

Report / of the Commission on hospitals for advanced cases of tuberculosis : made to the General Assembly at its January session, 1911.

Contributors

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REPORT

FORWARDED BY
R.G. HAZARD
Peace Dale, R. I.

Rec. Providence
OF THE

COMMISSION ON HOSPITALS

*day already seen copy sent me
by Dr Barnes
Good document*

FOR

Advanced Cases of Tuberculosis

MADE TO THE

GENERAL ASSEMBLY

AT ITS

JANUARY SESSION, 1911.



PROVIDENCE, R. I.

E. L. FREEMAN COMPANY, STATE PRINTERS.

1911.

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State of Rhode Island and Providence Plantations.

REPORT

OF THE

COMMISSION ON HOSPITALS

FOR

Advanced Cases of Tuberculosis

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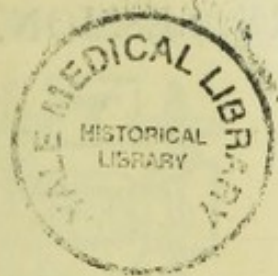
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COMMISSION ON HOSPITALS
FOR
ADVANCED CASES OF TUBERCULOSIS.

ALBERT H. SAYLES, *Chairman*Pascoag.
ROWLAND G. HAZARD.....Peace Dale.
WM. C. MONROE, M. D..... Woonsocket.
FREDERICK P. GORHAMProvidence.
WM. P. BUFFUM.....Newport.

HARRY LEE BARNES, M. D., *Secretary*..... Wallum Lake.

RESOLUTION

Requesting the Trustees of the State Sanatorium to investigate as to the need of hospitals for the treatment of advanced cases of tuberculosis, and to report thereon.

Resolved, That the Trustees of the State Sanatorium be and they hereby are appointed a commission to investigate as to the need of hospitals for the treatment of persons afflicted with tuberculosis in its advanced stage, and to report thereon, with a comprehensive plan for the care of such cases.

STATE OF RHODE ISLAND.

OFFICE OF THE SECRETARY OF STATE,

PROVIDENCE, July 21, 1910.

I HEREBY CERTIFY the foregoing to be a true copy of the original resolution passed by the General Assembly on the 24th day of February, A. D. 1910, and approved by His Excellency the Governor on the same day.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seal of the State aforesaid, the day and year first above written.



J. FRED PARKER,

Secretary of State.

REPORT.

To the Honorable the General Assembly of the State of Rhode Island and Providence Plantations:

By a resolution passed by the General Assembly at its last session, this board was appointed a commission "to investigate as to the need of hospitals for persons afflicted with tuberculosis in its advanced stage, and to report thereon with a comprehensive plan for the care of such cases." In compliance with the terms of this resolution, we herewith submit to you the result of our investigation, together with a plan for the care of these persons.

SUMMARY OF THE REPORT OF THE COMMISSION.

1. The number of cases of tuberculosis actually reported to the commission is 1,467.
2. The minimum estimated number of active cases of tuberculosis in Rhode Island, based on the work of the commission is 2,509.
3. Segregation is the logical measure for the prevention of tuberculosis.
4. The death rate from tuberculosis has declined the most, and reached the lowest point, in countries in which there has been the most institutional segregation of consumptives.
5. The patients most needing segregation are the advanced ones, as they are most contagious and the least able to exercise precautions.
6. Of 102 patients having advanced tuberculosis whose home conditions were investigated in Providence, 50 per cent. were unable to occupy a room alone without objectionable overcrowding of the rest of the family.

7. There are at least 500 patients in the State having tuberculosis, in urgent need of hospital care, of whom 126 are already in hospitals and 374 have no hospital accommodation.

8. Of 122 advanced patients in various towns who were asked if they wished to enter a hospital, 72 per cent. replied affirmatively and signed blanks to that effect.

9. The ideal plan for the care of cases of tuberculosis in the advanced stage is the segregation of such cases by each city or town within its own limits, either in special hospitals or in separate wards connected with general hospitals. As an encouragement for the erection of such hospitals or wards, we recommend a State appropriation of \$200 per hospital bed to each municipality erecting such hospitals or wards, the plans of which receive State approval.

10. A hospital, the administrative parts of which allow of its expansion to 200 beds, should be built by the State, 100 beds should be provided at once, and the second hundred beds added as soon as needed to provide room for applicants.

11. As the main object of the institution is the protection of the public, the patient should not be expected to pay board.

12. The towns should pay \$5.00 per week, or one-half the estimated cost for the care of each patient, at the hospital, for whom they are justly chargeable, and cities or towns giving hospital care to patients should be paid \$6.00 per week by the State,—\$5.00 plus \$1.00 per week interest on capital invested.

13. The hospital should be located apart from other State institutions, and where it can be visited conveniently by the public.

14. The estimated cost of the institution for the first 100 beds is \$190,000.00 for brick, \$160,000.00 for part wood construction, and \$120,000.00 for all wood construction.

15. The teaching of the simple facts concerning the contagion of tuberculosis and its prevention as a part of a course in hygiene in the public schools is recommended.

16. An amendment to the anti-spitting law, requiring the frequent posting of signs on the streets, is recommended.

17. An amendment to the law, requiring registration of tuberculosis which will ensure sanitary teaching of all consumptives and their families, is recommended.

18. A sanatorium ward for children is needed.

19. Tuberculosis nurses should be engaged and paid by the towns.

20. The enactment of a law prohibiting the importation of tuberculous cattle into the State is recommended.

21. The thousand deaths from tuberculosis in Rhode Island each year represent an estimated loss of earnings during illness, of \$1,653,750.00; a loss in medical attendance, medicines, and nursing, of \$840,000.00; and a loss, through the cutting off of the earning power by death, of \$5,880,000.00; or an estimated total loss of over \$8,373,750.00.

THE NUMBER OF CASES.

As an aid to an intelligent consideration of this subject the commission felt the importance of obtaining an estimate of the number of tuberculous persons in the State. Had Chapter 386, Sections 10, 11, and 12 of the General Laws been complied with, all cases of tuberculosis under the care of physicians would have been registered at the office of the State Board of Health. As a large proportion of physicians had not complied with this law, the commission attempted to secure reports of cases on the following blank, which with a copy of the resolution was mailed to every physician in the State.

Please record all cases now under your care.

We wish the initials of the patient's name, the age (estimated), and the street, if possible, in order to detect duplicate reports of patients should they occur.

CASES OF PULMONARY TUBERCULOSIS.

Initials of the patient's name.	Age.	Town or City,	Street.	State whether patient is incipient, moderately advanced, or far advanced.

INCIPIENT—To mean	{	Cough and all symptoms slight. Possibly no symptoms except hemorrhage from the lungs. Little or no rise of temperature. Little or no acceleration of pulse. Area of involvement slight. Patient feels able to work.
MODERATELY ADVANCED—To mean	{	Moderate amount of cough, expectoration, and loss of weight. Patient may or may not have fever. Moderate amount of involvement. May or may not work full time, but he is not fit to do so.
FAR ADVANCED—To mean	{	Severe cough. Abundant expectoration. Pronounced loss of weight. Pronounced loss of strength. More or less fever. Extensive involvement. Unable to work.

NOTE—The symptoms of chills, night sweats, pleurisy, pains and hemorrhage may or may not be present in any stage of the disease.

CASES OF TUBERCULOSIS OTHER THAN PULMONARY.

Initials of the patient's name.	Age.	Town or City.	Street.	State the organ diseased.

The classification here given was considered more suitable for general practitioners than that of the National Association.

THE REPORTS OF PHYSICIANS.

The number of licensed physicians practicing medicine in this State, November 1, 1909, as shown in the *Monthly Bulletin* of the State Board of Health, was 823. Of this number, 149 were not in practice* in this State, at the time the blanks were sent out, and 10 did not reply. Of the 664 physicians from whom replies were received, 400 reported no cases and 264 reported cases.

Blanks were also filled out by the tuberculosis nurses of Providence, Newport, Pawtucket, Woonsocket, and Warwick.

The number and classification of the cases reported follows in tabular form.

*14 were retired from practice, several were summer residents only and over 100 had removed from the State.

TABLE 1.—REGISTRATION OF TUBERCULOSIS IN RHODE ISLAND BY THE COMMISSION.

	PULMONARY.				Non-Pulmonary.	TOTALS.
	Incipient.	Moderately Advanced.	Far Advanced.	Unclassified.		
1. Patients reported by physicians:						
(a) Pulmonary.....	172	265†	168	45	.....	650
(b) Non-Pulmonary.....						
Lupus.....					3	
Lymph Nodes:						
Cervical.....					9	
Cervical and axillary.....					1	
Glands.....					15	
Larynx.....					5	
Viscera:						
Peritoneum.....					4	
Kidney.....					1	
Intestines.....					5	
Vermiform appendix.....					1	
Ischio-rectal.....					2	
Fallopian tubes and peritoneum..					1	
Bladder.....					1	
Testicle.....					2	
Bones:						
"Bones".....					1	
Phalanx.....					1	
Clavicles.....					1	
Rib.....					1	
Spine.....					4	
Metacarpal.....					1	
Tibia.....					1	
Fibula.....					1	
Tarsal.....					1	
Radius.....					1	

TABLE 1.—REGISTRATION OF TUBERCULOSIS IN RHODE ISLAND BY THE COMMISSION.—*Continued.*

	PULMONARY.				Non-Pulmonary.	TOTALS.
	Incipient.	Moderately Advanced.	Far Advanced.	Unclassified.		
1. Patients reported by physicians.—<i>Concluded.</i>						
Joints:						
Shoulders.....					2	.....
Wrist.....					1	.....
Hip.....					13	.....
Hip with lungs far adv.....					1	.....
Knee.....					6	.....
Ankle.....					1	.....
Total Non-Pulmonary.....					87	.....
Total number reported by physicians.....						737
2. Patients reported by Out-Patient Depts:						
North End Dispensary.....	3	2				5
R. I. H. (Out-Patient Department).....	99*	97	40	29		265
Totals.....	274	364	208	74	87	1,007

†28 arrested cases were included.

*12 apparently cured cases and 1 cured case reported were excluded; 33 apparently arrested cases reported were included.

No cases of Miliary Tuberculosis were reported.

TABLE 1.—REGISTRATION OF TUBERCULOSIS IN RHODE ISLAND BY THE COMMISSION.—*Continued.*

	PULMONARY.				Non-Pulmonary.	TOTALS.
	Incipient.	Moderately Advanced.	Far Advanced.	Unclassified.		
‡Patients reported by institutions:						
Bethany Home.....						0
Butler Hospital.....						1
Chestnut Street Emergency Hospital.....						0
Dexter Asylum.....						0
East Side Hospital.....						0
Hills Grove Hospital.....	14	4	28			46
Hopeworth Sanatorium.....						0
Homeopathic Hospital.....						0
Newport Hospital.....	0	1	0		1	2
Oaklawn School for Girls.....	1	0	0			1
Parade Street Hospital.....						0
Providence City Hospital.....						*0
Providence Lying-in-Hospital.....						0
Rhode Island Hospital.....	2	1	1			4
Rhode Island Institute for the Deaf.....						0
Saint Elizabeth's Home.....						0
School for the Feeble-Minded.....						0
Sockanosset School.....						0
Soldiers' Home.....	0	0	1			1
State Almshouse.....	1	5	48		1	55
State Home and School.....						0
State Hospital (for the insane).....	5	19	7			31
State Prison and County Jail.....	0	1	1			2
State Sanatorium.....	10	116	0			126
Twin City Hospital.....						0
Woonsocket Hospital.....	2	1	0		1	4
Saint Joseph's Hospital.....						0

TABLE 1.—REGISTRATION OF TUBERCULOSIS IN RHODE ISLAND BY THE COMMISSION.—*Concluded.*

	PULMONARY.				Non-Pulmonary.	TOTALS.
	Incipient.	Moderately Advanced.	Far Advanced.	Unclassified.		
4. Patients reported by district nurses,† or anti-tuberculosis associations, not otherwise reported:						
Newport.....				22		22
Pawtucket.....				43		43
Providence.....				41		41
Woonsocket.....				59		59
Unknown.....				22		22
Total number reported.....	309	512	295	261	90	1,467

*Providence City Hospital had not been opened when the reports were received.

†All cases reported by nurses were nominally under the care of physicians, but were not reported by the latter.

‡At this writing there are no cases of tuberculosis in any town almshouse in Rhode Island.

The residences of the patients reported have been classified according to counties and towns in Tables 2 and 3. Patients are classified according to ages in Tables 4 and 5.

TABLE 2. RESIDENCE—COUNTIES.

Name of County.	No. of cases reported.
Bristol.....	23
Kent.....	78
Newport.....	73
Providence.....	963
Washington.....	50
Unknown.....	7
Institutions.....	273
Total.....	1,467

TABLE 3. RESIDENCE.—TOWNS.

Name of Town.	No. of cases reported.
Barrington.....	0
Bristol.....	11
Burrillville.....	8
Central Falls.....	35
Charlestown.....	0
Coventry.....	11
Cranston.....	27
Cumberland.....	25
East Greenwich.....	2
East Providence.....	23
Exeter.....	0
Foster.....	2
Glocester.....	1
Hopkinton.....	4
Jamestown.....	1
Johnston.....	1

Name of Town.	No. of cases reported.
Lincoln.....	2
Little Compton.....	4
Middletown.....	3
Narragansett.....	0
Newport.....	*54
New Shoreham.....	4
North Kingstown.....	9
North Providence.....	3
North Smithfield.....	5
Pawtucket.....	130
Portsmouth.....	2
Providence.....	586
Richmond.....	2
Scituate.....	4
Smithfield.....	0
South Kingstown.....	15
Tiverton.....	5
Warren.....	12
Warwick.....	65
Westerly.....	20
West Greenwich.....	0
Woonsocket.....	111
Unknown.....	7
Institutions.....	273
 Total.....	 1,467

*Four Newport patients, not included in the above table, are in the Holy Ghost Hospital, Cambridge, Mass.

TABLE 4.—AGES.

Age.	No. reported.	Age.	No. reported.
1 year.....	7	33 years.....	22
2 years.....	2	34 ".....	21
3 ".....	4	35 ".....	56
4 ".....	3	36 ".....	29
5 ".....	5	37 ".....	24
6 ".....	6	38 ".....	51
7 ".....	10	39 ".....	27
8 ".....	14	40 ".....	70
9 ".....	15	41 ".....	16
10 ".....	5	42 ".....	31
11 ".....	21	43 ".....	17
12 ".....	20	44 ".....	16
13 ".....	16	45 ".....	30
14 ".....	14	46 ".....	10
15 ".....	12	47 ".....	11
16 ".....	20	48 ".....	19
17 ".....	28	49 ".....	8
18 ".....	32	50 ".....	28
19 ".....	29	51 ".....	8
20 ".....	44	52 ".....	12
21 ".....	40	53 ".....	11
22 ".....	46	54 ".....	7
23 ".....	32	55 ".....	8
24 ".....	48	56 ".....	5
25 ".....	41	57 ".....	6
26 ".....	33	58 ".....	3
27 ".....	40	59 ".....	4
28 ".....	56	60 ".....	15
29 ".....	28	61 ".....	4
30 ".....	59	62 ".....	1
31 ".....	21	63 ".....	2
32 ".....	36	64 ".....	1

Age.	No. reported.	Age.	No. reported.
65 years.....	7	76 years.....	0
66 "	3	77 "	1
67 "	1	78 "	2
68 "	3	79 "	0
69 "	0	80 "	0
70 "	3	81 "	0
71 "	1	82 "	0
72 "	1	83 "	0
73 "	1	84 "	1
74 "	1	85 "	1
75 "	0	Unknown.....	81
Total.....			1,467

Physicians were allowed to give the estimated age, and this was done in some instances, but not often enough, we believe, to affect the general result.

TABLE 5.—AGES.

Ages.	No. of cases reported.
Under 5 years.....	16
From 5 to 10 years.....	50
From 10 to 15 years.....	76
From 15 to 20 years.....	121
From 20 to 25 years.....	210
From 25 to 30 years.....	198
From 30 to 35 years.....	159
From 35 to 40 years.....	187
From 40 to 45 years.....	150
From 45 to 50 years.....	78
From 50 to 55 years.....	66
From 55 to 60 years.....	26
From 60 to 65 years.....	23
From 65 to 70 years.....	14
From 70 to 75 years.....	7
From 75 to 80 years.....	3
From 80 to 85 years.....	1
From 85 to 90 years.....	1
Ages unknown.....	81
	—
Total.....	1,467

Everyone familiar with the tuberculosis problem appreciates that a large proportion of tuberculous persons are not constantly under a physician's care, so that a total obtained from all physicians' reports will be only a fraction of the actual number. Many patients leave their physicians, some because they feel able to work, others because they feel unable to pay, and still others because they are impressed with the futility of the physician's attention. In this connection a comparison of the cases reported by physicians with those known to the tuberculosis nurses in Newport, Woonsocket, and Pawtucket is of interest. Duplicate reports of cases used in Table 6, are eliminated by a comparison of the initials, ages, classification and streets of each case with every other in the same city.

TABLE 6. CASES REPORTED BY

City.	PHYSICIANS.		NURSES.	
	No.	Per cent.	No.	Per cent.
Newport.....	32.....	59.2	22.....	40.8
Pawtucket.....	87.....	66.9	43.....	33.1
Woonsocket.....	52.....	46.9	59.....	53.1
	—	—	—	—
*Total.....	171.....	57.9	124.....	42.1

From the above table it appears that of the total number of cases reported to us from these cities, only 58 per cent. were reported by physicians. If the same proportion prevailed throughout the rest of the State, the number of recognized cases unreported by physicians would be at least 729.

A large proportion of patients having incipient tuberculosis do not feel sick and for this reason they continue to work without consulting physicians. It is important that these cases should be recognized for the two-fold purpose of treating the patient while he is curable, and of protecting the community against his ignorance. The his-

*As Providence has relatively few nurses doing tuberculosis work compared with the other cities of the State, it was not considered in this table.

tories of patients at the State Sanatorium have been carefully taken with the idea of determining the period which ensues between the clinical onset and the diagnosis of the disease. An examination of 1,000 of these histories shows that the average duration of this period is about six months, and as there are about 1,000 new cases infected each year, we estimate that there are constantly at least 500 cases of active tuberculosis which have not been diagnosed.

TABLE 7. SUMMARY OF CASES.

Reported by physicians.....	737
Reported by out-patient departments.....	270
Inmates of Institutions.....	273
Estimated number of recognized cases not reported by physicians.....	729
Estimated number of unrecognized cases.....	500
	<hr/>
*Total minimum estimate based on the investigation of the commission.....	2,509

This is a conservative minimum estimate. We think that the true number is considerably more and we are reasonably sure that it cannot be less.

*Various estimates as to the number of cases of tuberculosis in the community have been made, based on the duration of the disease. Latham quotes Pollock, who showed that the average duration of life of 3,566 cases of consumption, from the first symptom of the disease to the fatal termination, was two and one-half years. According to this method of estimation, if the average duration be considered two and one-half years, there would be two and one-half times the number of deaths, or about 2500 cases in Rhode Island. Most authorities now believe that the average duration of the disease is over two and one-half years, some authorities estimating the average duration to be as long as seven years. Other estimates have been made, based on the frequency with which tuberculosis is found post mortem. In the post mortem statistics, of course all cases are recorded as tuberculosis if there is the slightest trace of the disease in any part of the body, and pathologists rarely find the number of the tuberculous to be less than 30 per cent. of all deaths. Phillip, of Edinburgh, reasoning largely from post mortem statistics, places the number of tuberculous persons at about twenty times the annual number of deaths. As in a very large percentage of persons in whom tuberculosis is found post mortem the disease has not developed sufficiently to sensibly impair the health of the persons affected, or to make them at all dangerous to others, it may well be doubted whether estimates based on post mortem statistics, including as they do many latent and cured cases, are not too high to have practical value in formulating measures for the protection of the public health.

THE TUBERCULOSIS DEATH RATE.

Tuberculosis has always been a prominent cause of death in this State. In 1854, the first year in which reliable data are available, it caused 395, or 22.8 per cent., of all deaths. Since this time the number of deaths from tuberculosis has steadily increased until in 1908 it caused 1,050 deaths. The death rate during 1908, for each county, as reported by the State Registrar of Vital Statistics, is shown in Table 8. The number of deaths from 1865 to 1908 is shown graphically on Chart 1‡. Although at first glance this increase appears startling, it is entirely due to increase of population from 184,965 in 1865 to 480,082 in 1905. The number of deaths from tuberculosis per 10,000 population had decreased, as shown in Chart 2‡, from 34.3 in 1865 to 21.4 in 1905, a reduction of 37.6 per cent. In 1908 it had fallen to 20.5 per cent.

TABLE 8.

Counties and Towns.	Total No.	In every 1000 of Population.
Bristol.....	22	1.36
*Kent.....	111	3.03
Newport.....	49	1.06
Newport City.....	.....	1.38
†Providence County.....	417	2.41
Central Falls.....	.....	2.37
Pawtucket.....	.....	1.90
Providence City.....	412	1.94
Woonsocket.....	.....	2.46
Washington County.....	39	1.51
Whole State.....	1,050	2.05

†Does not include Providence city.

*The hospital for consumptives at Hills Grove is in Kent county.

‡ See charts on following pages.

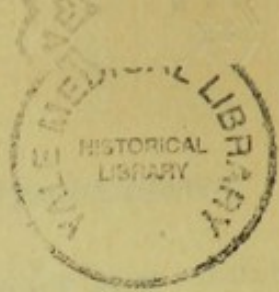


Chart 1, showing increase in deaths from tuberculous diseases in Rhode Island, A. D. 1865-1908.

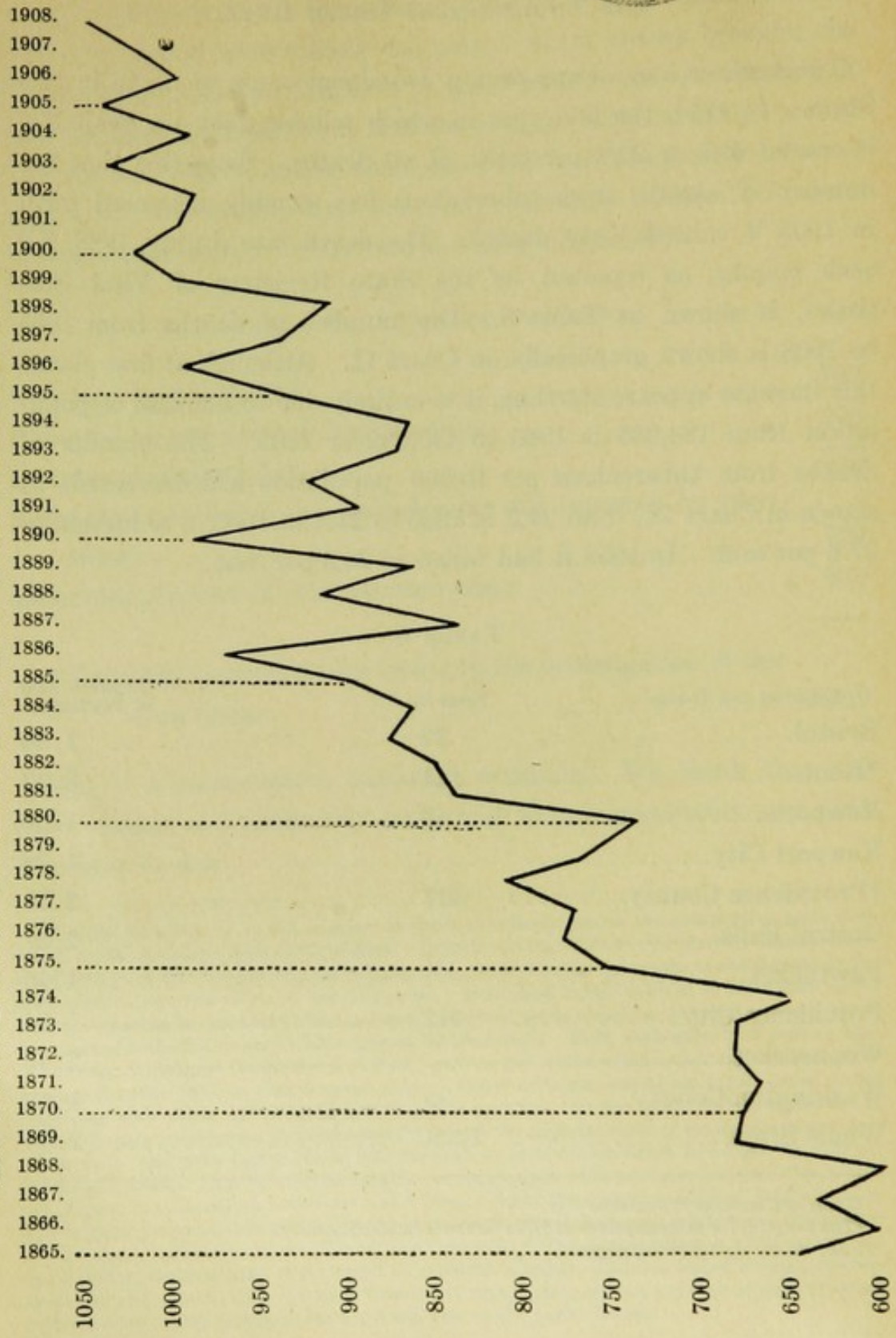
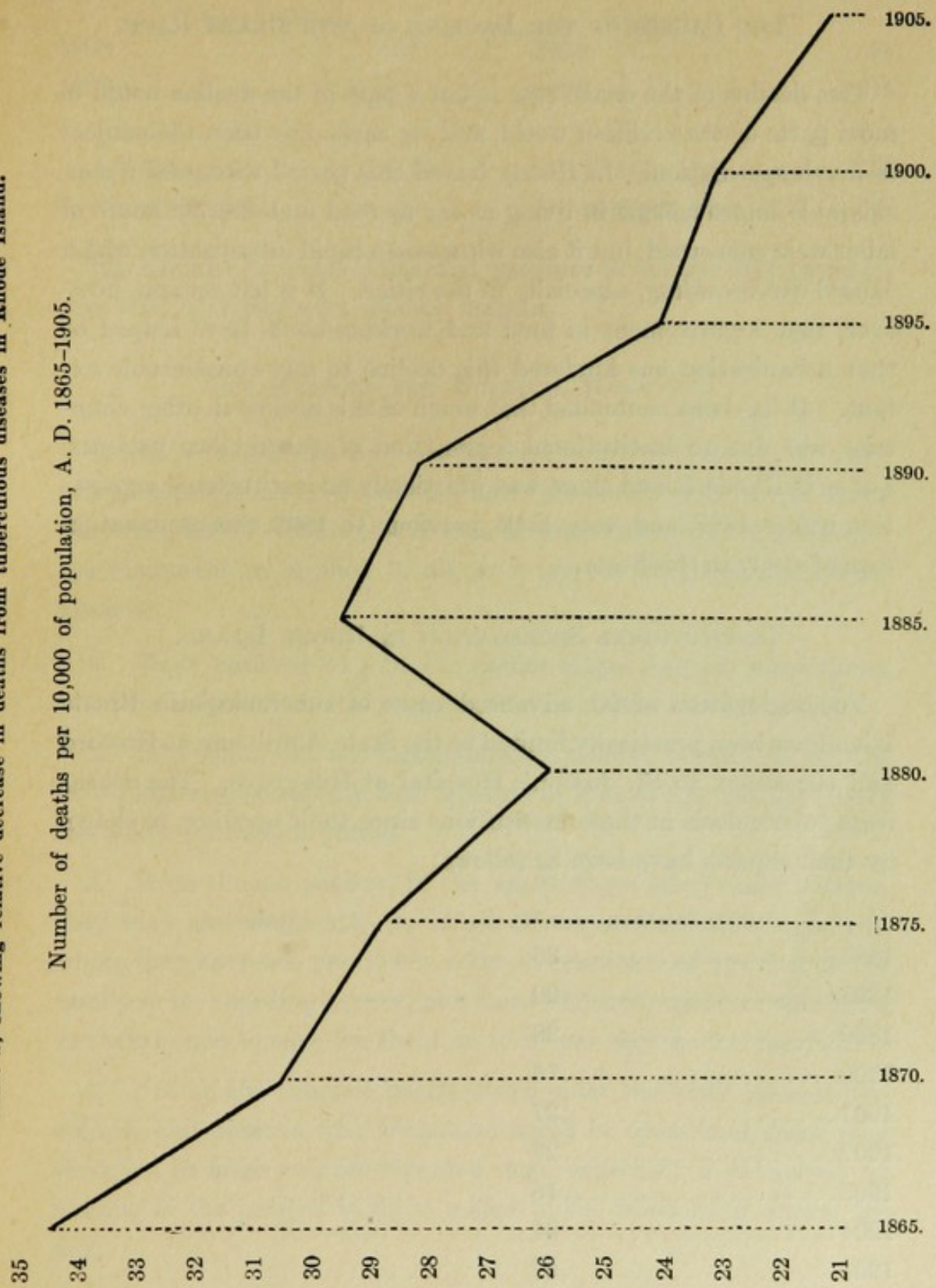


Chart 2, showing relative decrease in deaths from tuberculous diseases in Rhode Island.

Number of deaths per 10,000 of population, A. D. 1865-1905.



THE CAUSES OF THE DECLINE OF THE DEATH RATE.

This decline of the death rate is but a part of the decline noted in most parts of the civilized world, and its cause has been the subject of much speculation. In Rhode Island this period witnessed a considerable improvement in living as far as food and shorter hours of labor were concerned, but it also witnessed a rapid urbanization which caused overcrowding, especially in the cities. It is not certain, however, that improvement in food and working-hours have helped or that urbanization has hindered this decline to any considerable extent. It has been contended that much of this decline in other countries was due to institutional segregation of tuberculous patients, but as in Rhode Island there was practically no institutional segregation before 1897, and very little previous to 1903, this explanation cannot apply to this State.

INSTITUTIONAL SEGREGATION IN RHODE ISLAND.

The segregation of far advanced cases of tuberculosis in Rhode Island has been practically limited to the State Almshouse at Howard and the annex to St. Joseph's Hospital at Hillsgrove. The deaths from tuberculosis in these institutions since their opening, as shown by their reports have been as follows:

State Almshouse.	Hillsgrove.
1897 26
1898 29
1899 28
1900 16
1901 27
1902 27
1903 16
1904 31
1905 57
1906 54	1906 41
1907 73	1907 46

State Almshouse.	Hillsgrove.
1908.....32	1908.....46
1909.....	1909.....84
—	—
Total.....416	Total.....217
Average per year.....34	Average per year.....54

The average duration of hospital residence of the last fifty patients, who died at Hillsgrove, was 4.3 months.

THE REASONS FOR HOSPITAL ISOLATION.

It has been objected that the hospital isolation of advanced cases is inadequate because the patients have previously infected all whom they can infect. While this is true in some cases, it is in no sense a fair statement as applied to all, as it ignores the following circumstances:

1. Many patients who in the earlier stages exercise precautions, are physically and mentally unable to do so in the last few months.
2. In a small, but not inconsiderable, number of patients the disease progresses so rapidly that a period of four or five months covers the whole contagious period.
3. Even though patients in the early stages infect many persons, they may and frequently do infect others in the later stages with whom they have not previously come in contact,—as boarders in the family or in boarding-houses, new-born children, relatives who come to their homes to care for them or to whom they go for care, etc.
4. Not all the tubercle bacilli which enter the body cause tuberculosis, and persons who withstand small or occasional doses may succumb to large and oft-repeated ones, especially if exhausted by nursing of the patient at night added to the usual labor during the day.

EXPERIENCE IN HOSPITAL ISOLATION.

It cannot be denied, moreover, that the countries in which the death rate from tuberculosis has declined the most, and reached the lowest point, England and Prussia, for example, are those in which institutional segregation of consumptives has been carried to the greatest extent. In England and Wales, between 1886 and 1907, there was a reduction in the death rate, from tuberculosis, of 36 per cent.; in Prussia, between 1886 and 1909, there was a reduction of 44 per cent.; while in Rhode Island, between 1886 and 1907, the reduction was 32 per cent.* The death rate from tuberculosis per 10,000 of population in England and Wales is now about 15; in Prussia, 17.1; and in Rhode Island, about 20.

Newsholme has pointed out that while Ireland and Norway had until recently very little institutional segregation of consumptives and no marked diminution in the death rate from this disease, England, Scotland, and Prussia have had a large amount of hospital segregation with a great diminution in the death rate. The reduction in the mortality from consumption in England was believed by Koch to have resulted in great measure from hospital treatment of advanced cases. Newsholme states that in England and Wales, "in the period 1886-1903 segregation, measured by the fraction of total deaths occurring in institutions, has approximately doubled, and the death rate from phthisis has approximately halved; in London segregation has not quite doubled, and the phthisis death rate is rather more than half." He estimates that about 20 per cent. of all deaths from consumption in England occur in institutions, and that the average duration of hospital residence is about four months.

Flick has stated that if the number of hospital beds available for consumptives in England be placed in relation to the number of deaths from the disease, that from 1850 to 1860 the isolation quota was 4 per cent. and the reduction in mortality 5 per cent. From 1860 to 1870 the isolation quota was 6 per cent. and the reduction

*Doubtless many tuberculous persons during these years emigrated West and South and died elsewhere, or still live outside the State.

in mortality 5 per cent. From 1870 to 1880 the isolation quota was 9 per cent. and the reduction in mortality 20 per cent. From 1880 to 1890, with an isolation quota of 11 per cent., the reduction of mortality was 16 per cent. From 1890 to 1900 the isolation quota was 15 per cent. and the reduction in mortality was 20 per cent. Flick also cites the experience of the Kingdom of Naples as an illustration of the value of institutional segregation. "According to Dr. De Renzi, out of 5,282 admissions to one of the general hospitals in Naples in the year 1828, 1,108 were consumptives, and out of 1,366 deaths which occurred in that hospital during that year, 699 were from consumption. The strict enforcement of the isolation of consumptives in Naples for over fifty years was accompanied by a drop in the mortality rate of from possibly 100 per 10,000 to approximately 10 per 10,000."

In 1906, Koch stated that during the preceding ten years over 40 per cent. of the deaths from tuberculosis in Berlin had occurred in institutions. In other parts of Prussia there was also a great amount of segregation. According to Frankel, the number of deaths from tuberculosis per 10,000 population in Prussia has been reduced from 31.14 in 1886 to 17.16 in 1907. Copenhagen has carried out the institutional treatment of advanced cases on a large scale, and has the lowest death rate from tuberculosis of any large city in the world.

Drs. Flick and Bennett, of the Henry Phipps Institute, made a study of the mortality from tuberculosis from the different wards in the city of Philadelphia from 1903 to 1905, inclusive. They say, "A most interesting and striking fact which stands out prominently in this topographical study of the death rate from tuberculosis in Philadelphia is that every ward in which an institution for the treatment of tuberculosis exists has had a reduction in the death rate from tuberculosis, while some of the adjoining wards have had an increase."

SEGREGATION IN CATTLE.

Bang, of Copenhagen, has demonstrated the value of isolation and segregation in the prevention of tuberculosis in cattle. If the tuber-

culous animals of a herd be kept separate from the non-tuberculous animals on the same farm, a healthy herd can gradually be developed to replace the infected one. There is no reason to doubt that the same policy applied to man would bring the same result.

THE DANGER OF FAR-ADVANCED CASES IN HOMES.

While it is true that the danger from the well-trained and conscientious consumptive is so slight that it may be almost disregarded, it is also true that a large proportion of tuberculous, as well as non-tuberculous, persons have not the acute intelligence and sensitive conscience necessary to exercise sufficient care. The care of the far-advanced patients, who are often confined to their beds because of high fever or weakness, can be given by the family only at a great risk. In this stage the sputum is more abundant, and the patient is often too weak in mind and body to faithfully carry out the necessary precautions.

The well-known occurrence of tuberculosis in several members of a family was formerly considered evidence of the hereditary tendency of the disease, but it is now believed to be the result of contagion. Of 1,058 patients admitted to the State Sanatorium, 250, or 23 per cent. of the whole number, underwent prolonged exposure to the contagion from other members of their families. Additional evidence of the danger of family infection is furnished by the investigations of Miss Mary Murray, Director of the tuberculosis nurses of the Providence District Nursing Association, who found:

In 239 families.....	1 case.
In 91 families.....	2 cases.
In 49 families.....	3 cases.
In 14 families.....	4 cases.
In 12 families.....	5 cases.
In 5 families.....	6 cases.
In 2 families.....	7 cases.
In 3 families.....	8 cases.
In 36 families.....	Both husband and wife.

THE HOUSING PROBLEM.

The proper isolation of a tuberculous patient is impracticable in families having so few rooms that two or more persons must sleep in each bedroom, and it is for the protection of these families that hospital care is most urgently needed. That a large proportion of families having cases of consumption are thus overcrowded is shown by the facts obtained for us by the tuberculosis nurses of Providence, who filled out blanks for us in 102 cases of tuberculosis, in over 50 per cent. of which the patient could not be given a room without overcrowding the rest of the family. These facts are shown in Tables 9 and 10.

TABLE 9. NUMBER OF FAMILIES OF SPECIFIED SIZE OCCUPYING SPECIFIED NUMBER OF ROOMS.—TUBERCULOSIS IN FAMILY.

Number of persons to a family.	Number of families of specified size.	NUMBER OF FAMILIES OF SPECIFIED SIZE OCCUPYING SPECIFIED NUMBER OF ROOMS.								
		ROOMS.								
		1.	2.	3.	4.	5.	6.	7.	8.	9.
1.....										
2.....										
3.....	12	1		2	5	3	1			
4.....	10		1	1	4	3		1		
5.....	20			5	7	3	4		1	
6.....	17		1	5	4	4	2			1
7.....	15		1	1	8	1	3	1		
8.....	13			2	5	2	3	1		
9.....	13			2	5	2	1	1	2	
10.....	3				1		2			
11.....	1				1					
Total...	104	1	3	18	40	18	16	4	3	1

TABLE 10.—NUMBER OF FAMILIES OF SPECIFIED SIZE TAKEN FROM THE PRECEDING TABLE OCCUPYING SPECIFIED NUMBER OF ROOMS.—TUBERCULOSIS IN FAMILY.—ISOLATION OF PATIENT WITHOUT OVERCROWDING FAMILY, IMPOSSIBLE.

Number of persons to a family.	Number of families of specified size.	NUMBER OF FAMILIES OF SPECIFIED SIZE OCCUPYING SPECIFIED NUMBER OF ROOMS.								
		ROOMS.								
		1	2	3	4	5	6	7	8	9
1.....						1				
2.....										
3.....	2	1			1					
4.....	3		1	1	1					
5.....	7			4	3					
6.....	10		1	5	3		1			
7.....	10		1	1	8					
8.....	9			2	5	1	1			
9.....	9			2	5	1	1			
10.....	2				1		1			
11.....	1				1					
Total...	53	1	3	15	28	2	4			

If patients are segregated in hospitals, discipline is enforced and opportunity for infecting others practically eliminated. Isolation of tuberculous patients in hospitals is therefore the ideal preventive measure, and although the great number of consumptives precludes the isolation of all at present, yet it is the measure the carrying out of which should be promptly commenced and continually worked for.

WHY THE SANATORIUM IS NOT SUFFICIENT.

The aim of the sanatorium is to treat the patients who are curable or savable. It gives to the tuberculous patients, who are curable and ambitious to be cured, a chance for life which was formerly denied them, and it has saved these lives with sufficient frequency to amply

justify its establishment from an economic standpoint, even though the humanitarian consideration is ignored. While the training which it gives patients and its contribution to the educational campaign have distinct preventive value, it was primarily intended for the cure of the sick and not for the protection of the healthy, and its operation as a curative institution forbids its use as an isolation hospital for far-advanced cases. Indeed its use has served to a great extent to demonstrate more clearly what remains to be done outside its sphere. In his last annual report the Superintendent of the State Sanatorium said "although we have been most liberal in admitting doubtful cases, you will note that one hundred and eighty-one patients have been refused admission to the sanatorium this year, by the examining physicians, because the disease was too far advanced. If to this number be added the 56 patients who were discharged in need of hospital care, we have a total of two hundred and thirty-seven patients coming within the sanatorium influence, during 1909, who should have been sent to hospitals for far-advanced cases. As this could be done in but few cases, because of the lack of beds, most of these patients were obliged to return to their families and friends, where they will infect those whom it will be our duty to treat a few years hence. That it is poor policy to allow the far-advanced patients to spread infection and then attempt to cure the victims has long been recognized by all workers in the tuberculosis field."

WHAT OTHERS ARE DOING.

In Europe in addition to Great Britain and Prussia, whose activities have already been mentioned, Stockholm, with a little over 332,000 inhabitants, has at its disposal, including 300 beds in the public work-houses, a total of 564 beds. In Denmark the value of hospital beds is appreciated, as shown by the fact that this country of two and one-half millions of inhabitants will, when hospitals now planned have been completed, have 1,036 hospital beds for advanced cases in addition to 1,000 sanatorium beds. The value of hospitals

for advanced cases has already appealed strongly to both municipalities and States in this country. Large cities have led the way in providing care for advanced consumptives. The percentage of all cases of phthisis who die in hospitals as reported to us by the departments of health of several large cities are given below:

TABLE 11.—DEATHS FROM PHTHISIS IN CITIES.

CITY.	Year.	Population.	Total deaths.	DEATHS IN INSTITUTIONS.		Deaths per 1,000 population.
				No.	Per cent.	
Baltimore.....	1908.	573,000	1,379	138	10.0	2.40
Providence.....	1909.	217,000	416	134	32.2	1.91
San Francisco.....	1908.	475,000	819	328	40.0	1.72
Cincinnati.....	1908.	380,000	860	332	38.6	2.26
Springfield, Mass.....	1909.	84,237	112	19	16.9	1.32
Hartford, Conn.....	1909.	103,000	144	70	48.5	1.39

Boston has erected and put in operation a hospital for the care of far-advanced cases. In addition to the State Sanatorium for early cases, Massachusetts has recently established three sanatoria, providing four hundred and fifty more beds to which advanced cases are admitted. In Connecticut three county homes have recently been erected for which the State provided the funds. Ohio already has a county hospital plan, and similar movements are under way in other States. In the State of New York the legislature of 1909 passed, and Governor Hughes signed, a bill (Chapter 341, Laws of 1909) authorizing the establishment and maintenance, by the Board of Supervisors of each county, of a county hospital for tuberculosis. The framers of the bill hoped to have a hospital in each one of the fifty-seven counties of the State, and although this law was so recently enacted, hospitals have already been erected in ten and are being constructed in nine other counties. At the last session of its legislature, Maryland appropriated \$100,000 for a hospital for ad-

vanced cases of tuberculosis. In New York city plans which already have been adopted will, when completed, furnish 5,000 institutional beds for tuberculous persons, or an equivalent of about 600 beds in Rhode Island.

WHAT PERCENTAGE OF ADVANCED PATIENTS WOULD ENTER A HOSPITAL?

In all communities where hospitals have been provided for advanced cases, they have been filled. In England a large percentage die in hospitals. In Styria 44 per cent. of consumptives die in hospitals. In Prussia, in 1881-1885, for every 100 deaths from tuberculosis in the general population, 17 were treated in hospitals; in 1907 the proportion had risen to 100:64. In Berlin, in the same interval, the proportion rose from 100:77 to 100:136. In New York city the Seton Hospital and the Hospital for Consumptives at Blackwell's Island are constantly crowded.

In this State the 55 beds at the almshouse at Howard are constantly filled, and great difficulty is found to accommodate those who must be admitted. The hospital at Hillsgrove usually has more applicants than can be cared for. The Tuberculosis ward at the Providence City Hospital was filled shortly after it was opened. In order to present further information as to the percentage of advanced patients willing to go to a hospital, blanks for signature were taken to advanced patients by tuberculosis nurses. The results are given in tabular form:

TABLE 12.

	Willing.	Unwilling or undecided.	Total.
Providence.....	68	54	122
Newport.....	10	0	10
Pawtucket.....	8	0	8
Woonsocket.....	26	1	27
Warwick.....	27	1	28
Cumberland.....	1	0	1
Scituate.....	5	0	5
Coventry.....	1	0	1
Hopkinton.....	2	0	2
Total.....	148	56	204

HOW LONG SHOULD PATIENTS BE KEPT IN HOSPITALS?

In Styria, although in the five years 1903 to 1907, inclusive, the number of tuberculous persons treated in hospitals was over 40 per cent. of the number dying of tuberculosis each year, yet there was no demonstrable reduction in the mortality from tuberculosis. Pfeiffer showed that although over 43 per cent. of the native population of the Styrian city of Graz dying of tuberculosis died in hospitals, that the average duration of treatment was but a little over thirty days, and that but 66 to 69 per cent. remained a month. The short duration of hospital residence of tuberculous patients in Austria, compared to England, Prussia, and Denmark, is believed by competent observers to account for the different results. In Copenhagen, for the years 1890-1904, the average hospital residence of consumptives admitted to hospitals was 104 days. In England, as has been previously stated, the average duration of hospital residence is about four months. Some consumptives may be expected to leave hospitals at the last of their sickness in order to die at home. While this action is of course to be deplored, and prevented whenever

possible, it by no means follows that the families do not receive a considerable amount of protection, even in these cases, as the time during which the family is exposed is but a fraction of what it would have been had the patient remained at home during the whole contagious period. A continuous isolation of all tuberculous patients during a period averaging six months preceding death is none too long. Chronic cases whose capacity for work cannot be restored by treatment at sanatoria or elsewhere could wisely be kept in a hospital until death, even though this residence was prolonged a year or two.

NUMBER OF HOSPITAL BEDS NEEDED.

Reference to Table I will show that the physicians have reported 208 cases as far advanced, and excluding arrested cases, 303 cases as moderately advanced. Practically all of the 208 cases require hospital care, and as many of the moderately advanced cases are febrile, feeble, and too unfavorable for sanatorium treatment, it may safely be asserted that at least one-half of them, or 150, need hospital care. We now have a total of over 350 as reported by physicians, and as we have submitted evidence that not more than 57 per cent. of the recognized cases are under physician's care, we think it is safe to say that there are at least 500 who need hospital care in Rhode Island. We may check the accuracy of this estimate in another way. As there are, in round numbers, 1,000 deaths from tuberculosis in the State each year, and as on an average each case is about six months in the far-advanced stage before death, there should constantly be about 500 in this class.

The hospital beds now available are:

Hillsgrove.....	48*
City Hospital.....	34
State Almshouse.....	44*
	<hr/>
Total.....	126
Leaving a total of 374 beds needed.	

* These wards were built for the capacity above stated but this number is frequently exceeded.

Although we have presented evidence that 72 per cent. of advanced cases now outside institutions are willing to enter a hospital, yet if we reduce this estimate to 60 per cent., we will still have 225 (60 per cent. of 374) beds which should be furnished at the present time.

THE ATTITUDE OF GENERAL HOSPITALS.

If general hospitals had from the outset cared for advanced tuberculous patients in separate wards, this policy would have had some advantage over special hospitals for tuberculosis, as patients would not only have been near their homes, but they would have more readily entered general hospitals than special hospitals. As a rule, however, general hospitals are barely able to make room for the general cases applying for admission, and the great number of tuberculous cases would make the financial burden difficult, even though beds were available. It has thus happened that general hospitals exclude phthisical patients and make special hospitals for advanced cases of tuberculosis necessary.

THE NEED OF MUNICIPAL HOSPITALS.

The ideal plan for the care of cases of tuberculosis in the advanced stages is the segregation of such cases by each city or town within its own limits, either in special hospitals or in separate wards in connection with general hospitals. The chief reason in favor of municipal hospitals is the greater willingness of far-advanced tuberculous patients to enter and remain in hospitals which are near their homes, where they can be readily visited by their relatives and friends. Another advantage of municipal hospitals is the possibility of the exercise of the police power by the local boards of health in forcing hospital isolation on improperly cared for, willful, or careless consumptives who are dangerous to the public health.

THE USE OF THE POLICE POWER IN SEGREGATING CONSUMPTIVES.

Types of patients who should be forcibly removed to hospitals for advanced cases, if necessary, as described by Biggs, are:

A. "Those which are discharged from other institutions, because from the institutional standpoint they are undesirable patients, or because they have violated the regulations of the institutions. A moment's consideration will show that the point of view of the sanitary authorities and that of the managers of an institution widely differ. In order to maintain the discipline of an institution, patients who persistently violate its regulations must be dismissed. From the sanitary standpoint, these are of all cases those which it is especially important should be provided with institutional care.

"Homeless, friendless, dependent, dissolute, dissipated, and vicious consumptives are those which are likely to be most dangerous to the community. If not cared for in an institution, they wander from place to place, frequenting saloons, lodging-houses, sleeping in hallways or whatever cover can be found. Negligent as to the disposal of their expectoration, they disseminate infection in every place which they visit. Such cases must be provided for by the sanitary authorities at any cost, and if necessary they must be forcibly removed to proper institutions and there detained."

B. "Consumptives living in lodging-houses, or consumptive inmates of public institutions, not having facilities for their care, who are unwilling to enter any of the institutions which are available, must be provided for and must also be forcibly removed, if necessary, and detained.

C. "It frequently becomes necessary in a large city to remove from their homes patients who are almost necessarily sources of danger to other members of their family, viz., in those instances in which sanitary conditions are very unfavorable, when there is great poverty, destitution, or overcrowding, and when the patients themselves are unwilling to enter an institution. Then the health authorities must intervene and remove such patients by force and retain them.

D. "There are numerous cases in which patients, who have already been under the care of an institution, for some reason become

dissatisfied with their care and are determined to return to their homes. They demand their discharge. In such instances, when their families are unwilling or unable to provide properly for them, they should be removed by the authorities and retained under supervision."

TO ENCOURAGE THE BUILDING OF MUNICIPAL HOSPITALS.

As an encouragement to cities and large towns to build their own hospitals, we recommend that the State appropriate \$200 to any city or town for each hospital bed provided for advanced cases of tuberculosis, such bed to be located either in a special hospital for tuberculosis or in a separate tuberculosis ward connected with a hospital. Any city or town which now provides hospital beds for consumptives, or which shall provide such beds before the enactment of this proposed law (*i.e.*, \$200 per bed), should unquestionably receive its quota of the State appropriation. The \$200 per bed should be appropriated only after the plans for such hospital or ward have been approved by the Trustees of the proposed State Tuberculosis Hospital. Aside from municipal hospitals, there should be one or more hospitals in every State, in order to provide accommodations for patients from the small towns and rural districts, and from the cities until they build hospitals.

THE NUMBER OF HOSPITALS.

The number of hospitals which should be built in a State obviously depends on the extent of its population and territory. Enough beds can be provided in one hospital in Rhode Island for all demand that can at present be foreseen. The State is so small, geographically, that, were such a hospital located near the center of population, 75 per cent. of the people of the State could go to the hospital and return on the street cars in an afternoon. As far as accessibility goes, one State hospital in Rhode Island, although lacking the ideal accessibility of city or town hospitals, would nev-

ertheless be equivalent to a hospital in every county in many States.

The counties of Rhode Island have practically no organization outside the courts, and they have no funds for building or maintaining hospitals. As hospitals cannot be provided by the counties, and as the small manufacturing or farming towns cannot reasonably be expected to build hospitals in the near future, it is obvious that a considerable proportion of the population of the State can only do its duty to advanced tuberculous patients through the medium of a State hospital. We believe that an institution, the administrative parts of which allow of its expansion to 200 beds, should be built, 100 beds being provided at once, and the second 100 beds added as soon as required to admit applicants.

LOCATION OF A STATE TUBERCULOSIS HOSPITAL.

While it might be supposed by those not familiar with the subject, that a State Hospital could be advantageously located in connection with the other State institutions at Howard, we are confident that such a step would be a mistake. The great majority of tuberculous patients are at present supported in their homes, they are not paupers, and they would refuse to go to an almshouse. The tuberculosis wards at Howard should be maintained in the future, as in the past, for the care of tuberculous paupers and also for patients discharged from other hospitals of the State for infraction of rules, and who are dangerous to the public health. A new hospital is not needed to dispense charity to tuberculous patients, but it is needed to isolate patients, who are now cared for by their relatives and friends, and thus protect the community. It might with more reason be urged that provision should be made for these cases at the State Sanatorium by the erection of additional buildings at Wallum Lake. It must be admitted that wards for advanced cases could be added to the State Sanatorium with a considerable saving in first cost, as the duplication of land and administration buildings, and possibly of power, water, and sewage plants, would be avoided. The ready transference of patients from one institution to another would allow

of easy classification of patients. Patients frequently object to entering a special hospital for advanced cases, as being a confession of hopelessness which they are unwilling to make, and it is likely that some patients, who would refuse to go to a special hospital located by itself, would go to an advanced hospital at Wallum Lake, encouraged by the thought that all their environments were not hopeless and that they might readily be transferred to the sanatorium if unexpected improvement warranted such a change. It takes something from the ideal of a sanatorium to have patients frequently dying of the same disease close at hand, although if there is a complete separation of the patients, this objection is not weighty. In our opinion an institution for far-advanced tuberculosis should be easily accessible in order to avoid a tedious journey for feeble patients, and to allow of ready visitation by relatives and friends who are anxious to visit, and whose visits are important factors in the contentment of patients. We consider the question of accessibility of first importance, and therefore recommend the location of the State Tuberculosis Hospital apart from other State institutions, and as near the centre of population as possible.

THE COST OF HOSPITALS FOR TUBERCULOSIS.

The last three sanatoria, each of 150 beds, built by Massachusetts, cost, when opened, including furnishings, a little under \$700 per bed. Connecticut has recently built three sanatoria at a cost of about \$600 per bed. These institutions are built of wood. About fifty per cent. of the patients' quarters at Massachusetts' new sanatoria are shacks having one side completely exposed, and are, for the most part, without cellars. The scientific treatment of favorable cases of tuberculosis at present requires that patients be kept out of doors, and it has even been found desirable that they should sleep out of doors. The construction of expensive quarters for curable patients may therefore fairly be considered an extravagance. As fast as beds for curable or improvable cases are needed in Rhode Island they

should be provided at the State Sanatorium at Wallum Lake, where shacks could be built for less than \$300 per bed. The problem, which we are now considering, however, is an entirely different one. If an institution be designed for the care of incurables, a large proportion of whom will die within a few months after admission, the true aim should be to make the patient comfortable and give him good nursing, and for this purpose lean-tos are not suitable. The Boston Consumptive Hospital, which is designed to care for the dying cases, is practically of fire-proof construction and cost over \$2,000 per bed. The Providence City Hospital cost about \$2,500 per bed. To build a complete hospital of fire-proof construction may be expected to cost about that sum. While this expense may sometimes be necessary in large cities in order to conform to local ordinances, strictly fire-proof construction is unnecessary when outside city limits. For brick buildings \$1,200 per bed for two hundred beds is a reasonable estimate. As the administrative buildings have to be built in any event, and they will cost but little more, if planned for two hundred beds, than for one hundred beds, the same construction which would require but \$1,200 per bed for two hundred beds would probably require \$1,900 per bed for the first one hundred beds. If the administrative buildings, service buildings, and wards were built of wood, the cost should not be more than \$1,000 per bed for 200 beds, and not more than \$1,600 a bed for the first 100 beds. If all construction was of wood, and of the cheapest type, \$120,000.00 might suffice.

COST OF MAINTENANCE.

A hospital near Providence would avoid the high freight, express, and telephone charges at Wallum Lake (amounting to \$2,500 in 1909), where the weekly per capita cost averages over \$9.50. The food for far-advanced cases need not be as expensive as for incipient cases, as the former do not require, and frequently cannot digest, such large quantities of food. The cost of nursing would, however, be more, and, all things considered, we would not expect good hospital care to be furnished these patients for much less than \$10.00 per

week, or about \$500.00 per year. If the institution was run the first year with only 100 patients, the cost would be \$50,000.00, and under the proposed settlement law, at least half of this expenses should be met by the towns.

HOW SHOULD THE COST OF MAINTENANCE BE MET?

Considering first the question as to the duty of the patient, we are of the opinion that a patient sent to a sanatorium can with some reason be expected to pay part of the cost, if he is able, because sanatorium treatment affords a patient the opportunity to save or prolong his life, and has therefore both a sentimental and cash value to him. While it is true that an advanced patient sent to a hospital receives sustenance and care, the patient often feels that this does not compensate him for giving up his home. The chief object in sending an advanced case to a hospital is not the good of the individual, but the good of the community. That a person is a victim to tuberculosis at all is a result, to a considerable degree, of the neglect of the State and local authorities to protect him, and to expect, after his health has been irretrievably lost and his finances drained as a result of the disease, that he should, in addition, be required to pay for the protection of the community, is unreasonable. A board charge for patients would not only be unjust to them, but it would be impracticable as well, for by preventing the admission of the majority who could not pay, and by shortening the stay of the few who could, it would defeat the main object of the hospital. Unless patients or their relatives feel able and willing to pay, there should be no charge. A fair share of the expense of maintaining patients at the proposed State Tuberculosis Hospital should be borne by the towns to which the patients are justly chargeable. At this point it should be appreciated that Providence is at present maintaining 35 beds for advanced cases in its City Hospital. Other cities should, and probably will, sometime build such hospitals for their own advanced cases. Cities which are progressive enough to build such

hospitals should not be discriminated against by double taxation, once for the maintenance of their own hospital and a second time for the maintenance of a State hospital. The present law for determining the settlement of paupers, which requires that a person shall have been a property owner in a town in order to claim a settlement, results in most of the paupers being State charges, and is obviously unsuitable for determining the responsibility for the care of persons who are not paupers, but who are afflicted with a communicable disease dangerous to the public health.

The following draft is suggested for an act fixing the responsibility for the payment of maintenance charges at the proposed State Tuberculosis Hospital and at town or city hospitals.

SECTION 1. All tuberculous persons legally settled in any city or town in the State who are admitted to hospitals for advanced tuberculosis in this State shall be supported by such city or town, whether such persons be admitted to the State Tuberculosis Hospital, to a tuberculosis hospital maintained by any city or town in this State, or to a tuberculosis ward of a hospital supported by any city or town in this State.

SEC. 2. Any tuberculous person justly chargeable to any city or town in the State shall be supported by such city or town to the extent of \$5.00 per week, if cared for in any tuberculosis hospital or tuberculosis ward of a hospital, as described in section 1 of this act.

SEC. 3. Any tuberculous person justly chargeable to any city or town, but not legally settled therein, shall be supported by the State to the extent of \$6.00 per week, in any tuberculosis hospital or tuberculosis ward of a hospital, as defined in section 1 of this act.

SEC. 4. Any tuberculous person legally settled or justly chargeable to the State of Rhode Island, but not legally settled or justly chargeable to any city or town, shall be supported entirely by the State in any tuberculosis ward of a hospital, as defined in section 1 of this act.

SEC. 5. All tuberculous persons legally settled in any city or town in the State shall be supported by such city or town to the

extent of \$7.00 per week, if admitted to any tuberculosis hospital or tuberculosis ward of a hospital in this State, maintained by individuals or by a corporation other than a municipality, provided that the plans for such hospitals or ward are approved by the Trustees of the State Tuberculosis Hospital.

SEC. 6. Any tuberculous person justly chargeable to any city or town, but not legally settled therein, shall be supported by such city or town to the extent of \$5.00 per week, if admitted to any tuberculosis hospital or tuberculosis ward of a hospital, as described in section 5 of this act.

SEC. 7. Any tuberculous person justly chargeable to any city or town, but not legally settled therein, shall be supported by the State to the extent of \$2.00 per week in any tuberculosis hospital or tuberculosis ward of a hospital, as defined in section 5 of this act.

SEC. 8. Any tuberculous person legally settled or justly chargeable to the State of Rhode Island, but not legally settled or justly chargeable to any city or town, shall be supported by the State to the extent of \$7.00 per week in any tuberculosis hospital or tuberculosis ward of a hospital, as defined in section 5 of this act.

SEC. 9. No town or city having a municipal tuberculosis hospital or ward, as defined in section 1 of this act, shall be responsible for the board of patients admitted to other tuberculosis hospitals, unless such patients could not be given hospital accommodation in the town or city in which they are legally settled or justly chargeable, within ten days from the date of their application to or discharge therefrom.

SEC. 10. The decision as to whether persons affected by this act are legally settled or justly chargeable to the State of Rhode Island, or to any city or town of the State, shall in all cases be made by a Settlement Board, to consist of the Agent of the Board of State Charities and Corrections, the Overseer of the Poor of Providence and the superintendent of the State Tuberculosis Hospital.

SEC. 11. The superintendent or authorities of the State Tuber-

culosis Hospital, or the superintendent or authorities of any tuberculosis hospitals, as defined in sections 1 and 5 of this act, may admit on application any tuberculous person who is legally settled in or justly chargeable to any city or town in the State, or to the State of Rhode Island, and such person shall be supported by the town or State, in accordance with provisions of this act.

SEC. 12. The words "tuberculous persons" in this act shall be interpreted to mean that tubercle bacilli are present in the sputum on admission to the hospital.

By avoiding discrimination against cities or towns maintaining hospitals, this plan would encourage cities to care for their advanced tuberculous cases and thus tend to counteract the enlargement of the State Hospital with the growth of population. It should also be appreciated that as it is far more satisfactory to care for advanced cases near their homes, the encouragement of cities and towns to care for their cases is the wisest plan aside from the question of economy.

THE DUTY OF GOVERNMENT IN THE PROTECTION OF THE PUBLIC HEALTH.

The causes of many diseases are unknown, and the causes of many that are known are at present beyond the control of government; but when once a disease is clearly shown to be preventable there can be no excuse for inaction. A quarantine is maintained on all cases of small-pox, scarlet fever, diphtheria, and typhoid fever, and yet a preventable disease which kills more than three times as many as these four diseases combined is often ignored by the government, the health officers, and the people. The reasons for this amazing inertia are the lack of startling onset and epidemic form, which so quickly attract public attention, and the slow progress of the disease, which kills after a long period, during which the victims and their relatives become reconciled. The supine indifference which

leaves tuberculous patients uncontrolled and uncared for should be tolerated no longer by a civilized community. The unit for fighting a communicable disease is the town, and it is as much the duty of a town or city to protect the people against preventable diseases as to protect them against illiteracy or fire.

As by the terms of the resolution this commission was requested to prepare "a comprehensive plan for the care of advanced cases," and as a hospital is only one step of such a plan, we submit a brief review of other State legislation needed for the care of these cases and the control of the disease.

The most prominent laws or measures for the care of cases of tuberculosis and the control of the disease enacted or undertaken by various States or municipalities are as follows:

Tuberculosis education in the public schools.

Provision for free examination of the sputum.

Anti-spitting laws.

Registration of tuberculosis.

Tuberculosis dispensaries.

Sanatoria for early cases.

Hospitals for advanced cases.

Day camps.

Night camps.

Isolation in the homes.

TUBERCULOSIS EDUCATION.

Tuberculosis is a disease which it is impossible to control until the masses understand something of the principles of its prevention. While education by means of lectures and exhibits will always have great value, especially among foreign-born people, for the great mass of the population they are obviously poor substitutes for the systematic education of all children in the public schools.

It is only right that every child should know something concerning a disease which destroys one-tenth of the race. The simple facts in

regard to the prevention and spread of tuberculosis should be taught in the schools, not as a separate subject, but having its proper proportion of space in a text-book on hygiene.

Fresh-air schools are to be commended and their more general establishment urged.

Ample provision for the free examination of sputum has been made by the State Board of Health, and a law against spitting was enacted in 1900. Experience in Providence and Burrillville, where probably 95 per cent. of offensive spitting in public places has been done away with, shows that the most valuable means for the control of offensive spitting is the posting of numerous signs in prominent places, warning against this dangerous practice. Many warning signs without arrests is a much more efficient policy than frequent arrests without signs. An amendment to the anti-spitting law, requiring that frequent signs be posted by each municipality, would, we believe, increase the value of the present law.

The transference of tubercle bacilli or the germs of other contagious diseases from one member of the community to another, by means of the common drinking-cup, should, so far as possible, be prevented by law.

REGISTRATION.

While it is generally conceded by scientific men that it is possible for tuberculosis to be transmitted from animals to men, yet the great majority of tuberculous individuals are believed to be infected from human beings through tubercle bacilli in the sputum. Sputum may be conveyed directly from the mouths of the sick to the mouths of the healthy, as in kissing, or by the spray discharged during coughing when persons are near each other, as when they are in the same bed. The sputum may also become mixed with dust and inspired with air or ingested with food. It is therefore obvious that every case of active tuberculosis may be a source of infection, and that health officers should know the whereabouts of each patient, know that he has been trained, and that he will be supervised and, so far as

possible, made innocuous until he has recovered or died. There can be no rational or efficient control of tuberculosis or any other communicable disease until compulsory notification, compulsory sanitary education, and supervision of patients by the State and local health authorities are realized. The State registration law is not thoroughly enforced; but even though rigidly enforced, it would not ensure education of the patient and family as to the danger of the disease. Those features of the Maryland registration law which compel physicians reporting cases to return a blank to the local board of health containing detailed statements as to the precautions taken by the patients and family against the spread of the disease are extremely important, as the State in this way compels every patient and family to have at least the initial training in prevention. To thoroughly explain the principles of prevention to the family, to start them using sputum-cups and other precautions, and to fill out a lengthy blank, takes considerable of the physician's time, for which the patient cannot and will not pay, and for which a reasonable fee should be paid by the State. We believe that the fee of \$1.50 allowed by the Maryland law is none too much. Having once reported a case and instructed the patient and family in accordance with the regulations of the board of health, the physicians should be required to further assume or reject responsibility for the continued carrying out of these sanitary measures for the protection of the public health. Cases in which the physicians assumed the responsibility could be left to the discretion of the physician, while patients who asked for charitable aid, or who had no physicians, or for whom physicians refused to assume responsibility, should be supervised by the local health department. Twice yearly all cases should be investigated by the local department of health to see whether they still have active disease and that they are under the care of a physician.

TUBERCULOSIS DISPENSARIES.

Tuberculosis dispensaries, by furnishing opportunity for the poor to obtain an early diagnosis of the disease, by influencing each

patient to have other members of his family examined, and by the sanitary education which they give patients themselves, are of great value in combating the disease. As each of the dispensaries receives patients from surrounding towns, it is safe to say that 80 per cent. of the population of the State have a dispensary within easy access. Other dispensaries are likely to be formed by anti-tuberculosis associations, and while tuberculosis dispensaries do a work which should be done eventually by municipal departments of health, this work is so well done at present that no legislation is recommended for the immediate future.

SANATORIA.

The State Sanatorium at Wallum Lake is at present of sufficient capacity to admit all favorable cases applying for admission. A separate ward should, however, be erected for children under twelve years of age, as children cannot be given the best care when put in wards with adults.

CAMPS.

Day camps which provide a means of outdoor life for consumptives who cannot or will not enter institutions, and night camps which allow working consumptives to sleep out at night, are of some value as means of treatment and training and perhaps of more value as means of partial segregation. If a State Tuberculosis Hospital is centrally located, it could render considerable service by the maintenance of day and night camps on its grounds.

ISOLATION IN THE HOMES.

There are now 126 beds for advanced cases in the State. If all the present number are maintained, there would be 226 beds available on the opening of the proposed State Hospital with 100 beds. We assume that there are about 2,000 advanced and far-advanced cases

in the State, practically all of which are centres of infection. If 226 of the most dangerous cases are isolated in hospitals what shall be done with the remaining 1,774, or thereabouts? We have previously shown that no efficient supervision of the disease is practicable until the local health officers are in position to keep records of the cases of tuberculosis in their respective towns, and to see that sanitary precautions are understood and carried out in each case. It is of course impossible for health officers to keep these cases under supervision, to have them well drilled and frequently reminded of the details necessary for an isolation which will give their families a fair degree of protection, unless inspectors are employed, and for this work we think visiting nurses are most suitable. It must be admitted that many patients are too careless or too ignorant to faithfully carry out all the precautions taught them by the nurses, and it is this inability in many cases of carrying out an efficient isolation, because of ignorance, gross carelessness, and overcrowding, that furnishes a strong argument in favor of institutional segregation.

Miss Ellen E. La Motte, a tuberculosis nurse in Baltimore, classified 1,160 patients, according to the degree in which they were able to put in practice the information given them by the nurse, as:

Adequately careful.....	9
Fairly careful.....	143
Careless.....	719
Grossly careless.....	289

“The first group designated ‘adequately careful,’ indicated those who utilized to the full extent the knowledge that they had received; the second group ‘fairly careful,’ were able to profit more or less by what they had learned; the third group ‘careless,’ could not or would not use their instructions except irregularly and inconsistently; on the fourth group, ‘grossly careless,’ all teaching, from whatever source, was utterly thrown away so far as their putting any of it to practical use was concerned.”

If it be granted that this education was thorough, and that the statistics of the results are accurate, it is nevertheless true that the conclusions which the writer draws from these statistics are utterly unwarranted.

Miss La Motte apparently assumes that if the technique falls short of perfection, by so much as a hair's breadth, all previous sanitary precautions have been wasted.

If every mistake in the isolation of a patient was certain to result in his infecting some one, this view of the case might be taken; but, fortunately for the race, this is not true. As many families having careless consumptives lose but one member from this disease, it is reasonable to suppose, and it is in fact pretty generally accepted, that large and oft-repeated doses are necessary in most instances to overcome the bodily resistance sufficiently to develop the disease. According to Miss La Motte's figures, 871 patients, or 75 per cent. of the whole number, carried out the nurses' instructions to at least some degree, and we can reasonably expect a reduction in the number of new cases just in proportion as "fairly adequate," or "irregular," carefulness is an improvement on total ignorance and gross carelessness. The work of the district nurse is not, however, limited to the inspection and enforcement of sanitary technique in the home. She very frequently is able to coax the patient into carrying out the doctor's orders for home treatment when this would not otherwise be done; she very frequently brings suspected members of the patients' families to the physicians or to the dispensarises, who otherwise might not receive a diagnosis until too late; and she frequently persuades patients to become inmates of institutions who would otherwise remain as sources of danger to the family and the community. It may then be expected that the nurses' work, while falling short of establishing a perfect isolation in the homes, is nevertheless of great value, not only in reference to isolation, but also in finding tuberculous persons and having them use our institutions to the best advantage. Finally, the home isolation is the only isolation possible in the near future, as it is out of the question at present

to segregate in institutions but a small fraction of all the cases of tuberculosis.

The number of visiting nurses doing tuberculosis work in Rhode Island is as follows:*

Providence.....	4	East Providence.....	1
Pawtucket.....	2	Westerly.....	1
Woonsocket.....	3	South Kingstown.....	1
Newport.....	2	Warwick.....	2
Burrillville.....	1	.....	.....
—			
Total.....			17

WHO SHOULD PAY FOR TUBERCULOSIS NURSING.

Nearly all of the tuberculosis nurses in Rhode Island are supported by the local anti-tuberculosis associations. We think that every town in the State should be covered by the work of tuberculosis nurses, and to accomplish this, and also to educate the public, we believe that at the outset an anti-tuberculosis association or committee should be formed in every town. We do not feel, however, that the towns should expect to shirk their duty indefinitely by throwing the care and isolation of their tuberculous patients on the shoulders of the public spirited citizens in the anti-tuberculosis associations. Citizens do not band themselves together into anti-diphtheria, anti-scarlet fever and anti-small-pox associations, and towns as well as municipalities should do their duty by tuberculosis the same as other communicable diseases dangerous to the public health. Newport has made a good start in this direction by appropriating \$3,000 for the care of advanced patients for the year ending August, 1910, and \$4,000 for the care of patients for the year ending August, 1911. Patients who will leave their homes are sent either to Hillsgrove or to a Massachusetts hospital, and the others are cared for

*Four nurses in Providence and one in Newport do tuberculosis work only. Other nurses do general work as well as tuberculosis work.

†The Providence tuberculosis nurses are paid by the Providence District Nursing Association.

in their homes by nurses. Every town of over 10,000 inhabitants should have and pay for the work of a tuberculosis nurse. The smaller towns should combine in employing nurses.

BOVINE TUBERCULOSIS.

There is still great diversity of opinion among scientists as to the frequency with which human beings are infected from cattle, some contending that this means of infection is rare, while others place the number of cases infected from bovine sources as slightly over 20 per cent. of all cases. Even though the highest estimates of the danger from bovine tuberculosis be finally supported by proofs, it would evidently be poor policy to expend a major portion of our energy and money in combating a minor cause of the disease. The passage of an act prohibiting the importation of cattle into the State until they had successfully passed the tuberculin test would be comparatively inexpensive, and therefore a warrantable step toward the control of bovine tuberculosis. The distribution of circulars among the farmers of the State, describing bovine tuberculosis, the tuberculin tests, the best means of combating the disease, and the proper methods of producing clean milk would, we believe, result in much good at slight expense. The passage of a bill requiring sanitary control in the production and handling of milk is advisable.

THE COST OF TUBERCULOSIS.

It is proper at this point to consider what tuberculosis costs the people of Rhode Island. Prof. Irving Fisher, of Yale, after an exhaustive consideration of this subject, concludes that the average yearly earnings of the tuberculous subject is \$700.00, and as there is an average total disability of a year and one-half, each death represents a loss of earnings of \$1,050.00. To this must be added another year and one-half of partial disability, amounting to \$525.00, or a total loss of earnings in each case of \$1,575.00. The cost of medical attendance, medicines, special food, nursing, etc., he estimates at

\$1.50 per day, or \$800.00 during the period of total disability. The period of partial disability is ignored in making this estimate, in order that it may be conservative. This will bring up the total cost, preceding death, to nearly \$2,400.00. The capitalized value of each life sacrificed to tuberculosis, or the amount of earnings prevented by the disease, he estimates at \$5,600.00. Of this sum, \$2,400.00 would have been spent on the patient himself and \$3,200.00 on his family or others. "This sum, \$3,200.00, may be conceived as practically the insurable interest which the family or friends of the consumptive have in his life, a sum for which he should have been insured in order to indemnify others for the economic loss occasioned by his death."

THE ANNUAL COST TO RHODE ISLAND.

The money loss resulting from the disease and death of 1,050 persons, who died of tuberculosis in the year 1908 in this State, computed from the above estimates, is as follows:

Loss of earnings, at \$1,525 per death.....	\$1,653,750 00
Cost of medical attendance, medicine, special food, nursing, etc., at \$800.....	840,000 00
Loss through the cutting off of the earning power by death:	
<i>a.</i> To the patients.....	2,520,000 00
<i>b.</i> To the families and friends.....	3,360,000 00
	<hr/>
Total.....	\$8,373,750 00

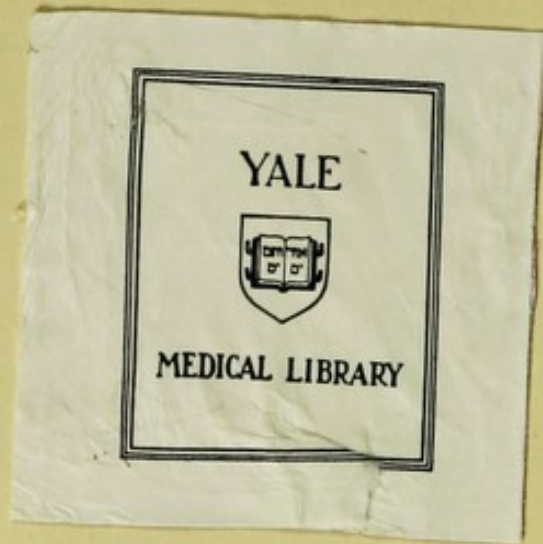
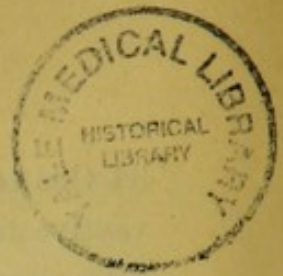
The more one studies this subject, the more does he become convinced that the loss from tuberculosis has been underestimated in the above computation, in which the considerable losses of those who recover after an expensive sickness find no place. Can the towns afford to go on neglecting to give their people adequate protection from such a communicable disease? Can the State afford to

let this tremendous financial drain go on without undertaking preventive measures, after the value of such preventive measures has been clearly shown?

Respectfully submitted,

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