiar to this type. It has been shown in another connection that the charity patient is not the average. The age at which they are first reported is later, and they tend to have increased susceptibility to tuberculosis in later age periods--a fact not true of the average case.

The restrictions of the nurses' work to charity

patients has not been altogether satisfactory. It has left those above the help of a charity organization without help no-one can give but a trained visiting nurse. The support of two nurses by Mrs. George Christian temporarily met this difficulty for tuberculous patients. There is now a system where anyone in the city can have the services of these nurses by making a request. They co-operate quite successfully with private physicians, and in this manner every tuberculous case in the city may have the very best of services obtainable. At present a request sent to the city health department's office will be followed with a call by one of these nurses within a day. These two nurses associations work together quite effectively. They turn over cases to whichever organization such a case can best be handled. In this way, there is an attempt to eliminate duplication in the work. The Christian Nurses co-operate with the work of the tuberculous dispensary of the city hospital, while the Associated Charities furnish a nurse for the University free dispensary. Cases coming to these dispensaries are thus

cared for by nurses at the dispensary, and are followed up afterwards in the homes. In this way Minneapolis is securing a very efficient visiting nurse service.

The question naturally arises at this juncture whether the visiting nurses ought to be under a private agency or a public one. This question has been suggested by many health authorities and it would seem as though public sentiment were turning towards increasing the functions of the public health office. ^{in this respect.} There are undoubtedly many advantages which could be secured by such a course. There is room for doubt as to the advisability of a private agency assuming the function of protecting public health. Indeed, such a situation is ridiculous. But what is a community to do when a public health officer will not assume this duty? It will do what all communities are doing, to-day; a private agency will assume the burden, until the public are educated to the necessity for demanding the organization of a visiting nurses association. This is what has occurred in Minneapolis, and now I believe this city has come to the place where it can support its

public health commissioner in demanding funds for this purpose. There is certainly an advantage to the poor in having the Visiting Nurses under the jurisdiction of the Associated Charities. The workers learn the method of handling charity patients. The one difficulty with all governmental charity dispensers in the past, has been a loose system of investigation, before giving relief. However, scientific principles applied to this subject have produced some rather exact formulae, so it is now only a question of securing a properly trained individual. Such a person can just as well be secured by a city health department as a private agency.

The Visiting Nurses of the Associated Charities have received reports from cases as follows:

Dispensaries	None*	Doctors
52	17	596
		Total 665

596 cases are listed as reported by physicians, but a careful study of the dispensaries reveals the names of some of these acting as examiners. Undoubtedly this list

*This means that records show no source of report.

does not give due credit to the cases the nurses unearth. There is no method of telling the exact error from the data. It is very desirable to have information on this point.

The nurses have done 52% of their work with females,--mostly among housewives, factory girls, and clerks. A large number of school children are also on their records. The following table shows how they have dispensed of their patients from 1904 to 1910.

Sent away 24	Thomas Hosp. 6	City Hosp. 31	Discharged 13
Cured 12	Walker* 6	Tuber. Camp 31	Christian Nurses 6
Placed in tents. 4			Total----133.

One serious error in the data is the keeping of the records on this particular point. In many cases, the cards are filed with only a red ink mark "discharged" at the top. It is extremely difficult to make an estimate of the reason why the case was discharged from this sign. The records show 80% deficient on this point.

*State Sanatorium for tuberculosis.

The records show that 42% of the total number of cases had at one time been in contact with other tuberculous patients, either as members of the family or as co-workers. Deaths have occurred in 39% of the total number of patients under the care of these nurses. Altogether besides the work of maintaining the camp for tuberculous children the nurses of the Associated Charities have performed an invaluable service to the citizens of Minneapolis. They are to be highly commended for their work.

Chapter Nine .

Policy of Reconstruction.

There are two classes of thinkers who do not attract the fullest intellectual sympathy; the one comprises those who rest with criticism, the other those whose critical analysis leads only to admonition. Each is useful in its own way, but it fails to render to society the highest service of which it is capable. For obviously the object of true criticism is construction---a construction built upon a correction of the mistakes disclosed. Applying this thought to the subject in hand, it now becomes our difficult task to search for those methods that will effectively remedy the evils set forth before, and adequately cope with the problem in the future.

There are many who would resent a policy of reconstruction coming from a layman. Some think that no one but a medical man can even understand the problem. But in this day a sentiment of that kind is based either on ignorance or a very limited conception of the various

problems of the disease. And in this day of universal knowledge, such a conception is intolerable. No medical man without a training in the social sciences can hope to have said the last word. Indeed, such a man is almost incompetent to deal with the disease from an administrative stand point. The problem is not one of administration, but it is distinctly one of bringing that administration into closer contact with facts.

There is no one agency for the preservation of the public health so indispensable as the functions of a health commissioner. Originally conceived as a political organ of city government for the administration and control of disease, this office has now grown to be an important medium for prevention. With this additional function has come the need for many new details of office administration. The work has become more and more complicated, until today a city the size of Minneapolis requires not only a good physician, but also a man who can scientifically administer the various details of the office routine. The day has passed when any good politician can fill the position. To-

day we require a man who is alert and active; who can administer the office scientifically and efficiently; who can cope with any disease quickly and successfully; above all, one who can quickly ascertain exact conditions, and give honest reports on them. We not only require such a man in every city and town, but the public are urgently demanding him. Dissatisfaction with the old methods is every where apparent. Progressive communities are even sounding the death warning to the old time political health commissioner. It will not be long before he will be laid upon the shelf of political cast asides.

There are three factors involved in the answer to this question.

Why has this movement begun? (1) Inefficiency of present officers. (2) Agitation by medical profession. (3) Advance in Medical Science. The answer does not seem very far away. To him who feels the public pulse, there comes a consciousness of widespread feeling that the old methods are inefficient and inadequate. When epidemics break out, and death occurs at the threshold of many homes, the out cry against him who could have prevented this waste of human life makes itself heard. At such times

the press distributes knowledge of the progress of medical science along preventive lines. Discussion provokes inquiry, and as a result, many a health officer has been severely condemned. The answer to our question is that many instances of marked inefficiency have produced general dissatisfaction. But, more than this, the medical profession itself has contributed invaluable aid. It has agitated for better conditions, while medical schools have sent forth their graduates with more advanced training for handling just such circumstances. So anxious are scientists to discover some remedy for human ills that there is actual strife among them in their endeavors to be the first. With the progress in other sciences we have a right to expect advance in medical science. This advance has contributed largely to the dissatisfaction noted above.

A public health officer has in charge the welfare of every individual in his community. Any common danger must be handled skillfully by him and his assistants. For this purpose it is expedient for him to have all the advanced methods at his command. Especially is this true

FUNCTIONS OF HEALTH DEPARTMENT.

- I. To prevent the spread of the disease by the establishment & enforcement of the necessary precautions.
- (A. Anti-spitting ordinance.
 - (B. Shop and factory inspection.
 - (C. Inspection of Lodging Houses.
 - (D. Periodical examination of inmates of Lodging Houses.
 - (E. Tenement inspection.
 - (F. Fumigation of premises.
- II. To organize & supervise the methods of curing incipients, and to provide means for segregating advanced cases.
- (A. Open air camps.
 - 1. Day.
 - 2. Night.
 - (B. Special home treatment for special cases.
 - (C. Supervision of hospitals for incipients
 - (D. Supervision of hospitals for advanced cases.
- III. Educate the people.
- (1. Publication of facts .
 - (2. Warning vs. special evils.
 - (3. Visiting nurses used as means of distributing knowledge.
 - (4. Special educational literature.
 - (5. Exhibit and lectures.
 - (6. Special instruction in schools
- IV. To discover cases and follow them.
- (1. Dispensaries.
 - (2. Compulsory reporting by physicians.
 - (3. Compulsory ^{reporting} of all sick by Lodging Houses.
 - (4. Visiting Nurses.
 - (5. Close affiliation with charitable organizations.
 - (1. Showing age periods
 - (2. Nationality
 - (3. Medical treatment
 - (4. Occupation
 - (5. ~~Sanitation~~ ^{Sanitation} additions
 - (a. Ventilation.
 - (b. sanitation.
 - (c. Light.
- V. To compile statistics.
- A. Living cases
 - (1. Age
 - (2. How long sick
 - (3. Treatment.
 - (4. Occupation.
 - (5. Nationality.
 - B. Deaths.

with regard to tuberculosis. This cause of the disease has been so recently discovered, and is so little known at the present time, that it demands an advanced man who is acquainted with all the new methods. But behind such a person there must be a substantial support. The city must furnish plenty of funds and assistance. The community must give strong moral support. Without these the best man can do nothing.

In the first place Minneapolis is large enough to pay a salary sufficient to command the entire time of its health commissioner. It not only demands such now, but it is imperative that it have it within a very few years. No man can do so important a task well with his efforts extended over many other things. This is a field that needs intensive cultivation. In order to secure an efficient supervision of tuberculosis, the functions of a city health commissioner may be stated as:-

- (1) To prevent the spread of the disease by the establishment and enforcement of necessary precautions;
- (2) to organize and supervise the methods of curing incipient tuberculous cases and to provide means of segregating

advanced cases; (3) to consistently and persistently educate the people to a realization of the exact nature of the disease; (4) to provide means for discovering cases at the earliest possible moment, and to persistently follow these cases until they are beyond the danger of infecting others; (5) to employ competent statisticians to shift and combine statistics that the worst evils may be remedied while near at hand, and growing evils may be anticipated. No one of these functions can be omitted without seriously impairing the successful administration of the disease. The keeping of statistics is as important as the actual administration. And this is one feature most difficult to handle when discussing a public health official. Almost universally they believe that the administration is the all important thing. To prevent contagion and to eliminate present evils, actually do things and not to discuss them, is the almost universal answer one will get from a public health official. This is all true, but the most alert official recognizes the value of statistics when properly compiled. And the official who

would understand the exact nature of the conditions with which he must deal, will most sedulously consult his data. Different conditions call for different methods. In disease, as in all other fields, no general rule will always apply. It is only by the method of statistics that one can tell whether his community is the exception. Especially with regard to tuberculosis, complete statistics ought to be kept because of the comparative incompleteness of our knowledge. By gathering material from every source, it is possible to have a more accurate conception of the precise place to direct attention. The modern public health official will take advantage of this opportunity, and in consequence, he will make his work very much more effective.

In devising this plan, consideration was given to every possible individual. A working plan must comprehend all classes of persons. Any other arrangement is short sighted and bound to reveal many failures. The plan, however, is only tentative. More or less changes are necessary as conditions warrant. This plan is suggested

as the best working scheme that would fit conditions today. It is not claimed to be perfect, but it does seem to be expedient.

There is some overlapping in the plan with work which is done under the direction of the Board of Charities and Corrections. In these functions, although Minneapolis is unfortunate in having so divided a system, there must be a hearty co-operation between the City health commissioner and the City hospital authorities. This is explained below.

The policy I have outlined above requires a constant application of the best intellect obtainable. It requires a consistent policy supervised by an official for a long period of time. We cannot tolerate a fluctuating policy with every change in a city administration. In the matter of public health it is imperative for us to rise above political considerations.

We are unfortunate in not having yet emerged out of the individual philosophy of our political parties. The old maxim that "to the victor belongs the spoils" persistently clings to municipi-

pal politics. While important advances have been made in many localities, and in many departments of our government, the public office seems to belong to the holder for his private emolument and for that of his friends. Competence is not always the primary consideration. It hardly seems necessary to make such statements in this enlightened age, and yet I have grave fears for public health, unless competent men are employed. This is of first importance, if we are to make any considerable advance in our fight against tuberculosis.

The necessity for having all the time of the health Commissioner has been suggested. It is needless to say that administrative questions cannot be handled efficiently in two or three hours of a day. If a department, so important as this one, is to exist, it must have a head who will supervise it and know what is going on in each department each day. This cannot be done where half time is all that is required. So far as tuberculosis is concerned, the health commissioner ought to be able to have complete information as to the

Lodging houses inspected and conditions there: the number of sputum examinations made, and the percentage of those which are positive; and the results of dispensary work at the end of each day and week. (2) There ought to be a list of more complete data on file. As the files have gone on, the data ~~is~~^{are} more and more meager as we approach the later periods. If the data cannot be obtained from the physician, the case should be followed up from time to time by some other agency. The data are of the greatest importance in understanding conditions. (3) There must be a more efficient inspection of Lodging Houses and tenements for dangerous cases. It is absurd for any civilized community to allow advanced cases to roam at will, infecting countless others, while it knows the disease is infectious. If the hospital facilities are inadequate, then it is necessary to provide adequate ones. At any rate, it is the business of this department to segregate dangerous individuals, and it ought to be held strictly to account for this work.

The Lodging houses ought to have an inspection at regular intervals. The inmates ought to be examined by

a physician at intervals. A compulsory system of reporting sick persons by the managers should be inaugurated and a penalty should be attached for failure to comply.

(3) So far as Minneapolis has gone, it deserves commendation, but for handling tuberculosis, there must be a closer relation between the City health commissioner and the City Hospital Authorities. If the health commissioner is to handle this disease, he must have adequate hospital facilities. When he discovers a case he must be able to place it at once. It would seem wise to divide the work between the hospitals and the City Board of Health. The City Health office should do the detective work, and the hospital authorities should attend to the hospital cases. For this purpose there should be a corps of Visiting Nurses to assist the health department in its work. These nurses could follow up reported cases and complete the datum for each one. They could be constantly on the look out for new cases and thus they could secure early information of possible ones. They should also serve as an educational medium.

The work of the hospitals should be divided into four parts: (1) to provide hospitals for segregating advanced cases; (2) to provide dispensaries for early diagnosis, advice and treatment; (3) to provide sanatoria for curable cases; (4) to provide day camps, night camps and home treatment.

On the second function above, the health department and the hospital authorities should co-operate. Each could render valuable assistance to the other. The remaining other three functions could be carried on exclusively under the direction of the City Hospital.

Properly equipped dispensaries are the most important mediums for discovering cases early. One ought to be located in the lodging house district. It should be the duty of the nurses to bring people to these dispensaries for examination and treatment.

It has been shown before that a large percentage of existing cases are not reported. It is very difficult to estimate the number of those who are unable to take hospital treatment. On a very careful canvass of the

records of the incipients about 20% of the total number of cases were found to be doubtful. For safety, we may divide this number by half, and figure that 10% are absolutely unable to take hospital treatment. This means that 10% must be cared for outside of hospitals, and at intervals between their working hours. This can be done no better than by the erection of day and night camps, and by providing for special home treatment.

The city might well invest in a few tents to be loaned those who cannot go to hospitals, when the patient has a place to erect them. The patients could then be attended by the Visiting Nurses. For others, shacks might be erected at a nominal cost. Reservations of desirable land in the crowded districts ought to be made for this purpose, while there is yet time. There is no doubt but that this land will prove a valuable investment in terms of the lives saved. Such a progressive policy would deserve the highest commendation; for, there will undoubtedly be many patients who will be unable to go a great distance for treatment. This policy would tend to remove

any such obstacle.

Tuberculosis is not the easiest disease to handle. In fact, it is so difficult that specially trained nurses are required. Patients who are sent to hospitals ought not to be put in the hands of students. At least one supervisor of the nurses should be a specialist. Any other arrangement is intolerable. This is true both for incipient and for advanced cases.

We need some more adequate place for accomodating advanced cases than we have now. There ought to be a special hospital constructed for caring for these unfortunates. Places should be arranged for placing the beds in the open air for sunning and fresh air. For those who are stronger, special chairs should be arranged in the open where the patient may sun himself and rest comfortably. The present place for accomodating advanced cases is not only inadequate, but it is wrong in principle. A new arrangement has long been needed. It is to be hoped that it will not be long in coming.

With an average death rate from this disease of 25 a month[#], we should have a hospital capable of caring for not less than 100 advanced cases today. To make adequate provision for the future, we should add not less than twenty-five beds more, and more properly, fifty. This provision is absolutely necessary, if progress is to be made; for, the advanced cases are the most dangerous. Every one of them demands special hospital facilities. To give them every chance to recover, and to make sure they are not spreading infection, this course is the only one to pursue.

We come now to the compulsory reporting of cases. There still lingers an idea among the medical profession that their duty goes no farther than their patient. They seem to have forgotten their social trust and their social responsibility. In some cases it would almost seem as if money could induce them to stoop to some very low levels. There are exceptions in many instances, and we are happy to observe an increase in the number of such. But there is a heavy burden resting upon them. No one can

[#] See table opposite page 64. -----

truthfully relate all the struggles a physician must pass through in this respect. Friends make appeals to him, and he cannot violate their confidence. His regular patients demand his services and resent any reporting of their case. As a general rule, he is beset on every side.

The effect of this condition has already been noted in the small percentage of actually existing cases reported. It is only frank to say, we cannot blame the physicians. We must face this truth boldly; acknowledge it bravely and attempt to discover a remedy. No amount of denial will alter conditions. There are some who will probably take that course. To them, it must be said, that they are harming the cause more than they are benefiting it. It is not he who denies that there is a problem, who contributes anything of value to progress, but it is rather he who acknowledges the problem and attempts to solve it.

The honest physician must be supported. We must create a demand among people for the reporting of these cases. It can be accomplished in no other way. When

people realize the infectious nature of the disease, they ought to demand a protection from this infection. This, however, cannot be done unless the authorities are advised of the danger. It makes no difference whether the case be incipient or advanced. If the former, then the authorities ought to be informed that they may make every endeavor to arrest the disease, and thus save the individual. If the latter, the authorities ought to be informed that they may protect every other individual from infection, besides giving the patient the very best opportunity for saving himself from an untimely end. Whatever way we look at it, whether from the individual or social view point, there should be a report of the case on file in city health commissioner's office. This is no mere passing whim. It is a necessary precaution for the whole community's welfare. A true realization of this fact must be impressed upon every inhabitant.

There are some who maintain that public officers have shown them selves so incompetent that so prodigious

a task as handling tuberculosis demands a private agency. Many claim that the problem raised by the existence of tuberculosis is a growing one and that in consequence some special agency is needed satisfactorily to handle the disease. Indeed, there is a good deal of truth in this argument. Organizations which deal with many other things can only give passing attention to this problem. And yet, as a health problem, tuberculosis ranks first. The health department has its energies spread over an extended territory. Charity organizations almost universally superimpose the charity view point. The hospital authorities have many other questions to settle of more or less importance. On the whole, tuberculosis would not receive the proper attention from these sources.

It would seem that there might be a good place for an intermediary between these three organizations. Such an intermediary might serve as a general clearing house for all three. A system of cross filing and cross-notification could be easily devised, whereby each organization could keep in close touch with actual con-

ditions. It would have the further advantage of giving each organization its material from the clearing house, and the clearing house would receive its material from these three sources. In Chicago, the Chicago Tuberculosis Institute Performs this function. This institution has the advantage of being independent of any political affiliations. It employs ten visiting nurses and has under its control nine dispensaries. These dispensaries are run by physicians who donate a few hours time per week to this work. Besides these, the Institute owns and operates the Edward Sanatorium at Naperville.

The functions of this Institute are (1) agitation, (2) education, (3) discovery of cases, and (4) treatment. It has already brought pressure to bear upon the county hospital board, and has secured a hospital for advanced cases, accomodating 300 persons. It used its influence to have Chicago adopt the "Glackin Law" which permits cities and villages to levy a special tax(not to exceed one mill) for the construction and maintenance of tuberculosis sanatoria.* The work of this Institute deserves

* Chicago Tuberculosis Third Annual Report 1908, p. 41.

strong commendation.

Minneapolis does not need an institution of this kind. What we do need is a special department of the City Health office, to have no other function than that of serving as a general supervisor of this work. If the health department does not merit so much confidence as would be reposed in it, then it is the duty of Minneapolis citizens to reconstruct it. There are many other health problems here besides that of tuberculosis, and if the department is inefficient in one, it is liable to be inefficient in another. Whatever we do, it is absolutely necessary to maintain an efficient health office.

The Anti-Tuberculosis Committee should assume responsibility for agitation. There is no special need for organizing a special institution for that purpose. To make sure, however, that it may do this effectually, there ought to be some legal basis provided for it to ascertain the facts. Such could be easily established. This need not be a sensitive point, except to

him who would attempt to withhold the facts. By this method, there could be active and helpful co-operation between the health office and this committee.

We come now to the discussion of the methods for securing adequate hospital facilities. Reference has already been made to the provisions necessary for efficient hospital accommodations. The City health authorities have repeatedly conceded the inadequacy of the present ones. Necessary extensions are needed on every side, and the principal question is, What should be provided for first? Obviously, there are many other problems to be considered than that of tuberculosis. There is not hospital room for meeting the emergencies of an epidemic, and this is one problem a city hospital ought to meet, first. The contagious wards are very inadequate, and they must soon be enlarged. There is immediate need for a large expenditure, exclusive of the demands which must be made for tuberculosis. The limit of the City's bonded indebtedness has already been reached. The same is true with its taxes. Any relief

from the city, in the light of these facts, must be very limited and not very immediate. The question is now one of securing immediate relief for the tuberculosis cases. And the other question is how shall it be done?

It is neither proper nor scientific to erect a tuberculosis hospital and to care for other diseases there. Because of the peculiar form of treatment, tuberculous patients require facilities especially adapted to their needs. Advanced cases need segregation, fresh air and sunshine. Incipients need gymnasium facilities, light, fresh air shacks, and open porches for rest. Here we have the peculiar problem of preventing the spread of infection by segregation in the case of advanced patients and at the same time providing for the patient to secure plenty of fresh air and sunshine in the open; while with incipients it is necessary to keep them in the open almost entirely, and yet not in contact with the advanced cases. In consequence, there is need for two distinct kinds of hospitals for the treatment of this disease; one for the advanced cases, and another for the incipients.

In view of the many hospital needs which Minneapolis confronts at the present time, there does not seem to be any possibility of securing these facilities for handling tuberculosis for some time. And yet, this problem demands immediate relief. There is just one method of escape from this embarrassing situation. This is to take advantage of the law passed by our last state legislature providing for the erection of tuberculosis sanatoria.

This law provides that any county may levy a tax not to exceed 1/4 mill for this purpose. The adoption of this plan by the county commissioners of Hennepin county would be advisable for the following reasons:

1. Minneapolis is almost co-extensive with Hennepin county.
2. Those inhabitants of Hennepin county outside of Minneapolis come here for treatment, and in some cases go to the city hospital.
3. The health conditions which affect Minneapolis tend to affect the whole county.
4. By far the largest part of the financial burden will rest upon Minneapolis itself, but this method will re-

move the legal obstruction for raising the funds.

5. Only by this method shall we be able to secure immediate relief.

There is no doubt but that the management of such a hospital could be amicably adjusted. There ought to be some responsible centralized agency for controlling all the agencies in the city. This is a matter of agreement, and involving considerable detail. In consequence, there is no place for such a discussion in a paper of this kind.

There are one or two things that ought to be considered. In the management of such a hospital, efficiency is of primary importance. Hence the direct management ought to be as far removed from politics as possible. The head of the hospital ought to be held to a very strict account for all the important details. Specially trained nurses are particularly desirable.

Before closing this chapter, a word ought to be said about publications. The citizens of a community have a right to know the exact truth about health con-

ditions. The suppression of this truth is abominable. Any playing to political parties in this section of City administration deserves the severest condemnation. A public health official MUST be a public truth teller, however exceptional these may be among politicians. It is scandalous for a civilized society of this day to tolerate anything else. We must demand a proper execution of this important duty.

It is not sufficient for a public health office to publish the facts that come to its notice through the regular channels. It must make a special endeavor to secure additional facts for itself. In other words, it must act as a form of a detective agency. This is not a matter of detecting deceit among physicians entirely, but it is a matter of discovering conditions among those who do not have a physician. Among those acquainted with public health reports, it is the common practice to discount their statements by large percentages. In some cases very little confidence is reposed in the persons who issue these docu-

ments. This condition is wrong in principle and bad in practice. In cities the size of Minneapolis, it is time to demand the services of competent statisticians. We are not living in an age where any kind of a slip shod assembling of facts will suffice. We demand the best intelligence obtainable. We have a right to expect that a published report indicates the mature judgment of one who knows the facts. We ought to know that the report indicates the final conclusions of one competent to judge, after due allowance has been made for errors. It is time for radical innovations to be made in this department of our public health administration.

These documents ought to be fearless. They should state exact truths with a comparatively exact precision, with out any playing to any interest whatever. It is time to put aside the fallacy of thinking that the publication of exact facts will injure a community. The withholding of these facts is more injurious than the publication, for it creates a lack of confidence in a department of the public, and makes it an object of suspi-

cion. It is to be hoped that this fallacy will be quickly laid aside.

BIBLIOGRAPHY.

Allen, William H.

"Civics and Health"

Pamphlet, Publ. by Ginn & Co. *date*

Chapter XXIV

Baldwin, G.

Tuberculosis: History and Etiology"

Osler's Mod. Med., Vol.iii, 1907, p.156

"Billboards against tuberculosis"

Survey---Aug. 7, 1909. p. 613.

Boston to Reorganize their public health system.

Survey---Oct. 23, 1909. pp. 119.

"British Journal of Tuberculosis" *date*

Publ. Quarterly by Bailliere, Tindall
& Cox of London.

"Charities and the Commons"

Tuberculosis number. Nov. 7, 1908.

Third Annual Report of the Chicago Tuberculosis

Institute. Chicago-----1908.

Includes report of the Naperville
Sanatorium.

Economical Construction of County Hospitals
for tuberculosis

Thomas Spees Carrington, M.D.

THE SURVEY---Sept. 18, 1909.

Dixon, Samuel G.

"May not drinking water polluted with
sewage be one medium of dissemination
of the Tubercle Bacillus?"

Jour. Am. Med. Assoc., Vol.ii,
August 1, 1908, p. 380.

"Directory of Institutions dealing with Tubercu-
losis".

Published by the National Assoc. for
the Study and Prevention of Tubercu-
losis.

105 East 22nd. St., New York City, N.Y.

Farrand, Livingston

"Educational Methods in the Campaign
Against Tuberculosis".

AM/ Medical Ass.
Chicago-----1907.

Farrand, Livingston---M.D.

"A Comprehensive Program for the
Prevention of Tuberculosis".

Pamphlet Reprint. 1908.

REPRINT form the 6th. International
Congress on Tuberculosis----1908.

Flick, Dr. Lawrence F.

"Consumption a Curable and Preventable
Disease".

David McKay. Publisher
1022 Market St., Phila. Pa.

Foster, John P. C. ---M.D.

"The Relationship of The State to the
Tuberculosis Question".

Pamphlet
New Haven, Conn.

Fulton, Frank T.

"The Detection and Treatment of Cases
of Tuberculosis Among Factory Employees
in Providence"

Pamphlet
Providence, R. I.

Gardiner, Chas. Fox,

"The Dangers of Tubercular Infection
and their partial arrest by climatic
influences"

Am. Jour. Med. Sci.
Phila., Vol. cxv, 1898, p.136.

Gerhard, William Paul

"A guide to Sanitary House-inspection"
16mo.-- 146pp. Cloth \$1.00

Golen, G. W. -M.D.

"Life Insurance and Public Health"

Mutual Interests. Sept. 1909.
William and Liberty St., N.Y.

Goodrich, W. Francis

"The Economic Disposal of a Towns
Refuse" 8vo. 34Opp. Cloth \$3.50
No Date. Publisher not given.

H "New Hope for Consumptives"
Review of Review-----June--1903.

Huber, Dr. John B.

"Consumption and Civilization" 1902
Lippincott & Co., Publishers.

"Proceedings" of the International Congress
On Tuberculosis. 6 Volumes.

Washington-----1908.
Dr. Geo. M. Fulton. Sec'y.

Eight Million Dollars to prevent tuberculous

Phil P. Jacobs.
The Survey-----Sept. 18, 1909.

Knopf, Dr. S. A.

"Tuberculosis a Preventable and
Curable Disease" N.Y. 1909.

Tuberculosis a Disease of the Masses
and How to Combat It. (Prize Essay)
Pamphlet.

Kober, Dr. Geo. M.

"Industrial and Personal Hygiene"

A report of the Committee on Social Betterment.

Publ. by the President's Homes Commission, Washington----1908.

Leach, Albert E. -- S. B.

"Food Inspection and Analysis"
8vo, xiv.--787pp.

For use of Public Analysts, Health Officers, Sanitary Chemists and Food Economics.

Lewis, Orlando F.

"The War on the White Death"

Metropolitan Magazine

April, May and June---1909.

Profusely Illustrated.

Many reproductions from the International Congress Exhibit.

Lowman, John H.

"Schools and Tuberculosis"

Pamphlet. Cleveland, Ohio. No date.

Mass. Hospitals for Cases of Tuberculosis.

The Survey Nov. 27, 1909. p. 273
Incurables.

"Public Health" Michigan.

Health Report July-Sept. 1908.

"Public Health"

Jan---March---1909. Michigan

Newsholme, Arthur--M.D.

"The Cause of the past decline of tuberculosis and the high light thrown by History on Preventive Measures for The Immediate Future". Pamphlet.

REPRINT for the Natl. Ass. No date.
105 E.22nd St, N.Y.

"Tuberculosis or Consumption"

Pamphlet
State Charities Aid Ass. No date.
New York City.

"Proceedings" of the National Association for
the Study and prevention of Tuberculosis.
105 East 22nd St., New York City, N.Y.

Newsholme, Arthur

"The Prevention of Tuberculosis.
Dutton. 1908.

"Hand Book on the Prevention of Tuberculosis"

Pamphlet. New York Charity
Organization Society.
105 East 22nd St., N.Y.

"How to avoid Consumption"

State Charities Aid Association
Pamphlet New York City.

Otis, Edward O.

"The Great White Plague"
New York-----1909.

Pennsylvania Plans against tuberculosis

The Survey Oct. 9, 1909.

Price, George M.

"Handbook on Sanitation"

2nd edition--Revised and Enlarged 1904.

Pressmen vote on Sanatorium

The Survey Oct. 23, 1909. p. 118

Prevention

"Information for persons having diseases
of the Lungs and for others living in
the same house

Publ. by Natl. Ass. for the study
and Prevention of tuberculosis
105 E. 22nd St. New York

"Printers' fight against tuberculosis".

Survey-----Aug. 7, 1909.

Rideal, Samuel D. SC.

"Disinfection and the Preservation of Food, together with an account of the Chemical Substances used as antiseptics and Preservatives.

8vo. 504 pp. London. No Date.

Rogers, Oscar H.

"A Working Program for a small City."
Pamphlet. Yonkers, New York.

Routahn, E. G.

"The Value of the Tuberculosis Exhibition"
The Survey---Nov. 20, 1909. pp--252.

Sachs, Theodore B.

"Children of the Tuberculous"
Pamphlet
Copyright--1908 Am. Medical Ass.
Chicago.

Sachs, Theodore B. M.D.

"Tuberculosis in the Jewish District of Chicago" Pamphlet

Publ. by committee on V. N. Ass. Chicago
79 Dearborn St.

"Catechism and Primer for school children" Pamphlet
Dep't of Health. City of New York.
New York----1908.

Extent

"Tuberculosis in the United States"

Bureau of the Census, S.N.D. North,
Director, Pamphlet
Washington, D.C.

"Prevention of tuberculosis"

Von Behring.
Transl. by Chas. Bloduan M.D.
London & New York-----1904

Wertebaker, C.P.

"Colored Anti-tuberculosis League"
Washington-----1909. Pamphlet.

Williams, Linsly R.

"The Great White Plague"----Otis
A Review of this book
The Survey Nov. 20, 1909. p247

"Annual report of the Workhouse"
Minneapolis, Minn. 1907
Note--Foods and increase of weight

Wright, Barton Lisle

"The Treatment of Tuberculosis" by
the administration of Mercury
Pamphlet
Washington--Gov't printing office-
1908.

Young, A. G.

"Tuberculosis"

1. Infection.
2. Heredity.
3. Prevention.
4. Hygienic treatment.

Pamphlet
Augusta----1900

Hoffman, Frederick L

"Mortality from Consumption in Dusty
Trades"
Statistician of the Prudential Life
Insurance Company.

Bulletin No 79 of the Bureau of Labor
of the Dept. of Commerce and Labor,
Nov. 1908, Washington, D.C.

"Tuberculosis in Chicago"

A few facts collected by the Chicago
Tuberculosis Institute:

Pamphlet Chicago. *