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## THE DECREASE OF CONSUMPTION IN NEW ENGLAND.

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HEALTH.

The following study is presented for the purpose of answering certain oft-repeated questions in regard to the mortality from consumption in New England.

The natural history of the group of infectious diseases to which tuberculosis belongs constitutes one of the most interesting studies which is presented to the student of public hygiene, as much so as is the study of botany, zoölogy, or any other of the natural sciences to the student of biology in general.

The causes of disease, the widely varying modes of their transmission and spread, the methods of prevention, the classification, all these are themes for study in their proper place. Here, however, we are called upon simply to present the barren facts, divested of all the attending conditions and circumstances, and to show only what has happened and is happening in this portion of the United States.

The six adjoining States known as New England form a distinct division of the United States, having the advantage of a fairly accurate system of vital statistics, extending over a period varying from 1842 in one State and from 1892 in another State down to the present time. The populations of these States present variable conditions as to density, occu-

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pations of the people, and other social conditions. The population of Maine is least, and that of Rhode Island most densely, settled.\* Vermont is the most distinctly agricultural State, and in Rhode Island and in Massachusetts manufactures constitute the employment of the greater number of persons engaged in different occupations. Vermont has in the past fifty years been the most stationary in point of population, having increased at a much lower rate than either of the other New England States. The manufacturing States have been affected more decidedly by immigration than the rest. In the first portion of the last half-century Ireland was a large contributor to the immigrant population; but during the last ten years, the time chiefly considered in this paper, Italy, Scandinavia, Germany, Southern Russia, and the eastern provinces of Canada have also been large contributors. But the registration reports of the States do not furnish information from which any conclusions can be drawn with reference to the effect of such immigration upon the prevalence of tuberculosis in these different States.

The term "consumption" as employed in this paper refers to tuberculosis pulmonum, or consumption of the lungs,—a disease which accounts for at least 75 per cent. of all deaths from tuberculosis in the New England States at the present time.

The points which I propose to consider are:—

First, the prevalence of consumption at the present time.

Second, its decrease in the last years of the nineteenth century.

Third, the comparative mortality of the sexes from consumption and the relative decrease in each sex.

Fourth, the comparative mortality from consumption at the different ages of life and the relative decrease at each age.

The registration of deaths did not begin at a sufficiently

\* Vital Statistics of the New England States for the Year 1892, p. 13.



early period in all of the New England States to enable me to give a satisfactory answer to all of the foregoing questions. The statistics of Maine begin with 1892, those of Massachusetts with 1842, and those of the other States at intervening periods. In order to answer the last two of the foregoing questions satisfactorily, I have taken the figures of Massachusetts, as embracing about one-half of the total population of the district of New England.

1. *As to the Present Mortality from Consumption in New England.* Complete figures are at hand for the period of ten years, 1892-1901. These embrace a total of 99,002 deaths in the six States in these ten years, which is equivalent to an annual mean mortality from this cause of 18.81 per 10,000 living inhabitants, or 1,881 per million.

The figures for individual States are as follows for the same period:—

	Deaths from Consumption, 1892-1901.	Mean Death-rate.
Vermont . . . . .	5,073	14.93 per 10,000
Connecticut . . . . .	13,888	16.35 " "
New Hampshire . . . . .	6,724	16.85— " "
Maine . . . . .	11,504	16.85+ " "
Rhode Island . . . . .	7,890	19.82 " "
Massachusetts . . . . .	53,923	20.77 " "
	99,002	18.81 " "

In connection with the foregoing figures the condition of density of population is worthy of consideration. Dividing the six States into two districts, the density of population of the district embracing Maine, New Hampshire, and Vermont at the census of 1900 was 30.2 inhabitants per square mile. That of the remaining district, comprising Massachusetts, Rhode Island, and Connecticut, was 296.7 inhabitants per square mile, or nearly ten times as great as the former. The mean annual death-rate from consumption in the former district was 16.4 per 10,000 living, and that of



the latter was 19.7 per 10,000. The general death-rate of the two districts in the same period was also nearly 16.8 per 1,000 living in the former and 18.4 per 1,000 in the latter, the general death-rate being approximately ten times as great as the death-rate from phthisis.

In a paper entitled "The Geographical Distribution of the Causes of Death in Massachusetts," published in the annual report of the State Board of Health for 1891, the writer showed that the mortality from consumption in Massachusetts in the twenty years 1871-90 bore a definite relation to density of population. The mortality of densely settled districts being taken as 1,000, that of districts with medium density was 810, and that of sparsely settled districts was 727.

It was also found that the mortality from consumption diminished from the seacoast districts toward the western border of the State, as follows:—

Groups.	Mean Annual Death-rate from Consumption per 10,000 Inhabitants.
1. All Seacoast Counties except Suffolk . . . . .	31.1
2. Worcester County . . . . .	27.9
3. The Connecticut River Counties . . . . .	27.5
4. Berkshire County . . . . .	23.7

Suffolk County was omitted from the calculation because of the presence of several institutions to which consumptives are admitted.\* If Suffolk County were included in the estimate, the death-rate of the first district would be increased to 33.1 instead of 31.1.

2. *The Diminution in the Death-rate from Phthisis.*—To illustrate this point, I have taken mainly the figures of Massachusetts, since those of all the New England States cannot be had for so long a period as in Massachusetts. To these I have added the figures of four other States for two uniform periods the middle years of which are eleven years apart, and those of Maine for a shorter period.

\*Several of these institutions admit consumptives from other cities and towns outside of Suffolk County, thereby increasing its death-rate from consumption and diminishing that of such cities and towns.



The accompanying table shows that the death-rate from consumption has declined in Massachusetts from 3,901 per million inhabitants in 1851 to 1,595 in 1902. The maximum appears to have been reached in 1853, when it was 4,272 per million, since which time the mortality has declined with considerable uniformity to the present time, the death-rate from this cause in 1902 constituting only 37.3 per cent. of that which prevailed in 1853, fifty years earlier.

TABLE I.

DEATH-RATES FROM CONSUMPTION PER MILLION LIVING OF EACH SEX,  
MASSACHUSETTS AND ENGLAND.

Year.	Massachusetts.			Deaths of Females to 1,000 Males in Equal Numbers living.	England.			Deaths of Females to 1,000 Males in Equal Numbers living.
	Persons.	Males.	Females.		Persons.	Males.	Females.	
1851	3,901	3,166	4,600	1,296	2,734	2,649	2,816	1,076
1852	3,967	3,246	4,645		2,773	2,673	2,869	
1853	4,272	3,592	4,917		2,984	2,880	3,083	
1854	4,179	3,543	4,781		2,755	2,657	2,849	
1855	4,195	3,680	4,669		2,777	2,671	2,879	
1856	4,083	3,475	4,649		2,564	2,465	2,658	
1857	3,950	3,572	4,303		2,602	2,482	2,717	
1858	3,842	3,506	4,157		2,591	2,473	2,703	
1859	3,886	3,473	4,270		2,547	2,450	2,640	
1860	3,702	3,357	4,025		2,557	2,457	2,652	
1861	3,653	3,349	3,934	1,095	2,581	2,488	2,670	1,006
1862	3,428	3,343	3,504		2,502	2,440	2,561	
1863	3,726	3,677	3,768		2,476	2,430	2,520	
1864	3,757	3,554	3,941		2,533	2,520	2,545	
1865	3,678	3,532	3,809		2,541	2,525	2,557	
1866	3,531	3,420	3,631		2,602	2,608	2,597	
1867	3,255	3,080	3,416		2,539	2,549	2,530	
1868	3,220	3,105	3,326		2,336	2,353	2,321	
1869	3,288	3,038	3,517		2,352	2,393	2,313	
1870	3,433	3,235	3,617		2,410	2,467	2,357	
1871	3,393	3,125	3,643	1,154	2,342	2,404	2,284	918
1872	3,626	3,444	3,796		2,271	2,345	2,201	
1873	3,536	3,360	3,698		2,194	2,290	2,103	
1874	3,280	3,076	3,469		2,081	2,199	1,970	
1875	3,474	3,244	3,685		2,202	2,296	2,113	
1876	3,176	2,936	3,398		2,119	2,223	2,020	
1877	3,204	2,926	3,461		2,079	2,176	1,987	
1878	3,085	2,734	3,408		2,111	2,211	2,017	
1879	2,975	2,706	3,223		2,021	2,140	1,908	
1880	3,081	2,861	3,285		1,869	1,939	1,804	



TABLE I.—*continued.*DEATH-RATES FROM CONSUMPTION PER MILLION LIVING OF EACH SEX,  
MASSACHUSETTS AND ENGLAND.

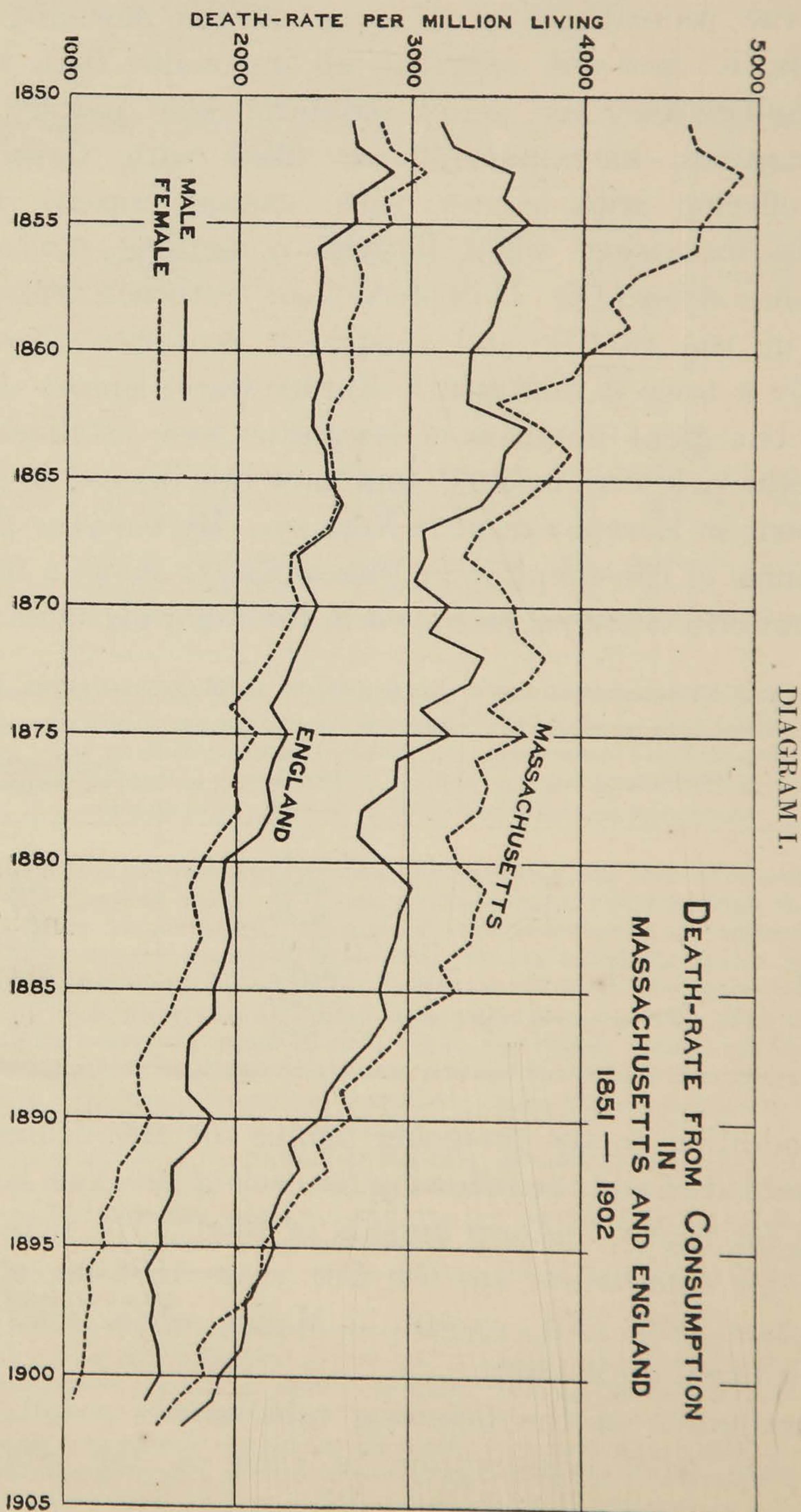
Year.	Massachusetts.			Deaths of Females to 1,000 Males in Equal Numbers living.	England.			Deaths of Females to 1,000 Males in Equal Numbers living.
	Persons.	Males.	Females.		Persons.	Males.	Females.	
1881	3,245	3,025	3,450	1,094	1,825	1,920	1,735	871
1882	3,179	2,953	3,388		1,850	1,947	1,758	
1883	3,160	2,941	3,363		1,880	1,967	1,797	
1884	3,037	2,877	3,184		1,827	1,927	1,733	
1885	3,066	2,846	3,270		1,770	1,875	1,670	
1886	2,951	2,875	3,022		1,739	1,874	1,612	
1887	2,856	2,781	2,925		1,615	1,728	1,508	
1888	2,708	2,637	2,774		1,568	1,717	1,428	
1889	2,565	2,527	2,600		1,573	1,719	1,435	
1890	2,587	2,498	2,671		1,682	1,868	1,506	
1891	2,396	2,309	2,479	995	1,599	1,780	1,429	773
1892	2,453	2,371	2,530		1,472	1,629	1,325	
1893	2,310	2,260	2,358		1,466	1,638	1,305	
1894	2,234	2,211	2,255		1,386	1,561	1,216	
1895	2,194	2,224	2,166		1,395	1,562	1,239	
1896	2,164	2,165	2,163		1,307	1,484	1,138	
1897	2,074	2,066	2,083		1,337	1,528	1,156	
1898	1,974	2,069	1,883		1,311	1,511	1,124	
1899	1,905	2,036	1,780		1,330	1,550	1,124	
1900	1,853	1,906	1,802		1,333	1,570	1,111	
1901	1,754	1,861	1,650	888	1,264	1,487	1,054	
1902	1,595	1,690	1,504					

For the sake of comparison the figures for England are introduced in the same table, and are also represented in the diagram. In the latter the death-rate from consumption is shown to have diminished from 2,984 per million in 1853 to 1,264 per million in 1901, the maximum death-rate having occurred in 1853 as in Massachusetts.

In a recent paper by Dr. Hillier, entitled "The Probable Extinction of Tuberculosis," the author goes so far as to predict its extinction in England and Prussia within "about a generation," showing by means of a chart the rate of decrease in each country. Dr. Newsholme also, in a paper entitled "Public Health Authorities in Relation to the Struggle against Tuberculosis," says, "There is, I believe, more hope



of the almost complete extermination of tuberculosis than of any of the acute infectious diseases, with the possible exception of typhus and small-pox."\*



*Note.* The lower, or zero, lines in Diagrams I. and II. are omitted for economy of space.

\* *Journal of Hygiene*, October, 1903.



Von Behring also expresses a similar opinion in a report of the Seventy-fifth Annual Meeting of philosophers and biologists at Cassel in 1903.

At the present rate of decrease in the mortality from phthisis, it does not seem at all impossible that in the next half-century the many sanatoria now peopled with consumptives, may possibly be filled with those who are suffering with cancer, since cancer appears to be steadily increasing, while phthisis is tending toward extinction. After the Crusaders had returned from the East in the twelfth and thirteenth centuries, there was scarcely a town in Continental Europe where leprosy did not exist; but great numbers of lazarettos were established, in which the sick were isolated, and now this disease is almost unknown in Europe except in Norway. By ten-year periods the course of consumption in Massachusetts shows a remarkably uniform decrease, as shown in the following table:—

DEATHS AND DEATH-RATES FROM CONSUMPTION IN MASSACHUSETTS, 1851-1902.

Periods.	Deaths.	Death-rates per 10,000.
1851-60 . . . . .	45,252	39.9
1861-70 . . . . .	45,913	34.9
1871-80 . . . . .	54,039	32.7
1881-90 . . . . .	58,303	29.2
1891-1900 . . . . .	54,374	21.4
1901 . . . . .	5,033	17.5
1902 . . . . .	4,685	15.9

In addition to the foregoing figures for Massachusetts, I am enabled to add the following for each of the New England States for nearly uniform periods of time. The periods selected for comparison are the five years 1886-90, and the five years 1897-1901, except in Maine, where registration did not begin until 1892.

Examination of the following table shows a fall in the death-rate from consumption in each of the States as follows:—



In Maine from . . . . .	18.6 to 15.1 per 10,000 living.
In New Hampshire . . . . .	20.5 to 15.5 " " "
In Vermont from . . . . .	20.2 to 13.3 " " "
In Massachusetts from . . . . .	27.1 to 18.8 " " "
In Rhode Island from . . . . .	23.8 to 19.3 " " "
In Connecticut from . . . . .	20.2 to 16.1 " " "

TABLE II.

DECREASE IN MORTALITY FROM CONSUMPTION IN NEW ENGLAND.\*

States.	Periods selected for Comparison.		Estimated Mean Annual Population of Selected Periods.		Mean Annual Deaths from Phthisis in Each Period.		Death-rates from Consumption.		Total Decrease, Per Cent.	Mean Annual Decrease, Per Cent.
	1	2	1	2	1	2	1	2		
Maine . . . . .	1892-96	1897-1901	674,258	691,070	1,254	1,045	18.6	15.1	18.8	3.8
New Hampshire . . . . .	1886-90	1897-1901	370,452	407,972	758	633	20.5	15.5	24.4	2.2
Vermont . . . . .	1886-90	1897-1901	332,395	342,519	670	456	20.2	13.3	34.2	3.1
Massachusetts . . . . .	1886-90	1897-1901	2,116,847	2,742,933	5,734	5,165	27.1	18.8	30.6	2.8
Rhode Island . . . . .	1886-90	1897-1901	328,599	419,610	783	812	23.8	19.3	18.9	1.7
Connecticut . . . . .	1886-90	1897-1901	719,961	891,018	1,457	1,440	20.2	16.1	20.3	1.9

The figures 1 and 2 at the head of the columns indicate the two selected periods.

The figures for Maine are not strictly comparable with those of the other States for the reasons stated. The time intervening between the mid-years of the two periods is employed as the factor for determining the mean annual decrease per cent. in the death-rate. In the case of Maine this was five years, in each of the other States eleven years.

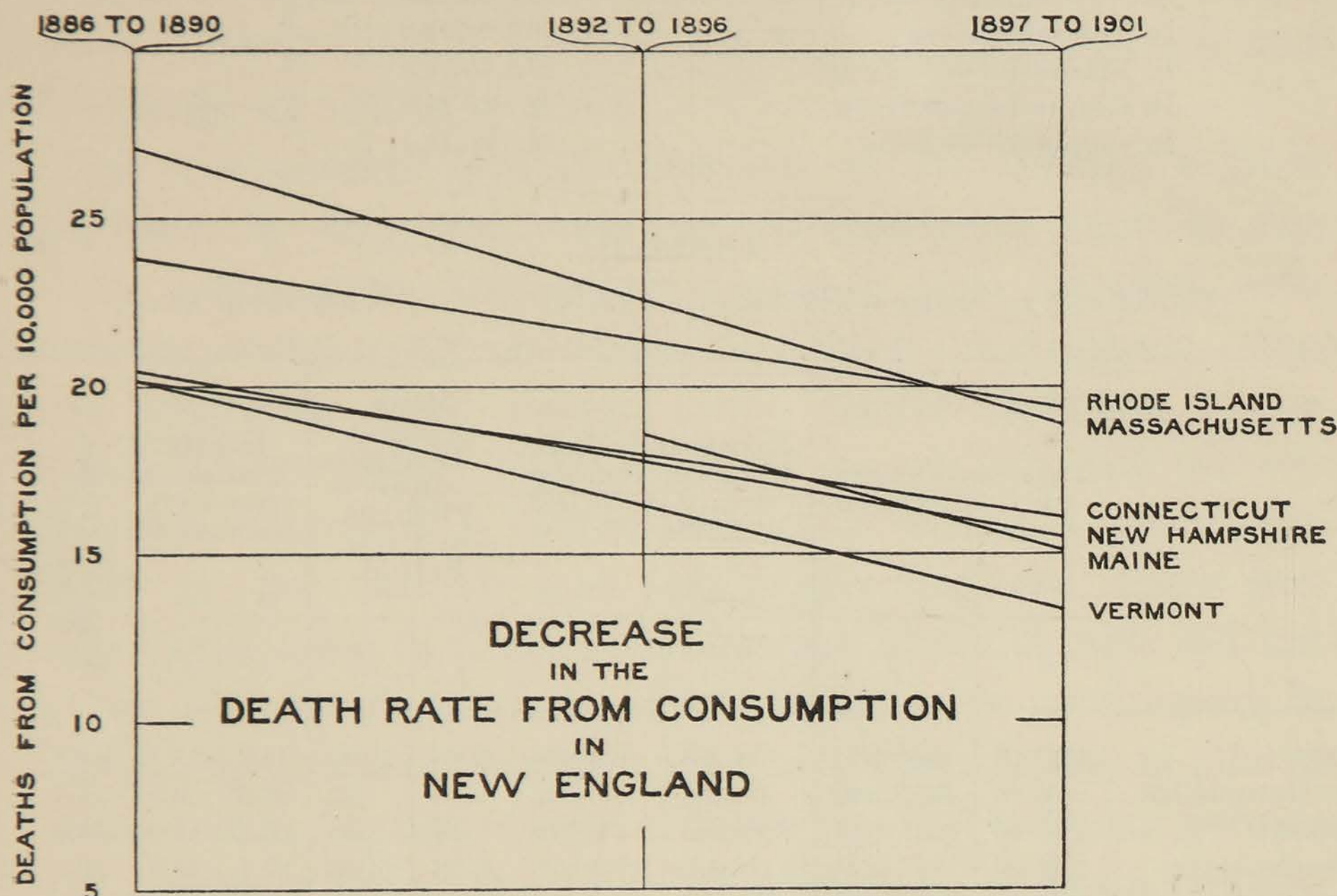
\* The decline in the death-rate from consumption has been so steady in most of the New England States as to suggest the propriety of assuming this death-rate as a factor for correcting the general death-rate from all causes in States where the figures are manifestly defective. In the adjoining States, Massachusetts and Rhode Island, for example, the population of the two States, when compared with each other, may be regarded as quite homogeneous. The density of population is nearly the same in each. Both are chiefly manufacturing States, living under nearly identical social and sanitary conditions throughout the last fifty years. We should, therefore, reasonably expect the death-rates to be nearly identical in the two States in this period.

On examination of the figures by ten-year periods, however, for these States we find in the general death-rate of Massachusetts a nearly uniform rate for the fifty years, the extremes being 18.1 and 19.8 per thousand living, while those of Rhode Island begin with a very low rate of 13.8 in the first period (eight years, 1853-60), gradually increasing to 18.9 in the last period, and nearly identical with that of Massachusetts.

On the other hand, the death-rate from consumption in Massachusetts begins at a high rate of 38.9 in the first period, and gradually diminishes to 21.4 per 10,000 in the last period,—a fall of nearly one-half. That of Rhode Island, on the contrary, begins with a comparatively low consumptive death-rate of 24.7 in the early period, and continues at nearly the same rate for about forty years, in no single year attaining as high a rate as 30 per 10,000, but in the last period it drops to about the same level as that of Massachusetts. These facts leave a very strong



DIAGRAM II.



The foregoing diagram may be taken to represent the net decrease in the consumption death-rate in each of the New England States, the starting-points at the left of the diagram indicating the mean annual death-rate from phthisis during a five-year period, and those at the right the mean annual death-rate at a later period, the time elapsing between the middle years of these two periods being eleven years, and the whole time (1886-1901) sixteen years. In the case of Maine the two periods comprise the time from 1892 to 1901.

3. *As to the Comparative Mortality from Consumption in the Two Sexes, and the Changes which have taken Place in this Direction.* In order to illustrate these changes clearly, reference may again be made to Diagram (I.) and table already mentioned, in which the two descending lines represent the course of the death-rate from consumption in each sex, both in Massachusetts and in England, in the past half-century. The chief points of interest in this table and diagram are the steady decline in the death-rate from consumption in both sexes, as already shown, and also the fact that the decline in the death-rate of females has been more rapid than that of males. A glance at the diagram shows at once that

presumption that the registration of Rhode Island in the early years from 1853 onward was defective, but that it has gradually improved until it is now in about the same condition as that of Massachusetts.



the lines for the two sexes are neither parallel nor coincident. The death-rate from consumption among females in Massachusetts in 1851 was far greater than that of males, that of the former being 4,600 per million living, and that of the latter 3,166 per million, the former being fully 45 per cent. greater than the latter. These lines for the two sexes rapidly converge, the improvement in the death-rate of females being much more rapid than that of males, until the period of the Civil War, when in 1863 the two lines nearly meet, that of females descending rapidly till 1862, and that of males remaining nearly level from 1860 to 1862.\* After this period the two lines show a tendency to approach each other more gradually until 1895, when the death-rate of females becomes less than that of males, and so continues during most of the years after that time. The death-rate of males from consumption in 1902 was 12 per cent. greater than that of females. In the same table and diagram are shown similar statistics for England for a nearly coincident period.†

The chief differences between the lines for Massachusetts and England are the following:—

(1) A generally lower rate for England through the entire period.

(2) The difference between the death-rates of males and females is generally less in England than it is in Massachusetts.

(3) The death-rate of females also descends more rapidly than that of males in England, and becomes less than that of males at a period (in 1866) nearly twenty years earlier than the date when the same change takes place in Massachusetts.

In order to bring these points relating to the mortality

\*The effect of war upon the vital statistics of populations is shown in a very marked degree, both in the vital statistics of Massachusetts in 1861-65, as well as upon those of France and Prussia in the later war of 1871.

†The total number of deaths from consumption among males in Massachusetts in the half-century 1851-1900 was 117,539, and that of females was 140,297. There were also 25 wherein the sex was not stated, making in all a total of 257,881 in the half-century.



of the sexes from consumption more sharply into view, I have selected from the figures of Massachusetts two periods of three years in each, forty years apart; namely, the three years 1859-61 and 1899-1900. These periods have each a census year in the middle of the period as a basis of comparison. The period 1849-51 would have been selected as a still earlier date, nearer the beginning of the half-century; but the statistics of that date are not presented with sufficient clearness and accuracy to afford a basis of comparison either in the figures of the census or in the registration of deaths.

The total number of deaths from consumption in the two periods selected for comparison are as follows:—

First period, 1859-61.	Deaths from Consumption.	Death-rates per 10,000.
Males* . . . . .	6,009	33.5
Females* . . . . .	7,678	40.3
Total . . . . .	13,687	37.1
Second period, 1899-1901.		
Males* . . . . .	7,927	19.3
Females* . . . . .	7,521	17.4
Total . . . . .	15,448	18.4

There was, therefore, a decrease of 42.4 per cent. in the phthisis death-rate of males and of 56.8 per cent. in that of females in the forty years.

4. *Changes in the Age Incidence of Consumption.* Turning now to the figures for different ages of life for each sex, we find differences in the death-rates of the sexes at every age of life from infancy to old age, both in the earlier and in the later periods of the half-century. In the

\*The distribution of the sexes in Massachusetts is not equal, the females exceeding the males by from 3.5 to 10.5 per cent. at different census enumerations. This, however, is accounted for in computing the rates given above.



period 1859-61, 104 females under five years of age died for each 100 males in equal numbers living; and the relative numbers for the next age period (5 to 10 years) are nearly the same, 105 to 100. But in the succeeding age period (10 to 15 years) the deaths of females to each 100 males were 238,—an enormous difference, which also appears in the later period 1899-1901 in nearly the same ratio, 225 to 100. I have also worked out this same question in a paper presented to the American Public Health Association in 1897, entitled "Consumption an Indoor Disease," in which it is shown that during the nine years 1887-95 301 females aged 10-15 years died for each 100 males in Massachusetts in equal numbers living.

During the three years 1859-61 the mean death-rate from consumption of all males in Massachusetts as compared with that of females was as 120 to 100; but in the later years 1899-1901 the tables had turned, and the mean death-rate of females from this cause as compared with that of males was as 90 to 100. In the earlier period the death-rate of females exceeded that of males in the ages 0 to 4, 5-9, 10-14, 15-19, 20-29, 30-39, 40-49, and all over 80 years; but in the later period the female rate exceeded that of males only in the periods 5-9, 10-14, 15-19, and all over 80.

Comparing again the male rate in 1899-1901 with that of 1859-61 and the female rate of the later period with the female rate of the earlier period, we find that 58 males died in the later period for each 100 males in the earlier period and 43 females in the later for each 100 females in the earlier period in equal numbers living.

The differences at the different ages of life are still more striking. At the age period 30-39 there had been an improvement of 30 per cent. among males, comparing the later period with the former; but at the age of 70 years and over there had been an improvement of 75 per cent., since only 25 males of these ages died in 1899-1901 for each 100 who died in 1859-61 in equal numbers living.



Among females the greatest difference between the death-rates at the earlier and the later periods was at ages 60-69, 70-79, and all over 80, at which ages the death-rates at the later period were respectively as 24, 21, and 24 to 100 in the later period, equivalent to an improvement of 76, 79, and 76 per cent. respectively at these ages of life.

DIAGRAM III.

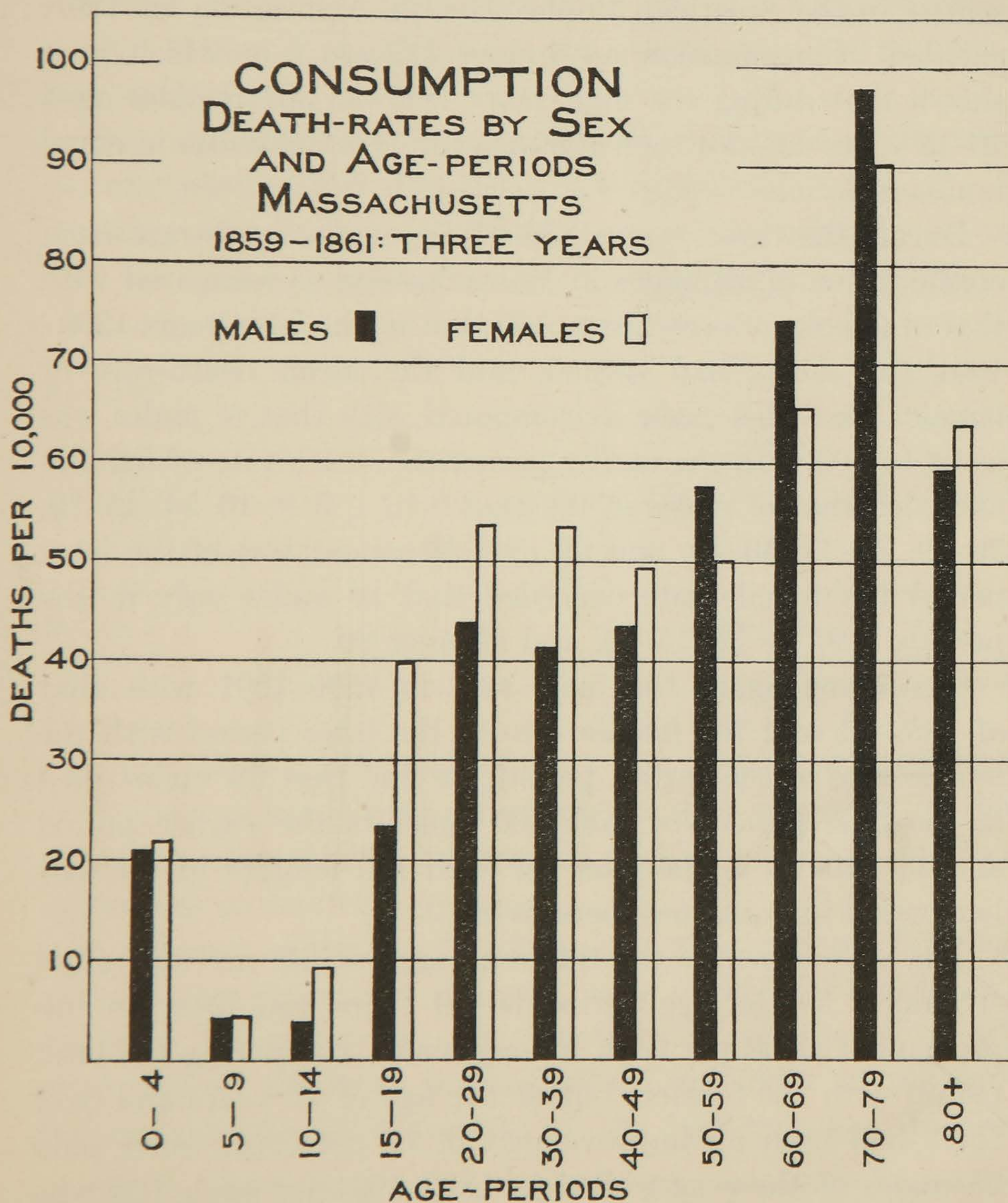




DIAGRAM IV.

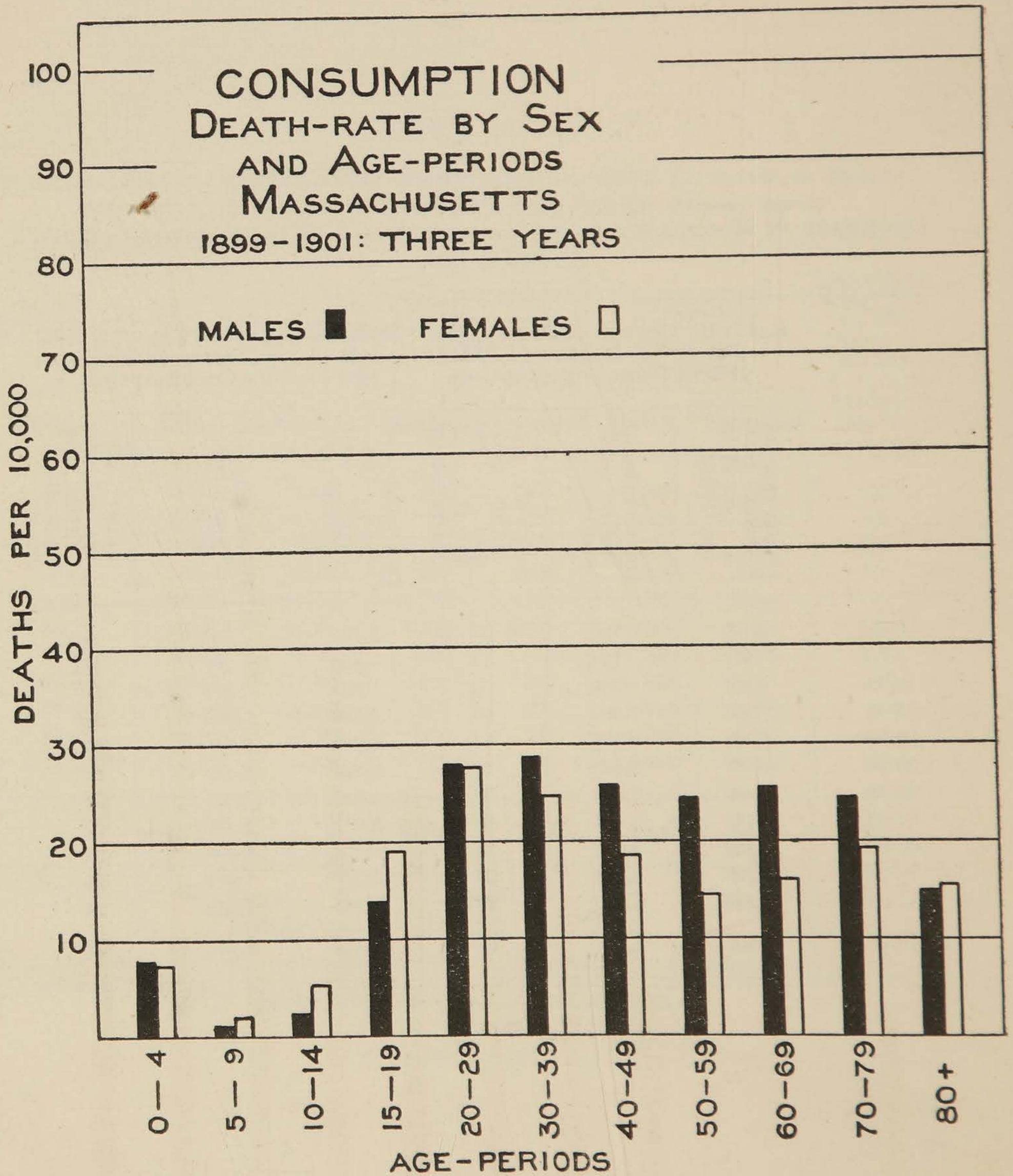




TABLE III.

DECREASE IN MORTALITY FROM CONSUMPTION IN MASSACHUSETTS FROM  
1860 to 1900.

Ages.	Ratio of Deaths of Males 1899-1901 to 100 Deaths of Males 1859-61 from Consumption.			Ratio of Deaths of Females 1899-1901 to 100 Deaths of Females 1859-61 from Consumption.		
	Death-rate of Males 1859-61 per Million living.	Death-rate of Males 1899-1901.	Deaths of Males 1899-1901 to 100 Deaths of Males 1859-61.	Death-rate of Females 1859-61 per Million living.	Death-rate of Females 1899-1901.	Deaths of Females 1899-1901 to 100 Deaths of Females 1859-61.
0-4	2,107	790	37	2,191	745	34
5-9	429	120	28	452	203	45
10-14	394	234	59	939	527	56
15-19	2,336	1,393	60	3,990	1,906	48
20-29	4,402	2,797	64	5,380	2,785	52
30-39	4,141	2,889	70	5,374	2,482	46
40-49	4,366	2,590	59	4,940	1,867	38
50-59	5,782	2,454	42	5,021	1,453	29
60-69	7,442	2,555	34	6,578	1,606	24
70-79	9,799	2,452	25	9,027	1,914	21
80 and over	5,946	1,500	25	6,402	1,550	24
Mean	3,356	1,941	58	4,034	1,747	43



TABLE IV.

DEATHS AND DEATH-RATES PER MILLION LIVING FROM PHTHISIS IN MASSACHUSETTS, BY SEX AND AGES, FOR THE THREE YEARS 1859-61.

Age Periods.	Population, 1860.		Deaths from Consumption, 1859-61.		Death-rates per Million, 1859-61.		Deaths of Females to 100 Males in Equal Numbers Living, 1859-69.
	Males.	Females.	Males.	Females.	Males.	Females.	
0-4	75,925	75,457	480	496	2,107	2,191	104
5-9	64,474	64,048	83	87	429	452	105
10-14	57,543	56,802	68	160	394	939	238
15-19	57,069	63,730	400	763	2,336	3,990	171
20-29	111,990	132,101	1,479	2,132	4,402	5,380	122
30-39	90,237	93,354	1,121	1,505	4,141	5,374	130
40-49	63,823	61,742	836	915	4,366	4,940	113
50-59	39,430	42,023	684	633	5,782	5,021	87
60-69	22,715	27,157	507	536	7,442	6,578	90
70-79	10,205	13,328	300	361	9,799	9,027	92
80 and over	2,859	4,686	51	90	5,946	6,402	108
			6,009	7,678	3,356	4,034	120
	Sum		13,687				
	Difference		1,669				

Mean rate 1859-61 = 3,706 per million.

Males 3,356 " "

Females 4,034 " "



TABLE V.

DEATHS AND DEATH-RATES PER MILLION LIVING FROM CONSUMPTION IN  
MASSACHUSETTS DURING THE THREE YEARS 1899-1901.

Ages.	Population, 1900.		Deaths from Consumption, 1899-1901.		Death-rates per Million, 1899-1901.		Deaths of Females to 100 Males in Equal Numbers living, 1899-1901.
	Males.	Females.	Males.	Females.	Males.	Females.	
0-4	141,773	140,464	336	314	790	745	94
5-9	128,120	127,941	46	78	120	203	169
10-14	114,122	115,208	80	182	234	527	225
15-19	115,258	122,609	482	701	1,393	1,906	137
20-29	265,801	295,991	2,230	2,473	2,797	2,785	99
30-39	230,201	230,885	1,996	1,719	2,889	2,482	86
40-49	160,113	163,536	1,244	916	2,590	1,867	72
50-59	105,808	114,583	779	511	2,454	1,453	59
60-69	63,043	75,551	483	364	2,555	1,606	63
70-79	28,969	36,386	216	209	2,452	1,914	78
80 and over	7,781	11,615	35	54	1,500	1,550	103
			7,927	7,521	1,941	1,747	90
	Sum		15,448				
	Difference		406				

Mean rate 1899-1901 = 1,836 per million.

Males " " 1,941 " "

Females " " 1,747 " "



*Conclusions.* In brief, the conclusions arrived at in this study are the following:—

1. The death-rate from consumption in New England at the present time is somewhat less than 20 per 10,000 living inhabitants.

2. The death-rate from this cause has diminished largely in all the New England States, in some, with fairly accurate registration, as much as 50 per cent. in the half-century; and this decrease appears to be going on now more rapidly than in earlier years.

3. The death-rate of women from consumption has decreased more rapidly than that of men, and is now less than that of men; while in earlier years it was greater.

4. This death-rate from consumption at every age of life has also decreased, but more at older than at younger ages.

The importance of this topic is shown by the many varied interests which it concerns. As a financial question, it touches the welfare of thousands of workmen, and women who are injured in a greater or less degree by the industries in which they are employed and from which they derive their support. It concerns sanitary bodies both official and voluntary, which are laboring together for the purpose of checking the spread of this disease, and with every prospect of success.

It is one of the principal topics of interest to the life insurance examiner; and in this connection I take pleasure in referring to the very full and comprehensive paper presented at the Congress upon Tuberculosis in London in 1901 by a member of this Association, Mr. F. L. Hoffman, of Newark, N.J.\* In this paper very many points were brought out which show the relation of tuberculosis to the white and colored races, the decrease of the disease in American cities, the question of inheritance, of occupation, and of many other points which it is not practicable to obtain from State Registration Reports, but which can be had with a

\* *Medical Examiner and Practitioner*, December, 1901, p. 692.



fair degree of accuracy from the records of life insurance companies.

Since this is a purely statistical paper, I have avoided all reference to the probable causes of these changes in the death-rates from consumption at different periods and ages and in the different sexes, but have chosen rather to present the simple figures, as shown upon analysis of the census and registration reports.















