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Twenty-third Annual Report

OF THE

BOARD OF HEALTH

OF THE

STATE OF NEW JERSEY

AND REPORT OF THE

BUREAU OF VITAL STATISTICS

1899

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TRENTON, N. J.:

MACCRELLISH & QUIGLEY, STATE PRINTERS,

1900.

21

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THE OFFICE OF THE BOARD IS IN THE STATE HOUSE, TRENTON.

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TRENTON, N. J., October 31st, 1899.

*To His Excellency Hon. Foster M. Voorhees, Governor of the State of
New Jersey :*

SIR—I have the honor to transmit herewith the twenty-third annual report of the Board of Health of the State of New Jersey, and the report of the Bureau of Vital Statistics, for the statistical year ending June 30th, 1899.

Very respectfully,

HENRY MITCHELL,

Secretary.

SECRETARY'S REPORT.

Marriages.—The number of marriages recorded during the year ending June 30th, 1899, was 13,336. The following table shows the decrease in the number of marriages which has followed the enactment of the law of 1897, requiring that where both parties are non-residents of the State a license for the ceremony shall be procured :

TABLE 1.—NUMBER OF CERTIFICATES OF MARRIAGE RECEIVED AND RECORDED DURING THE TEN YEARS ENDING JUNE 30th, 1899.

	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.
Marriage certificates recorded, . .	15,954	15,847	16,572	17,627	16,690	16,537	18,774	18,171	13,664	13,336

Births.—The number of births recorded during the statistical year was 29,419. The following table shows the number of births recorded during each of the past fifteen years, and it is apparent that the sudden diminution of recorded births from 34,687 in 1898 to 29,419 in 1899 is due very largely to the inefficiency of the system employed in New Jersey for the collection of birth returns.

TABLE 2.—BIRTHS RECORDED IN NEW JERSEY FOR THE FIFTEEN YEARS ENDING JUNE 30th, 1899.

Year	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
Number of births recorded.....	25,189	27,382	28,016	29,084	30,407	31,779	30,023	32,726
Year	1893.	1894.	1895.	1896.	1897.	1898.	1899.	
Number of births recorded.....	34,639	35,108	33,198	33,006	31,595	34,687	29,409	

Attention has often been drawn to the defects of the birth records of the State, and additional legislation, having for its purpose the better enforcement of the act of February 15th, 1888, has, from time to time, been recommended by this Board. The neglect or refusal of physicians to report births can, under the present law, be dealt with only by the local board of health having jurisdiction in the district in which the birth occurs, and while in the greater number of sanitary districts physicians voluntarily comply with the requirement which provides for the return of the birth certificate within thirty days after the birth, yet the local official supervision in many localities is lax to a degree which renders the system unreliable and unsatisfactory.

The following bill has been prepared for presentation to the Legislature at the coming session :

A further act to amend the act entitled "An act to secure in this state the certification of marriages, births and deaths, and of the vital facts relating thereto, and to provide for the record thereof," approved February fifteenth, one thousand eight hundred and eighty-eight.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey :

1. Section fifteen of the act recited in the title to this act is hereby amended to read as follows :

Any penalty incurred under any of the provisions of this act which shall relate to any particular marriage, birth, death or burial, may be recovered with costs in a summary proceeding in the name of the board of health of the state of New Jersey; any penalty incurred under any of the provisions of this act which shall relate to any particular marriage, birth or death, may also be recovered with costs in a summary proceeding in the name of the local board of health of the township, city, borough, town, or other local municipal government within whose limits such particular marriage, birth or death shall have occurred; and any penalty incurred which shall relate to any particular burial, if the death occur in this state, may also be recovered with costs in a summary proceeding in the name of the local board of health of the township, city, borough, town, or other local municipal government within whose limits the death shall have occurred, but if the death occur out of this state, and the burial be made in this state, then such penalty may also be recovered with costs in a summary proceeding in the name of the local board of health of the township, city, borough, town, or other local municipal government within whose limits such burial may have been made. In every such summary proceeding a complaint shall be made in writing against the person or persons, party or parties incurring the penalty, setting forth facts sufficient to present a prima facie case against the defendant, which complaint may be on information and belief and in the name of the state or local board instituting the suit, and upon the authority of any member, officer, health inspector or agent of such state or local board, and shall be filed in the office of the clerk of any district court, or with any justice

of the peace, police justice or recorder in the township, city, borough, town or municipality whose local board of health is authorized to recover such penalty; and it shall thereupon be the duty of the judge of the district court with which, or of the justice of the peace, police justice or recorder with whom, such complaint shall be filed, on being satisfied that a prima facie case is therein set forth, to make an order for the issue of process in the nature of a summons when the complaint is on information, and in other cases either in the nature of a summons or warrant, and to issue such summons or warrant against the defendant; when process is in the nature of a warrant it shall be returnable forthwith, and when in the nature of a summons it shall be returnable in not less than five nor more than fifteen days; on the return of the process, or, in case of adjournment, at the time to which the trial shall have been adjourned, the court or magistrate shall proceed to hear the testimony of witnesses and the proofs in the case, and to determine and give judgment in the matter without the filing of any pleadings, and if judgment be given in favor of the plaintiff, execution shall forthwith issue against the goods and chattels and person of the defendant for the amount of the penalty with costs; the officers to serve and execute any process or execution issued as aforesaid shall be the constables of the county, which service and execution, in the case of any process or execution issued out of a district court, shall be made in the same manner and under the same liabilities as other processes and executions issued out of said court are served and executed; the officers to serve and execute any process or execution issued by a justice of the peace, police justice or recorder shall be the constables of the county, which service and execution shall be made in the same manner and under the same liabilities as other processes and executions issued out of the courts for the trial of small causes; the costs taxable and recoverable in any case prosecuted in a district court shall be the same as in other cases prosecuted in said court, and in any case prosecuted before a justice of the peace, police justice or recorder they shall be the same as are allowed in cases prosecuted in the courts for the trial of small causes; the penalty recovered in any such action shall be paid to the plaintiff therein, and applied by such plaintiff to any purpose for which it may be legally authorized to expended money. The judge of the district court, justice of the peace, police justice or recorder before whom any case is prosecuted under the provisions of this section may adjourn the hearing thereof from time to time, not exceeding thirty days from the return day of the summons or warrant, and in any case where a warrant shall have been issued may require the defendant to enter into a bond with sufficient surety to the plaintiff, in the penal sum of one hundred dollars, conditioned to appear at the time and place of the hearing or trial, and in default of such bond may commit the defendant to the common jail of the county, to be there detained until the hearing or trial of the complaint; and if the defendant shall fail to appear at the time and place to which the hearing or trial shall be so adjourned the bond shall be delivered to the plaintiff, who may sue thereon and apply the moneys recovered in such suit to any purpose for which it may be legally authorized to expend money. The conviction in prosecutions under the provisions of this section shall be in the following or similar form: "State of New Jersey, County of ss.: Be it remembered that on this day of....., A. D. nineteen hundred....., at, in said county,

C. D., defendant, was, by the district court of the city of T. [or by me, E. F., justice of the peace, police justice or recorder of the city of.....or as the case may be] convicted of violating the.....section of 'An act to secure in this state the certification of marriages, births and deaths and of the facts relating thereto, and to provide for the record thereof,' approved February fifteenth, one thousand eight hundred and eighty-eight, in a summary proceeding, at the suit of the board of health of the state of New Jersey [or of the local board of health of the township of A, or as the case may be]; and further, that the witnesses in said proceeding who testified for the plaintiff were [name them], and the witnesses who testified for the defendant were [name them]; therefore, the said court [or justice of the peace, police justice or recorder, as the case may be] doth hereby give judgment that the plaintiff recover of the defendant... ..dollars penalty, and.....dollars costs of this proceeding." And the said conviction shall be signed by the judge of the district court, justice of the peace, police justice or recorder before whom the conviction is had.

2. This act shall take effect immediately.

Deaths.—The number of deaths which occurred in New Jersey during the year ending June 30th, 1899, was 30,999, and the estimated population is 1,855,872, thus showing a death-rate of 16.70.

The liability of error in estimating population increases with each succeeding year after the census enumerations, and this factor introduces an element of uncertainty relating to birth-rates and death-rates which can only be corrected when the next census shall have been completed.

During the past year there were 10,357 deaths of children under five years of age; 8,042 of persons over sixty, and 1,773 deaths occurred in persons over eighty.

Deaths from the Classified Causes.—The following table shows that the mortality from the preventable causes of disease has been greater than it was during the previous year, except in the case of scarlet fever, measles and diphtheria:

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TABLE 3.—DEATHS FROM ALL OF THE CLASSIFIED CAUSES FOR THE YEAR ENDING JUNE 30TH, 1899, COMPARED WITH DEATHS FOR THE PREVIOUS YEAR. AND COMPARED WITH THE YEARLY AVERAGE FOR TWENTY-ONE YEARS, 1879-1899.

CLASSIFIED DISEASES.	Average deaths for twenty-one years 1879-1899.	Deaths for year ending June 30, 1898.	Deaths for year ending June 30, 1899.
Remittent fever.....	213	82	96
Enteric or typhoid fever.....	572	450	486
Small-pox.....	39	0	0
Scarlet fever.....	471	201	187
Measles.....	159	195	96
Whooping cough.....	231	155	282
Diphtheria and croup.....	1,384	950	777
Erysipelas.....	91	58	88
Diarrhoeal diseases of children.....	3,115	2,958	3,568
Consumption.....	3,165	3,225	3,584
Acute lung.....	3,276	3,414	4,322
Brain and nervous diseases of children.....	1,874	1,642	1,954
Diseases of heart and circulation.....	1,784	2,286	2,731
Renal and cystic diseases.....	1,146	1,694	1,925
Adult brain and spinal diseases.....	2,108	2,700	2,842
Adult digestive and intestinal diseases.....	1,345	1,484	1,556
Cancer.....	622	852	946
Acute rheumatism.....	80	55	73
Puerperal.....	262	264	267

TABLE 4.—SHOWING MORTALITY IN NEW JERSEY FROM THE CLASSIFIED CAUSES OF DEATH, FOR THE YEAR ENDING JUNE 30TH, 1899, COMPARED WITH DEATHS FOR THE PREVIOUS YEAR.

CLASSIFIED DISEASES.	Deaths for year ending June 30, '98	Increase and dimi- nution for year ending June 30, '99.
Remittent fever.....	82	+ 14
Typhoid fever.....	450	+ 36
Small-pox.....	0	0
Scarlet fever.....	201	— 14
Measles.....	195	— 99
Whooping cough.....	155	+127
Diphtheria.....	950	—173
Erysipelas.....	58	+ 30
Diarrhoeal diseases of children.....	2,958	+610
Consumption.....	3,225	+361
Acute lung diseases.....	3,414	+908
Brain and nervous diseases of children....	1,642	+312
Diseases of heart and circulation.....	2,286	+445
Renal and cystic diseases.....	1,684	+231
Adult brain and spinal diseases.....	2,700	+142
Digestive and intestinal diseases.....	1,484	+ 72
Cancer.....	852	+ 94
Acute rheumatism.....	55	+ 18
Puerperal diseases.....	264	+ 3

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TABLE 5.--DEATHS FROM VARIOUS DISEASES FOR TWENTY-ONE YEARS, 1878-99,
ARRANGED IN ORDER OF GREATEST FREQUENCY.

NAME OF DISEASE.	NUMBER OF DEATHS.
Consumption.....	69 795
Acute lung.....	69 011
Diarrhoeal diseases of children.....	64,432
Adult brain and spinal diseases.....	44,071
Brain and nervous diseases of children.....	39 248
Diseases of heart and circulation.....	37,478
Diphtheria and croup.....	29 062
Digestive and intestinal diseases.....	28 245
Renal and cystic diseases.....	23 170
Violent deaths.....	21,732
Cancer.....	13 070
Typhoid fever.....	11,867
Scarlet fever.....	9 895
Puerperal.....	5 506
Whooping cough.....	4 862
Remittent fever.....	4 483
Measles.....	3,354
Erysipelas.....	1,913
Acute rheumatism.....	1,654
Small pox.....	843

TABLE 6—DEATHS IN NEW JERSEY, PER 10,000 POPULATION, FROM THE CLASSIFIED CAUSES FOR TWENTY-ONE YEARS—1879-1899.

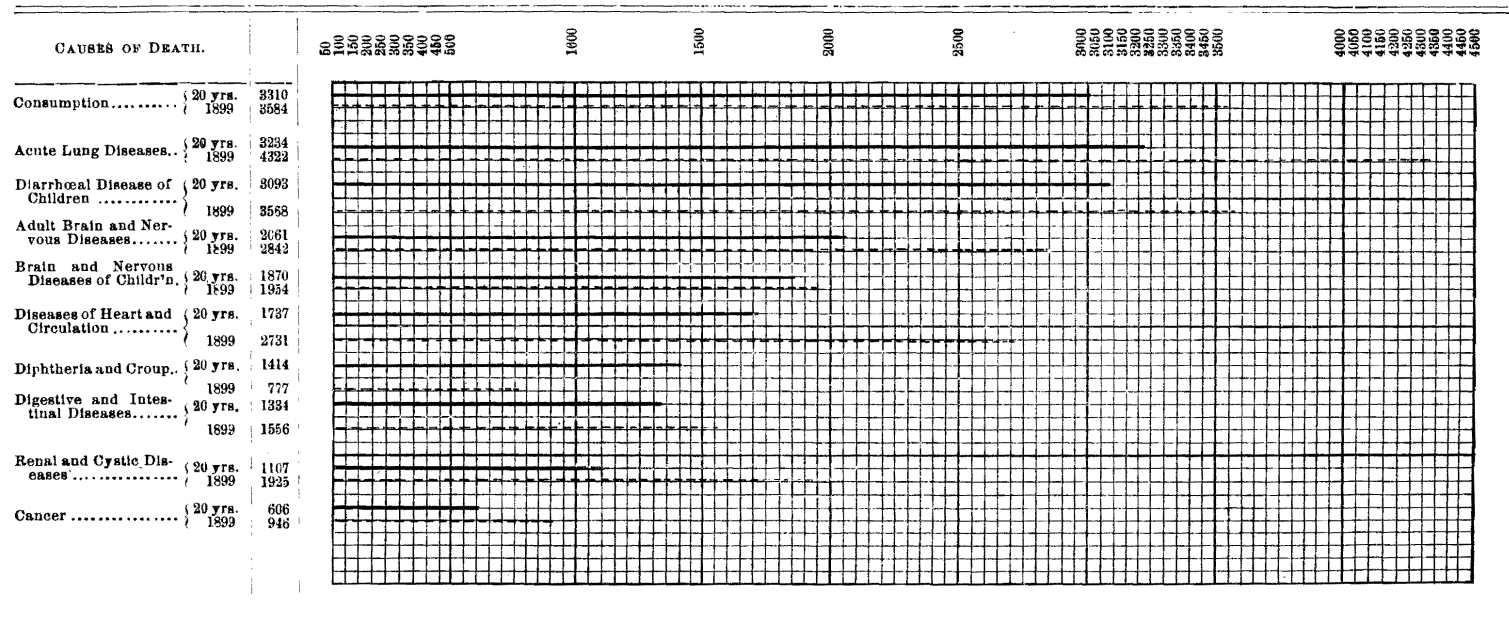
CAUSES OF DEATH.	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889.
Remittent fever.....	2.62	2.59	3.71	3.10	2.39	1.84	1.62	1.85	1.61	1.91	1.44
Enteric or typhoid.....	3.17	3.29	4.94	7.43	4.66	5.12	5.02	4.15	3.88	4.50	5.14
Small-pox.....	.00	.13	2.18	3.08	.44	.56	.01	.03	.03	.03	.02
Scarlet fever.....	6.14	5.06	4.30	10.09	7.05	4.38	5.05	1.69	1.89	4.17	3.78
Measles.....	.75	.76	.60	.73	1.08	1.51	1.05	.67	2.20	.53	.83
Whooping cough.....	2.71	1.14	1.02	2.12	1.56	.92	.41	2.09	1.34	1.17	1.97
Diphtheria and croup.....	10.86	7.71	9.72	12.37	9.47	8.21	11.70	9.94	11.37	14.80	11.18
Erysipelas.....	1.34	.96	1.06	.79	.74	.64	.57	.60	.71	.93	.80
Diarrhœal diseases of children.....	18.11	19.15	19.43	15.06	21.96	19.72	22.25	20.32	20.06	25.50	23.99
Consumption.....	27.31	23.99	25.76	29.21	25.81	25.75	25.97	24.45	27.20	24.41	24.50
Acute lung diseases.....	21.16	17.57	17.30	23.13	22.79	17.41	20.07	17.55	19.04	21.74	20.33
Brain and nervous diseases of children.....	16.13	14.48	14.15	16.80	13.92	12.80	14.01	13.53	14.04	14.33	13.66
Diseases of heart and circulation.....	9.52	8.68	10.45	9.92	10.21	10.60	11.75	11.49	11.39	12.29	12.68
Renal and cystic diseases.....	5.46	4.56	5.24	6.43	6.27	7.14	7.34	7.06	6.50	7.41	7.50
Adult brain and spinal diseases.....	12.87	11.91	12.94	12.78	12.91	13.33	14.82	14.74	14.64	15.23	14.14
Digestive and intestinal diseases.....	10.20	8.88	9.30	6.22	7.63	8.62	8.91	9.25	9.24	10.73	10.30
Cancer.....	3.70	3.75	3.88	3.37	3.81	3.87	3.89	4.15	4.21	4.45	4.11
Acute rheumatism.....	.74	.56	.76	.43	.27	.49	.28	.51	.98	.10	.83
Puerperal.....	1.90	2.15	2.61	2.05	1.63	1.77	2.09	1.96	1.95	1.97	1.80
Violent deaths.....	*	*	*	6.66	7.50	*	6.59	7.60	7.82	9.59	7.65

CAUSES OF DEATH.	1890.	1891.	1892.	1893.	1894.	1895	1896.	1897	1898.	1899.
Remittent fever.....	1.35	1.21	1.30	.96	1.02	.85	1.69	1.74	.45	.52
Enteric or typhoid.....	5.42	4.69	4.15	3.28	3.07	3.39	3.35	2.70	2.48	2.62
Small pox.....	.00	.00	.25	.27	.06	.13	.01	.00	.00	.00
Scarlet fever.....	1.45	1.94	6.66	2.89	1.72	1.57	1.06	1.15	1.11	1.01
Measles.....	1.20	1.69	1.30	.47	1.62	.56	2.26	.88	1.07	.52
Whooping cough.....	2.57	2.02	1.07	1.54	2.07	1.62	1.60	1.81	.85	1.52
Diphtheria and croup.....	10.92	11.74	11.74	10.89	8.19	8.75	10.22	7.83	5.24	4.19
Erysipelas.....	.56	.57	.62	.48	.61	.44	.40	.38	.32	.47
Diarrhœal diseases of children.....	24.47	21.57	26.74	25.87	24.66	22.39	22.15	19.55	16.34	19.23
Consumption.....	24.46	23.37	23.64	22.28	21.77	21.17	19.53	18.34	17.81	19.31
Acute lung diseases.....	26.39	27.73	34.31	25.82	26.50	27.49	24.12	22.89	18.86	23.29
Brain and nervous diseases of children.....	14.10	13.72	14.83	13.46	12.11	11.50	11.74	10.25	9.06	10.53
Diseases of heart and circulation.....	13.49	13.25	14.44	14.16	12.74	13.55	14.03	14.52	12.62	14.72
Renal and cystic diseases.....	7.97	8.11	9.55	9.36	9.16	9.10	9.21	9.92	9.35	10.37
Adult brain and spinal diseases.....	16.01	15.77	16.25	16.96	15.28	15.69	15.18	14.63	14.91	15.31
Digestive and intestinal diseases.....	10.55	10.63	10.74	11.39	9.92	9.49	9.43	8.91	8.19	8.38
Cancer.....	4.41	4.34	4.55	4.69	4.63	4.60	4.71	4.83	4.70	5.10
Acute rheumatism.....	.73	.51	.66	.66	.57	.49	.34	.39	.30	.39
Puerperal.....	1.73	2.00	1.86	1.83	1.85	1.75	1.64	1.57	1.45	1.44
Violent deaths.....	8.57	9.23	9.43	9.99	9.50	8.78	8.29	9.55	8.01	9.29

*Violent deaths were not separately recorded.

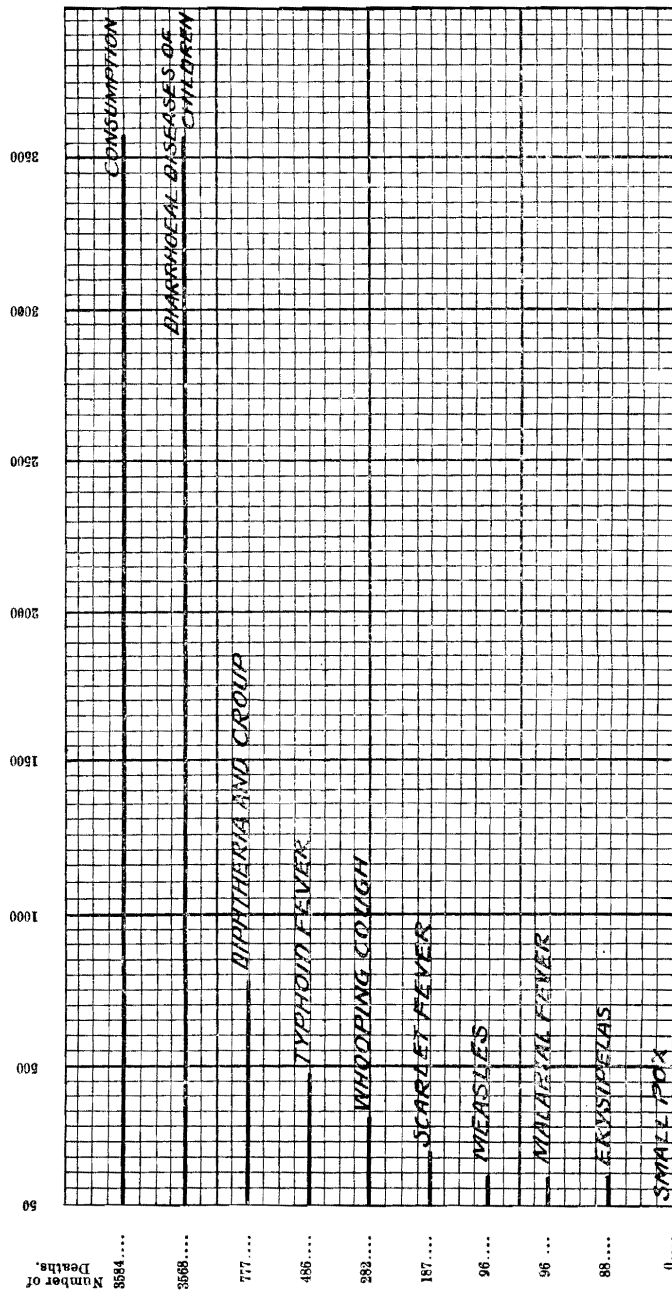
CHART SHOWING COMPARATIVE MORTALITY FROM THE TEN MOST PROMINENT CAUSES OF DEATH FOR 1899, AND THE AVERAGE DEATHS
FROM EACH OF THESE CAUSES FOR TWENTY YEARS, 1879-1898.

Black lines represent average deaths for twenty years; Dotted lines represent deaths for year ending June 30, 1899.



The number of deaths from the ten chief preventable diseases was 9,164, or 1,250 more than occurred during the previous year.

CHART SHOWING THE COMPARATIVE MORTALITY FROM TEN SELECTED PREVENTABLE DISEASES FOR THE YEAR
ENDING JUNE 30TH, 1899.



These lines are drawn to a scale of 500 to one inch.

Infant Mortality.—The following table shows the mortality among children compared with deaths at all ages :

TABLE 7.—NAMES OF MUNICIPALITIES IN NEW JERSEY HAVING OVER 5 000 INHABITANTS, SHOWING ALSO POPULATION, TOTAL DEATHS, DEATHS UNDER ONE YEAR, DEATHS UNDER FIVE YEARS, AND TOTAL DEATH-RATE PER 1,000 POPULATION.

NAMES OF MUNICIPALITIES	Estimated population.	Total number of deaths for year ending June 30, 1899.	Deaths under one year.	Deaths under five years and over one year.	Death rate per 1,000 population.
Atlantic County—					
Atlantic City.....	22,545	429	79	33	19.03
Bergen County—					
Englewood.....	5,919	104	20	8	17.57
Hackensack	8,298	124	23	11	14.94
Burlington County—					
Bordentown.....	5,244	91	9	4	17.35
Burlington.....	9,546	161	11	14	16.87
Camden County—					
Camden.....	67,587	1,308	234	160	19.35
Gloucester City.....	6,359	124	23	14	19.50
Cumberland County—					
Bridgeton.....	14,774	203	28	7	13.74
Millville.....	10,834	145	32	11	13.38
Essex County—					
Montclair	14,229	185	23	22	13.00
Newark.....	242,986	4,714	792	528	19.40
Orange.....	25,948	472	97	54	18.19
Hudson County—					
Bayonne.....	20,512	525	116	85	25.59
Harrison	10,742	206	43	24	19.18
Hoboken.....	62,431	1,243	232	129	19.91
Jersey City.....	198,481	3,926	688	533	19.78
Town of Union.....	15,388	179	34	17	11.63
Mercer County—					
Trenton.....	66,566	1,179	176	107	17.71
Middlesex County—					
New Brunswick.....	20,954	336	54	23	16.04
Perth Amboy.....	15,842	256	67	40	16.16
South Amboy.....	6,563	83	17	12	12.65
Monmouth County—					
Long Branch	7,425	130	22	9	17.51
Morris County—					
Dover.....	5,021	72	13	4	14.34
Morristown.....	11,994	230	27	19	19.18
Passaic County—					
Passaic.....	21,786	515	140	69	23.64
Paterson.....	112,540	2,211	374	279	19.65
Salem County—					
Salem City.....	6,993	128	18	11	18.30
Union County—					
Elizabeth	48,690	840	155	85	17.25
Plainfield	15,517	244	47	19	15.72
Rahway.....	8,523	142	16	11	16.67
Warren County—					
Phillipsburg.....	9,429	129	16	10	13.68

Consumption.—The increase in the number of deaths certified as being due to this cause is 361 greater than for the previous year, and 419 greater than the average for the previous twenty-one years. An extraordinary increase in deaths is also recorded for acute lung diseases, and as much confusion occurs in certifying to the cause of death in this group of affections, it is probable that tubercular causes enter into many of the cases reported as bronchitis, &c.

TABLE 8.—SHOWING THE DEATH-RATE FROM CONSUMPTION IN NEW JERSEY BY COUNTIES PER 10,000 POPULATION FOR YEAR ENDING JUNE 30TH, 1899.

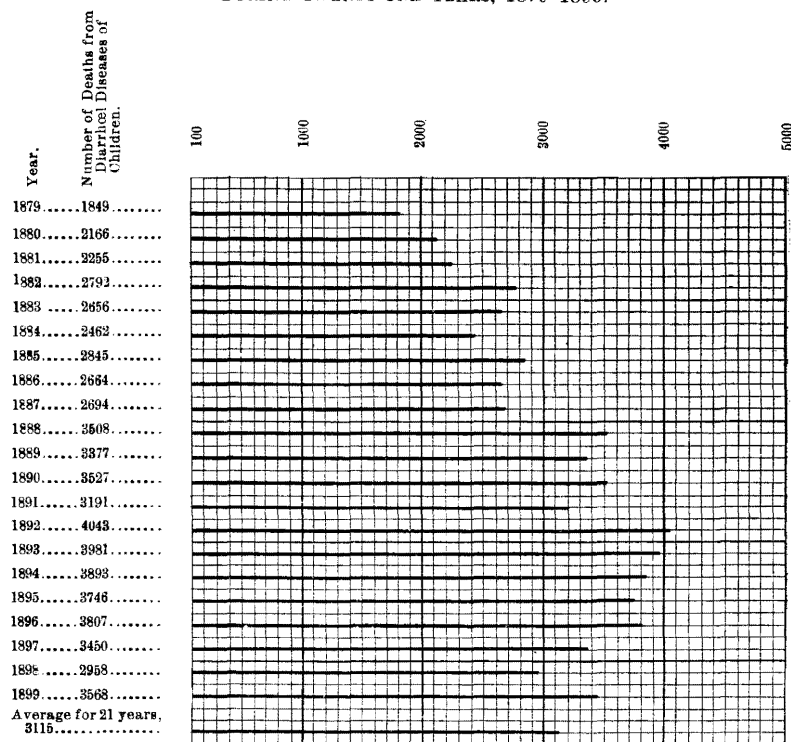
NAMES OF COUNTIES.	Estimated population.	Number of deaths from consumption.	Number of deaths from consumption per 10,000 population.
Hudson county	370,440	899	24.26
Essex county	356,000	848	23.82
Mercer county.....	89,986	194	21.55
Ocean county.....	19,531	40	20.48
Passaic county.....	155,771	299	19.19
Camden county.....	110,036	202	18.35
Morris county.....	63,884	112	17.53
Atlantic county.....	39,478	69	17.47
Cumberland county.....	53,325	92	17.25
Cape May county.....	14,123	23	16.28
Burlington county..	61,005	99	16.22
Union county.....	95,752	153	15.97
Salem county.....	26,828	41	15.28
Middlesex county.....	76,698	112	14.62
Somerset county.....	32,155	45	13.99
Bergen county.....	80,191	107	13.34
Gloucester county.....	33,223	42	12.64
Hunterdon county..	35,334	43	12.16
Monmouth county..	80,675	94	11.65
Warren county.....	37,867	44	11.61
Sussex county.....	22,606	26	11.50

Diarrhoeal Diseases of Children.—The very marked diminution in the mortality from these affections during the year ending June 30th, 1898, indicated that influences largely within human control govern the loss of life which occurs from this class of affections, and explanation of the striking increase in the number of deaths reported as being due to these causes for the year ending June 30th, 1899, must

be sought in errors in management, which appear to have been widespread.

An examination of the following chart shows that no recent fluctuations in deaths from infantile intestinal disorders have been so extreme as those which occurred previous to the general introduction of sterilization and pasteurization of milk:

CHART SHOWING NUMBER OF DEATHS FROM DIARRHOEAL DISEASES OF CHILDREN DURING TWENTY-ONE YEARS, 1879-1899.



In the early part of the summer of 1898, the chemist employed in the department of the State Dairy Commission began to find that the use of formaldehyde, as a preservative for milk, was becoming extensive, and as the summer advanced the employment of this article became still more general, and its cheapness invited the producer, dealer and retailer, all to add a portion to the daily supply of milk, to insure it against souring, and to obtain credit from consumers for fur-

nishing a grade of milk which did not require ice to keep it sweet. This new feature in the milk business flourished for several months before the various parties engaged in selling milk learned that the officers of the State were bringing suits to prevent this addition of a preservative fluid to milk. At present the use of formaldehyde, as a preservative for milk, has been almost altogether broken up, and if the further resort to this article as a means of saving ice, and as a means of marketing old milk in place of fresh new milk can be prevented, we may look forward to the tables for 1900 with much faith that the deaths from diarrhoeal diseases among children will be diminished, for there seems to be good ground for the opinion that when any antiseptic is added to milk in quantities which will prevent or effectually retard decomposition, that the milk so protected will undergo digestion very slowly, if at all, and consequently mal-nutrition and gastro-enteric derangements are liable to develop as a consequence of the continuous presence of an indigestible substance in the intestinal tract.

TABLE 9.—DEATHS AMONG CHILDREN UNDER FIVE YEARS OF AGE IN NEW JERSEY PER 100 000 OF POPULATION FOR TWENTY-ONE YEARS, 1879-1899.

YEARS.	Population.	Number of deaths under five years.	Rate per 100,000 population.
1879.....	1 020 584	7,919	774.9
*1880.....	1,130,892	7,407	654.9
1881.....	1,160 275	7 617	656.4
1882.....	1,189 658	10 512	883.6
1883.....	1,209 048	8,710	724.0
1884.....	1,248 224	7,971	638.5
*1885.....	1,278,033	9,120	713.5
1886.....	1,310,431	8 537	651.4
1887.....	1,342 829	9,245	688.4
1888.....	1,375 227	10,508	764.0
1889.....	1,407 625	10 354	735.5
*1890.....	1,441,017	10,748	745.8
1891.....	1,478 784	10,685	722.5
1892.....	1,511 653	12,369	818.2
1893.....	1,538,799	11,307	735.4
1894.....	1,578 373	9,264	586.9
*1895.....	1,679,942	9,074	542.3
1896.....	1,718 543	8 504	561.1
1897.....	1,764 144	9,643	482.1
1898.....	1,810,008	7,283	402.3
1899.....	1,855,872	10 357	563.5

*Census year.

TABLE 10.—SHOWING DEATHS FROM DIARRHOEAL DISEASES OF CHILDREN IN CITIES.

NAMES OF COUNTIES AND CITIES.	Deaths from diarrhoeal diseases of children exclusive of cities of over 5,000.	Deaths from diarrhoeal diseases of children in the cities of over 5,000.
Atlantic County.....	304	
Atlantic City.....		429
Bergen County.....	864	
Englewood.....		104
Hackensack.....		124
Burlington County.....	683	
Bordentown.....		91
Burlington.....		161
Camden County.....	463	
Camden.....		1,308
Gloucester City.....		124
Cape May County..	202	
Cumberland.....	322	
Bridgeton.....		203
Millville.....		145
Essex County.....	917	
Montclair.....		185
Newark.....		4,714
Orange.....		472
Gloucester County.....	426	
Hudson County.....	1,168	
Bayonne.....		525
Harrison.....		206
Hoboken.....		1,243
Jersey City..		3,926
Town of Union.....		179
Hunterdon County.....	450	
Mercer County.....	386	
Trenton.....		1,179
Middlesex County.....	466	
New Brunswick.....		336
Perth Amboy.....		256
South Amboy.....		83
Monmouth County.....	935	
Long Branch.....		130
Morris County.....	632	
Dover.....		72
Morristown.....		230
Ocean County.....	280	
Passaic County.....	249	
Passaic.....		515
Paterson.....		2,211

TABLE 10.—SHOWING DEATHS FROM DIARRHOEAL DISEASES OF CHILDREN IN CITIES.
(Continued.)

NAMES OF COUNTIES AND CITIES.	Deaths from diarrhoeal diseases of children exclusive of cities of over 5,000.	Deaths from diarrhoeal diseases of children in the cities of over 5,000.
Salem County.....	275	
Salem City.....		128
Somerset County.....	491	
Sussex County.....	240	
Union County.....	248	
Elizabeth.....		840
Plainfield.....		244
Rahway.....		142
Warren County.....	364	
Phillipsburg.....		129

Diphtheria.—Only 777 deaths were recorded from diphtheria, this being the smallest number reported from this disease during the past twenty years, and being 173 less than for the previous year, and 607 less than the average for twenty-one years.

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TABLE 11.—DEATHS FROM DIPHTHERIA IN THE CITIES OF OVER 5,000 POPULATION
IN NEW JERSEY FOR ELEVEN YEARS, 1889-1899.

NAME OF PLACE.	Population— Census 1895	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	Total.
Atlantic City.....	18,329	8	4	15	8	8	8	7	11	8	5	7	89
Bayonne.....	19,856	59	10	14	16	13	13	15	52	14	13	8	227
Bordentown.....	5,176		7	2	30	7	1	5	1		1		54
Bridgeton.....	53,202	2	6	40	10	2	2	1	8	12	2	4	89
Burlington.....	7,844	4	3	10	19	11	16	9	24	5	7		108
Camden City.....	53,467	32	76	192	150	89	90	84	60	95	48	66	982
Dover*.....										5	4	1	10
Elizabeth.....	43,834	40	40	51	18	47	44	22	40	32	25	27	395
Englewood*.....	5,721									1	1		2
Gloucester City.....	6,225	11	13	5	6	4	4	7	3	6	1	6	66
Hackensack.....	7,282					1	2	2	1	2	5	4	17
Harrison.....	9,672	28	3	10	8	6	7	8	15	4	6	4	99
Hoboken.....	54,083	162	126	93	70	77	56	95	103	53	45	46	926
Jersey City.....	182,713	223	341	295	261	221	272	187	299	229	156	102	2,586
Long Branch.....	7,333	4	9	6	2	4	4	2	9	7	2		49
Millville.....	10,466	9	17	27	3	2	7	6	6	3	14	1	95
Montclair†.....									9	2	8	4	23
Morristown.....	10,290	30	5	5	5	8		9	6	1	4	1	74
Newark.....	215,806	343	314	196	219	275	173	256	330	177	117	126	2,526
New Brunswick.....	19,910	50	23	5	29	7	11	17	23	9	10	6	190
Orange.....	22,797	22	44	41	30	23	11	15	47	18	29	15	304
Passaic.....	17,894	25	20	32	23	14	13	14	29	33	9	10	222
Paterson.....	97,344	78	68	161	142	96	151	85	125	177	68	86	1,237
Perth Amboy.....	13,030	8	6	29	12	22	20	11	4	18	16	13	159
Phillipsburg.....	9,081	12	7	2	8	11	2	10	6	19	5	2	84
Plainfield.....	13,629	3	12	4	5	33	14	14	4	1	7	2	99
Rahway.....	7,845	1	6	4	2	9	1	3	5	1	2	3	37
Salem.....	6,337	13	1			6	2	2	15	11	18	8	77
South Amboy*.....										34	5	3	42
Town of Union.....	13,336	27	44	53	12	17	13	25	10	7	8	7	223
Trenton.....	62,518	20	43	67	135	91	36	158	90	33	16	12	701
Total.....	959,484	1,214	1,248	1,359	1,233	1,104	973	1,070	1,344	1,017	657	574	11,793

*Record began 1897.

†Record began 1896.

Typhoid Fever.—This disease caused 486 deaths, 36 more than during the year ending June 30th, 1898, but 193 less than the average for the last twenty years.

TABLE 12.—DEATHS FROM TYPHOID FEVER IN CITIES OF OVER 5,000 POPULATION IN NEW JERSEY, FOR YEARS 1889-1899.

NAME OF PLACE.	Population— Census 1895.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.
Atlantic City.....	18,329	6	6	4	4	9	15	3	8	4	7	5
Bayonne.....	19,856	4	7	7	13	7	7	11	4	7	6	12
Bordentown.....	5,776	3	2	4	3	3	2	3	2	5	3	3
Bridgeton.....	13,292	4	3	8	9	2	1	3	1	4	8	6
Burlington.....	7,844	4	6	7	3	1	4	3	1	1	1	4
Camden City.....	63,467	90	82	33	38	38	42	64	32	38	23	49
*Dover.....											1	3
Elizabeth.....	43,834	9	19	5	11	8	4	14	8	7	7	5
*Englewood.....	5,721									2	2	
Gloucester City.....	6,225	1	2	5	1	5	2	5	7	5	2	1
Hackensack.....	7,282					3	4	3	2			1
Harrison.....	9,672	4	6	2	4	2	2	5	8	3	5	2
Hoboken.....	54,083	24	19	14	15	10	17	11	21	9	7	13
Jersey City.....	182,713	132	159	167	123	116	96	174	158	38	79	39
Long Branch.....	7,333	1	4	1	3			5	1	3	1	4
Millville.....	10,466	4	3	10	4	4	2	3		2	5	
†Montclair.....									1	3	3	3
Morristown.....	10,290	2	2	1	3	1	2	5	4		7	1
Newark.....	215,806	131	194	134	153	63	43	43	61	44	31	85
New Brunswick.....	19,910	5	10	6	9	3	4	2	8	3	6	5
Orange.....	22,792	7	14	9	6	6	11	5	6	3	4	1
Passaic.....	17,894	7		11	10	3		2	1	12	12	11
Paterson.....	97,344	26	4	17	15	35	7	24	43	49	38	59
Perth Amboy.....	13,030	2	1	9	1	1	1		12	7	3	4
Phillipsburg.....	9,081	5	1	4	3	2		3	5	1	1	
Plainfield.....	13,629	1	1	3	3	3	3	4	3	3		3
Rahway.....	7,945	5	1	2	4		2	4	7	1		2
Salem.....	6,337	10	1	3	1	3	1	1		2	3	1
Town of Union.....	13,336	5	3	5	2	2	2	2		2	3	1
Trenton.....	62,518	20	11	15	15	19	16	11	16	25	22	33
Total.....	959,484	512	589	487	467	349	328	410	422	279	294	355

*Record begins in 1897.

†Record begins in 1896.

TABLE 13.—LIST OF SANITARY DISTRICTS IN NEW JERSEY IN WHICH DEATHS FROM TYPHOID FEVER OCCURRED DURING THE YEAR ENDING JUNE 30TH, 1899, WITH NUMBER OF DEATHS, SOURCE OF WATER-SUPPLY AND NATURE OF DRAINAGE.

NAME OF DISTRICT.	Number of deaths from typhoid fever.	WATER SUPPLY.	DRAINAGE.
Atlantic City.....	5	Public.	Sewers.
Bass River township.....	1	Domestic.	No sewers.
Bayonne city.....	12	Public.	Sewers.
Bedminster township.....	1	Domestic.	No sewers.
Belleville township.....	1	Public.	" "
Belvidere city.....	1	"	Sewers.
Bergen township.....	1	Domestic.	No sewers.
Berkeley township.....	1	"	" "
Bernards township.....	1	"	" "
Beverly city.....	2	Public.	Sewers.
Bloomfield township.....	1	"	" "
Bordentown city.....	3	"	" "
Bound Brook borough.....	3	"	" "
Bridgeton city.....	6	"	No sewers.
Burlington city.....	4	"	Sewers.
Camden city.....	49	"	" "
Centre township.....	2	Domestic.	No sewers.
Clayton borough.....	4	Public.	" "
Collingswood borough.....	2	"	" "
Delran township.....	1	Domestic.	" "
Dover (Ocean) township.....	3	"	" "
Dover city (Morris).....	1	Public.	" "
East Greenwich township.....	1	Domestic.	" "
East Newark.....	1	Public.	Sewers.
East Orange township.....	4	"	" "
Eatontown township.....	2	Domestic.	No sewers.
Egg Harbor township.....	1	"	" "
Elizabeth city.....	5	Public.	Sewers.
Elmer borough.....	1	"	No sewers.
Evesham township.....	1	Domestic.	" "
Fairview borough.....	1	"	" "
Franklin township.....	1	"	" "
Freehold town.....	1	Public.	Sewers.
Frenchtown borough.....	1	Domestic.	No sewers.
Galloway township.....	2	"	" "
Glassboro township.....	1	Public.	Sewers.
Gloucester city.....	1	"	" "
Gloucester township.....	2	Domestic.	No sewers.
Greenwich township.....	3	"	" "
Hackensack city.....	1	Public.	Sewers.
Hanover township.....	1	Domestic.	No sewers.
Harrison township.....	2	Public.	Sewers.
Hillsborough township.....	1	Domestic.	No sewers.
Hoboken city.....	13	Public.	Sewers.
Hohokus township.....	1	Domestic.	No sewers.
Hope township.....	1	"	" "
Hopewell township.....	1	"	" "
Howell township.....	1	"	" "
Jefferson township.....	1	"	" "
Jersey City.....	39	Public.	Sewers.

TABLE 13.—LIST OF SANITARY DISTRICTS IN NEW JERSEY IN WHICH DEATHS FROM TYPHOID FEVER OCCURRED DURING THE YEAR ENDING JUNE 30TH, 1899, WITH NUMBER OF DEATHS, SOURCE OF WATER-SUPPLY AND NATURE OF DRAINAGE.—*Cont.*

NAME OF DISTRICT.	Number of deaths from typhoid fever.	WATER-SUPPLY.	DRAINAGE.
Kearny township.....	3	Public.	Sewers.
Lambertville city.....	1	"	"
Landis township.....	4	Domestic.	No sewers.
Little Egg Harbor borough.....	2	"	"
Long Branch city.....	4	Public.	Sewers.
Manalapan township.....	1	Domestic.	No sewers.
Manchester (Passaic) township.....	1	"	"
Mannington township.....	1	"	"
Mansfield township.....	2	"	"
Mantua township.....	2	Public.	"
Merchantville borough.....	2	"	Sewers.
Middletown township.....	2	Domestic.	No sewers.
Millburn township.....	1	"	"
Monroe township.....	1	"	"
Montclair city.....	3	Public.	Sewers.
Morristown city.....	1	"	No sewers.
Newark city.....	85	"	Sewers.
New Brunswick city.....	5	"	"
Newton township.....	2	"	No sewers.
Northampton township.....	2	Domestic.	Sewers.
North Bergen township.....	4	"	No sewers.
North Plainfield borough.....	2	Public.	Sewers.
Oldmans township.....	1	Domestic.	No sewers.
Orange city.....	1	Public.	Sewers.
Oxford township.....	1	Domestic.	No sewers.
Passaic city.....	11	Public.	Sewers.
Paterson city.....	59	"	"
Pemberton township.....	1	"	"
Penns Grove township.....	1	Domestic.	No sewers.
Pequannock township.....	1	"	"
Perth Amboy city.....	4	Public.	Sewers.
Plainfield city.....	3	"	"
Pleasantville borough.....	1	"	No sewers.
Plumstead township.....	1	Domestic.	"
Princeton borough.....	2	Public.	Sewers.
Rahway city.....	2	"	"
Raritan borough (Somerset).....	1	"	"
Raritan township (Middlesex).....	2	Domestic.	No sewers.
Red Bank borough.....	2	Public.	"
Ridgewood village.....	2	"	"
Riverside borough.....	1	"	"
Roxbury township.....	1	Domestic.	"
Rutherford borough.....	1	Public.	Sewers.
Salem city.....	1	"	"
Shrewsbury township.....	1	Domestic.	No sewers.
South Amboy borough.....	1	Public.	Sewers.
South Brunswick township.....	1	"	No sewers.
South Orange village.....	1	Public.	"
South River borough.....	1	Domestic	"

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TABLE 13.—LIST OF SANITARY DISTRICTS IN NEW JERSEY IN WHICH DEATHS FROM TYPHOID FEVER OCCURRED DURING THE YEAR ENDING JUNE 30TH, 1899, WITH NUMBER OF DEATHS, SOURCE OF WATER-SUPPLY AND NATURE OF DRAINAGE.—Cont.

NAME OF DISTRICT.	Number of deaths from typhoid fever.	WATER-SUPPLY.	DRAINAGE.
Sparta.....	1	Domestic.	No sewers.
Springfield (Burlington).....	1	"	" "
Springfield (Union).....	1	"	" "
Stafford.....	1	"	" "
Town of Union.....	1	Public.	Sewers.
Trenton.....	33	"	"
Upper Pittsgrove.....	2	Domestic.	No sewers.
Vailsburgh borough.....	1	Public.	" "
Vineland.....	3	"	" "
Wall	1	Domestic	" "
Waterford.....	2	"	" "
Weehawken.....	1	Public.	Sewers.
Westfield	1	"	"
West Hoboken township.....	4	"	"
Woodbury.....	1	"	"

TABLE 14—LOCALITIES IN NEW JERSEY HAVING PUBLIC WATER-SUPPLIES.

Place.	County.	When introduced.	Ownership.	Source of supply.	Storage capacity— gallons.	Taps.	Hydrants.	Average consumption— gallons.	Pressure—pounds.
Arlington.	Hudson.	1886	City.	See Kearny.					
Asbury Park.	Monmouth.	1886	City.	Artesian—filters.	106,000	1,028	64	500,000	4
Atlantic City.	Atlantic.	1888	"	Artesian and stream.	670,000	3,400	451	4,500,000	4
Atlantic Highlands.	Monmouth.	1898	Borough.	Artesian—filters.	250,000	305	74	109,428	12
Bayonne.	Hudson.	1882	City.	E. Jersey—Pequanook.	2,500	406	116	1,300,000	2
Beach Haven.	Ocean.	1898	Borough.	Artesian.	100,000	200	24	80,000	4
Belleville.	Essex.	1871	Village.	From Newark.			69		
Belmar.	Monmouth.	1897	Borough.	Artesian.					
Belvidere.	Warren.	1878	Private Co.	Delaware river.	33,920	175	25		
Bergen Fields.	Bergen.			From Hoboken.					
Beverly.	Burlington.	1887	Private Co.	Delaware river.		310	44		
Blairtown.	Warren.	1898	"	Springs.	12,000	40	12		6
Bloomfield.	Essex.			See East Orange.					
Boonton.	Morris.	1895	Private Co.	Mountain stream.	500,000,000		58		30-10
Bordentown.	Burlington.	1896	"	Delaware—filters.	600,000		60	500,000	
Bound Brook.	Somerset.	1888	"	Middle brook.	12,000,000	485	50	250,000	4
Breslin Park.	Morris.	1890	Association.	Lake Hopatcong.	25,000	15	6		3
Bridgeton.	Cumberland.	1874	City.	Springs and well.	1,500,000	1,730	180	650,000	4
Burlington.	Burlington.	1884	"	Delaware river.	223,000	1,780	118	450,000	56
Camden.	Camden.	1852	"	Artesian.	8,000,000	9,700	588	12,000,000	5
Cape May City.	Cape May.	1874	"	Surface wells.	130,000	700	90	350,000	
Cape May C. H.	"	1895	Private Co.						
Carlstadt.	Bergen.			Hoboken.					
Carters.	Middlesex.	1897	Private Co.	See Woodbridge.					
Clayton.	Gloucester.	1895	"	Driven wells.	91,800	43	40		60
Cliffside.	Bergen.			From Hoboken.					
Clinton.	Hunterdon.	1897	Private Co.	Mountain springs.	1,000,000		24		
Clinton Township.	Essex.			See N'rk and Irvington.					
Collingswood.	Camden.	1891	Private Co.	Springs.	587,600	285	17	25,000	
Columbia Heights.	Essex.			See Valisburg.					
Cranford.	Union.			Wells at Plainfield.					
Darlington.	Monmouth.	1898	Private Co.	Artesian.	60,000	18	6	15,000	24
Deckertown.	Sussex.	1896	Borough.	Lake Rutherford.	172,000,000		45	75,000	125
Delford.	Bergen.			From Hoboken.					
Dover.	Morris.	1887	Private Co.	Springs.	6,000,000	382	478	75,000	90
East Orange.	Essex.	1882	"	Wells.	2,300	500			45
East Rutherford.	Bergen.			From Hoboken.					
Egg Harbor City.	Atlantic.	1890	Private Co.	Artesian.	887,000				
Elizabeth.	Union.	1864	"	Art. & Elizabeth river.	212,000,000	5,600	350	4,000,000	35
Englewood.	Bergen.			From Hoboken.					
Englewood Cliffs.	"			"					
Essex Falls.	Essex.	1893	Private Co.	Springs.	70,000		20	25,000	
Fairview.	Bergen.			From Hoboken.					
Fanwood.	Union.	1892	Private Co.	From Plainfield.					
Flemington.	Hunterdon.	1864	"	Raritan river.	650,000	165	21	150,000	35
Franklin Township.	Essex.			See Nutley.					
Freehold.	Monmouth.	1891	Town.	Artesian.	235,000	301	5	150,000	40
Garfield.	Bergen.	1895	Private Co.	Deep wells.	60,000		20		30
Glassboro.	Gloucester.	1896	"	See Clayton.	70,500		36		35
Glen Gardner.	Hunterdon.			Spring.		40			75
Glen Ridge.	Essex.			See East Orange.					
Gloucester City.	Camden.	1884	City.	Springs and creek.	2,000,000	904	80	500,000	
Guttenberg.	Hudson.			From Hoboken.					
Hackensack.	Bergen.			"					
Hackettstown.	Warren.			Mountain springs.					
Haddonfield.	Camden.	1886	Private Co.	Stream.	2,000,000	180	21	25,000	
Harrison.	Hudson.	1886	City.	From Jersey City.		780	80		
Hasbrouck Heights.	Bergen.			From Hoboken.					
Hight's, Navesink.	Monmouth.	1886	Private Co.	Springs and wells.					
Hightstown.	Mercer.	1895	Borough.	Artesian.	84,000	105	27	25,000	60
Hoboken.	Hudson.	1855	Private Co.	Hackensack river.	48,153,000	18,144	1,126		
Irvington.	Essex.	1894	"	From Newark.	250	53			40
Jersey City.	Hudson.	1862	City.	East Jersey.	247,000,000	20,456	1,738	1,930,000	
Kearny.	"	1887	Township.	From Jersey City.		230	94		
Keyport.	Monmouth.	1893	Town.	Artesian—filters.	299,000	225	60	60,000	60
Lakewood.	Ocean.	1896	Private Co.	Medeconk river.		212	45		
Lambertville.	Hunterdon.	1878	"	Swan's creek—filters.	30,000,000	300	28	250,000	71
Leonia.	Bergen.			From Hoboken.					
Little Ferry.	"			"					
Little York.	Hunterdon.			Springs.		20			
Lodi.	Bergen.			From Hoboken.					
Long Branch.	Monmouth.	1877	Private Co.	Brook—filters.	6,000,000	1,360	132	1,400,000	39
Longport.	Atlantic.	1895	"						
Lorraine.	Union.	1894	"	From Plainfield.					70
Madison.	Morris.	1890	Borough.	Open wells.		250	129	150,000	85
Maple Shade.	Burlington.	1894	Private Co.	Well.					
Maywood.	Bergen.			From Hoboken.					
Medford.	Burlington.	1896	Private Co.	Creek.	80,000	110	20	80,000	46
Merchantville.	Camden.	1887	"	Stream.	810,000	261	40	46,601	

TABLE 14—LOCALITIES IN NEW JERSEY HAVING PUBLIC WATER-SUPPLIES.—Cont.

Place.	County.	When introduced.	Ownership.	Source of supply.	Storage capacity— gallons.	Taps.	Hydrants.	Average consumption —gallons.	Pressure—pounds.
Letuchen.....	Middlesex...	1897	Private Co.	Wells—flowing.....			25		64
Lidland.....	Bergen.....			From Hoboken.....					
Millville.....	Cumberland..	1878	"	Wells and river.....	Large reservoir	700	66	1,000,000	45
Monmouth Beach.....	Monmouth.....		"	From Long Branch.....					
Montclair.....	Essex.....	1887	"	E. Jersey—Pequan- nock.....	1,456	337		722,069	
Moorestown.....	Burlington..	1888	"	Springs and creek.....	1,000,000	341	85	250,000	45
Morris town.....	Morris.....	1799	"	Springs.....	22,650,000	815	111	450,000	30-55
Mount Holly.....	Burlington..	1846	"	Rancocas creek.....	1,400,000	780	45	250,000	35
Newark.....	Essex.....	1800	City will own.....	East Jersey—Pequan- nock.....	132,000,000	29,646	1,818	22,200,000	30
New Barbadoes.....	Bergen.....			See Hackensack.....					
New Brunswick.....	Middlesex...	1865	City.....	Lawrence brook.....	15,000,000	2,846	213	1,600,000	18-55
Newtown.....	Sussex.....	1895	Town.....	Morris lake.....	730,000,000	340	80		75-150
North Bergen.....	Hudson.....			From Hoboken.....					
North Plainfield.....	Somerset.....			From Plainfield.....					
Outley.....	Essex.....	1889	Township..	East Jersey.....		180		50,000	
Ocean City.....	Cape May.....		Private Co.	Artesian.....	50,000		30		
Ocean Grove.....	Monmouth....	1884	Association		295,000	864	41	186,300	35
Orange.....	Bergen.....	1883	City.....	Rahway river.....	375,000,000	1,933	210		
Palisades.....	Burlington..			From Hoboken.....					
Palmyra.....	Burlington..			From Riverton.....					
Passaic City.....	Passaic.....	1872	City.....	Passaic river.....	1,000,000	701	163	400,000	35
Pateron.....	"	1856	"	"	50,000,000	5,643	534	10,000,000	
Pemberton.....	Burlington..	1894	Private Co.	Well.....					
Pennington.....	Mercer.....	1886	"	Spring.....		60			
Perth Amboy.....	Middlesex...	1882	City.....	Tenney's brook.....	108,000,000	835	157	2,000,000	46
Phillipsburg.....	Warren.....	1887	Private Co.	Well near Delaware.....	2,000,000		76	2,000,000	112
Plainfield.....	Union.....	1891	"	Wells.....	515,000	1,300	325	700,000	74
Princeton.....	Mercer.....	1883	"	"	146,000	413	54	75,000	50
Rahway.....	Union.....	1871	City.....	Rahway river.....		596	125	690,000	
Raritan.....	Somerset.....			From Somerville.....					
Red Bank.....	Monmouth....	1885	Town.....	Artesian wells.....	850,000	425	100	200,000	45
Ridgefield Park.....	Bergen.....			From Hoboken.....					
Riverside.....	"			"					
Riverton.....	Burlington..	1889	Private Co.	Well.....	70,000	165	53		
Rockaway.....	Morris.....	1897	"	Brook.....	1,000,000				
Roselle.....	Union.....			From Elizabeth.....					
Rutherford.....	Bergen.....			From Hoboken.....					
Salem City.....	Salem.....	1882	City.....	Artesian.....	42,000,000		71	400,000	35
Schraalenburg.....	Bergen.....			From Hoboken.....					
Seabright.....	Monmouth....			From Long Branch.....					
Sea Isle City.....	Cape May.....	1895	Private Co.	Artesian.....	58,760	105	40		
Somerville.....	Somerset.....	1883	"	Raritan river—filters.....	514,600		62	750,000	45
South Amboy.....	Middlesex...	1894	Borough....	From Perth Amboy.....					
South Orange.....	Essex.....	1892	Village.....	From Summit.....	See Sum'mt.	44	210	130,054	120
Spring Lake.....	Monmouth....			Under construction.....					
Stockton.....	Camden.....	1892	Private Co.	Artesian.....	115,200		140		
Summit.....	Union.....	1889	"	Wells.....		700	80	500,000	50-80
Tenafly.....	Bergen.....			From Hoboken.....					
Toms River.....	Ocean.....								
Trenton.....	Mercer.....	1865	City.....	Delaware river.....	27,000,000		150	5,500,000	22-40
Tuckerton.....	Ocean.....	1898	Private Co.	Lake.....					
Union.....	Hudson.....			From Hoboken.....					
Union Township.....	"			"					
Vailsburg.....	Essex.....	1896		From South Orange.....					
Vincentown.....	Burlington..	1896	Private Co.	Rancocas creek.....	84,600	110	20		40-65
Vineland.....	Cumberland..	1856	"	Driven wells.....	79,000	83	30	125,000	
Wallington.....	Bergen.....			From Hoboken.....					
Washington.....	Warren.....	1882	"	Stream.....	1,000,000	450	30		60
Weehawken.....	Hudson.....			From Hoboken.....					
Wenonah.....	Gloucester..	1885	"	Spring.....	59,000				
Westfield.....	Union.....			From Plainfield.....					
West Hoboken.....	Hudson.....			From Hoboken.....					
Westwood.....	Bergen.....	1894	"	Artesian.....	60,000	209	15		30
Wildwood.....	Cape May.....		"	"	80,000	32	20		40
Woodbridge.....	Middlesex...	1897	"	Flowing wells.....					
Woodbury.....	Gloucester..	1886	Village.....	Mantua creek.....	1,350,000	750	82	300,000	45
Woodstown.....	Salem.....	1893	Private Co.	Artesian.....	874,400	126	55	30,000	55

Scarlet Fever.—This disease is still continuing to maintain the mild character which it has assumed during the past three years, there having been only 187 deaths recorded for the year ending June 30th, 1899, this number being 284 less than the average for the past twenty-one years.

Measles.—No extensive epidemic of measles occurred during the year, and the mortality was only 96, this being the smallest number of deaths from measles since 1895, and 63 less than the average for twenty-one years.

Whooping Cough.—The deaths reported from whooping cough number 282, an increase of 127, compared with the previous year. The average number of deaths from this disease for twenty-one years has been 231.

Malarial Fevers.—The prevalence of these affections has been much diminished in recent years in New Jersey, and the deaths ascribed to malarial influences for the last statistical year have been but 96. The average for the past 21 years has been 213.

Small-pox.—Sixty-four cases of small-pox were reported during the year ending October 31st, 1899, but no deaths from this disease occurred.

The following table has been corrected to show the facts relating to vaccination of school children for the year 1899:

TABLE 15.—UNVACCINATED CHILDREN OF SCHOOL AGE IN NEW JERSEY, BY COUNTIES, FOR THE YEARS 1896, 1897, 1898, 1899.

COUNTY.	1896		1897.		1898.		1899.	
	Number enrolled.	Unvaccinated.	Number enrolled.	Unvaccinated.	Number enrolled.	Unvaccinated.	Number enrolled.	Unvaccinated.
Atlantic.....	7,855	2,663	8,870	2,837	9,252	2,859	9,500	3,156
Bergen.....	15,983	2,383	16,951	2,671	18,028	3,123	18,695	4,057
Burlington.....	14,450	6,425	14,457	5,935	13,864	5,315	13,966	6,378
Camden.....	24,493	6,616	24,890	6,145	25,016	6,947	24,951	8,119
Cape May.....	3,157	1,696	3,232	1,906	3,148	1,755	3,171	1,849
Cumberland.....	12,394	7,987	12,736	8,347	12,620	8,598	12,575	8,888
Essex.....	78,601	4,402	82,403	6,680	85,413	5,918	86,703	6,824
Gloucester.....	7,901	3,685	7,978	3,937	7,841	3,794	7,927	4,085
Hudson.....	102,706	9,463	109,805	9,615	116,904	9,767	105,883	10,417
Hunterdon.....	8,067	3,312	8,056	3,262	8,069	3,753	7,975	4,094
Mercer.....	20,949	4,439	21,018	4,733	21,366	5,617	21,481	5,828
Middlesex.....	16,815	4,239	17,649	5,016	17,937	5,372	18,182	6,370
Monmouth.....	19,603	5,234	19,983	7,001	19,824	7,309	19,894	8,470
Morris.....	14,550	6,937	14,988	7,174	15,208	7,320	15,119	7,688
Ocean.....	4,838	3,252	5,045	3,518	5,033	3,422	5,163	3,637
Passaic.....	36,253	5,512	37,739	6,737	40,480	7,961	40,821	7,754
Salem.....	6,567	3,040	6,533	2,764	6,522	3,242	6,413	3,048
Somerset.....	7,283	1,171	7,566	984	7,607	1,316	7,660	1,632
Sussex.....	5,792	3,779	5,831	3,907	5,742	4,033	5,714	4,303
Union.....	20,929	2,609	21,623	3,010	22,120	3,065	22,641	2,698
Warren.....	9,681	5,637	9,509	6,113	9,523	6,388	9,331	6,138
Total.....	438,969	94,481	456,862	102,292	471,517	106,879	463,565	114,433

Of the total number of the children of the State of school age there were 94,481, or 21 per cent., unvaccinated in 1896; 102,292, or 22 per cent., unvaccinated in 1897; 106,879, or 22.67 per cent., unvaccinated in 1898, and 114,433 or 24.68 per cent., unvaccinated in 1899.

Bright's Disease has been separately classified for the year ending June 30th, 1899, this being the first time in New Jersey when deaths certified to have occurred from this cause have been specified in the mortality tables. Heretofore deaths from this cause have been included in the general classification, "Renal and Cystic Diseases." The number of deaths recorded from Bright's disease was 1,651, and the following table shows their distribution. In classifying Bright's disease all deaths certified as having resulted from albuminuria, uremia, nephritis and renal dropsy were also included in the group.

TABLE 16.—NUMBER OF DEATHS FROM BRIGHT'S DISEASE IN COUNTIES, EXCLUSIVE OF CITIES OF OVER 5,000 INHABITANTS, FOR YEAR ENDING JUNE 30, 1899.

Atlantic.....	14
Bergen.....	42
Burlington.....	41
Camden.....	24
Cape May.....	7
Cumberland.....	14
Essex.....	58
Gloucester.....	21
Hudson.....	57
Hunterdon.....	28
Mercer.....	16
Middlesex.....	20
Monmouth.....	55
Morris.....	25
Ocean.....	11
Passaic.....	7
Salem.....	10
Somerset.....	20
Sussex.....	11
Union.....	14
Warren.....	17
Total in counties, exclusive of cities.....	512
Total for State.....	1,651
Rate per 10,000 of population.....	8.89

TABLE 17.—SHOWING DEATHS FROM BRIGHT'S DISEASE IN NEW JERSEY FOR YEAR ENDING JUNE 30TH, 1899, IN CITIES OF OVER 5,000 INHABITANTS.

Atlantic City.....	25
Englewood.....	4
Hackensack.....	6
Bordentown.....	3
Burlington.....	8
Camden City.....	83
Gloucester City.....	6
Bridgeton.....	21
Millville.....	7
Montclair.....	18
Newark.....	313
Orange.....	29
Bayonne.....	25
Harrison.....	7
Hoboken.....	52
Jersey City.....	204

Town of Union.....	31
Trenton.....	58
New Brunswick.....	15
Perth Amboy.....	16
South Amboy.....	2
Long Branch.....	5
Dover.....	4
Morristown.....	16
Passaic City.....	13
Paterson.....	89
Salem City.....	8
Elizabeth.....	59
Plainfield.....	10
Rahway.....	13
Phillipsburg.....	7
Total in cities.....	1,139

Protection of Public Water-supplies.—Chapter 41 of the laws of 1899 prohibits the pollution of any river or other source from which is obtained any public supply of water for domestic use. Section 3 of this act reads as follows :

3. The state board of health shall have the general supervision, with reference to their purity, of all rivers, brooks, streams, lakes, ponds, wells, springs or other reservoirs in this state, the waters of which are, or may be used as, the source or sources of public water-supplies for domestic use, together with the waters feeding the same, and shall have the authority, from time to time, as they deem necessary or proper, to examine the same and to inquire what, if any, pollutions exist, and their causes; and the said state board of health, in carrying out the provisions of this section, may, from time to time, as they deem it necessary or proper, address inquiries in printed or written form to any local board of health, municipal or township authority, corporation, or person or persons, which inquiries it shall be the duty of the persons or parties addressed to answer within such time as the said state board of health may in such inquiries prescribe.

No appropriation was made by the legislature for the inspection of streams, and the work thus far performed under the provisions of the act above referred to has been conducted by the officers of the board, in addition to the duties previously required. On subsequent pages will be found reports of the inspections which have been made.

In reply to a letter of inquiry addressed to the Hon. William M. Lanning, the following reply was received :

TRENTON, N. J., April 19th, 1899.

Henry Mitchell, M. D., Secretary State Board of Health, Trenton, New Jersey :

MY DEAR SIR—

You have asked me the following question: Can several defendants who severally sewer into a stream, or maintain privies on the bank of a stream whose contents are discharged into it, be joined as co-defendants to one bill under Chapter XLI of the laws of 1899? I think they can. A superficial reading of the case of *State v. Freeholders of Bergen*, 1 Dickinson 173, might perhaps lead one to infer that Vice-Chancellor Pitney was of a different opinion, but I think the facts of that case were so different from the circumstances assumed in the question you have asked me that it cannot be regarded as a precedent for a case presenting the facts assumed in your question. In such a case as you suggest all of the defendants will be contributing to one common result, namely, the pollution of potable waters, and I think they may therefore be properly associated as co-defendants in one suit.

You have also asked me the question: Can the owner as well as the tenant be proceeded against before a magistrate, under Chapter XLI of the laws of 1899, when the owner is not himself in possession of the premises, but has leased the same to his tenant—the owner, however, having constructed or provided privies and drains whose contents are discharged into a stream whose waters are used for domestic purposes? In my opinion this question should also be answered in the affirmative. It seems to me that section 1 of Chapter XLI is broad enough in its terms to be applicable to the owner as well as the tenant, and that the courts would hold that by maintaining any such privy or drain he is necessarily guilty of discharging polluting matter into the stream.

Your third question asks for an explanation of the use of the words "shall or may" in section 1 of Chapter XLI of the laws of 1899. In my opinion the word "may," like the word "shall," has a future meaning with respect to the time of the passage of the act; that they are practically synonymous, and that no authority is given by the section for any procedure against a person for polluting a stream whose waters, at the time of such pollution, are not used for domestic purposes.

Very respectfully yours,

W. M. LANNING.

Local Sanitary Administration.—The first duty of a local health board is to keep the sanitary district clean, and if this purpose is always held to be of urgent importance, there will be no end of active work for the sanitary inspector. He will not wait until complaints are made by citizens, but will investigate the conditions on every premises in his district, especially with reference to soil-pollution, the purity of the water-supply, the storage and disposal of garbage, rubbish and ashes, and the disposal of waste liquids. With records of these facts, carefully prepared and conveniently arranged

for reference, the board is in position to direct operations for keeping the district free from refuse materials, the laws in this State being well adapted to the enforcement of all necessary ordinances for the prevention of accumulations of unhealthful substances.

The membership of local boards of health in New Jersey undergoes but slight changes from year to year, and a policy once adopted is not liable to suffer sudden reversal because of the introduction of a new element in the board. There is, therefore, an assurance in our laws that a plan of procedure once firmly established can be continued until the public benefits to be derived from its employment shall have been fully enjoyed. In some of the rural districts of the State a condition of sanitary stagnation has long prevailed, and instead of anticipating and preventing the pollution of domestic wells and the accumulation of refuse materials near dwellings, the local board often fails to take any measures whatever for the protection of the inhabitants against contamination of soil and water. If such boards could really understand and fully comprehend that every case of typhoid fever occurring upon a farm is probably due to the use of water from a contaminated well, we should straightway see the enforced abandonment of hundreds of wells which are daily receiving waste liquids, either from slops cast upon the ground, from washings under the pump-spout, from a leaky drain or cesspool, or from some other neighboring source of soil pollution. To retain the soil in the vicinity of dwellings in its natural condition of purity, or, if it has been polluted, to restore it as nearly as possible to its original freedom from defilement, is the most useful routine service which can be rendered by a rural board of health. Any board which will thoroughly perform the duty of keeping the ground-surface near dwellings clean and the water-supply of every dwelling pure, may be confidently relied upon to make rapid advances along all of the numerous other lines of public health protection which the interests of the community demand, for one good act leads to another, and popular approval invariably sustains judicious application of reasonable measures for preventing contamination of soil and water, and a local sanitary authority which successfully secures these blessings for its constituents may confidently expect support when its efforts are extended to the restriction of the spread of preventable diseases by preventing the adulteration of foods, regulating of the construction of drains and sewers, securing the isolation of infected persons, regulating the burial and disinterment of

human bodies, and in the performance of all of the other forms of sanitary service which experience and good judgment dictate.

Among the numerous duties which almost invariably suffer neglect at the hands of local boards of health is the requirement of the law that all births shall be reported. An estimate made in 1898 showed that not more than 90 per cent. of births which occur in the State are reported, and from a number of districts no returns of births are ever made.

The entire responsibility for the enforcement of the law providing for reports of births, marriages and deaths is placed (chapter 39, laws of 1888) upon local boards of health, and if they fail to insist that clergymen, physicians, midwives and others shall make reports, the only relief to be found will consist in a change in the law, and the interests of citizens in this particular will of necessity be safeguarded by some other department of the State or local government.

Notification of Communicable Diseases.—Attention has been called in previous reports of this board to the failure of some of the local sanitary authorities to enforce the provisions of chapter 260 of the laws of 1895, requiring reports of communicable diseases. In one city of about 8,000 inhabitants the neglect to conform to the requirements of this act has become general among the physicians of the locality, and the following letter was sent to these practitioners:

	OFFICE OF THE BOARD OF HEALTH	}
	OF THE STATE OF NEW JERSEY,	
....., M. D.,	TRENTON, N. J., March 8, 1899.	
....., N. J.		

DEAR SIR—Information has reached this board showing that many of the physicians of the city of ——— fail to report to the local board of health cases of communicable diseases which occur in their practice. Your attention is called to the act approved March 22, 1895, printed on pages 6 and 7 of circular 87, a copy of which is enclosed. We trust that your co-operation with the board of health to secure protection against the spread of these diseases will be cheerfully given, and that all cases of infectious or contagious diseases which may come under your professional care will be promptly reported in accordance with the requirement of the law.

Very respectfully,

HENRY MITCHELL,
Secretary.

Following is a copy of a letter sent to the local board of health of the same city :

OFFICE OF THE BOARD OF HEALTH
OF THE STATE OF NEW JERSEY,
TRENTON, N. J., March 8, 1899. }

To the Board of Health,.....N. J.:

GENTLEMEN—This board is informed that many of the physicians of your city do not report communicable diseases in accordance with the requirement contained in section 1 of the act approved March 22, 1895. Your attention is called to the provision in the said act which requires that physicians failing to report cases of infectious or contagious disease within 12 hours shall suffer a penalty of fifty dollars, and you are urged to immediately proceed to enforce the payment of this penalty by all persons who fail to obey the law, for stringent enforcement of this act will do more to enable your body to prevent the spread of the dangerous infectious diseases than any other means at your command. The safety of the public health of the adjoining communities, and in fact in all other parts of the State, is to some extent dependent upon the thorough execution of this law by your board. To the enforcement of this act should be added prompt isolation of all persons affected by the diseases which are reported.

Very respectfully,

HENRY MITCHELL, *Secretary.*

The following table shows the number of cases of communicable diseases which were reported under the provisions of the act above referred to :

TABLE 18.—COMMUNICABLE DISEASES REPORTED FOR EACH QUARTER DURING THE YEAR ENDING JUNE 30TH, 1899.

NAME OF SANITARY DISTRICT.	DIPHTHERIA.				SCARLET FEVER.				TYPHOID FEVER.				SMALL-POX.			
	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.
Absecon Township.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Acquackanonk Township.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alloway Township.....	.....	7	6	3	.....	.....	1	1	.....	.....	1	.....	.....	.....	.....	.....
Andover Township.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Asbury Park.....	.....	.....	.....	.....	.....	8	.....	1	.....	.....	1	.....	.....	.....	.....	.....
Basking Ridge Borough.....	.....	.....	.....	.....	.....	4	.....	10	.....	.....	.....	.....	.....	.....	.....	.....
Bayonne City.....	10	4	12	8	24	30	4	13	11	4	1	.....	.....	.....	.....	.....
Beltmar Borough.....	3	2	4	4	.....	1	7	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bethlehem Township.....	.....	.....	.....	.....	.....	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Beverly City.....	.....	.....	.....	.....	.....	5	9	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bloomfield Township.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bound Brook Borough.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....
Bradley Beach Borough.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caldwell Borough.....	.....	1	1	.....	.....	8	3	.....	.....	1	.....	.....	.....	.....	.....	.....
Carlstadt Borough.....	.....	2	2	.....	.....	.....	1	11	.....	.....	.....	.....	.....	.....	.....	.....
Centre Township.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chesterfield Township.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cliffside Park Borough.....	.....	.....	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....
Collingswood Borough.....	.....	.....	5	.....	.....	1	1	.....	.....	1	1	1	.....	.....	.....	.....
Cranford Township.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crystal Lake Borough.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Deptford Township.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Dover City.....	.....	1	.....	.....	.....	.....	3	.....	.....	.....	2	.....	.....	.....	.....	.....
East Brunswick Township.....	.....	.....	.....	1	.....	.....	2	12	.....	1	.....	.....	.....	.....	.....	.....
East Greenwich Township.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
East Orange Township.....	6	23	3	2	3	6	6	6	3	6	1	2	.....	.....	.....	.....
East Rutherford Borough.....	.....	.....	.....	1	.....	2	4	.....	1	1	.....	.....	.....	.....	.....	.....
Egg Harbor City.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Egg Harbor Township.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elizabeth City.....	.....	120	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elk Township.....	19	10	.....	.....	3	2	.....	.....	1	1	.....	.....	.....	.....	.....	.....
Englewood City.....	1	.....	.....	.....	6	.....	.....	.....	.....	9	.....	.....	.....	.....	.....	.....
Fairview Borough.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Franklin Township (B).....	.....	.....	.....	.....	.....	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....

Bacteriological Laboratory.—During the past year the laboratory service has been extended, the total number of depots for mailing-cases now being seventy-nine, as follows:

Marcy & Mecray, Cape May.	W. E. Honeyman, North Plainfield.
Dr. W. V. McKenzie, Metuchen.	F. G. Stroud, Moorestown.
Albert S. Elwell, Bridgeton.	Dr. E. K. Fee, Lawrenceville.
A. W. Taylor, Beverly.	Jno. L. Taylor, Boonton.
Geo. M. Beringer, J. S. Bair, Geo. J. Pechin, Dr. R. I. Haines, Camden.	Rob't Kilgore, Dover.
Mrs. J. A. Griffing, South Orange.	Board of Health, James Harron, City Hospital, Hoboken.
Aug. Frank, Town of Union.	Edgar Carroll, Dayton.
James A. Case, Somerville.	Dr. J. E. Pratt, Dumont.
James P. McNair, Paterson.	Dr. Chas. M. Williams, Washington.
Duryee & Conover, Freehold.	Dr. J. G. Edwards, Williamstown.
B. W. Hoagland, Woodbridge.	J. W. Smyth, Jr., Long Branch.
Dr. J. T. Moorhouse, A. Mosler, Orange.	L. E. Carpenter, Jersey City.
Dr. F. W. Flagge, Rockaway.	W. H. Dana, Salem.
Dr. Geo. M. Swain, Chatham.	F. W. Bissett, South River.
Plainfield Board of Health, J. H. Leggett, Plainfield.	S. W. Cochran & Co., Lambertville.
Wm. Rush & Sons, J. H. Van Deurzen, New Brunswick.	Dr. J. T. Robinson, South Bound Brook.
Trenton Board of Health, Trenton.	Geo. M. Wood, Bloomfield.
Oliver & Drake, Elizabeth General Hospital, Elizabeth.	Wm. Killiger, Secretary Board of Health, Raritan.
Dr. Wm. H. Shipps, Bordentown.	R. Willard, Haddonfield.
E. B. Jones, Mount Holly.	Board of Health, Rutherford.
J. W. Merritt, Woodbury.	Henry M. Smith, Morristown.
F. C. Burk, Flemington.	Henry C. Elsing, Ridgefield Park.
Dr. Alex. Marcy, Jr., Riverton.	Israel L. Halleck, Newton.
D. H. Cunningham, Hightstown.	John W. Davis, Burlington.
Board of Health, Atlantic City.	Chas. L. Manning, Bound Brook.
E. A. Hulst, Perth Amboy.	Loeser's Pharmacy, Benham & Johnson, Montclair.
Alfred Pierson, Dr. J. S. Halsey, Vineland.	Geo. B. Beakey, Gloucester.
D. Evans Smith, Millville.	Chas. Geras, Secretary Board of Health, Matawan.
L. Rockefeller & Co., Englewood.	J. J. McGaluck, East Rutherford.
Dr. J. A. Exton, Arlington.	Dr. F. J. La Rieu, Asbury, Warren County.
Faust Bros., Belvidere.	Chas. A. Minton & Co., Red Bank.
Berlin Pharmacy, W. W. Miller, Berlin.	Dr. W. C. Parry, Hainesport.
Board of Health, Asbury Park.	W. S. Briner, Marsh & Burke, Princeton.

The report of Dr. E. C. Baldwin, the director of the State laboratory, appears on subsequent pages of this Report.

Transportation and Burial of the Dead.—For the purpose of better regulating the transportation of the dead, and to cause the system in New Jersey to conform to that which now largely prevails in other States, a bill has been prepared for presentation at the next meeting of the Legislature.

Milk.—Two outbreaks of disease which occurred during the past summer were traced directly to milk as the medium through which the infection was conveyed. In one of these cases typhoid fever appeared on the milk route of Mr. J. T. Looby, a farmer living in Hilton, Essex county.

In the city of Orange this disease was reported among persons who were supplied with milk by Mr. Looby as follows: Two cases on June 21st, and one case on each of the following days: June 23d, 24th, 25th, 26th and July 4th. In East Orange one case among Mr. Looby's customers occurred June 26th, and in South Orange four other cases were reported during the month of June, making altogether twelve cases of typhoid fever on one milk route and in three different municipalities. The attention of the State board of health was first called to these cases by Mr. William Schleur, the health officer of Orange, and investigation of conditions on the premises of Mr. Looby showed that water for washing cans and utensils, and also for all domestic purposes, was taken from a surface well, having a chain pump, and being located within thirty-five feet from the horse stable, and within thirty-five feet from the cow stable. The plank covering of this well was found to be loosely laid, permitting the drippings from the pump to flow back into the well.

Chemical examination of this water showed that it was grossly polluted, and, in the absence of any other apparent cause of typhoid fever on the premises, this well was believed to be the source of the poison, and the sale of milk by Mr. Looby was stopped until a new water-supply should be provided. No cases of typhoid fever occurred after the use of water from this well was discontinued.

Another outbreak due to infected milk resulted from the presence of diphtheria in the family of Edward Schenck, a dairyman living in New Market, Middlesex county. Ten cases of this disease occurred



Corner in Bottle-washing Room. Small Pipe over Caldron Connects with Pump about Four Feet Distant.

among the customers of Mr. Schenck in the city of Plainfield, and inspection of the dairy premises showed that two of Mr. Schenck's children were affected with diphtheria. Specimens from these children were forwarded to the bacteriological laboratory in Princeton from time to time, and diphtheria bacilli were found to be present in the case of one of the children until September 16th, a period of 66 days from the date of the report of the disease.

The sale of milk by Mr. Schenck was prohibited at once when the nature of the disease affecting his children was detected, and the outbreak in Plainfield speedily subsided.

The following records of inspections of dairies and milk depots exhibit a fair average of conditions existing in the eastern portion of Monmouth county, and also show the usefulness of the camera in connection with these investigations.

RECORD OF DAIRY INSPECTION.

August 17th, 1899.

NAME OF DAIRYMAN—Franklin Patterson [Tenant].

ADDRESS—Lower Squankum.

TOWNSHIP—Howell. COUNTY—Monmouth.

Stable.

1. Size of stable—51 x 27 x 8 feet.
2. Area of stable—About 11,000 cubic feet. Cubic feet per cow—About 780 feet.
3. Stable well lighted? Yes.
4. Number and size of windows in stable—Eight, 27 x 46 inches, and four doors.
5. Material, construction and drainage of floor—Concrete with cemented trench at rear of stalls, 24 inches wide and 18 inches deep. [See note.]
6. Method and frequency of cleaning—Solid manure shoveled from floor daily. [See note.]
7. Floor ever washed? Yes, sometimes.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? No. Sidewalls spattered with dung.
9. Ever limewashed? Yes.

Water-Supply.

10. Source of water-supply for watering stock—Dug well, located beneath stable floor.
12. Distance of well from manure pile—About 15 feet; 10 feet from hog-pen.
13. Distance of well from privy vault—About 75 feet.

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14. Is well apparently liable to contamination? Yes.
15. Source of water-supply for washing utensils and cans—Well beneath shed in which utensils are washed.
16. If from well, describe surroundings—50 feet distant from privy vault, consisting of hole in the ground. [See note.]
17. Was sample taken for analysis? Yes. Marks—G. F.

Cattle.

18. Number of cows—12. Breed—Jersey.
19. State of health—Apparently good. Cows in good flesh and clean.
22. Cows groomed? Yes.
23. Amount, kind and quality of feed used—Wheat bran and shorts.
24. Cows pastured? Yes.

Manure.

25. How and where stored? Upon the ground adjoining stable building.
27. Quantity of manure at the time of this inspection—About 6 or 8 wagon loads.

Utensils.

28. How washed and dried? Washed in earthen wash-trays with warm water and soap; rinsed and drained.
29. Where are the utensils washed? Room at rear of dwelling used for this purpose.
30. Any appliance for sterilizing cans, pails and dippers? No.
31. Bottles—how washed and dried? Same as utensils; bottles not sterilized.

Collection of Milk.

32. Quantity of milk produced daily? About 80 quarts.
33. Are milkers' hands washed before milking? No.
34. Are clean garments put on? No.
35. Udders of cows cleaned? Yes. How? Towels and water are said to be used for this purpose.
36. When pail is full of milk what is done with it? Carried to cellar beneath dwelling and passed over cooler.
37. Where does the can stand? In cellar.
39. Is milk cooled? Yes. How? With "Champion" cooler.
40. How long after milking? Directly.
41. To what temperature? Ice-water used in cooler.
42. Is milk bottled? Yes.
43. How long after cooling? Directly.
44. Where is milk bottled? In cellar.
45. Where is milk stored? In cellar.
46. How long is milk stored before being shipped? Eight to eighteen hours.
47. Source of ice-supply—Harvested on near-by pond.



Drying Bottles.

Distribution.

- 50. Quarts sold from cans? None.
- 52. } Ever run short? If so, where is supply obtained? [See note.]
- 53. }
- 54. How many persons handle the milk? Three on dairy premises.
- 55. All in good health? So stated.
- 56. Date of last sickness among persons on dairy premises? None reported.

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Inspector.

Notes.

- 5. The cement trench at the rear of stalls in stable is covered with wooden slats and partly filled with horse manure. Dry horse manure is placed in trench for the purpose of absorbing and retaining fluid excreta from cattle.
- 6. Accumulation in trench removed about once each week. Stable floor is occasionally sprinkled with dry sand and swept.
- 16. Well is a tube-well, said to be thirty-two feet deep, sunk beneath earth floor in wash-room. An under-drain, said to be of tile, leads from wash-trays in this room to brook about 100 feet distant.
- 53. Milk is received twice daily from a near-by dairy, kept by Mr. Gaston, and bottled and delivered with Gilman Farm product.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

September 1st, 1899.

NAME OF DAIRYMAN—A. E. Jennings [Owner].

ADDRESS—Lower Squankum.

TOWNSHIP—Howell. COUNTY—Monmouth.

Stable.

- 1. Size of stable—60 x 18 x 10 feet.
- 2. Area of stable—10,800 cubic feet. Cubic feet per cow—About 1540.
- 3. Stable well lighted? Yes.
- 4. Number and size of windows in stable—Six, 20 x 40 inches, four doors.
[See note.]
- 5. Material, construction and drainage of floor—Cement concrete with smooth surface drained into gully at rear of stalls. [See note.]
- 6. Method and frequency of cleaning—Sweeping and washing. Floor and gully clean and free from accumulations.
- 7. Floor ever washed? Yes, with running water and hose.
- 8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? Yes, stall-posts and partitions painted.
- 9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Spring in meadow on bank of brook.
11. Distance of well from stable—800 feet. [See note]
14. Is spring apparently liable to contamination? No.
15. Source of water-supply for washing utensils and cans? Well near dwelling.
16. If from well, describe surroundings—Clean and free from visible sources of contamination.
17. Was sample taken for analysis? No.

Cattle.

18. Number of cows—7. Breed—Grade.
19. State of health—Apparently good.
20. Ever examined? Yes.
22. Cows groomed? Yes.
24. Cows pastured? Yes.

Manure.

25. How and where stored? In vault. [See note.]
26. How frequently removed? When vault is full. Holds about eight loads.
27. Quantity of manure at time of this inspection. Accumulations in vault about six inches deep.

Utensils.

28. How washed and dried? Washed with warm water and soap, rinsed and placed in rack to drain and dry in open air.
29. Where are the utensils washed? At dwelling.
30. Any appliance for sterilizing cans, pails and dippers? No.
31. Bottles—how washed and dried? None used.

Collection of Milk.

32. Quantity of milk produced daily? About 14 quarts.
33. Are milkers' hands washed before milking? Not regularly.
34. Are clean garments put on? No.
35. Udders of cows cleaned? Yes.
36. When pail is full of milk what is done with it? Taken to dwelling and strained into can.
37. Where does the can stand? In yard, near dwelling.
39. Is milk cooled? Yes. How? Can placed in brook of running water.
40. How long after milking? Directly.
41. Is milk bottled? No.
45. Where is milk stored? Not stored.
47. Source of ice-supply? None used.
48. If shipped, to whom, and where? Shipped to Mr. Hall, Belmar.

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Inspector.

Notes.

4. In addition to ventilation of stable by windows and doors, which are screened against the entrance of flies by wire netting, there are four ventilators opening into an air-duct, about 10 x 24 inches in area, constructed over the ceiling in stable building and open to the outer air on either side of the same.
5. Gully has trapped under-drains discharging into manure vault.
11. Water forced from spring by means of hydraulic ram into tank erected in barn loft.
25. Manure vault about 24 x 4 x 4 feet in size, constructed of brick and cement, along the outside wall of stable building. Vault covered with hinged wooden lids and ventilated by ventilator openings connecting into the air-duct above referred to, which ventilates stable building.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

November 21st, 1898.

NAME OF DAIRYMAN—George F. Robbins [Tenant].
LOCATION OF DAIRY—Deal Beach.
TOWNSHIP—Ocean. COUNTY—Monmouth.
P. O. ADDRESS—Asbury Park.

Stable.

1. Size of stable—Cows are not stabled; housed under open shed. [See 58.]

Water-Supply.

10. Source of water-supply for watering stock—Brook in pasture and well near stable yard.
11. Distance of well from stable—About 30 feet.
12. Distance of well from manure pile—About 30 feet.
14. Is well apparently liable to contamination? Yes.
15. Source of water-supply for washing utensils and cans—Well at dwelling about 300 feet distant from stable.
16. If from well, describe surroundings—Well located beneath porch floor at front of house.
17. Was sample taken for analysis? No.

Cattle.

18. Number of cows—14. Breed—Grade.
20. Ever examined? No.
22. Cows groomed? No.
23. Amount, kind and quality of feed used—Pasture only at time of this inspection.

Manure.

25. How and where stored? In stable yard.
26. How frequently removed? About once each year.
27. Quantity of manure at time of this inspection—About one hundred and fifty wagon loads.

Utensils.

28. How washed and dried? Warm water and soap solution; rinsed and drained.
29. Where are the utensils washed? At dwelling.
30. Any appliance for sterilizing cans, pails and dippers? No.

Collection of Milk.

32. Quantity of milk produced daily? About 15 quarts at this time.
33. Are milkers' hands washed before milking? No.
34. Are clean garments put on? No.
35. Udders of cows cleaned? Yes. How? Said to be rubbed off with hand or cloth when required.
36. When pail is full of milk what is done with it? Placed in cans.
37. Where does the can stand? Near stable yard.
38. Is can kept covered? With cheese-cloth strainer.
39. Is milk cooled? Yes. How? By standing cans in tubs filled with well-water.
40. How long after milking? Directly.
41. To what temperature? Not known.
42. Is milk bottled? Not at this time.
46. How long is milk stored before being shipped? Shipped daily.
47. Source of ice-supply? Deal Lake; for use in summer.
48. If shipped, to whom, and where? William Polhemus, Asbury Park.
56. Date of last sickness among persons on dairy premises? None reported.
58. Remarks—Sheds on border of stable yard.

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Inspector.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAILY INSPECTION.

November 21st, 1898.

NAME OF DAIRYMAN—William L. Robinson [Tenant].
ADDRESS—Oakhurst.
TOWNSHIP—Ocean. COUNTY—Monmouth.

Stable.

1. Size of stable—11 x 30 x 8 feet.
2. Area of stable—2,640 cubic feet. Cubic feet per cow—377 for the seven cows stabled.
3. Stable well lighted? Yes. [See 58.]
4. Number and size of windows in stable—One, 30 x 50 inches.
5. Material, construction and drainage of floor—Tight board floor kept covered with hay. No drainage provided.
6. Method and frequency of cleaning. Daily.
7. Floor ever washed? No.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust
Stable has been in use but a short time.
9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Brook in meadow and well.
11. Distance of well from stable—About 300 feet.
12. Distance of well from manure pile—300 feet.
13. Distance of well from privy vault—About 60 feet.
14. Is well apparently liable to contamination? Suspicious.
15. Source of water-supply for washing utensils and cans—Same well.
16. If from well, describe surrounding—About 60 feet distant from dwelling;
watering-trough for stock near well, and cans and utensils washed
near well.
17. Was sample taken for analysis? No.

Cattle.

18. Number of cows—12. Breed—Grade.
20. Ever examined? No.
22. Cows groomed? No.
23. Amount, kind and quality of feed used—Corn meal.
24. Cows pastured? Yes.

Manure.

25. How and where stored? On ground under stable window.
26. How frequently removed? At intervals of two or four weeks.
27. Quantity of manure at time of this inspection—Eight or ten wagon loads.

Utensils.

28. How washed and dried? Warm water and soap; said to be rinsed with
boiling water and hung on fence to dry.
29. Where are the utensils washed? Near well in yard.
30. Any appliance for sterilizing cans, pails and dippers? No.
31. Bottles—how washed and dried? Same as cans and utensils.

Collection of Milk.

32. Quantity of milk produced daily? About 85 quarts.
33. Are milkers' hands washed before milking? No.

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34. Are clean garments put on? No.
35. Udders of cows cleaned? Rubbed with milkers' hands.
36. When pail is full of milk what is done with it? Poured into cans.
37. Where does the can stand? In wagon-room adjoining stable.
38. Is can kept covered? With cheese-cloth strainer.
39. Is milk cooled? Yes. How? By standing can in tub of well-water.
40. How long after milking? Directly.
41. To what temperature? Not known.
42. Is milk bottled? Yes.
43. How long after cooling? Directly.
44. Where is milk bottled? Where cans are washed.
45. Where is milk stored? In yard over night.
46. How long is milk stored before being shipped? Over night.
47. Source of ice-supply—None.
48. If shipped, to whom, and where? Distributed by producer.

Distribution.

49. Temperature of milk when delivered to customers? Not known.
50. Quarts sold from cans? About 40.
52. Ever run short? Yes.
53. If so, where is supply obtained? Bought from other dealers.
54. How many persons handle the milk? Two.
55. All in good health? Yes.
56. Date of last sickness among persons on dairy premises? None reported.
58. Remarks—Cows kept in stable during nights only, and stable door always kept open for ventilation.

D. C. BOWEN,
Inspector.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

November 21st, 1898.

NAME OF DAIRYMAN—William H. Brower [Tenant].
LOCATION OF DAIRY—Interlaken.
TOWNSHIP—Ocean. COUNTY—Monmouth.
P. O. ADDRESS—Asbury Park.

Stable.

1. Size of stable—40 x 20 x 8 feet.
2. Area of stable—6,400 cubic feet. Cubic feet per cow—About 457 cubic feet.*
3. Stable well lighted? No.
4. Number and size of windows in stable—Four, 20 x 40 inches.
5. Material, construction and drainage of floor—Coal-tar concrete floor, worn and broken away at rear of stalls, so that droppings fall on bare ground.

*Two horses also stabled in same space.

6. Method and frequency of cleaning—Solid accumulation pitched out daily.
7. Floor ever washed? No.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? No, apparently contain accumulation of years.
9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Well, when stabled; brook, when in pasture.
11. Distance of well from stable—Adjoins.
12. Distance of well from manure pile—10 feet.
14. Is well apparently liable to contamination? Yes.
15. Source of water-supply for washing utensils and cans? Well, located at edge of shed on rear of dwelling.*
16. If from well, describe surroundings—Waste fluids from wooden box beneath pump run into wooden keg sunk into ground by side of well; waste fluids from keg run to brook through underdrain.
17. Was sample taken for analysis? No.

Cattle.

18. Number of cows—14. Breed—Grade.
20. Ever examined? No.
22. Cows groomed? No.
23. Amount, kind and quality of feed used—Bran and corn meal.
24. Cows pastured? Yes.

Manure.

25. How and where stored? Pitched from door of cow stable into barnyard.
26. How frequently removed? About four times each year.
27. Quantity of manure at time of this inspection—About 50 wagon-loads.

Utensils.

28. How washed and dried? With warm water and soap solution; rinsed with cold water and placed on bench at side of house to dry.
29. Where are the utensils washed? At dwelling.
30. Any appliance for sterilizing cans, pails and dippers? No.
31. Bottles—how washed and dried? None used.

Collection of Milk.

32. Quantity of milk produced daily? About 60 quarts at present.
33. Are milkers' hands washed before milking? So claimed.
34. Are clean garments put on? No.
35. Udders of cows cleaned? Yes. How? Rubbed with hands, or, if particularly dirty, with dry cloth.
36. When pail is full of milk what is done with it? Poured into large can.
37. Where does the can stand? Room in stable adjoining cow-shed.

*Hog-pen and pile of 8 or 10 cubic yards of manure on ground about 20 feet distant from well.

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38. Is can kept covered? With cheese-cloth strainer.
39. Is milk cooled? Yes. How? Cans placed in spring-house, over side of brook.
40. How long after milking? Directly.
41. To what temperature? Not known.
42. Is milk bottled? No.
48. If shipped, to whom, and where? E. Brower, Asbury Park.
56. Date of last sickness among persons on dairy premises. None reported.
D. C. BOWEN,
Inspector.
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BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

November 21st, 1898.

NAME OF DAIRYMAN—Forman T. Stryker [Tenant].
ADDRESS—Oakhurst.
TOWNSHIP—Ocean. COUNTY—Monmouth.

Stable.

1. Size of stable—About 105 x 12 x 8 feet.
2. Area of stable—10,080 cubic feet. Cubic feet per cow—560 cubic feet.
3. Stable well lighted? Yes. [See 58.]
4. Number and size of windows in stable—[See 31.]
5. Material, construction and drainage of floor—Earth floor; no drainage.
6. Method and frequency of cleaning—Droppings pitched out daily.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? No.
9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Well at stable and brook in field.
11. Distance of well from stable—10 feet, adjoining stable yard.
12. Distance of well from manure pile—10 feet.
14. Is well apparently liable to contamination? Yes.
15. Source of water-supply for washing utensils and cans—None washed on premises.

Cattle.

18. Number of cows—18. Breed—Grade.
20. Ever examined? No.
22. Cows groomed? No.
23. Amount, kind and quality of feed used—Bran and corn meal.
24. Cows pastured? Yes, turned out daily.

Manure.

25. How and where stored? In stable yard.
26. How frequently removed? Possibly three or four times yearly.
27. Quantity of manure at time of this inspection—About forty wagon loads.

Utensils.

28. How washed and dried? None washed on premises. Milk placed in cans which are supplied by dealer, without further cleansing.
31. Bottles—how washed and dried? Owing to the manner in which the shed in which the cows are stabled is constructed, abundance of ventilation is secured through cracks and other openings in the building.

Collection of Milk.

32. Quantity of milk produced daily? About 40 quarts at this time.
36. When pail is full of milk what is done with it? Placed in cans for shipment.
37. Where does the can stand? Near stable yard.
38. Is can kept covered? No.
39. Is milk cooled? Yes. How? By standing can in tub of well-water.
40. How long after milking? Directly.
41. To what temperature? Not known.
42. Is milk bottled? No.
47. Source of ice-supply—None used.
48. If shipped, to whom, and where? Henry Truex, Asbury Park.
56. Date of last sickness among persons on dairy premises? None reported.
58. Remarks—Cattle turned into stable yard daily during winter, and eat fodder spread over large quantities of dung.

D. C. BOWEN,
Inspector.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

November 21st, 1898.

NAME OF DAIRYMAN—J. C. King [Tenant].
LOCATION OF DAIRY—Interlaken.
TOWNSHIP—Ocean. COUNTY—Monmouth.
P. O. ADDRESS—Asbury Park.

Stable.

1. Size of stable—25 x 15 x 7 feet.
2. Area of stable—2,625 cubic feet. Cubic feet per cow—875.
3. Stable well lighted? Yes.
4. Number and size of windows in stable—Large openings over doors.
5. Material, construction and drainage of floor? Earth.
6. Method and frequency of cleaning—Solid excrement thrown from stalls into stable yard.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? No.

Water-Supply.

10. Source of water-supply for watering stock—Brook in meadow, and well at stable.
11. Distance of well from stable—About 30 feet.
12. Distance of well from manure pile—About 20 feet.
13. Distance of well from privy vault—About 300 feet.
14. Is well apparently liable to contamination? Yes. [See 58.]
15. Source of water-supply for washing utensils and cans—Well in yard near dwelling.
16. If from well, describe surroundings—Clean.
17. Was sample taken for analysis? No.

Cattle.

18. Number of cows—3. Breed—1 Jersey, 2 grade.
19. State of health—Good.
20. Ever examined? No.
22. Cows groomed? No.
23. Amount, kind and quality of feed used—Corn; pumpkins are also fed to cows.
24. Cows pastured? Yes.

Manure.

25. How and where stored? In stable yard.
26. How frequently removed? Two or three times yearly.
27. Quantity of manure at time of this inspection? About five loads.

Utensils.

28. How washed and dried? Warm water and soap solution; rinsed and dried in open air.
29. Where are the utensils washed? At house.
30. Any appliance for sterilizing cans, pails and dippers? No.
31. Bottles—how washed and dried? None used.

Collection of Milk.

32. Quantity of milk produced daily? About 15 quarts at this time.
33. Are milkers' hands washed before milking? No.
34. Are clean garments put on? No.
35. Udders of cows cleaned? Rubbed with hands or damp cloth.
39. Is milk cooled? Yes. How? Can placed in running brook.
40. How long after milking? Directly.
41. To what temperature? Not known.
42. Is milk bottled? No.
46. How long is milk stored before being shipped? Shipped daily.
47. Source of ice-supply—None.
48. If shipped, to whom, and where? William Polhemus, Asbury Park.
58. Remarks—Hog-pen within 10 feet of stable well.

D. C. BOWEN.
Inspector.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

January 23d, 1899.

NAME OF DAIRYMAN—Thomas Johnson [Owner].

ADDRESS—Tinton Falls.

TOWNSHIP—Atlantic. COUNTY—Monmouth.

Stable.

1. Size of stable—Not taken.
2. Area of stable. Cubic feet per cow—Ample.
5. Material, construction and drainage of floor—Earth floor; no drainage.
6. Method and frequency of cleaning—Solid accumulation thrown out daily.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? No.
9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Well.
11. Distance of well from stable—About 50 feet.
12. Distance of well from manure pile—About 50 feet.
14. Is well apparently liable to contamination? Suspicious.
15. Source of water-supply for washing utensils and cans—Well located near kitchen door of dwelling.
16. If from well, describe surroundings—Obstructed wooden under-drain leading to cesspool, 20 feet distant.*
17. Was sample taken for analysis? No.

Cattle.

18. Number of cows—5. Breed—Grade.
19. State of health—Apparently good.
20. Ever examined? No.
22. Cows groomed? No.
24. Cows pastured? In season.

Manure.

25. How and where stored? In stable yard.
26. How frequently removed? Not frequently.
27. Quantity of manure at time of this inspection? About 25 wagon loads.

Utensils.

28. How washed and dried? No milk being sold from premises at time of this inspection, facts were not learned.

D. C. BOWEN,
Inspector.

* Waste fluids from pump-box fall on ground and flow back into well.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

November 21st, 1898.

NAME OF DAIRYMAN—W. S. Hunt [Tenant].

ADDRESS—Oakhurst.

TOWNSHIP—Ocean. COUNTY—Monmouth.

Stable.

1. Size of stable—45 x 30 x 7 feet. Stables nine cows in this shed.
2. Area of stable—9,450 cubic feet. Cubic feet per cow—1,050.
3. Stable well lighted? Yes; through open space over doors about two feet wide, extending full length of stable.
5. Material, construction and drainage of floor—Earth floor; no drainage.
6. Method and frequency of cleaning—Droppings thrown into stable yard from rear of stalls daily.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? No; contains large accumulation.
9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Well.
11. Distance of well from stable—15 feet.
12. Distance of well from manure pile—Five feet.
14. Is well apparently liable to contamination? Yes.
15. Source of water-supply for washing utensils and cans—None washed on premises.
17. Was sample taken for analysis? No.

Cattle.

18. Number of cows—16. Breed—Grade.
20. Ever examined? No.
22. Cows groomed? No.
23. Amount, kind and quality of feed used—Wheat bran and corn meal.
24. Cows pastured? Yes.

Manure.

25. How and where stored? In barnyard.
26. How frequently removed? Possibly carted out three or four times yearly.
27. Quantity of manure at time of this inspection—About 20 loads. Barnyard low, wet, and contains stagnant pools.

Utensils.

28. How washed and dried? None washed on premises. Milk placed in shipping cans as soon as milked, in same condition in which they are received from dealer.

Collection of Milk.

32. Quantity of milk produced daily? At present about 65 quarts.
33. Are milkers' hands washed before milking? No.
34. Are clean garments put on? No.
35. Udders of cows cleaned? Yes. How? Said to be wiped off, when requiring it, with dry cloths.
36. When pail is full of milk what is done with it? Poured into cans for shipment.
37. Where does the can stand? In shed where milking is done.
38. Is can kept covered? Yes; by cloth through which milk is strained.
39. Is milk cooled? Yes. How? By standing can in tub of well-water.
40. How long after milking? Directly.
41. To what temperature? Not known.
41. Is milk bottled? No.
46. How long is milk stored before being shipped? Shipped once daily.
47. Source of ice-supply—None.
48. If shipped, to whom, and where? Henry Truex, Asbury Park.
56. Date of last sickness among persons on dairy premises? Spring of 1898.
57. Diseases? La grippe.
58. Remarks—Milk kept in stable, or stable yard, until called for by dealer.

D. C. BOWEN,
Inspector.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

January 23d, 1899.

NAME OF DAIRYMAN—Joseph H. Leferson [Owner].

ADDRESS—Tinton Falls.

TOWNSHIP—Atlantic. COUNTY—Monmouth.

Stable.

1. Size of stable—12 x 13 x about 10.
2. Area of stable—About 4,320 cubic feet. Cubic feet per cow—About 332.
3. Stable well lighted? Fair.
4. Number and size of windows in stable—Two, 24 x 24 inches; also numerous cracks and openings.
5. Material, construction and drainage of floor—Earth floor; no drainage.
6. Method and frequency of cleaning—Solids thrown out daily.
8. Are sidewalls, ceilings and ledges kept from cobwebs and dust? No; wooden doors at rear of stalls coated with dung.
9. Ever limewashed? No.

Water-Supply

10. Source of water-supply for watering stock? Well; well located on border of barnyard.
11. Distance of well from stable—20 feet.
14. Is well apparently liable to contamination? Yes.
15. Source of water-supply for washing utensils and cans—Well located at dwelling, long distance from stable.
16. If from well, describe surrounding—Waste fluids from pump flow through wooden drain upon the ground, 25 feet distance from well; privy vault 50 feet distant.
17. Was sample taken for analysis? No.

Cattle.

18. Number of cows—13. Breed—Grade.
19. State of health—Apparently good.
20. Ever examined? No.
22. Cows groomed? No; solid excreta clinging to flanks and udders.
23. Amount, kind and quality of feed used—Corn, bran, stalks, hay and beets.
24. Cows pastured? In season; cows kept in barnyard during day.

Manure.

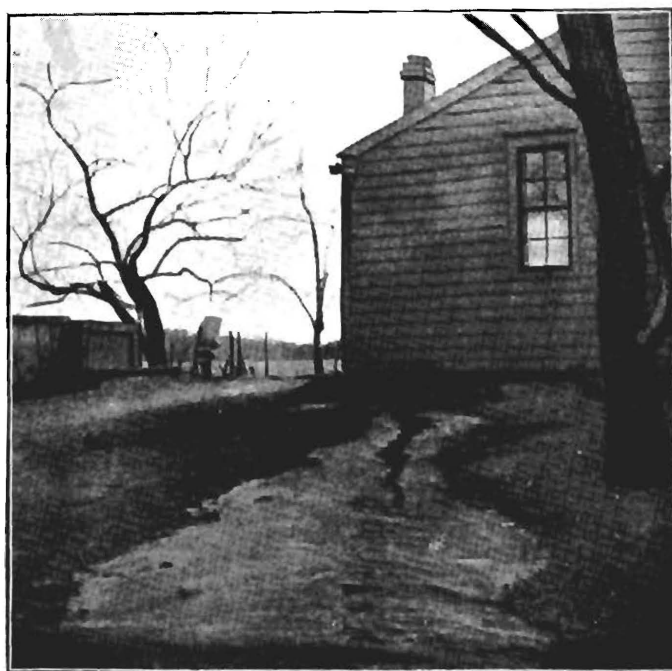
25. How and where stored? In barnyard, near stable.
26. How frequently removed? Indefinite periods.
27. Quantity of manure at time of this inspection? About 15 or 20 wagon-loads. [See photograph.]

Utensils.

28. How washed and dried? With warm water and soda; rinsed and drained.
29. Where are the utensils washed? At dwelling.
30. Any appliance for sterilizing cans, pails and dippers? No.
31. Bottles—how washed and dried? None used.

Collection of Milk.

32. Quantity of milk produced daily? About 50 quarts.
33. Are milkers' hands washed before milking? No.
34. Are clean garments put on? No.
35. Udders of cows cleaned? No; judging from appearance.
36. When pail is full of milk what is done with it? Carried to dwelling and strained into cans.
37. Where does the can stand? Near well at dwelling.
39. Is milk cooled? Yes. How? Cans containing milk submerged in well-water.
40. How long after milking? Directly.
42. Is milk bottled? No.



The Well is Under the House and the Pump is in the Kitchen.

45. Where is milk stored? In dooryard.
 46. How long is milk stored before being shipped? Two days.*
 48. If shipped, to whom, and where? William R. Sickles, Asbury Park, N. J.

D. C. BOWEN,
Inspector.

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

January 23d, 1899.

NAME OF DAIRYMAN—Jonathan Youmans [Owner].

ADDRESS—Poplar.

TOWNSHIP—Ocean. COUNTY—Monmouth.

Stable.

1. Size of stable—A, 12 x 20 x 10 feet; B, 15 x 30 x 7 feet.
2. Area of stable—A, 2,400 cubic feet; B, 3,150 cubic feet. Cubic feet per cow—A, 300 cubic feet; B, 630 cubic feet.
3. Stable well lighted? No light supplied.
4. Number and size of windows in stable—None.
5. Material, construction and drainage of floor—Earth floor; no drainage.
6. Method and frequency of cleaning—In one stall excrement and stalks had accumulated to a depth of 15 inches.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? No.
9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Well.
11. Distance of well from stable—About 200 feet.
12. Distance of well from manure pile—Compost heap, 70 feet.
13. Distance of well from privy vault—300 feet.
14. Is well apparently liable to contamination? No.
15. Source of water-supply for washing utensils and cans—Well located beneath dwelling.
16. If from well, describe surrounding—Wet and filthy, wooden floor covering well. Waste fluids flowing from wooden box beneath spout of pump have spread over the surface of the ground and formed a filthy pool about the well.

Cattle.

18. Number of cows—13. Breed—Grade.
19. State of health—Thin in flesh.
20. Ever examined? No.
22. Cows groomed? No; dung matted on flanks and udders.
23. Amount, kind and quality of feed used—Corn (ground with cob), sometimes mixed with bran; also corn stalks.
24. Cows pastured? Yes.

*Milk shipped every other day at this season of the year.

Manure.

- 25. How and where stored? In yard near stable doors.
- 26. How frequently removed? No stated time for removal.
- 27. Quantity of manure at time of this inspection—About 15 or 20 wagon-loads.

Utensils.

- 28. How washed and dried? With soda and hot water; rinsed with well-water and drained.
- 29. Where are the utensils washed? In dwelling.
- 30. Any appliance for sterilizing cans, pails and dippers. No.
- 31. Bottles—how washed and dried? Same as cans.

Collection of Milk.

- 32. Quantity of milk produced daily? About 50 quarts.
- 33. Are milkers' hands washed before milking? No.
- 34. Are clean garments put on? No.
- 35. Udders of cows cleaned? No.
- 36. When pail is full of milk what is done with it? Poured into can.
- 37. Where does the can stand? On manure pile.
- 38. Is can kept covered? With cheese-cloth strainer.
- 39. Is milk cooled? Yes. How? Can containing milk submerged into ice-water.
- 40. How long after milking? Directly.
- 42. Is milk bottled? Part of product.
- 43. How long after cooling? Directly.
- 44. Where is milk bottled? In dwelling or yard.
- 45. Where is milk stored? In ice-box near dwelling.
- 46. How long is milk stored before being shipped? Disposed of daily.
- 47. Source of ice-supply—Purchased from dealers.

Distribution.

- 49. Temperature of milk when delivered to customers? Not known.
- 50. Quarts sold from cans? About 35.
- 51. Quarts sold in bottles? About 15.
- 52. Ever run short? Yes.
- 53. If so, where is the supply obtained? Purchased from other dealers.
- 54. How many persons handle the milk? Two.
- 55. All in good health? Yes.
- 56. Date of last sickness among persons on dairy premises? None reported.

D. C. BOWEN,
Inspector.

REPORT OF INSPECTION OF MILK DEPOT.

State Board of Health, Trenton, N. J.:

GENTLEMEN—I have this day inspected the milk depot conducted by William Polhemus, No. 1,119 Monroe avenue, West Asbury Park, Monmouth county, N. J., and respectfully submit the following report :

The milk-house is located in door-yard between the dwelling and stable building, about ten feet distant from each. The milk-house is a roughly built structure, about ten by twelve by eight feet in size. It contains a rough, loosely-joined hemlock floor. Milk is stored in cans placed in large cooling-vats. The vats in use, at time of this inspection, were dirty and greasy from neglect and accumulations of milk around the top and edges of wooden cover. Utensils and bottles were strewn among the rubbish which littered up the room. A slut and her litter of puppies had free access to the place through the open door.

A heap of decomposing stable manure and garbage was stored against the only side of the milk-house which contains a window. The ledges and roughly finished woodwork of the interior of milk-house is covered with dust. The interior has never been limecoated nor painted. The air in the milk-house is polluted with stable odors.

Water-supply is from driven well, located beneath dwelling, with sink-drain leading to cesspool about twenty feet distant. Cans, bottles and utensils are washed in milk-house with warm water brought from dwelling. No appliance for sterilizing.

Average daily sales, about seventy-five quarts. About thirty-one quarts are bottled at night and delivered in morning.

Supply is from Wm. Robinson and G. Robbins, Deal Beach. Two persons handle the milk. When supply runs short deficiency is bought from any dealer who can supply it. Accompanying diagram shows relative position of milk-house, stable and dwelling.

Sample of water marked W. A. P., No. 82, was taken for analysis.

Respectfully submitted,

D. C. BOWEN,
Inspector.

March 16th, 1899.

REPORT OF MILK DEPOT INSPECTION.

State Board of Health, Trenton, N. J.:

GENTLEMEN—I have this day inspected the milk depot conducted by Walter C. Parker, West Bradley Beach, Monmouth county, N. J., and respectfully submit the following report:

Milk is stored in an open wagon-shed attached to the stable building. This shed is also used as a storage-house for rubbish. The milk-cans are kept in cooling-vat partly filled with iced water. The water-supply is from a dug well located beneath the shed at dwelling. The well is about thirty feet distant from an overflowing privy-vault, which consists of wooden box sunk into the ground. Waste fluids and garbage are thrown upon the ground around the well. The ground around the rear of the dwelling shows unmistakable evidence of such pollution. Ice-supply is from Seashore Ice Company. Milk cans are returned to dairy unwashed. Small cans, utensils and bottles are washed in kitchen at dwelling.

About sixty quarts of milk is sold daily. About fifteen quarts of this amount is bottled. When supply runs short milk is purchased from any source obtainable.

Sample of water marked W. C. P., No. 4, was taken for analysis.

Respectfully submitted,

D. C. BOWEN,
Inspector.

March 24th, 1899.

REPORT OF MILK DEPOT INSPECTION.

To the Board of Health of the State of New Jersey:

GENTLEMEN—I have this day inspected the milk depot conducted by Henry Truax, No. 80 South Main street, Ocean Grove, Monmouth county, N. J., and respectfully submit the following report:

About one hundred quarts of milk is now being sold from this depot daily. About one-half of this amount is bottled. The supply is from dairies conducted by Forman T. Striker and W. S. Hunt, Oakhurst, Monmouth county. [See reports on dairies dated November 21st, 1898.]

The room in which milk is stored is in the stable building. A loft above the milk-room is used as a storage-room for general purposes. The milk-room is about fifteen feet square, and contains three cooling-vats. A portion of the room has a loose plank floor, and the balance of the room has an earth floor. The plank floor is probably never scrubbed, and, if so, the washings, together with sloppings from cans and cooling-vats, fall upon and pollute the ground beneath it. The room is dusty and dirty, and festooned with cobwebs. The wooden casings of the cooling-vats are decaying and filthy. An iron sink, with a short branch of lead waste-pipe loosely placed in the open mouth of a tile drain-pipe, serves as a drain for fluid waste. This sink sets flush with the wooden floor. The tile drain, it is stated, connects with the sewer passing near by. The opening of the tile drain where lead pipe enters was stuffed with a piece of decaying carpet, which, Mr. Truax stated, was for the purpose of "keeping out the smell." The odors of drain-air emitted from this opening in the sewer were perceptible in the milk-room at the time of this inspection. The air about the milk-house is polluted by a large pile of stable manure stored within five feet of the room, together with other unclean conditions which exist around the place. Waste fluids from washing cans and bottles are thrown upon the surface of the ground near by, where cans and bottles are washed and dried.

Water-supply is from Ocean Grove's public water-supply.

Ice-supply, stored in ice-house, adjoining milk-house; harvested on Romain's pond.

Milk cans are washed and dried in the surroundings above described and returned to dairies, where they are filled without further cleansing.

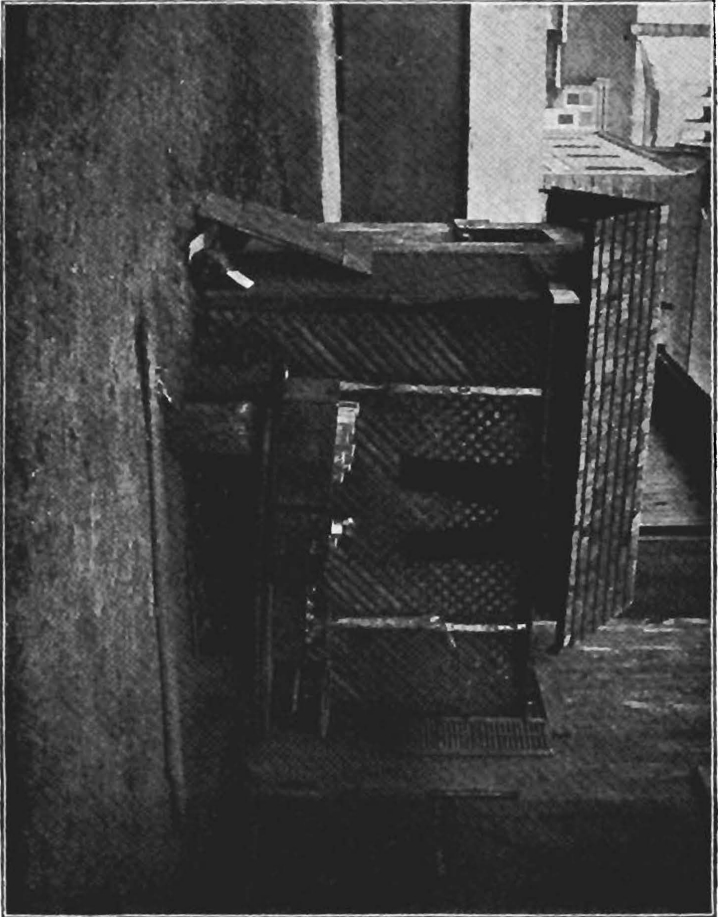
Bottles are washed on a bench just outside of the milk-house, near closet apartments, in lukewarm water and left standing there until refilled just before delivery.

The bottles ready to be filled at time of this inspection were unclean.

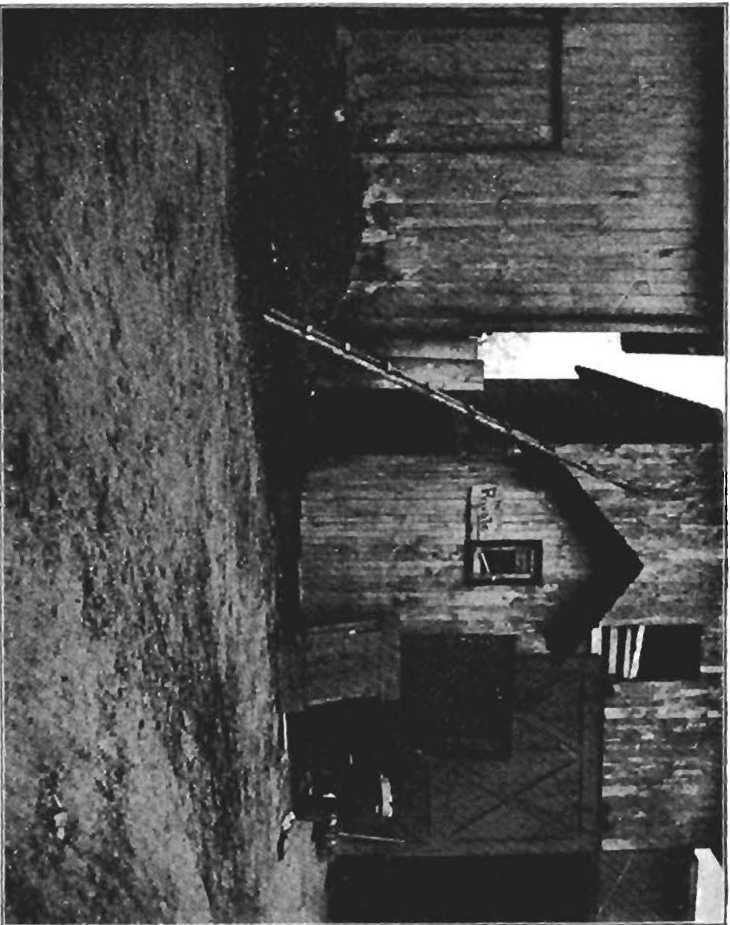
Respectfully submitted,

D. C. BOWEN,
Inspector.

March 27th, 1899.



Showing where Milk-bottles are Washed.



Manure Pile, Privy, Bottle-washing Outfit and Milk-house.

SECRETARY'S REPORT.

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REPORT OF INSPECTOR OF MILK DEPOT.

To the Board of Health of the State of New Jersey:

GENTLEMEN—I have this day inspected the milk depot conducted by William R. Sickles, Sunset avenue, West Asbury Park, Monmouth county, N. J., and respectfully submit the following report:

The average daily sales of milk are eighty quarts, twenty of which is sold in bottles. Supply is received from J. H. Lefferson's dairy, Tinton Falls. Milk is stored in stable building. (See diagram.) Strong stable odors pervaded the room at time of this inspection. Drainage from ice-box in stable is by wooden box in stable floor connected by pipe to street gutter. Artesian water, from Asbury Park's city supply, is supplied to sink in dwelling. A dug well is located near stable in yard close to privy, and leaching cesspool. Ice-house on premises filled with ice from Deal Lake. Cans and utensils are washed in stable. Water used for this purpose, it was stated, is brought from dwelling. Sample of water from well marked W. R. C. No. 5, was taken for analysis.

Respectfully submitted,

D. C. BOWEN,
Inspector.

March 24th, 1899.

REPORT OF INSPECTOR OF MILK DEPOT.

To the New Jersey State Board of Health:

GENTLEMEN—I have this day inspected the milk depot conducted by Charles V. Hurley, No. 1023 Mattison avenue, West Asbury Park, Monmouth county, N. J., and respectfully submit the following report:

A stable building extending across the rear of the lot (lot about fifty by one hundred feet) is divided into three sections. One end-section is used for a stable for horses, and the other end is an ice-house. The center sections are used as milk-room and wagon-house. Milk is stored in cooling-vats which are drained to cesspool. Water-supply is from driven well located beneath dwelling, twenty feet distant from stable, twenty feet from leaching cesspool and thirty feet from privy vault. Drain leading from kitchen sink to cesspool is obstructed and slops thrown on ground about the well. Washing of utensils is done in milk-house with water brought from dwelling. There is no appliances for sterilizing cans, bottles and utensils. A cask is kept by stable door to receive drips from eaves of building. Water caught in this cask is used for washing bottles. Mr. Hurley states that the water in the well has apparently been good until the past few weeks, since which time an objectionable taste in the water has been noticeable. Ice is harvested on Deal lake and Romain pond. Milk-supply as follows: From D. P. Pittenger, Howell, Monmouth county; R. J. Johnson, Davis, Monmouth county, and from Hurley's own dairy, Glendola, Monmouth county. Average daily sales are about one hundred and forty quarts. About forty quarts sold in bottles. Sample of water from well marked W. A. P., No. 3, was sent to chemist.

Respectfully submitted,

D. C. BOWEN,
Inspector.

March 16th, 1899.

NEW JERSEY STATE LIBRARY

REPORT OF MILK DEPOT INSPECTION.

To the N. J. State Board of Health :

GENTLEMEN—I have this day inspected the milk depot conducted by A. L. Clayton, No. 1117 Summerfield avenue, West Asbury Park, Monmouth county, N. J., and respectfully submit the following report :

A shed attached to the rear of the dwelling serves as a milk-house. Door from kitchen opens into shed, which is well lighted and ventilated. The premises are furnished with artesian water from the "White" system. Waste fluids are disposed of by placing them upon the surface of the ground and by emptying them into cesspool through sink-drain. Milk is stored in cans kept in cooling-vat in shed. Sixty quarts is the average daily sales; about one-half of this amount is sold in bottles, which are filled just before delivery. The supply is received from Alva Truex, milk dealer, Asbury Park. Cans and utensils are washed with warm water and wood-ashes, rinsed and drained. Bottles are treated in the same way, with the addition of the use of bristle bottle-brush. No sterilizing of cans and utensils is done. Ice-supply is artificial ice. The shed in which the milk is stored is clean. The yard and surroundings are clean and show evidence of good housekeeping. The milk cans and utensils look well cleansed. A film of grease is apparent, however, upon the inside of the bottles, and bottles which were ready to be filled were not drained dry.

Sample of water marked W. A. P., No. 1, was taken for analysis.

Respectfully submitted,

D. C. BOWEN,
Inspector.

March 16th, 1899.

REPORT OF MILK DEPOT INSPECTION.

To the N. J. State Board of Health :

GENTLEMEN—I have this day inspected the milk depot conducted by Frank P. Sutphen, No. 1038 Bangs avenue, West Asbury Park, Monmouth county, N. J., and respectfully submit the following report :

A building located on rear of lot is used as stable, milk and wagon-house on first floor, and dwelling on second floor. A wooden partition separates that part of stable in which five horses are kept from the part used as milk and wagon-house. Milk is stored in cooling-vats in stable building. Water-supply is from the "White" artesian wells. Ice-supply bought from United Ice Company. Milk cans are returned to dairy without washing. Bottles and utensils are washed in living apartments in stable, and waste fluids are thrown upon the ground. No appliance for sterilizing bottles and utensils. The daily sales are about sixty quarts. About ten quarts of this amount is bottled.

Respectfully submitted,

D. C. BOWEN,
Inspector.

March 16th, 1899.

Maritime Quarantine.—The outbreak of yellow fever which occurred in July, 1899, in the Soldiers' Home, Hampton, Va., led to a critical examination of the defences which the laws have established against the introduction of this disease into New Jersey, and it is found that abundant authority has been given to prevent the entrance of infected persons by internal lines of travel, and there is no confusion concerning the nature of the official duties and responsibilities relating to the enforcement of the law. Chapter 68, of the laws of 1887, provides as follows:

4. *And be it enacted*, That the state board of health shall have a right to cause a sanitary inspection to be made of all chattels and persons in transportation through the State, and of the cars, boats and other vehicles in which such chattels or persons may be transported, and the said board shall have the same right of inspection, procedure and control in this respect as is or may be conferred by law upon the local board of health or local authorities in any township or city, or other local municipal government in this State, and when in the judgment of the said board it may be necessary, the said board may require or cause an examination of vessels, cars, boats or other vehicles, and of all baggage and persons, to be made, and may enforce such detention or disinfection as they may deem necessary for the public safety.

The State board of health is by this act fully empowered, when an emergency exists, to guard all avenues of entrance into the State, and, so far as lines of railway and other means of inter-state communication may be concerned, the protection afforded to the inhabitants against the introduction of pestilential diseases from without the State is ample for all contingencies.

In New Jersey there are eight ports of entry, as follows:

Trenton, Bordentown, Bridgeton, Tuckerton, Perth Amboy, Newark, Jersey City and Hoboken.

The ports on the Delaware river are protected by the quarantine stations which are maintained for the port of Philadelphia, and we may assume that little danger exists that infection will enter at these points. Tuckerton is available only for vessels drawing less than six feet of water, and the probability of an infected vessel from a southern port entering at that inlet is therefore small, for the vessels employed in the coastwise, West Indian and Central American trade are all deep-draft craft.

Newark, Jersey City and Hoboken are approached almost altogether by way of the Narrows and upper New York bay, and ships entering by this route or by way of Long Island sound are inspected

by officers attached to the New York quarantine service. At Perth Amboy, vessels drawing twenty-four feet can pass in from the open sea, and it is necessary, therefore, to maintain at this port a system of inspection which can be depended upon to detect and detain every vessel upon which is any person or any article infected by any of the quarantinable diseases.

An inquiry concerning the degree of efficiency of the local quarantine inspection at Perth Amboy was made by this board in 1897, and a report was presented to the Governor February 16th of that year (see page 23 of the Twenty-first Annual Report of the Board of Health of the State of New Jersey). An act was passed by the Legislature, then in session, which was designed to correct some of the defects in the maritime quarantine service at Perth Amboy, but the original bill was much modified before its passage, and its usefulness was thereby materially diminished.

The annual report of the health officer of Perth Amboy shows that the total number of vessels inspected during the year ending October 1st was 71, and that the total sum received in fees from these vessels was all paid to the boarding officer. It is, therefore, seen that the health officer receives no compensation whatever for the responsibility which he bears, and for the performance of his official duties as medical inspector. Further legislation is urgently needed to insure good service at this port.

The following bill has been prepared for presentation at the coming session of the Legislature :

AN ACT to prevent the introduction into the state of New Jersey of communicable diseases by maritime vessels or maritime traffic.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey :

1. No vessel infected with any communicable disease, and no vessel on board of which there may be any person, baggage, merchandise or materials infected with any communicable disease, shall be brought to any wharf in the state of New Jersey, and no person, baggage, merchandise or materials being so infected, or being on any vessel so infected, shall land or be landed at any place in this state until a permit therefor shall have been granted in the manner required by the local board of health of the sanitary district within which it may be intended to bring such vessel to wharf, or within which it may be intended to land therefrom any such person, baggage, merchandise or materials; such permit shall not be granted until after such vessel, and the persons, baggage, merchandise and other materials thereon shall have been examined, cleansed, ventilated and purified, and such quarantine period shall have been observed as the regulations or special order or orders of the board of health

of the state of New Jersey may require, which regulations and special orders said state board is hereby authorized to make and prescribe; any master or commander of any vessel who shall violate any of the provisions of this section, and every person who shall violate any of said provisions or aid in the violation thereof, shall be deemed guilty of a misdemeanor and on conviction thereof shall be punished by a fine not exceeding three thousand dollars, or by imprisonment not exceeding the term of one year, or both, in the discretion of the court before whom the conviction may be had; *provided, however, that this section shall not apply to any vessel, or any person, baggage, merchandise or materials on board of any vessel, whose master or commander shall obtain a permit to land persons, baggage, merchandise and other materials from any local board of health in this state under the provisions of the second section of this act, nor to any vessel, or any person, baggage, merchandise or materials on board of any vessel, coming into any port or place in the state of New Jersey where a health officer, appointed by the board of health of the state of New Jersey under the provisions of the third section of this act, may then be holding office.*

2. No vessel coming from any foreign or domestic port, which shall pass any quarantine station located at City Island or elsewhere in Long Island sound, or at Fort Wadsworth or elsewhere in New York bay, whose master or commander shall have obtained a written permit from the proper officer at any of said quarantine stations to proceed with his vessel to any place in the state of New Jersey, shall be brought to any wharf in this state, and no passenger, baggage, merchandise or other materials on board of any such vessel shall land or be landed at any place in this state, until such master or commander shall have deposited such permit at the office of the local board of health of the place of destination named in the permit, which deposit shall be made within twenty-four hours after receiving such permit, nor until said master or commander shall have received a permit to land said passengers, crew, baggage, merchandise and other materials, which permit shall be granted in the manner required by said local board of health; if said local board, or the officer acting for it, shall have no reason to believe that said vessel, or any of the persons, baggage, merchandise or materials thereon, is or are infected with any communicable disease, a permit to land said persons, baggage, merchandise and materials shall be granted forthwith upon the deposit of the permit issued by any quarantine officer as aforesaid, but if said local board, or the officer acting for it, shall have reason to believe that said vessel, or any person, baggage, merchandise or materials thereon, is or are infected with any communicable disease, then no permit to land shall be granted except subject to such regulations and special orders as may be prescribed or given by the board of health of the state of New Jersey; any master or commander of any vessel who shall violate any of the provisions of this section, and every person who shall violate any of said provisions or aid in the violation thereof, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding three thousand dollars, or by imprisonment not exceeding the term of one year, or both, in the discretion of the court before whom the conviction may be had; *provided, however, that this section shall not apply to any vessel, or any person, baggage, merchandise or materials on board of any vessel, coming into any port or place in the state of New Jersey*

where a health officer appointed by the board of health of the state of New Jersey under the provisions of the third section of this act may then be holding office.

3. The board of health of the state of New Jersey shall from time to time appoint a competent person as "health officer of the port of Perth Amboy," who shall hold office during the pleasure of said board, and shall have the powers, perform the duties and be entitled to demand and receive the fees in this act prescribed; said state board of health may also, at any time when it may deem it necessary, appoint a competent person as health officer for any other maritime place in this state, and every such health officer shall hold office during the pleasure of said board, shall exercise all the powers conferred upon, and perform all the duties required of local boards of health by the first and second sections of this act, shall wholly supersede the local board of health having jurisdiction of the place for which he may be appointed in the exercise of such powers and the performance of such duties, and shall be entitled to demand and receive the fees prescribed by this act; said state board shall also have the power from time to time to adopt, alter and amend regulations prescribing the manner and form in which local boards and health officers appointed as aforesaid shall exercise the powers conferred upon and perform the duties required of them by this act, to require from said local boards and health officers such reports from time to time as it may deem expedient, and to revoke, modify, supplement or supersede any order given or act done under the provisions of this act by any local board of health or health officer by such other order or orders as the said state board may deem the necessities of any particular case to require.

4. Every vessel which, between the first day of March and the first day of December in any year, or within any other time in any year designated by resolution of the board of health of the state of New Jersey, shall come from any port in the United States south of Cape Henlopen, or from any West India, Bahama or Bermuda Island port, or from any port or place where any communicable disease exists, into that portion of the waters of this state known as Raritan bay or Sandy Hook bay south of a straight line extending from Ward's Point to the northerly extremity of Sandy Hook, and every vessel at any time coming into said waters on board of which any person shall have died while at any port in the United States south of Cape Henlopen or at any foreign port, or while between any such port and said Raritan bay or Sandy Hook bay, or on board of which there are contained any baggage, merchandise or materials by which any communicable disease may be introduced into this state, or on board of which the health officer of the port of Perth Amboy shall have reason to believe that any person or persons may be sick with any communicable disease, or on board of which such health officer shall have reason to believe there may be any baggage, merchandise or materials by which any communicable disease may be introduced into this State, shall come to anchor at some place designated by said health officer of the port of Perth Amboy, which anchorage place shall be southward of a straight line extending from the South ferry wharf in Perth Amboy to the house on Staten Island, formerly of Caleb Ward, as well as southward and eastward of a straight line extending from the said south ferry wharf to the most easterly wharf of South Amboy; and any master or commander who shall refuse, neglect or fail to

bring to anchor at the place designated as aforesaid any such vessel as aforesaid, of which he may be master or commander, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding three thousand dollars, or by imprisonment for a term not exceeding one year, or both, in the discretion of the court before whom the conviction may be had.

5. Whenever any vessel subject to the provisions of the next preceding section of this act shall arrive at any anchorage place designated as aforesaid, it shall be the duty of the health officer of the port of Perth Amboy and he shall have the power, subject to such regulations and special orders as the board of health of the state of New Jersey may from time to time make or prescribe, to visit said vessel and examine into the sanitary condition thereof, and of all persons, baggage, merchandise and materials on board thereof; to order such vessel, and all baggage, merchandise and materials on board thereof, to be cleansed, ventilated and purified under his supervision and direction, and to that end to require such vessel to be unloaded; to order such vessel to be detained at quarantine for such period after the vessel, and the baggage, merchandise and materials on board thereof, shall have been so cleansed, ventilated and purified, as the regulations or any special instruction of the board of health of the state of New Jersey may require; to prescribe quarantine stations for vessels; to prohibit and prevent communication with infected vessels; to detain and isolate all infected persons; to grant permits to land passengers, crews, baggage, merchandise and other materials; to grant permits to discharge cargoes into lighters or otherwise; to release vessels from quarantine; and to give such other orders as he may deem necessary for the prevention of the introduction into this state of any communicable disease; it shall be the duty of the master or commander, or any other person in charge, of any vessel concerning which, or concerning the persons, baggage, merchandise or other materials on board of which, any such order may be given by said health officer, or by the board of health of the state of New Jersey, to cause the order to be forthwith obeyed; and any master or commander, or other person in charge of any such vessel, who shall refuse, neglect or fail to perform such duty, and any master, commander or other person who shall violate any order or permit given as aforesaid, and every person who shall aid in any such violation, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding three thousand dollars, or by imprisonment for a term not exceeding one year, or both, in the discretion of the court before whom the conviction may be had.

6. Every health officer appointed as aforesaid is hereby authorized to ask, demand and receive, from the master or commander of any vessel in respect of which any of the duties prescribed by this act shall be performed, the following fees: for examination of every vessel from a foreign port, five dollars; for examination of every vessel from any port in the United States south of Cape Henlopen, if a steamer, three dollars, and if other than a steamer, one dollar; for medical examination of every one hundred, or fraction of one hundred, steerage passengers upon transatlantic vessels, two dollars; for each permit granted for the landing of persons, baggage, merchandise and other materials, or discharging cargoes, and every release of a vessel from quarantine, twenty-five cents; for sanitary inspection of every vessel after the discharge of cargo

or ballast, ten dollars ; for disinfection of every vessel from an infected port, and of every vessel that shall require disinfection by reason of exposure to infection or contagion, fifty dollars ; and for vaccination of persons on board of any vessel on which small-pox has developed during the voyage, each twenty-five cents ; each health officer appointed as aforesaid shall keep a record of all fees received by him under the provisions of this act, and if in any calendar year the total amount of fees so received by the health officer of the port of Perth Amboy shall be less than one thousand two hundred and fifty dollars, he shall, on presenting to the board of health of the state of New Jersey an itemized statement of the fees received by him for such year, duly verified by his affidavit, be entitled to receive out of the moneys appropriated to said board for payment to said health officer (if any such appropriation for such payment be made) a sum sufficient to raise his compensation for services during such year to the sum of one thousand dollars, and to pay to one deputy health officer of said port the sum of two hundred and fifty dollars.

7. The said health officer of the port of Perth Amboy is hereby authorized to appoint one or more deputies, who, in the absence of such health officer, shall exercise the powers and perform the duties of the health officer ; but before the appointment of any such deputy shall become effective, such appointment shall be approved by the secretary of the state board of health ; every such deputy shall hold office during the pleasure of the health officer, subject, however, to the revocation of his appointment at any time by the state board of health, or by its secretary ; said health officer shall compensate every such deputy for his services out of the fees allowed by this act.

8. The local board of health of any place in this state, excepting the local board of health of any place for which a health officer may be holding office, under the provisions of the third section of this act, shall have power, whenever, in its judgment, the protection of the public health requires such action, to order the master or commander of any vessel within its jurisdiction to remove such vessel to some quarantine station or other place of safety, to be designated by said board, and to order all persons, baggage, merchandise and materials which have been landed from such vessel to be seized and returned to said vessel, or taken to some other place of safety, to be designated by said board ; if such master or commander cannot be found, or if he shall refuse or neglect forthwith to obey any such order, said local board may employ such assistance as may be necessary to effect such removal ; and said master or commander shall not thereafter bring such vessel to any landing place within the limits of the jurisdiction of said local board, or land any person, baggage, merchandise or materials from such vessel at any place within said jurisdiction until a permit therefor shall have been granted by said local board ; any master or commander who shall violate any of the provisions of this section shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding three thousand dollars, or by imprisonment not exceeding the term of one year, or both, in the discretion of the court before whom the conviction may be had.

9. All expenses incurred by, and all fees becoming due to, any health officer or any local board of health, or any of their employees, for services rendered or duties performed under the provisions of this act, or under any regulations prescribed by the state board of health, shall be paid by the master, commander

or owner of the vessels in relation to which such duties shall be performed or services rendered; and every health officer, local board of health and employee to whom any moneys shall be due on account of any such expenses or fees shall have a lien for the amount thereof, and for all costs of suit and such counsel fee for the plaintiff as the court in its discretion may allow, upon such vessel, its tackel, apparel and furniture, and if payment be not forthwith made on demand therefor, such lien may be enforced by a suit in admiralty, or other proper suit, in any court of competent jurisdiction.

10. The following acts are hereby repealed: "An act to provide for the security of the citizens of this state against the introduction of contagious diseases," passed November nineteenth, seventeen hundred and ninety-nine; "An act to prevent the introduction of malignant and other infectious diseases into this state," approved April fourth, eighteen hundred and seventy-one, and all acts supplementary thereto; and "An act to prevent the introduction of dangerous, infectious, epidemic and pestilential diseases into the state of New Jersey, and to improve the present system of maritime quarantine," approved April ninth, eighteen hundred and ninety-seven.

11. This act shall take effect immediately.

Foods.—During the past year the traffic in diseased meat has been much diminished but not altogether suppressed. Tuberculous cows have been slaughtered and sent to market in a few instances, and the parties guilty of this practice have shown great skill in evading punishment. New legislation is urgently needed to more explicitly prohibit the sale of diseased meat for food, and the penalties should be sufficiently severe to discourage further trifling with the public health in this particular. The laws under which prosecutions for this practice are now undertaken were not designed or intended to deal with this matter, and they are not adapted to the necessities of the case. Section 7 of the act approved May 4, 1886, provides "that if any person or persons shall *knowingly* buy or sell, or cause to be bought or sold, any animal or animals affected with the pleuro-pneumonia, rinderpest, or any other contagious or infectious disease * * * shall be deemed and adjudged guilty of a misdemeanor." The act approved March 25, 1881, provides that no article shall be sold for food if it consists in whole or in part of a diseased, decomposed or putrid or rotten animal or vegetable substance.

The first of the acts above referred to was intended to apply only to animals on the hoof, and is of no avail in preventing the sale of the meat after slaughter. Moreover, this act is rendered practically useless by the insertion of the word "knowingly," for no prosecution under its provision (Section 7) will be successful unless the State can show that the guilty party knew that the animal sold was diseased,

and satisfactory evidence on this point must be brought before a conviction can be obtained. Such evidence can rarely, if ever, be procured, for the parties who will engage in so mean a business as the sale of sick animals, will do it slyly, and they are quite unlikely to communicate to other persons their knowledge that the animal in question is diseased.

The act of 1881 is known as the "food act," and it was expressly intended to prevent adulteration.

The following bill has been prepared for the purpose of improving the entire system of sanitary administration so far as the protection of the food-supply is concerned :

AN ACT to secure the purity of foods, beverages, confectionery, condiments, drugs and medicines; to prevent deception in the distribution and sales thereof.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey :*

1. The term "food," as used in this act, shall include every article used for food or drink by man, and every ingredient in such article, and all confectionery; and the term "drug," as used in this act, shall include every article of medicine for internal or external use, and every ingredient in such article.

2. The following drugs shall be deemed to be impure within the meaning of this act: (1) any drug which, being known under or by a name recognized in the United States pharmacopœia, possesses a strength, quality or degree or purity inferior to or different from that laid down in such pharmacopœia; (2) any drug which, not being known under or by a name recognized in the United States pharmacopœia but which is found in some other pharmacopœia, or in some other standard work on materia medica, possesses a strength, quality or degree of purity, inferior to or different from that laid down in such other pharmacopœia or standard work; and (3) any drug whose strength, quality or degree of purity, falls below the professed standard under which it is sold.

3. The following foods shall be deemed to be impure within the meaning of this act: (1) any food which is rendered poisonous or injurious to health, or whose quality, strength or degree of purity is injuriously reduced, lowered or affected, by adding thereto or mixing therewith any other substance or substances; (2) any food for any of whose constituents have been substituted any substance or substances inferior to or cheaper than the constituents naturally or customarily composing such food or any part thereof; (3) any food from which has been wholly or partially abstracted any valuable or necessary constituent; (4) any food, which consists wholly or in part of diseased, decomposed, putrid, infected, tainted or rotten animal or vegetable substance, whether manufactured or not; and (5) in the case of milk, if it contain more than eighty-eight per centum of watery fluids or less than twelve per centum of milk solids, or if any water, drug, chemical, preservative or other substance, be added thereto or mixed therewith; *provided however*, that an article of food or of confectionery which does not contain any ingredient injurious to health, shall not be deemed to be impure in the case of mixtures or compounds which

may now be, or which may from time to time hereafter be, known as an article of food or of confectionery under its own distinctive name.

4. No person shall distribute or sell, or transport or carry for the purpose of distribution or sale, or have in his possession with intent to distribute or sell, any article of food or drug which, under any of the provisions of this act, is or shall be deemed to be impure.

5. No person shall distribute or sell, or offer to distribute or sell, any article of food or any drug which is an imitation of some other article of food or of some other drug, under or by the name of the article of food or drug imitated but the same shall be distributed and sold, or offered for distribution or sale, only by the true name of the imitation.

6. No person shall distribute or sell, or offer for distribution or sale, or transport or carry for the purpose of distribution or sale, or have in his possession with intent to distribute or sell, any article of food which shall have been colored, coated, polished, powdered or treated in such manner as to conceal any element of injury or damage therein or any inferiority of quality thereof.

7. No person shall keep cows for the production of milk in a crowded or unhealthy place or condition, or feed any cow kept for the production of milk on distillery waste, or swill, or on any substance in a state of putrefaction or rottenness, or on any substance of an unwholesome nature, or on any food or substance that produces diseased or unwholesome milk; and no person shall knowingly distribute or sell, or offer to distribute or sell, or transport or carry for the purpose of distribution or sale, or have in his possession with intent to distribute or sell, any milk which is the produce of cows so kept or fed.

8. No person having the possession or care of any milk shall knowingly permit it to be exposed to, or contaminated by, the emanations, discharges or exhalations from any person or persons sick with any contagious disease; and no person shall knowingly distribute or sell, or offer to distribute or sell, or transport or carry for the purpose of distribution or sale, or have in his possession with intent to distribute or sell, any milk which has been so exposed or contaminated.

9. No person shall sell, or offer or expose for sale, or transport or carry or have in his possession for the purpose of sale, any milk from which the cream or any part thereof has been removed, unless every can, vessel or package containing such milk have a label or tag of metal distinctly, durably and permanently soldered in a conspicuous place upon the outside and not more than six inches from the top thereof, with the words "skimmed milk" stamped, indented or engraved on the label or tag in letters not less than two inches in height; such milk shall only be sold or shipped in, or retailed out of, a can, vessel or package so marked.

10. No person shall knowingly sell, supply or bring to be manufactured, to any person or party operating any cheese or butter manufactory in this state, any milk which under any of the provisions of this act is or shall be deemed to be impure, or from which the cream or any part thereof has been removed, or the sale of which by any of the provisions of this act is prohibited.

11. The state board of health shall have the power from time to time to adopt, promulgate and publish, by circulars or otherwise, such general rules and regulations for the government of the analysts, chemists, chief inspector, and such other inspectors and employees appointed by the said board, as they

may deem proper; they shall also have the power to give to any analyst, chemist, chief inspector or other inspector or employee appointed by the board, such orders concerning any performance of duty as they from time to time may deem proper; they shall also have the power from time to time to appoint such analysts, chemists, chief inspector and other inspectors and employees, as they may deem proper, who shall hold their respective positions during the pleasure of said board and perform such general or special services as said board may, by their general rules and regulations or by their special orders require, and to fix and allow to said analysts, chemists, chief inspector, and other inspectors and employees, respectively, such salaries, fees or compensation as the said board shall deem to be reasonable, which salaries, fees and compensation shall be paid out of the appropriations from time to time made by the legislature for carrying out the provisions of this act; the said board shall have the power, and it shall be their duty, through said analysts, chemists, chief inspector and other inspectors and employees, and in such other ways as to the said board may seem practicable, to make inquiries and investigations concerning alleged or probable violations of any of the provisions of this act, to cause any and all persons guilty of any violation thereof to be prosecuted under the provisions of this act, and, generally, to adopt, carry out and enforce such rules and regulations as shall promote the purposes of this act.

12. Every person who shall distribute or sell, or offer for distribution or sale, or transport or carry for the purpose of distribution or sale, or have in his possession with intent to distribute or sell, any article of food or drug, shall, on the request therefor and the tender of the value thereof by any chief or other inspector appointed under the authority of this act, deliver to such chief or other inspector so much of any such article of food or drug as such chief or other inspector may request.

13. Every person, copartnership of persons and corporation who shall violate any of the provisions of this act, and any and every person who shall hinder, impede, obstruct or otherwise prevent any analyst, chemist, chief inspector or other inspector or employee of the state board of health, in the performance of any duty under this act, shall be liable to a penalty of one hundred dollars; *provided, however*, that if any person, copartnership of persons or corporation, charged with the violation of any of the provisions of this act shall prove at the hearing or trial of the complaint that the article alleged to be impure was procured under a warranty from any person or persons residing within this state, in the form hereinafter set forth, that said article was pure within the meaning of this act, and prior to the hearing or trial shall have filed in the district court, or with the justice of the peace, police justice or recorder before whom the case is prosecuted, and with the attorney of the prosecutor of the case, a copy of such warranty, the person, copartnership of persons or corporation so complained against shall be discharged from prosecution; the warranty to justify such discharge shall specifically name and describe the article or articles warranted and shall be of the following form, to wit:

"It is hereby warranted that the following described article or articles are pure and unadulterated within the meaning of the act of the legislature of the state of New Jersey entitled 'An act to secure the purity of foods, beverages, confectionery, condiments, drugs and medicines, and to prevent deception

in the distribution and sales thereof.' Dated at.....this..... day of.....A. D.....;"

Every such warranty shall be signed by the warrantor, but no warranty shall be a defense if the person offering it shall have been notified prior to the sale complained of that the article or articles mentioned in it were impure within the meaning of this act. Any such penalty may be recovered with costs, in a summary proceeding either in the name of the board of health of the state of New Jersey, or in the name of the local board of health of the township, city, borough, town or other local municipal government within whose jurisdiction the penalty may have been incurred; it shall be the duty of any inspector appointed under this act, and of any member of any local board of health, and of any local health inspector, who shall know or be informed of any violation of any of the provisions of this act, to make, and any other person having such knowledge may make, under oath or affirmation, a complaint in writing against the person or persons, copartnership of persons or corporation incurring such penalty, setting forth the facts of such violation, and the section of this act violated, which complaint may be on information and shall be filed with the clerk of any district court or with any justice of the peace of the county within which the offense may have been committed, or with any police justice or recorder of the city or other municipality within which any local board of health bringing suit shall have jurisdiction; and the clerk of the district court with whom any such complaint shall be filed, upon the order of the judge thereof, and the justice of the peace, police justice or recorder with whom any such complaint shall be filed, is hereby authorized and required to issue process in the nature of a summons when the complaint is on information, and in other cases either in the nature of a summons or warrant, which process, when in the nature of a warrant, shall be returnable forthwith, and when in the nature of a summons shall be returnable in not less than five nor more than fifteen days; on the return of such process, or at any time to which the trial shall have been adjourned, the said court, justice of the peace, police justice or recorder shall proceed to hear the testimony of witnesses and the proofs in the case, and to determine and give judgment in the matter without the filing of any pleadings, and, if judgment shall be given in favor of the plaintiff, execution shall forthwith issue against the goods and chattels of the defendant or defendants for the amount of the penalty, with costs; the officers to serve and execute any process or execution issued as aforesaid shall be the constables of the county, which service and execution, in the case of any process or execution issued out of a district court, shall be made in the same manner and under the same liabilities as other processes and executions issued out of said court are served and executed; the officers to serve and execute any process or execution issued by a justice of the peace, police justice or recorder shall be the constables of the county, which service and execution shall be made in the same manner and under the same liabilities as other processes and executions issued out of the courts for the trial of small causes; the costs recoverable in any case prosecuted in a district court shall be the same as in other cases prosecuted in said court, and in any case prosecuted before a justice of the peace, police justice or recorder, they shall be the same as are allowed in cases prosecuted in the courts for the trial of small causes; the penalty recovered in any such action shall be paid to the

plaintiff therein and applied by such plaintiff to any purpose for which it may be legally authorized to expend money.

14. The judge of the district court, justice of the peace, police justice or recorder before whom any case is prosecuted under this act may adjourn the hearing thereof from time to time, not exceeding thirty days from the return day of the summons or warrant, and, in any case where a warrant shall have been issued, may require the defendant or defendants to enter into a bond with sufficient surety to the plaintiff in the penal sum of two hundred dollars, conditioned to appear at the time and place of the hearing or trial, and in default of such bond may commit the defendant or defendants to the common jail of the county, to be there detained until the hearing or trial of the complaint; and if the defendant or defendants shall fail to appear at the time and place to which the hearing or trial shall be so adjourned, the bond shall be delivered to the plaintiff who may sue thereon and apply the moneys recovered in such suit to any purpose for which it may be legally authorized to expend money.

15. The conviction in prosecutions under this act shall be in the following or similar form:

"State of New Jersey, County of....., ss.

"Be it remembered that on this.....day of.....
A. D. 18....., at....., in said county, C. D., defendant, was, by the district court of the city of T. (or by me, E. F., justice of the peace, police justice or recorder of the city of....., or as the case may be) convicted of violating the.....section of 'An act to secure the purity of foods, beverages, confectionery, condiments, drugs and medicines, and to prevent deception in the distribution and sales thereof,' approved....., one thousand eight hundred and ninety-nine, in a summary proceeding at the suit of the local board of health of the township of A. (or as the case may be); and, further, that the witnesses in said proceeding who testified for the plaintiff were (name them), and the witnesses who testified for the defendant were (name them); wherefore, the said court (or justice of the peace, police justice or recorder, as the case may be) doth hereby give judgment that the plaintiff recover of the defendant one hundred dollars penalty and.....dollars cost of this proceeding."

The said conviction shall be signed by the judge of the district court, justice of the peace, police justice or recorder, before whom the conviction is had.

16. Any person who shall give or utter any false warranty of the form prescribed in the thirteenth section of this act shall be guilty of a misdemeanor, and, on conviction thereof, shall be punished by a fine of not more than five hundred dollars, or imprisonment at hard labor for not more than one year, at the discretion of the court.

17. The state board of health may expend annually, for the purposes of carrying out the provisions of this act, a sum not exceeding twelve thousand dollars, which sum shall be paid by the treasurer of this state upon the warrants of the comptroller; *provided, however*, that an appropriation therefor shall first be made by the legislature.

18. The office of state dairy commissioner is hereby abolished, and all duties now imposed upon the state dairy commissioner, by any act of the legislature not repealed by this act, shall hereafter be performed by the chief inspector, appointed under the authority of this act.

19. The following acts are hereby repealed : "An act to protect butter and cheese manufacturers," approved March twenty-third, eighteen hundred and sixty-five; "An act relative to the dairy commissioners," approved June thirteenth, eighteen hundred and ninety-five; "An act to prevent the adulteration, and to regulate the sale of milk," approved March fourteenth, eighteen hundred and eighty-two, and all acts supplementary thereto and amendatory thereof; "An act to prohibit the sale of adulterated and skimmed milk in cities of this state," approved March twenty-third, eighteen hundred and eighty-three; "An act to prevent the adulteration of food or drugs," approved March twenty-fifth, eighteen hundred and eighty-one, and all acts supplementary thereto and amendatory thereof; "An act to prevent the adulteration of candy," approved March fourteenth, eighteen hundred and ninety-five; and "An act to prevent deception in the sale of cakes and biscuits, and to preserve the public health," approved March twenty-second, eighteen hundred and ninety-five, and all other acts and parts of acts inconsistent with this act.

20. This act shall take effect October 31st, 1899.

Sewer Outlet at Bayway, Elizabeth.—The act approved March 15th, 1899, authorizing the construction of a joint sewer outlet for two or more municipalities, contains a provision that (section 5) nothing contained in said act "shall be construed to authorize such jointly contracting municipalities to discharge any such outlet sewer or sewers or drains in tide-water adjacent to or within the boundaries of any municipality of this State, until after a thorough and exhaustive examination of the locality of such discharge shall have been made by the State board of health, and a certificate from such board shall have been given to the governing body of such municipality, certifying that in the judgment of such board such discharge will not in any manner prejudice or impair the health or comfort of the inhabitants of this State."

An application having been received from Mr. R. S. Sinclair, acting on behalf of the representatives of the citizens of Newark, Irvington, Vailsburg, village of South Orange, and townships of South Orange, West Orange and Milburn, asking for approval by the State board of health of the plans submitted by Alexander Potter, C.E., for disposing of the sewage of portions of the above-mentioned districts, by discharging said sewage into Staten Island sound at the end of Bayway in the city of Elizabeth, an examination of the locality of said proposed sewer outlet was made, and the following reports were presented to the Board :

To the Board of Health of the State of New Jersey :

GENTLEMEN—An examination was made on May 12th, 1899, of the proposed outlet for the sewer from Milburn, Irvington, South Orange and other districts. The point which has been chosen by the engineers is in the city of Elizabeth, at the end of the street known as Bayway. The body of water which connects Princess bay with New York bay is known as Staten Island sound, and the portion opposite Bayway is known as Arthur Kill. On either side of Bayway are located factories, and the depth of water at the end of the avenue is 20 feet at low-water mark. The dock of the Bowker Fertilizer works extends into the stream, and it is proposed to carry the outlet-sewer as far out as the end of the said dock. The tidal current at this point is very strong, the current coming in by the way of Amboy and passing beyond this point to an island known as Shooters island, and when the tide ebbs floating materials are carried from Shooters island into Princess bay by way of Amboy. On May 16th an examination was made of the river by boat, for the purpose of ascertaining the character of the adjacent shores, and also the number and character of factories located along the stream.

The following is a list of the factories on the north or New Jersey shore, starting at Carteret :

- No. 1. The Lucol Oil Works.
- No. 2. Carteret Car Works.
- No. 3. Leibig Fertilizer Works.
- No. 4. Wheeler Printing Press Works.
- No. 5. Condon Iron Works.
- No. 6. William & Clark's Phosphate Works. These are located at what is known as Carteret.
- No. 7. At Tremley the Mitchell Phosphate Works.
- No. 8. Russell & Co. Phosphate Works. No business being transacted at this factory.
- No. 9. Gracella Chemical Works.
- No. 10. The Standard Oil Exchange.
- No. 11. Swan & Finch, fish-oil refiners.
- No. 12. Mountain Copper Works.
- No. 13. W. A. Clark, wire works.

This brings us to Bayway avenue, the proposed outlet for the sewer. It is about seven miles from Carteret to Bayway avenue. Going east from Bayway avenue is located

- No. 14. The Bowker Fertilizer Works.
 - No. 15. The Manhattan Oil Exchange.
- This brings us to where the B. & O. bridge is placed over the river. The next is Clifton street city docks.
- No. 16. Cook Bros. Lard Oil Refinery.
 - No. 17. Borne & Schminser, oil works.
 - No. 18. Pennsylvania and Delaware Oil Refinery.
 - No. 19. Bliven & Carrington Oil Refinery.
 - No. 20. Herrieder Lumber Yard.
 - No. 21. New York Dry Dock & Transportation Co.

This brings us to the outlet of the Elizabeth river, which is one mile north from Bayway. On the Staten Island shore, opposite the territory just described,

the character of the land is that of salt meadow, and it is about a half to three-quarters of a mile across the meadows before the upland wooded territory is reached. There are no factories or houses on the Staten Island shore, opposite the proposed sewer outlet.

Respectfully submitted,

A. C. HUNT, M.D.,

State Sanitary Inspector.

May 12th, 1899.

To the Board of Health of the State of New Jersey :

GENTLEMEN—Application having been received from Mr. R. S. Sinclair, Chairman, requesting that this board will inspect the site of the proposed outlet of the trunk sewer to be constructed jointly by South Orange and adjoining municipalities, an examination of the locality mentioned in said application has been made in accordance with the provisions of the act approved March 15th, 1899. By reference to the report prepared by Alexander Potter, C. E., consulting engineer, dated September 29th, 1898, it is found that the district for which it is proposed to construct sewers, the discharge of which will flow through the joint outlet, includes territory in the municipalities of Newark, South Orange, Irvington and the townships of West Orange, Millburn and South Orange, and that the total area of the district which it is proposed to drain by this trunk sewer is 16,359 acres, the ultimate population of which it is estimated will be 106,380. The diameter of the proposed trunk sewer is to be 27 inches, and the maximum daily flow of sewage is estimated to be 5,315,000 gallons. The point selected for the outlet of this sewer is the easterly terminus of the street called Bayway, near the southern boundary of the city of Elizabeth, and it is proposed to extend the sewer, by the use of iron pipe, along the bottom of Staten Island sound to a point 200 feet from shore, and to there discharge the sewage at a depth of 20 feet beneath the surface of the water. It is stated that the grade of the trunk sewer from a point 4,071 feet from the terminus will be two feet per hundred feet. At Bayway the land is higher than at any adjoining point on the water front, and the solid ground extends westward along the course of the street. The Arthur Kill, near the point chosen for the outlet of the sewer, is about 800 feet in width, and it has an average depth of not less than 17 feet, with a channel 20 feet to 24 feet deep. The tidal flow is strong and rapid in this portion of the sound, incoming tides passing northward to Shooters Island, at which point they meet the waters which enter through the Kill von Kull. From an examination of the currents in the sound it is found that the flood-tide carries suspended matters as far northward as Newark bay, and on the ebb-tide they are carried out through the Kill von Kull and the Arthur Kill, the strong current permitting little opportunity for deposit on the banks.

Assuming that the width of the Arthur Kill at Bayway is 800 feet, that its average depth is 17 feet, and that the velocity of the tidal movement is three miles per hour, it is found that the maximum discharge of sewage bears to the volume of water passing through the sound the proportion of 1 to 7,297. The Staten Island shore of the Arthur Kill is low and swampy, and is free from buildings from a point opposite Carteret to the Staten Island ferry. Directly opposite Bayway the low lands extend back about one-half mile from the sound, and the nearest buildings on Staten Island are located at Old Place. Along the New Jersey side of the sound the shore front is nearly all occupied

by factories from Carteret to the Elizabeth river. It appears from the examination made of the above-described site of the proposed outlet into tide water of the joint sewer for South Orange and adjacent municipalities that the location of said site is well adapted to the purpose, and there seems to be no reason to believe that the proposed discharge of sewage at this point will create a nuisance. As a precaution against objections which may arise in future, because of the deposit of sedimentary matters in the waterway, or because of the presence of crude sewage in the waters of the sound, it is advisable that the plans for the construction of this system of sewers shall include provision for the partial purification of the sewage, should necessity or public sentiment demand such a measure at any time hereafter.

Very respectfully,

L. DENNIS,
HENRY MITCHELL,
Committee.

Trenton, N. J., June 19th, 1899.

By direction of the Board the following communication was forwarded to the authorities of the city of Elizabeth :

OFFICE OF THE BOARD OF HEALTH
OF THE STATE OF NEW JERSEY,
TRENTON, June 30th, 1899. }

Hon. W. A. M. Mack, Mayor, Elizabeth, N. J.:

DEAR SIR—The Board of Health of the State of New Jersey has received a communication signed by R. S. Sinclair, notifying said Board that the Joint Sewerage Committee, representing the city of Newark, town of Irvington, borough of Vailsburgh, village of South Orange and the townships of South Orange, Millburn and West Orange, propose to construct sewers in accordance with plans devised by Alexander Potter, C. E., and it is further stated in said communication that it is proposed to discharge the sewage from said sewers through a joint trunk-sewer into Staten Island Sound, at the end of Bayway, city of Elizabeth.

The said State Board of Health has caused an examination to be made of the locality where it is proposed to discharge the sewage from the said trunk-sewer, and a report of said examination was presented at a meeting of said Board, held June 19th, 1899, at which time the said Board, by motion, authorized the issuance of the following certificate, in compliance with the provisions of section 5 of chapter 36 of the Laws of 1899 :

“This certifies that, in the judgment of the Board of Health of the State of New Jersey, the discharge of sewage into Staten Island Sound, at Bayway, in the city of Elizabeth, in accordance with the plans submitted to this Board, prepared by Alexander Potter, C. E., for the Joint Sewerage Committee representing the city of Newark, town of Irvington, borough of Vailsburgh, village of South Orange and the townships of South Orange, Millburn and West Orange, will not in any manner prejudice or impair the health or comfort of the inhabitants of the State of New Jersey.”

Very respectfully,

HENRY MITCHELL,
Secretary.

C. F. BRACKETT,
President.

Inspection of Public School Buildings.—The inspection of public school buildings has been continued from time to time, and the following reports of two of these inquiries is here presented because they deal with one of the errors in the construction of new school buildings which is frequently observed, and also because the mistake of placing privy vaults within or beneath public school buildings is still being made.

(Copy.)

To the Board of Health of the State of New Jersey:

GENTLEMEN—In accordance with a request received from the board of health of the township of West Orange an inspection was made December 12th, 1898, of the method employed in the Washington street public school building for the disposal of excreta. This application of the township board of health was made in response to a complaint signed by twenty-eight residents of the locality in which the school building is located. Following is a copy of the complaint:

(Copy.)

“WEST ORANGE, N. J., November 23d, 1898.

“To the West Orange Board of Health:

“GENTLEMEN—We, the undersigned, citizens and tax-payers of the vicinity of Washington Street School, humbly petition your Honorable Body to abate the nuisance occasioned by the disposal of sewage of the above-mentioned school.

We are satisfied, from the fumes and terrible odor emanating from said disposal, that it is causing disease in this neighborhood.

Respectfully yours,

GEORGE H. HARRISON, Washington street.
CHAS. E. SULLIVAN, Eagle Rock avenue.
FRANK H. BRODEUR, Washington street.
THOMAS W. JONES, Washington street.
LOUIS E. CONNIT, Washington street.
CHRISTIAN WOOLFLE, Llewellyn avenue.
JOHN MACTER, Valley Road.
HENRY J. SCHLAMP, Watchung avenue.
EZRA C. WILLIAMS, Watchung avenue.
W. A. FLINT, Watchung avenue.
MARY A. HEIBUGER, Llewellyn avenue.
ARTHUR F. KIRSTEN, Llewellyn avenue.
FREDERICK HEIBERGER, Llewellyn avenue.
PETER DINGNAM, Llewellyn avenue.
MRS. MORRISROE, Llewellyn avenue.
MARY F. SULLIVAN, Eagle Rock avenue.
MRS. SAMUEL SNAREZ, Eagle Rock avenue.
FREDERICK STEIN, Llewellyn avenue.
AGNES D. HEIBERGER, Llewellyn avenue.
GEORGE M. DALY, Llewellyn avenue.
E. E. WEBER, Llewellyn avenue.
JOHN KENNEDY, SR., Ridgehurst road.
THEO. HEISE, Llewellyn avenue.
FRANK DEPAOL, Llewellyn avenue.
F. MASON, Llewellyn avenue.
FRANK MASON, JR., Llewellyn avenue.
JOHN McDONALD, Llewellyn avenue.
JOHN KENNEDY, JR., Ridgehurst road.

Upon inspection, the following conditions were observed :

The school building is a fine modern brick structure, two stories high, located at the junction of Washington street, Valley Road and Eagle Rock avenue. It has a well-lighted basement, having a firm and smooth concrete floor; a hall sixty feet by eighty feet; one class-room thirty feet by forty feet, and three class-rooms thirty-eight feet by thirty-five feet. The total number of pupils attending the school is 283, there being alteration in the attendance of some of the classes. The water-supply is taken from the mains of the West Orange Water Co. Waste fluids are disposed of by discharging them into an unventilated leaching cesspool located about forty feet from the building. The boys' urinal and one teachers' water-closet also discharge into the cesspool. The building is heated and ventilated by a Fuller-Warren apparatus, and excreta is deposited in pits in the basement constructed by the Fuller-Warren Company, said pits being connected with the ventilating stack by flues placed beneath the floor of the basement. It is the practice of the janitor to burn the excreta once each week, and the gases and unconsumed portions of the excremental material which escape from the chimney produce the offensive odors and cause the deposits upon the neighboring roofs which are complained of by the persons whose names are attached to the petition. The offensive odors are not observed by persons in the school building, but they are said to be perceptible at a distance varying from three hundred to fifteen hundred feet from the school premises. It is stated by some of the complainants that the water of cisterns attached to their dwellings is rendered offensive to the sense of smell by the unburned particles contained in the smoke from the school-house chimney, which settle upon the roofs from which the cisterns are filled. It will be seen that the conditions in West Orange are similar to those which have been brought to the attention of this board in numerous other instances where a nuisance has been created by the storage of excrement in the school buildings, and by attempts at disposal of this material by first covering it with kerosene oil and then igniting the mass. Both of these proceedings violate the principles upon which are founded approved measures for the removal and disposal of waste products. If these pits for receiving excreta in the basements or cellars of school buildings which have within the past few years been constructed in connection with certain popular heating appliances were called by their true names, *privy vaults*, instead of being known by the somewhat mysterious designation "dry closet system," it is probable that but few would have been introduced, for who would consent to place a privy and its abominable vault, generally regarded as almost intolerable even in the back end of back yards, in the cellar of a school building where his child or children of his friends and neighbors will pass several hours daily?

Probably no one could be found who would vote to allow such a detestable contrivance to be placed in a school building, yet the "dry closet" differs from the disgusting and dangerous back-yard privy only in its having connection with a ventilating flue. Many of these "dry closets" have been replaced by earth closets or other devices, because they were found after trial to be objectionable, but in almost every such instance considerable difficulty has been encountered in efforts to secure the disuse of these structures owing to the fact that they were introduced at considerable cost to the taxpayers, and because

the persons responsible for their introduction are naturally loth to reverse their own recorded judgment.

Experience has shown that these basement privy vaults do not constitute efficient furnaces, for the slow combustion permits the escape of the liberated but unconsumed gases from the chimney, and they are carried by the air currents to various and often unexpected points. The odors from smouldering ordure are offensive past comparison, and pollution of the atmosphere from this source constitutes a nuisance which is unspeakably revolting to human beings. In the case of Public School No. 5 in the city of Bayonne, where the construction of the plant was similar to the one now under consideration, the contaminated air not only created a nuisance in the dwellings situated near to the school building, but the vile particles escaping from the chimney-top were whirled downward at times, entering the fresh air intake for the class-rooms and causing an unendurable and indescribable stench in the school building itself.

As before stated the objections to this method of disposal of excreta do not alone consist in the employment of an unsuitable furnace for cremation, but they also apply to the storage of this material in the buildings. This board has repeatedly assented to the opinion that excreta shall be removed from dwellings and public buildings as soon as possible and conveyed away as far as possible. The construction in the case of the Washington street school building in West Orange is simply that two privy pits have been built below the level of the cellar floor, and as before stated the only difference of consequence between these privy pits and other structures of this sort which are usually found in back yards in unsewered districts is that a flue connects the pits in the school basement with a chimney in which a fire is presumed to be constantly burning. If, by chance, because of some irregularity in the habits of the janitor, the exhaust flue becomes cold, or if the draught for any other reason is insufficient, the school basement privy pit emits its gases upward through the building in precisely the same manner that such pits have created nuisances time-out-of-mind. There is nothing to warrant the construction or continuance of a receptacle of this character inside of school buildings except the financial interests of the makers or dealers who sell these outfits, or the failure on the part of the purchasers to realize that a "dry closet" is just a plain privy vault. It was once the claim of the agents for these "dry sanitary closets" that the constant passage of air over the excreta would evaporate the urine, but it is found that cesspools are almost invariably added, for after the pit has stood full of fluid for a few months some conduit to carry off the liquids is generally considered to be a matter of necessity by those who have charge of the building.

The facts and evidence herein presented justify the recommendation that the further storage of excreta in the basement of the Washington Street School, West Orange, and also the periodical product of noxious odors by incomplete cremation of the filth on that premises should be abandoned, and some safe substitute for the present defective construction should be furnished. It is manifestly inappropriate for either the local or State health authorities to specify the construction which is best suited to the conditions which exist in this case, the proper relation of the West Orange board of health to the improvement of the defects herein described, being indicated in the act of the Legislature approved February 25th, 1889. Under this act an ordinance may

be passed "to compel, prescribe, regulate and control the plumbing, ventilation and drainage of all buildings, public and private," and if no such ordinance has yet been adopted in the township of West Orange, it is advisable that the board of health shall at once proceed to consider and agree upon such a measure, and to then exercise the influence and control which the Legislature has directed that health boards shall render to prevent errors in the construction and management of drainage and ventilation appliances.

Very respectfully,

HENRY MITCHELL, Sec.

TRENTON, N. J., December 22d, 1898.

(COPY.)

OFFICE OF THE BOARD OF HEALTH
OF THE STATE OF NEW JERSEY,
TRENTON, April 7th, 1899. }

To the Board of Health of the State of New Jersey:

GENTLEMEN—In response to a request received from Dr. Henry A. Pulsford, of South Orange, Secretary of a committee of the Board of Health, an inspection of the Columbia Public School building, located on Irvington avenue, corner of Academy street, in the village of South Orange, was made March 31st, 1899, and the following conditions were observed:

The building is warmed by two separate heating systems, the older portion of the structure being warmed with hot-water pipes, there being both direct and indirect radiators, and the newer portion of the building being furnished with a supply and exhaust fan-system, and with hot-air furnaces.

For the reception, storage and disposal of excreta, with which the heating devices have no direct relation, receptacles have been constructed in the basement (one for the male and one for the female departments of the school), and these receptacles are each connected with a separate chimney. In each chimney a small furnace is placed for the purpose of increasing the draft of the flue. At the time the inspection was made, both of these chimneys were operating satisfactorily, a good draft being maintained through the receptacles in which excreta is deposited, and also through the spaces left for the admission of air in the urinal on the boys' side of the building.

It was stated by Dr. Pulsford, and also by Dr. Heberton, and the janitor of the building, all of whom were present at the inspection, that offensive odors are observed in the building from time to time, and that these odors have been traced to the receptacles before referred to.

Provision is made for burning out the contents of said receptacles at periodical intervals, but it was learned that no excrement had been burned or otherwise removed or disposed of on this premises since the opening of the school in the fall of 1898, and the accumulations from that date to the present time still remain in the building.

During several years past the attention of this board has been called occasionally to school buildings having a construction similar in character to the one above described for the storing of excreta, and in every instance the board has looked with disfavor upon devices of this character, for safety against back drafts, due to imperfect construction of the chimney, or to

obstruction to the free passage of wind currents, or to the neglect of the furnace fire, may at any time interrupt the usual discharge of offensive gases through the chimney-flues, and permit said gases to find their way into the various apartments of the building occupied by the pupils. In the case of the school building now under consideration there can be no doubt concerning the accuracy of the testimony showing that at times the gases of decomposition do in fact escape within the building, and there is, therefore, sufficient reason why in this case the system of storing excreta in the basement of the school building should be condemned, and that the conditions above described should be considered a source of danger to the pupils, and a public nuisance. It is, therefore, recommended that the authorities of the village of South Orange be advised to at once cause the said receptacles and urinal, and also all of the said accumulations, to be removed, and to allow no more excreta to be stored in said school building. Inasmuch as a sewer system is already under consideration for this district, it is recommended that the said authorities be further advised to construct for temporary use one or more structures outside of the present school building, and to supply the said structures with suitable boxes or receptacles for receiving excreta, and that an abundant supply of dry earth be provided for the use of the janitor, and that said dry earth shall be added from time to time in such quantities as may be necessary to prevent the emanation of odors from the said material.

Very respectfully,

HENRY MITCHELL,

Secretary.



MAP OF THE STATE OF NEW JERSEY SHOWING THE PRINCIPAL SANITARY DISTRICTS.

The names of places where repositories have been established for the distribution of mailing cases for sending specimens of diseased tissues to the state bacteriological laboratory in Princeton are printed in red ink.

Summary of Reports from Local Boards of Health.

Early in September the following circular was sent to local Boards of Health:

BOARD OF HEALTH OF THE STATE OF NEW JERSEY,
TRENTON, September 1st, 1899. }

To Local Boards of Health:

Section thirty-seven of the act approved March 31st, 1887, reads as follows:

37. *And be it enacted*, That the local board of health of every township, city, borough, town and other municipality, shall, on or before the first day of October in each year, in addition to other reports required, prepare an annual report of the condition of the public health within the limits of its jurisdiction, stating therein any special cause for the deterioration of health or of hazard thereto, and shall therein answer any inquiries which may have been addressed to such local board by the state board of health, and such local board shall forward a copy of such report to the state board of health on or before the fifteenth day of October in each year.

The act approved June 15th, 1895, requires that the annual report of the State Board of Health shall be completed one month earlier than formerly. Local boards are, therefore, urgently requested to forward their reports to us as early as October 1st, if possible.

Local boards are requested to include in their reports replies to the accompanying inquiries.

The State Board of Health desires to publish a comprehensive abstract of the reports of local boards, to show what degree of progress each sanitary district is making in the promotion and protection of the public health, and to this end local boards are requested to make a clear statement of the needs and sanitary defects of their districts, as well as to record the local hygienic advancement and give an account of official duties performed.

Very respectfully,

HENRY MITCHELL, M.D.,

Secretary.

ANNUAL REPORT

OF THE

LOCAL BOARD OF HEALTH OF

1.
(Name of sanitary district.)

County of.....for the year ending October 1st, 1899.

2. Names and addresses of the members and officers:

NAMES.	ADDRESSES.
.....President.	
.....Member.	
.....“	
.....“	
.....“	
.....“	
.....“	
.....Secretary.	
.....Inspector.	
.....“	
.....“	

3. Births and deaths:

[a] Total number of births during year ending June 30, 1899.

[b] Total number of deaths during year ending June 30, 1899.

[c] Number of deaths under one year.

4. Communicable diseases:

[a] Have all cases of communicable diseases been reported to your board by physicians as required by chapter 260 of the laws of 1895?

[b] Has a record been kept by the secretary of your board of all cases of communicable diseases as required by section 2 of chapter 260 of laws of 1895?

[c] Has a weekly statement of all reports of communicable diseases been regularly transmitted to the State Board of Health as provided for in the act above referred to?

NAMES OF DISEASES.	Number of cases reported.	Number of deaths.	Number of houses infected.
Diphtheria.....			
Membranous Croup.....			
Scarlet Fever.....			
Typhoid Fever*.....			
Small-pox.....			
Varioloid.....			

* If typhoid fever has occurred, please state the origin of each case.

5. Water-supply: [a] Source.....
[b] Sources of pollution.....
[c] Average daily quantity used during the year.....
[d] Number of dwellings connected.....
[e] Have any extensions been made?.....
6. Pollution of streams: [a] Names of rivers, brooks or streams in the district from which water is taken for public supply.....
.....
[b] Are any rivers, brooks or streams polluted by:
[1] Cinders or other solid refuse dumped therein or deposited upon the banks?.....
[2] Gas works?.....
[3] Chemical works?.....
[4] Breweries?.....
[5] Creameries?.....
[6] Wool or silk works?.....
[7] Dye works?.....
[8] Paper mills?.....
[9] Laundries?.....
[10] Manure yards?.....
[11] Slaughter-houses?.....
[12] Sewers and drains?.....
7. Sewerage: [a] Total length of sewers.....
[b] Number of premises connected with the sewers.....
[c] Number of premises connected with the sewers during the year ending October 1st, 1899.....
[d] Has there been any extension of the sewers during the year?.....
[e] Where do sewers discharge?.....
8. Garbage, rubbish, offal and ashes: Is the collection, removal and disposal of this refuse satisfactory?.....
9. Slaughter-houses: Any nuisances caused by these establishments?.....
10. Offensive trades:
[a] Are any nuisances caused by offensive trades or manufactories?.....
11. Nuisances: [a] Number investigated during the year.....
[b] Number abated.....
[c] Number of prosecutions for failure to abate nuisances.....
12. Food inspection:
[a] Is the act of March 31, 1887, relating to the sale of impure foods enforced?.....
[b] Is the act of April 23, 1897, and the supplement of April 21, 1898, regulating the sale of milk, enforced?.....
.....
[c] Is a record kept of all persons engaged in the sale of milk?.....
[d] Is a milk inspector employed?.....
[e] Was the spread of disease traced in any case to the sale of contaminated milk?.....
[f] Have any instances of food adulteration come to your knowledge?

- [g] Please communicate fully the facts concerning any cases of disease caused by polluted water, defective ventilation, over-crowding, or other forms of poisoning.....
13. **Dairies and milk depots:** Is there a regular inspection of dairy premises and milk depots in your district? Are records kept of such inspections, and do the records show [a] the character of the water-supply, [b] the methods employed in washing the cans and utensils, and in the [c] collection, [d] cooling, [e] transportation and [f] delivery of the milk?.....
14. **Diseases of animals:**
 [a] Have any cases of diseases of animals occurred?.....
 [b] Has any relation between such diseases and diseases in human beings been observed?.....
15. **Ice:** Is the cutting and the sale of ice controlled under the provisions of the act of March 18, 1885, and the supplement approved March 8, 1888?.....
16. **Vaccination:**
 [a] Is vaccination generally practiced in your district?.....
 [b] Has gratuitous vaccination been offered to the public by your board during the past year?.....
17. **Isolation hospital:** Has your board provided satisfactory facilities for isolating cases of infectious diseases?.....
18. **Suits at law:** Has any law suit been brought by your board for the enforcement of health laws or ordinances? If so, please report so much of the case or cases as may be useful for the guidance of other boards.....
19. **House-to-house inspections:**
 [a] Does your board conduct house-to-house inspections at stated intervals?.....
 [b] Is any record kept of sanitary inspections?.....
20. **New constructions:** Has any hospital, disinfecting plant, garbage furnace or other sanitary institution or apparatus been established?.....
21. **Amount appropriated for uses of board of health**.....
22. **Meetings:** How many meetings have been held by the board during the year?.....
- Signature, official title and
 P. O. address of the person
 filling out this report. }

ATLANTIC COUNTY.

TOWN OF ABSECON.

MEMBERS AND OFFICERS—Elmer C. Bales, Daniel Walters, Jr., Japhet Adams, J. Alton Michell,¹ Jos. S. Smith, Harry Foules, Geo. B. Lutts; T. W. Madden, Inspector.

*Births for the year ending June 30th, 1899, 14; deaths, 15. Deaths under 1 year, 2. Two meetings were held by the board during the year. One nuisance was investigated and abated.

ATLANTIC CITY.

MEMBERS AND OFFICERS—Alfred W. Bailey, M.D., Thos. D. McDevitt, Elwood S. Johnson, Wm. F. Clark, Arthur H. Stiles, Wm. F. Koeneké, F. Brode, H. C. Beck, J. R. Boilett, Alfred T. Glenn.

Births, 370; total deaths, 431; under 1 year, 106. Communicable diseases were reported as follows: Diphtheria, 13; scarlet fever, 6; typhoid fever, 26. There are 3,956 connection of houses and hotels with the public water supply. There are 30 miles of sewers and 4,900 connections. During the year 260 permits for new connections were given. Nuisances investigated, 500, and abatement secured in each instance. Several suits at law have been brought for non-compliance with ordinances. Appropriation, \$5,700. Meetings held, 104.

BUENA VISTA TOWNSHIP.

MEMBERS AND OFFICERS—Alfred Pennock, Buena; Geo. Deape, Folsom; Edmund Smith, Richland; Alfred Chalmers, Vineland; Douglas Reed, Secretary, Buena.

Births reported, 35; total deaths, 16. Under 1 year, 3. Two meetings were held by the board.

¹The births and deaths reported from local health officers do not in all cases correspond with the facts contained in the tables published by the Bureau of Vital Statistics, because in some instances the returns are sent by the physician or midwife to a registrar in some adjoining district.

ATLANTIC COUNTY—*Continued.*

BOROUGH OF BRIGANTINE.

No organized board.

EGG HARBOR CITY.

MEMBERS AND OFFICERS—Geo. F. Breder, Henry G. Regensburg, Theo. H. Boysen, M.D., J. N. Elmer, M.D.; V. P. Hoffman, Secretary.

Births reported, 46; deaths, 36; under one year, 8. Two cases of diphtheria were reported. Ten nuisances were investigated, eight of which were abated. Fourteen meetings were held. Appropriation, \$77.85.

EGG HARBOR TOWNSHIP.

MEMBERS AND OFFICERS—Walter Fifield, Bakersville; Theo. Smith, Scullville; John J. Blackman, Steelmanville; S. C. Edmonds, Linwood; Edmund R. Vickers, Secretary, Bakersville.

Births reported, 24; total deaths, 26; 8 under one year. Seven cases of typhoid fever occurred. Appropriation, \$75.00. Five meetings were held.

GALLOWAY TOWNSHIP.

MEMBERS AND OFFICERS—Harry Filling, Pomerania; C. B. Somers, Oceanville; A. S. Johnson, Port Republic; E. H. Madden, M.D., Absecon; F. W. Somers, Secretary, Oceanville.

Births reported, 51; deaths, 44. One meeting was held.

HAMILTON TOWNSHIP.

MEMBERS AND OFFICERS—L. B. Carson, Andrew Stewart, Ansel Crowel, H. E. James, M.D., Chas. Cain, Secretary. All of Mays Landing.

Births reported, 45; total deaths, 37; under one year, 10. One meeting was held.

ATLANTIC COUNTY--*Continued.*

TOWN OF HAMMONTON.

MEMBERS AND OFFICERS—M. L. Jackson, J. C. Anderson, Chas. Cunningham, M.D., J. T. French, J. H. Garton; J. L. C. Donnell, Secretary; Geo. Bernshouse, Inspector.

Four cases of diphtheria and 3 of typhoid fever were reported. Four meetings were held.

BOROUGH OF LINWOOD.

In the report of this borough the names of the mayor and councilmen are given, and there is no organized board of health.

BOROUGH OF LONGPORT.

There is no organized board of health in this borough.

MULLICA TOWNSHIP.

MEMBERS AND OFFICERS—John D. Carver, Elwood; Alexander McKeon, Pleasant Mills; Chas. Saalman, Egg Harbor City; W. W. Phillips, Assessor, Elwood; John T. Irving, Secretary, Elwood.

Births reported, 20; deaths, 11. One case of typhoid fever occurred. Appropriation, \$50. One meeting was held.

BOROUGH OF PLEASANTVILLE.

MEMBERS AND OFFICERS—Lewis H. Barrett, P. R. Adams, Frank Reiner, Samuel Bartlett, S. B. Jones; John Sanders, Secretary; R. M. Sooy, M.D., Inspector.

One case of diphtheria and 5 of typhoid fever were reported. All of the cases of typhoid fever were traced to polluted well. Three nuisances were abated. Appropriation, \$150. Meetings were held monthly.

ATLANTIC COUNTY—*Continued.*

BOROUGH OF SOUTH ATLANTIC CITY.

MEMBERS AND OFFICERS—Chas. Boggs, D. B. Ristine, J. Norcross, P. J. Gilligan; Chas. Hart, Secretary.

WEYMOUTH TOWNSHIP.

MEMBERS AND OFFICERS—A. Campbell, Tuckahoe; P. W. Flanagan, Tuckahoe; R. L. Barringer, Risley; Randolph Marshall, M.D., Tuckahoe; B. M. Godfrey, Secretary, Tuckahoe.

One meeting was held.

BERGEN COUNTY.

BOROUGH OF ALLENDALE.

MEMBERS AND OFFICERS—M. H. Blauvelt, Peter D. Rapelje, John M. Malinson, S. W. Brainerd, R. R. Letts, M.D., Inspector; Garret G. Smith.

Births, 7; deaths, 6; deaths under one year, 1. The sum of \$30 was appropriated for the uses of the Board. Six meetings were held.

BERGEN TOWNSHIP.

MEMBERS AND OFFICERS—Joseph Linden, Woodridge; Alfred Harry, Woodridge; John B. Laporte, Woodridge; D. L. Sabiello, Woodridge; P. Grueter, Woodridge.

Number of births, 10; number of deaths, 4, one of which was under 1 year. One case of typhoid fever was reported. One nuisance was reported. \$40 was appropriated for the uses of the Board. Seven meetings were held.

BOROUGH OF BERGENFIELDS.

MEMBERS AND OFFICERS—Conrad H. Fricke, John J. Huyler, Fred. Brischacher, Wm. B. May; H. Demarest, Secretary.

BERGEN COUNTY—*Continued.*

Births reported, 13; deaths reported, 3; no deaths under one year. None of the notifiable communicable diseases occurred. Twenty dwellings in the borough are connected with the mains of the Hackensack Water Company. Surface wells supply water for the remainder of the population. There are no sewers. Systematic inspection of the milk-supply is regularly conducted in the borough. The amount appropriated was \$30. Five meetings were held.

BOROUGH OF BOGATA.

MEMBERS AND OFFICERS—A. G. Munn, Peter Bogert, Jr., Mr. McNaughton, Mr. Walters; Peter F. Hopper, Secretary; Wm. S. Hopper, Inspector.

One case of diphtheria was reported.

BOROUGH OF CARLSTADT.

MEMBERS AND OFFICERS—Christian Steinbrenner, Chas. Lonz, Henry Krailing, Jr., Wm. Fleischmann; Herman Foth, Secretary; Ernest F. Sickenberger.

Births reported, 65; total deaths, 43; deaths under one year, 20. Communicable diseases were reported as follows: Diphtheria, 2; scarlet fever, 17. The water-supply of the borough is provided by the Hackensack Water Company and cisterns. About 300 houses are connected with the water mains. Twelve complaints were received, and all nuisances found were abated. Appropriation, \$100. Fifteen meetings were held.

BOROUGH OF CRESSKILL.

MEMBERS AND OFFICERS—E. Tallmad, Wm. Fraiser, E. Deacon, John Rendon, John P. Westervelt, A. C. Demarest; E. B. Westervelt, Secretary; J. B. W. Lansing, M.D., Inspector.

Births reported, 6; total deaths, 8; under one year, 5. Six meetings were held.

BERGEN COUNTY—*Continued.*

BOROUGH OF DELFORD.

MEMBERS AND OFFICERS—W. P. Ackerman, M.D., Oradel; E. Blauvelt, Oradel; T. Knight, Oradel; C. H. Storms, Oradel; Geo. F. Moore, Secretary, Oradel.

Births reported, 11; total deaths, 6; two under one year. A portion of the borough is supplied with water from Hackensack river. About 2 miles of sewers have been laid in the borough, about 35 houses being connected. Three nuisances were abated. Amount appropriated for the board, \$50. Four meetings were held.

BOROUGH OF DUMONT.

MEMBERS AND OFFICERS—O. M. Russell, D. D. Blauvelt, R. S. Dox; J. E. Prall, M.D., Secretary.

Births reported, 17; deaths, 14. One case of diphtheria and one of scarlet fever occurred. Water-supply is furnished to some buildings in the borough by the Hackensack Water Company. Two nuisances were abated. Six meetings were held.

BOROUGH OF EAST RUTHERFORD.

MEMBERS AND OFFICERS—W. E. Ogden, M.D., A. De Vries, A. Bolle; J. J. McGorlick, Secretary; P. A. Jeanneret.

Births reported, 47; deaths, 39; ten under one year. Two cases of diphtheria, 5 of scarlet fever and 2 of typhoid fever were reported. Two hundred and fifty dwellings are supplied with water from Rockland lake. Ten nuisances were abated. Twelve meetings were held.

CITY OF ENGLEWOOD.

MEMBERS AND OFFICERS—Henry Booth, Walter W. Conklin, James Johnson, J. W. Proctor, M.D.; P. F. Kenney, Secretary; Henry Smith, Inspector.

Births, 91; deaths, 76; under one year, 24. Communicable diseases reported: Diphtheria, 2; scarlet fever, 6; typhoid fever, 15.

BERGEN COUNTY—*Continued.*

Total length of sewers, 73,300 feet ; premises connected, 512 ; dwellings connected during past year, 30 ; extensions, 1,360 feet. Appropriation, \$1,000. Monthly meetings are held.

BOROUGH OF FAIRVIEW.

MEMBERS AND OFFICERS—Frederick Schneider, John C. Bush, S. H. Beerman, W. G. Wingerath ; Geo. A. Storms, Secretary,

Births reported, 17 ; total deaths, 13 ; under one year, 4. Two cases of scarlet fever and one of typhoid fever occurred. Four nuisances were abated. Appropriation, \$50. Six meetings were held.

FRANKLIN TOWNSHIP.

MEMBERS AND OFFICERS—John H. Post, Oakland ; John P. Smith, Oakland Daniel Van Houten, Wyckoff ; John W. Ackerman, Secretary, Oakland ; E. W. Hamilton, Inspector, Oakland.

Births reported, 36 ; total deaths, 28 ; under one year, 5. Seven cases of scarlet fever and four of typhoid fever occurred. One nuisance was abated. Two meetings were held.

BOROUGH OF GARFIELD.

MEMBERS AND OFFICERS—Geo. S. Davenport, David Dwyer, Franz Bierman, Joseph Charett ; P. J. Scanlon, Secretary.

Births reported, 57 ; deaths, 49 ; under one year, 6. Fifteen cases of diphtheria, 16 of scarlet fever and 3 of typhoid fever occurred. Fifty-two dwellings are connected with the water mains. Fifty complaints were investigated and action was taken in all cases where nuisances were discovered. Appropriation, \$125. Twenty meetings were held.

BOROUGH OF GLEN ROCK.

MEMBERS AND OFFICERS—John Marinus, Secretary, Ridgewood ; Geo. Berdan, Ridgewood.

BERGEN COUNTY—*Continued.*

The terms of some members have expired and appointments to fill the vacancies have not been made.

CITY OF HACKENSACK.

MEMBERS AND OFFICERS—R. G. Wool, Lemuel Lozier, W. P. Amerman, T. A. Hering; A. E. Conklin, Secretary; Robert Ballagh, Inspector.

Births reported, 162; deaths, 104. Communicable diseases were reported as follows: Diphtheria, 49; scarlet fever, 7; typhoid fever, 1; small pox, 2; varioloid, 2. Sixty-four premises have been connected with sewers during the past year. Thirty nuisances were abated. Appropriation, \$600. Twelve meetings were held.

HARRINGTON TOWNSHIP.

MEMBERS AND OFFICERS—Wm. L. Linderman, Closter; Geo. E. Tooker, Demarest; John W. Van Blarcom, Norwood; Lewis B. Parsell, M. D., Closter; Wm. J. Demarest, Secretary, Norwood.

Births reported, 59; total deaths, 47; under one year, 8. Fourteen cases of scarlet fever occurred. Seven meetings were held.

BOROUGH OF HASBROUCK HEIGHTS.

MEMBERS AND OFFICERS—Frank S. Flagg, E. L. D. Hester, A. K. Goodrich, James S. Valentine, G. B. Gale, M. D.; John G. Martin, Secretary.

Births reported, 10; total deaths, 10; under one year, 1. Four cases of scarlet fever were reported. One hundred cases of measles occurred, and three cases of varicella were reported. Appropriation, \$100. Eight meetings were held.

BERGEN COUNTY—*Continued.*

HILLSDALE TOWNSHIP.

MEMBERS AND OFFICERS—Edwin L. Greenin, Hillsdale; Geo. H. Seaman, River Vale; Sanford Bogert, Hillsdale; John A. Storms, Secretary, Hillsdale.

Population estimated at 1,000. Four cases of diphtheria, one of membranous croup, nine of scarlet fever and six of typhoid fever occurred. Five meetings were held.

HOHOKUS TOWNSHIP.

MEMBERS AND OFFICERS—James Devine, Samuel May, Henry A. Winter; John Ackerman, Secretary; Jacob J. Young, Inspector, all of Mahwah.

Births reported, 54; total deaths, 41; under one year, 10. Eleven cases of scarlet fever and one of typhoid fever were reported. Two nuisances were abated. Appropriation, \$100. Two meetings were held.

BOROUGH OF LITTLE FERRY.

MEMBERS AND OFFICERS—George Soll, Charles Heuer, John Clausen, Sr.; Henry C. Elsing, M.D., Inspector; A. Woods, Secretary.

Births reported, 16; total deaths, 12; under one year, 9. One case of diphtheria and 3 of typhoid fever were reported. One nuisance was abated. Six meetings were held.

BOROUGH OF LODI.

MEMBERS AND OFFICERS—James J. Mason, Walling Van Vorst, Christopher Tattersall, John Hagerty, E. E. Conover, M.D.; Jacob Van Hook, Secretary.

Births reported, 45; total deaths, 31; under one year, 7. One case of diphtheria, 30 of scarlet fever and 2 of typhoid fever were reported. Eighty dwellings are connected with the public water-supply. Two nuisances were abated. Appropriation, \$150. Eighteen meetings were held.

BERGEN COUNTY—*Continued.*

LODI TOWNSHIP.

MEMBERS AND OFFICERS—Charles Kienzly, Herman Schmidt, John Schulz; Julius Pries, Secretary.

Births reported, 6; total deaths, 5; under one year, 2. Four cases of scarlet fever were reported. Two meetings were held.

BOROUGH OF MAYWOOD.

MEMBERS AND OFFICERS—Philip Thorne, G. L. Jaeger, D. S. Price, Charles Schminke; F. T. May, Secretary.

One case of scarlet fever was reported. Two meetings were held.

MIDLAND TOWNSHIP.

MEMBERS AND OFFICERS—David H. Hopper, Hackensack; John G. Zabriskie, Rochelle Park; John W. Winters, Oradell; Wm. L. Vroom, M.D., Ridgewood; Nicholas G. Hopper, Secretary, Ridgewood.

Births reported, 21; total deaths, 45; under one year, 4. Eleven cases of diphtheria were reported. Two meetings were held.

BOROUGH OF MIDLAND PARK.

MEMBERS AND OFFICERS—Thomas Holt, John Guyre, John Klopman, Jacob Leenas, Secretary; Hendrick Deiphuis, Inspector.

Births reported, 33; deaths, 20. Two cases of diphtheria and one of scarlet fever were reported. Three meetings were held.

BOROUGH OF MONTVALE.

No organized board of health.

BERGEN COUNTY—*Continued.*

ORVIL TOWNSHIP.

MEMBERS AND OFFICERS—Harvey Springstead, Waldwick; A. Z. Demarest, Hohokus; J. W. Quackenbush, Waldwick; B. A. VerNooy, M.D., Waldwick; J. B. VerNooy, Secretary, Waldwick.

Three cases of diphtheria and 2 of scarlet fever were reported. Two nuisances were abated. Appropriation, \$75. Two meetings were held.

OVERPECK TOWNSHIP.

MEMBERS AND OFFICERS—Mr. Leinweber, J. W. DeGroat, Hugh Innes; H. C. Elsing, M.D., Inspector; Carl Hallberg, Secretary.

Two cases of diphtheria were reported, with 1 death. Twelve nuisances were abated. Appropriation, \$100. Two meetings were held.

PALISADE TOWNSHIP.

MEMBERS AND OFFICERS—James E. Collins, New Bridge; Gustav Buck, Deetzburg; J. B. Christie, River Edge; Dr. Ackerman, Oradell; Wm. Ely, Secretary, New Bridge.

Two cases of membranous croup were reported. Four meetings were held.

BOROUGH OF PALISADE PARK.

G. W. Gardner, borough clerk, informs us that the incorporation of this borough occurred November 22d, 1899, and no board of health has thus far been appointed.

BOROUGH OF PARK RIDGE.

MEMBERS AND OFFICERS—H. C. Neer, M.D., Emil Fruhn, Adolp Barkerding, Wm. Park; Henry Strohsahl, Secretary; Wm. G. Woodley, Inspector.

BERGEN COUNTY—*Continued.*

Total deaths, 18. Under 1 year, 7. Two cases of scarlet fever and five of typhoid fever were reported. Appropriation, \$50. Four meetings were held.

BOROUGH OF RIDGEFIELD.

MEMBERS AND OFFICERS—B. F. Underwood, M.D., W. B. Rurckart, J. C. McGill, B. S. Tedmon; M. A. Lemm, Secretary.

Seventy-seven dwellings are connected with the water mains. About fifty dwellings have sewer connections. Fourteen meetings were held.

BOROUGH OF RIVERSIDE.

MEMBERS AND OFFICERS—John A. Jenkins, Cherry Hill; Geo. Sulter, River Edge; Frank Pierce, River Edge; W. W. Herrick, Secretary, River Edge.

One case of typhoid fever occurred. Thirty-five premises are connected with the Hackensack Water Company's mains. Appropriation, \$75. Ten meetings were held.

BOROUGH OF RUTHERFORD.

MEMBERS AND OFFICERS—Chas. Van Winkle, Jos. C. Sares, Chas. Colhoun, M.D., Geo. B. Gale, M.D.; F. E. Milner, Secretary.

Two cases of diphtheria, seventeen of scarlet fever and two of typhoid fever were reported. Appropriation, \$250. Fourteen meetings were held.

BOROUGH OF SADDLE RIVER.

MEMBERS AND OFFICERS—W. Savage, B. O. Blenis, A. H. Ackerman.

One meeting was held.

BERGEN COUNTY—*Continued.*

SADDLE RIVER TOWNSHIP.

MEMBERS AND OFFICERS—W. H. Ackerman, Warren Point; Sela Doremus, Dundee Lake; John Strehl, Fair Lawn; S. Chittenden, Secretary, P. O. Box 628, Paterson.

Births reported, 32; total deaths, 19; under one year, 2. Three cases of diphtheria and three of scarlet fever were reported. Three nuisances were abated. Twelve meetings were held.

TEANECK TOWNSHIP.

MEMBERS AND OFFICERS—P. J. Ackerman, Hackensack; Wm. Bennett, Englewood; H. J. Brinkerhoff, Englewood; J. Hawkins, Secretary, Englewood.

BOROUGH OF TENAFLY.

MEMBERS AND OFFICERS—J. J. Haring, M.D., S. G. Clarke, Richard Delahanty, F. L. Colver; J. B. W. Lansing, M.D., Secretary.

One suit was brought for violation of sanitary code and a penalty of \$25 collected. Appropriation, \$1.20. Six meetings were held.

UNION TOWNSHIP.

MEMBERS AND OFFICERS—David Machette, James McKenna, John Kehoe, Thos. E. Buckley, all of Lyndhurst.

BOROUGH OF UPPER SADDLE RIVER.

MEMBERS AND OFFICERS—John H. Straut, Ramsey; Edward Smith, Ramsey; John Swarty, Saddle River; Herman T. Hopper, Saddle River; H. Zabriskie, Secretary, Saddle River.

Three meetings were held.

BERGEN COUNTY—*Continued.*

WASHINGTON TOWNSHIP.

MEMBERS AND OFFICERS—Daniel Omara, Peter J. Westervelt, Edward C. Sarson, Nicholas Cleveland, Secretary; all of Westwood.

Births reported, 7; total deaths, 7; under one year, 3. One case of diphtheria and five of scarlet fever were reported.

BOROUGH OF WOODCLIFF.

MEMBERS AND OFFICERS—S. B. Reed, Wm. English, J. H. Wortendyke, David Tice, G. J. Ackerman; G. J. Wortendyke, Secretary.

BOROUGH OF WOODRIDGE.

MEMBERS AND OFFICERS—Jos. H. Schmitt, E. C. Sirovanna, F. J. Rohde, Wm. H. White, Secretary; H. W. Ostrouski, Inspector.

Births reported, 12. Total deaths, 12; under 1 year, 2. Three cases of scarlet fever were reported. About 50 dwellings are connected with the public water-supply. Appropriation, \$50. Ten meetings were held.

BURLINGTON COUNTY.

BASS RIVER TOWNSHIP.

MEMBERS AND OFFICERS—John A. Mathis, New Gretna; Ellis Matthews, New Gretna; John D. Sooy, Wading River; A. E. Mathis, Secretary and Assessor, New Gretna.

Communicable diseases are not satisfactorily reported. Fifteen cases of scarlet fever and 1 of typhoid fever occurred. Thirteen meetings were held by the board.

BURLINGTON COUNTY—*Continued.*

CITY OF BEVERLY.

MEMBERS AND OFFICERS—J. J. Curry, M.D., R. P. Harris, Geo. A. Smith, Wm. K. Newkirk, Chas. S. Ransom, Jr.; B. F. Soby, M.D., Secretary; C. F. Richardson, Inspector.

Births reported, 45; deaths, 60. Cases of communicable diseases were reported as follows: Diphtheria, 5 cases; scarlet fever, 7 cases. The city is supplied with water pumped from the Delaware river and from surface-wells. Twenty nuisances were reported. Seventy-five dollars was appropriated for the use of the board. Seventeen meetings were held.

BEVERLY TOWNSHIP.

MEMBERS AND OFFICERS—W. T. Baggs, Beverly; W. W. Weiler, Delanco; Robert Stewart, Beverly; Jos. B. Carter, Secretary, Delanco; H. K. Weiler, M.D., Delanco.

Births reported, 3; total deaths, 24. Six deaths under 1 year. Two fatal cases of diphtheria were reported. One nuisance was investigated and abatement was secured. The board held monthly meetings.

CITY OF BORDENTOWN.

MEMBERS AND OFFICERS.—L. D. Tebo, M.D., Edwin L. Thompson, David R. Brown, Samuel E. Burr, Robert T. Bantle; H. N. Jobes, Inspector; Wm. H. Shipp, M.D., Secretary.

Deaths reported, 71. Communicable diseases were reported as follows: Diphtheria, 22; scarlet fever, 6; typhoid fever, 18. The water-supply is still obtained from Crosswicks creek, the pollution of which still continues. The average amount of water pumped is about 400,000 gallons; the number of dwellings connected being 650. The board of health is taking steps to secure the enforcement of the act of April 23d, 1897, regulating the sale of milk. The amount appropriated for the board is \$115. Fifteen meetings were held.

BURLINGTON COUNTY—*Continued.*

CITY OF BURLINGTON.

MEMBERS AND OFFICERS—Franklin S. Carter, Alfred Platt, F. A. Gauntt, M.D., J. B. Cassady, M.D.; Alfred P. Silpath, Secretary; J. F. Clima, Registrar; A. D. L. Adams, Inspector; F. C. Woolman, Attorney.

Communicable diseases were reported as follows: Diphtheria, 7; membranous croup, 1; scarlet fever, 12; typhoid fever, 7. The water-supply is obtained from the Delaware river, about 400,000 gallons being pumped daily. The number of dwellings connected with the water-works is about 600. Garbage is removed by contract. Eight hundred and seven complaints were investigated and 640 nuisances were abated. A new sanitary code was adopted. Amount appropriated for uses of board, \$400. Twelve meetings were held.

CHESTER TOWNSHIP.

MEMBERS AND OFFICERS—Joseph Stokes, M.D., Geo. Brock, A. J. Collins, F. G. Stroud, M.D., Benj. Rogers, Secretary. All of Moorestown.

Births reported, 88; total deaths, 64; under one year, 18. Communicable diseases were reported as follows: Diphtheria, 3; scarlet fever, 19; typhoid fever, 8. Water-supply of Moorestown is taken from Pensauken creek, 125,000 gallons being pumped daily, and 375 dwellings being connected with the mains. About 1,000 feet of water-pipe was laid during the year. Twenty-five complaints were investigated and all nuisances found to exist were abated. Appropriation, \$100. Three meetings were held.

CHESTERFIELD TOWNSHIP.

MEMBERS AND OFFICERS—Charles E. Wallace, Chesterfield; E. U. Ridgway, Crosswicks; Benj. H. Middleton, Crosswicks; Chas. B. Holloway, Secretary, Chesterfield.

Births reported, 9; deaths, 19. One case of scarlet fever was reported. Two meetings were held.

BURLINGTON COUNTY—*Continued.*

CINNAMINSON TOWNSHIP.

MEMBERS AND OFFICERS—Clayton Conrow, Cinnaminson; Howard G. Taylor, Riverton; Isaac Evaul, Palmyra; Timothy Morton, Secretary, Parry; J. D. Janney, M.D., Cinnaminson.

Twenty-five nuisances were investigated and abated.

DELRAN TOWNSHIP.

MEMBERS AND OFFICERS—Franklin Murphy, Bridgeboro; Samuel J. Painter, Bridgeboro; Alexander Bright, Bridgeboro; David A. Kendall, Secretary, Riverton; James Richardson, Inspector, Riverton.

Births reported, 5; total deaths, 23; under one year, 5. Two meetings were held.

EASTAMPTON TOWNSHIP.

MEMBERS AND OFFICERS—Henry Githens, Smithville; Isaac Parker, Unionville; Geo. W. Craig, Secretary, Smithville; Prentice Comegyes, Smithville.

Two meetings were held.

EVESHAM TOWNSHIP.

MEMBERS AND OFFICERS—Wm. J. Evans, J. W. Parnell, Chas. H. Heisler, S. B. Farron, Assessor; P. V. B. Stout, M.D., Secretary. All of Marlton.

BOROUGH OF FIELDSBORO.

MEMBERS AND OFFICERS—Jos. B. Carter, W. I. Leonard, August Zeller, Wm. Leatherbury, Secretary; John Mealey, Inspector.

FLORENCE TOWNSHIP.

MEMBERS AND OFFICERS—Chas. A. Bowne, Burlington; Wm. Kimble, Florence; Walter Scully, Florence; David Baird, Jr., M.D., Florence; John Adams, Secretary, Florence.

BURLINGTON COUNTY—*Continued.*

Births reported, 41; total deaths, 24; under one year, 5. One case of diphtheria occurred. One nuisance was abated. Two meetings were held.

MANSFIELD TOWNSHIP.

MEMBERS AND OFFICERS—John B. Burtis, Georgetown; John H. Day, Kin-kora; Albert Dobbins, Columbus; G. W. H. Calver, M.D., Columbus; Thomas A. Keeler, Secretary, Columbus.

MEDFORD TOWNSHIP.

MEMBERS AND OFFICERS—Wm. M. Potts, Assessor; L. L. Sharp, M.D.; R. S. Braddock, M.D.; J. Reeve, Secretary. All of Medford.

Births reported, 31; total deaths, 50; under one year, 16. Two cases of typhoid fever were reported.

MOUNT LAUREL TOWNSHIP.

MEMBERS AND OFFICERS—R. G. Dudley, Moorestown; R. T. Evans, Masonville; Wm. A. Wilkins, Masonville; Dr. Thorn, Moorestown; W. P. Lippincott, Hartford.

Four cases of typhoid fever were reported. One meeting was held by the board.

NORTHAMPTON TOWNSHIP.

MEMBERS AND OFFICERS—A. A. Anderson, T. L. Atkins, J. S. Shreve, R. H. Parsons, M.D.; M. H. Girven, Secretary, all of Mount Holly.

Seven cases of diphtheria; twelve of scarlet fever, and 2 of typhoid fever were reported. There are $3\frac{1}{4}$ miles of sewers in Mount Holly, one hundred and twenty-five premises being connected. Nuisances abated, 35. Twelve meetings were held.

BURLINGTON COUNTY—*Continued.*

BOROUGH OF PEMBERTON.

MEMBERS AND OFFICERS—J. P. Seaman, Wm. H. Heisler, A. L. Johnson, Earl Lippincott, Andrew Rosbach, George Reiley, Henry B. Ridgeway; James B. Hankins, Secretary.

The foregoing names are those of the mayor and councilmen of the borough, the persons constituting the local board of health.

BOROUGH OF RIVERSIDE.

MEMBERS AND OFFICERS—Edward Schwabenland, Ernest Rien, Alois Hemmerle; W. T. Stecher, Secretary; Emma P. Weeks, M.D., Inspector.

Four cases of typhoid fever occurred. Eight nuisances were abated. Six meetings were held.

BOROUGH OF RIVERTON.

MEMBERS AND OFFICERS—J. C. S. Davis, C. C. Reinhard, A. J. Briggs, W. G. Wilson, Alex. Marcy, Jr., M.D.

Three cases of scarlet fever and one of typhoid fever were reported. Six nuisances were abated. Appropriation, \$100. Seven meetings were held.

SHAMONG TOWNSHIP.

MEMBERS AND OFFICERS—James K. Naylor, Indian Mills; J. W. Crain, Indian Mills; E. E. Bowker, Secretary, Tabernacle.

SPRINGFIELD TOWNSHIP.

MEMBERS AND OFFICERS—John A. Hancock, Columbus; Thos. L. Assy, Jacksonville; Rosha Thompson, Wrightstown; Aaron H. Burtis, Secretary, Mount Holly.

Two nuisances were abated. Four meetings were held.

BURLINGTON COUNTY—*Continued.*

WASHINGTON TOWNSHIP.

MEMBERS AND OFFICERS—J. W. Sooy, Green Bank; J. L. Williams, Wading River; Wm. Taylor, Batsto; J. E. Cary, M.D., Lower Bank; A. E. Koster Secretary, Green Bank.

One meeting was held.

WESTAMPTON TOWNSHIP.

MEMBERS AND OFFICERS—Samuel E. Rogers, Mount Holly; Stewart McFarland, Jr., Mount Holly; Amos Evans, Rancocas; W. L. Martin, M.D., Rancocas; H. B. Haines, Assessor, Rancocas.

WOODLAND TOWNSHIP.

MEMBERS AND OFFICERS—Victor Ritzendollar, Chatworth; J. W. Thompson, South Park; C. H. Pittman, Brown's Mills; Geo. Bogarth, Secretary, Chatworth.

Births reported, 10; total deaths, 6; under one year, 2.

CAMDEN COUNTY.

CITY OF CAMDEN.

MEMBERS AND OFFICERS—J. W. Fithian, M.D., H. F. Middleton, M.D., H. H. Davis, M.D., Reuben H. Gaskill, Charles Watson, S. G. Bushey, M.D., Jos. T. Baer, M.D.; Eugene B. Roberts, Secretary; John F. Leavitt, M.D., Inspector; Henry B. Francis, Inspector; Joseph A. Starr, Inspector.

Births reported, 1,048; total deaths, 1,304. Deaths under 1 year, 314. The following cases of communicable diseases were reported: Diphtheria, 237; membranous croup, 11; scarlet fever, 112; typhoid fever, 322. The public water-supply is obtained from tube-well, 15,000,000 gallons being the average daily pumped. About 85 per

CAMDEN COUNTY—*Continued.*

cent. of the dwellings in the city are connected with the public water-supply.

Total length of the sewers is about 48 miles, with 9,200 houses connected. Premises connected during the past year, 770. During the year about 2 miles of mains have been added.

Refuse materials are removed by the city, and not by contract. Number of complaints investigated, 1,232, and 1,127 nuisances were abated.

Two suits for violation of the sanitary code were instituted. In one case a judgment was found for the city against an individual charged with selling decomposed meat. In the second case a plea of guilty was entered and sentence was suspended. A garbage furnace has been erected during the year. Sanitary inspections are made only upon complaint. Appropriation for the board, \$3,500. Nineteen meetings were held.

CENTRE TOWNSHIP.

MEMBERS AND OFFICERS—Samuel J. Brown, Snow Hill; A. E. Rowand, Chews Landing; Howard M. Haines, Haddon Heights; O. A. Wood, M.D., Magnolia; J. H. Jackson, Secretary, Magnolia.

Births reported, 28; total deaths, 35; under one year, 7. Two cases of typhoid fever were reported. Two nuisances were investigated and abated. Four meetings were held.

BOROUGH OF CHESILHURST.

No organized board of health.

BOROUGH OF COLLINGSWOOD.

MEMBERS AND OFFICERS—John W. Moore, Geo. Lippincott, Albert H. Clark, Frank H. Bond, Robert S. Duff, Secretary; Edward Sheldon, M.D., Inspector; Paul T. Shinn, Attorney.

The following communicable diseases were reported: Diphtheria, 4; scarlet fever, 1; typhoid fever, 4. One suit was brought

CAMDEN COUNTY—*Continued.*

for violation of chapter 260, laws of 1895. Water-supply is obtained from springs near Haddonfield. The number of dwellings connected is 328, and the daily average quantity pumped was 33,000 gallons. Two thousand feet of water-mains were laid during the past year. Ten nuisances were abated. A complete system of sewers is to be introduced. Ten suits were brought by the board, one for violating an ordinance relating to the disposal of cesspool contents, and one for failure to report a case of contagious disease as above stated. Monthly meetings are held by the board.

DELAWARE TOWNSHIP.

MEMBERS AND OFFICERS—John A. Meredith, Haddonfield; Wm. Graff, Haddonfield; Samuel K. Matlack, Haddonfield; Wm. T. Lippincott, Moorestown; W. B. Jennings, M.D., Secretary, Haddonfield.

Births reported, 17; deaths, 13; three under one year. Two cases of diphtheria were reported.

GLOUCESTER CITY.

MEMBERS AND OFFICERS—D. W. Blakie, J. M. Uibel, Geo. W. Turner, Charles Burdsall; D. Lane, Secretary.

GLOUCESTER TOWNSHIP.

MEMBERS AND OFFICERS—Wm. M. Godfrey, Blackwood; Albert J. Druir, Kirkwood; John M. Stetson, Kirkwood; Wm. T. Gibbs, Secretary, Clementon.

One case of diphtheria and one of typhoid fever occurred. One nuisance was abated. Two meetings were held.

HADDON TOWNSHIP.

MEMBERS AND OFFICERS—Samuel Wood, B. A. Lippincott, Chas. Schnitzler, Wm. J. Harrison, Secretary; W. B. Jennings, M.D., Inspector.

CAMDEN COUNTY—*Continued.*

BOROUGH OF HADDONFIELD.

MEMBERS AND OFFICERS—Chas. H. Hillman, E. B. Austin, L. L. Glove, M.D.; Wm. H. Harrison, Secretary; Wm. J. Boning; Wm. B. Jennings, M.D., Inspector.

Births reported, 32; total deaths, 52; under one year, 11. Five cases of diphtheria, two of scarlet fever and three of typhoid fever occurred. Six nuisances were abated. Appropriation, \$80. Monthly meetings were held.

BOROUGH OF MERCHANTVILLE.

MEMBERS AND OFFICERS—D. H. Bartine, M.D., A. H. Moses, J. W. Marcy, M.D., G. C. Mick, F. W. Kleinz; W. B. Stewart, Secretary; J. B. Wilson, Inspector.

Appropriation, \$325. Monthly meetings are held.

VOORHEES TOWNSHIP.

MEMBERS AND OFFICERS—E. C. Gardner, Kirkwood; John McCulley, Kirkwood; Wm. R. Haines, Marlton; S. H. Gardner, Secretary, Ashland.

Two cases of scarlet fever occurred. One meeting was held.

WATERFORD TOWNSHIP.

MEMBERS AND OFFICERS—M. D. Beckley, Berlin; Frank Ware, Atco; Samuel Mitten, Berlin; F. O. Stem, M.D., Berlin; M. S. Bittle, Secretary, Berlin.

Births reported, 53; total deaths, 41; under one year, 15. Two cases of typhoid fever were reported.

WINSLOW TOWNSHIP.

MEMBERS AND OFFICERS—Clarence Hoag, Waterford; Joseph Strock, Cedar Brook; George Ware, Sicklerville; M. G. Burdsall, Secretary, Wilton.

Appropriation, \$25. Two meetings were held.

CAPE MAY COUNTY.

CITY OF CAPE MAY.

MEMBERS AND OFFICERS—A. L. Leach, M.D., L. M. Hall, A. B. Little, Geo. L. Lovett, Lewis T. Stevens, Secretary; J. Stratton Ware, Attorney; Geo. Young, Inspector.

Two cases of scarlet fever and one of typhoid were reported. Sources of water-supply are artesian and surface wells. About one million gallons of water are pumped daily and two hundred dwellings are connected with the mains. About one hundred dwellings are connected with the sewers, ten having been connected during the past year. Fifteen complaints were investigated and all nuisances found were abated. Appropriation to board, \$150. Fifteen meetings were held.

BOROUGH OF HOLLY BEACH.

MEMBERS AND OFFICERS—Wm. H. Bright, C. F. Dyce, G. Anderson, C. Colbury; A. C. Pentland, Secretary.

Three nuisances were abated. Four meetings were held.

LOWER TOWNSHIP.

MEMBERS AND OFFICERS—Geo. Dickinson, A. B. Walters, James H. Thomas, W. A. Lake, M.D.; Wm. C. Rutherford, Secretary.

One case of scarlet fever was reported. Three nuisances were abated. Appropriation, \$125.

MIDDLE TOWNSHIP.

MEMBERS AND OFFICERS—D. N. Errickson, Dias Creek; L. M. Swain, Swainton; Chas. Ross, Cape May; Julius Way, M.D., Cape May; Stillwell H. Townsend, Secretary, Cape May.

One meeting was held.

CAPE MAY COUNTY—*Continued.*

OCEAN CITY.

MEMBERS AND OFFICERS—Luther Wallace, B. R. Smith, T. C. Hutchison, M.D., Jesse Conover; Wm. Lake, Secretary.

Births reported, 36; deaths, 17. Appropriation, \$200. Twelve meetings were held.

BOROUGH OF SEA ISLE CITY.

MEMBERS AND OFFICERS—Charles Clouting, Alfred Steelman, Frank G. Rachor, M. Davis, M.D.; H. A. DeRoche, Secretary.

BOROUGH OF SOUTH CAPE MAY.

MEMBERS AND OFFICERS—Peter Day, P. M. Walton; F. S. Rutchman, Secretary.

One meeting was held.

UPPER TOWNSHIP.

MEMBERS AND OFFICERS—Anthony B. Smith, Beasley's Point; B. E. Smith, Tuckahoe; W. Van Gilder, Petersburg; A. G. Carson, Assessor, Palermo; R. Marshall, M.D., Tuckahoe; Jesse T. Young, Secretary, Beasley's Point.

Two meetings were held.

BOROUGH OF WEST CAPE MAY.

MEMBERS AND OFFICERS—T. H. Hughes, L. Eldridge, E. Phillips, F. Newkirk, A. G. Stevenson, Eldridge.

BOROUGH OF WILDWOOD.

MEMBERS AND OFFICERS—G. J. R. Miller, M.D., John N. Reeve, J. E. Harris, J. DuBois; N. S. Hays, Secretary; W. H. Washburn, Inspector.

CAPE MAY COUNTY—*Continued.*

Water is obtained from artesian wells, supplying about 10,000 gallons a day, 88 dwellings being connected. About 6,000 feet of sewers have been laid, and 41 premises have sewer connection. One nuisance was abated. Eight meetings were held.

CUMBERLAND COUNTY.

CITY OF BRIDGETON.

MEMBERS AND OFFICERS—Ellsmore Stites, M.D., President; Theodore G. Davis, M.D., J. C. Applegate, M.D., Jacob G. Streets, M.D., Wm. H. Ballenger Charles E. Bellows, Jesse C. Davis; Isaac T. Nichols, Secretary.

The President of the board writes as follows:

The health of our city is at a high point. The great decrease of typhoid fever, together with contagious diseases generally, cannot help but attract the attention of our people. No one of us can deny that since the attention of our general public was called to the subject of polluted wells, how their condition was brought about, and how prevented, and how remedied, that even the most illiterate have been more careful, as a matter of course they would be, if for no other reason than from fear. Call the people's attention to these matters and if they do not respond upon first call, do so again and again, and sooner or later we will impress them with the necessity of giving them some attention. This is well illustrated in the matter of the South East avenue drainage upon our city water plant. Our city council has been somewhat slow, but is now remedying an evil that might have been serious. For this our board should be duly thankful. The dumping of trash upon lots in our city limits has been carefully looked after, and nuisances generally have been watched and abated, so that at present the condition of our city is as good as could be well expected under existing circumstances, and to all of these precautions I am forced to ascribe the low death-rate of our city.

CUMBERLAND COUNTY—*Continued.*

The scavenger system is very unsatisfactory, and it seems to be a choice of evils, either to have our privy-vaults and cesspools cleaned in a very unsatisfactory and crude manner, or to not have them cleaned at all. To my knowledge, I know of but one scavenger who is to be considered well appointed and equipped for this work. It seems to me if we could induce some public-spirited individual to interest himself in the matter and would properly equip himself for the work, with the understanding that he should be given the exclusive right for, say a period of five years, by this board, that it would not only be a financial success to himself, but a great boon to the health and comfort of the city.

Registration of cattle, as provided for in our code, is a matter that should be attended to, and that, by all means; the excuse has been lack of appropriation.

There are, of course, many other matters that might be mentioned, chief among which is vaccination, and this, I might say, we must watch carefully, for small-pox is quite prevalent in the country, and should we be unfortunate enough to have a case imported, we would be in a serious dilemma; but all we can do at present is to keep the matter before the people, and wait their pleasure—sooner or later their co-operation will come, and I hope before the actual necessity demands it. I feel well pleased with the progress of the work of the board during the year. More work has been done, because it is easier to do. People are getting a better understanding of health matters. They are asking what to do and how to do it.

The Secretary of the board says:

For the year ending June 30th, 1898, 48 cases of typhoid fever were reported, showing a decrease of 8 cases this year, and 1 death less than last year. Scarlet fever cases remain exactly the same, 24. Diphtheria cases, 26, an increase of 11. Total deaths, 189.

Death rate for the year, the city of Bridgeton now having an estimated population of 15,000, is a fraction less than 13 per thousand, the lowest in the history of the town in proportion to number of inhabitants.

The Secretary has received reports of the following diseases:

CUMBERLAND COUNTY—*Continued.*

Diphtheria.....	26 cases, 2 deaths.
Membranous Croup.....	1 " 1 "
Measles	5 " 0 "
Rotheln or Rubella	3 " 0 "
Scarlet Fever.....	28 " 0 "
Typhoid Fever.....	40 " 7 "
	103

The board now has 15 licensed scavengers and garbage collectors. The city is in an unusually healthy condition, more so than at any other period in its recent history.

The sanitary inspector says :

During the last week in April, and the second inspection during the second week in May, notification was given to landlords and tenants to have the yards, cellars, cesspools and privies on their premises cleaned prior to the 15th of May. In most cases this order has been promptly complied with, but in a few instances it has been necessary to give second notice.

The investigation and abatement of nuisances has, as in former years, been an important part of our work, the bulk of the complaints received during the year being due to the waste-water nuisance. It is gratifying to note that the city authorities are seeing the pressing need of a system of sewerage for our city. The system is now being extended quite rapidly and in its present shape it has enabled the board to abate several old and grievous nuisances in the centre of the city. But what of the future? Is the plan now being pursued a wise one, when no permanent disposition of the sewage seems to be considered at all? The plan now being pursued allows the sewage to flow into a circuitous stream with low, marshy banks and a slow current. Is there not a strong probability that trouble will arise from fouling the shores? The same methods adopted in other communities have resulted in its abandonment. Disposal beds, within the city limits, in my judgment, offer the best solution to the problem.

In my two previous reports I have called the attention of the board to the large number of children of school age who were unvaccinated. For some time no notice was taken of this fact, but after a committee appointed by our board brought the matter before the board of education, the following resolution was unanimously adopted by said board :

CUMBERLAND COUNTY—*Continued.*

"That the Board request that all scholars be vaccinated and in case of an outbreak of small-pox no unvaccinated child should be allowed to attend school so long as there is a single case of the disease in the city."

Particular attention has been paid during the early spring to the dumping-grounds for the rubbish of the city, resulting in a marked improvement on and about them.

The pressing needs for the future advancement of sanitation in this city are :

First, the present method of disposal of rubbish is a nuisance. The city should own or rent sufficient ground beyond the city limits to be utilized as a dump for city refuse.

Second, an improvement should be effected in the present method of collecting night-soil and cesspool matter.

Third, garbage collection and disposal should be improved.

Fourth, the important work of disinfection should be performed exclusively by the board of health.

DEERFIELD TOWNSHIP.

MEMBERS AND OFFICERS—Elijah R. Parvin, Deerfield street; Chas. Brooks, Finley Station; P. A. Krespack, Rosenhayn; Wm. H. Van Leer, Jr., Deerfield street; Chas. C. Phillips, M.D., Secretary, Deerfield street.

Births reported, 67; total deaths, 31—4 under one year. Two cases of typhoid fever were reported. Five meetings were held.

DOWNE TOWNSHIP.

MEMBERS AND OFFICERS—R. H. Leaming, Newport; Chas. T. Sheppard, Newport; Nathaniel Lore, Dividing Creek; A. P. Glanden, M.D., Newport; Geo. E. Butcher, Secretary, Dividing Creek.

One meeting was held.

FAIRFIELD TOWNSHIP.

MEMBERS AND OFFICERS—John E. Ogden, Geo. B. Williams, Irvin W. Kirk, Ephraim H. Whiticar, Secretary. All of Fairton.

CUMBERLAND COUNTY—*Continued.*

GREENWICH TOWNSHIP.

MEMBERS AND OFFICERS—Wm. H. Glaspey, Geo. W. Sloan, Geo. Watson, S. M. Snyder, M.D.; Morris Bacon, Secretary, Bridgeton.

Births reported, 27; deaths, 26. One case of diphtheria occurred. One meeting was held.

HOPEWELL TOWNSHIP.

MEMBERS AND OFFICERS—John G. Dare, Seeley; J. F. Glaspey, Bridgeton; Philip Hitchner, Shiloh; Walter L. Minch, Shiloh.

No township physician has been appointed. No meeting has been held by the board for two years.

LANDIS TOWNSHIP.

MEMBERS AND OFFICERS—O. H. Adams, M.D., D. H. Burge, A. W. Outhank, Edwin Kyte, Richard Johnson; all of Vineland.

Births reported, 54; total deaths, 88; under one year, 9. One case of diphtheria, one of scarlet fever and ten of typhoid fever have occurred during the year. Two meetings were held.

LAWRENCE TOWNSHIP.

MEMBERS AND OFFICERS—H. C. Newcomb; Ephraim Bateman, M.D., Inspector; Jacob Mulford, Furman Sheppard; Henry S. Long, Secretary. All of Cedarville.

BOROUGH OF LEESBURG.

MEMBERS AND OFFICERS—Jeremiah Smith, Leesburg; Wm. D. Oliver, Port Elizabeth; Jacob B. Lee, Delmont; Henry Reeves, Jr., Leesburg.

CUMBERLAND COUNTY—*Continued.*

CITY OF MILLVILLE.

MEMBERS AND OFFICERS—Edwin Conover, Silas C. Smith, Richard B. Radcliffe, Wm. G. Champion, John W. Wade, M. D., L. H. Hogate, Secretary; Frank Bullock, Inspector.

Births reported, 227; total deaths, 159; under one year, 50. Fourteen nuisances abated. Appropriation, \$200. Six meetings were held.

STOE CREEK TOWNSHIP.

MEMBERS AND OFFICERS—E. H. Sheppard, Roadstown; H. E. Hoffman, Shiloh; E. M. Mulford, Roadstown; Charles D. Fogg, Secretary, Shiloh.

One meeting was held.

BOROUGH OF VINELAND.

MEMBERS AND OFFICERS—Walter Foulk, E. C. Howe, Robert Pond, James Loughran; W. E. Bates, Secretary.

Three cases of diphtheria, 3 of scarlet fever and 8 of typhoid fever were reported. Twelve meetings were held.

ESSEX COUNTY.

BELLVILLE TOWNSHIP.

MEMBERS AND OFFICERS—N. H. Taylor, Jno. B. Coryman, W. F. Fackrell, H. J. McGuire, James Murray, Wm. Connolly, E. O. Cyphers; J. J. Hannan, Secretary; J. J. Connell, Wm. Ketchen, Inspectors.

Births reported, 58; deaths, 98; deaths under one year, 20. Communicable diseases were reported as follows: Diphtheria, 56, with 5 deaths; scarlet fever, 10; typhoid fever, 5. The water-supply of Bellville is obtained from the Pequannock river, the average quantity pumped being 99,750 gallons. Number of dwellings connected with the supply is 312. Fourteen nuisances were investigated, all of which were abated. Nine meetings were held during the year.

ESSEX COUNTY—*Continued.*

BLOOMFIELD TOWNSHIP.

MEMBERS AND OFFICERS—James H. Moore, G. Lee Stout, John A. Lawrence, James M. Nollser, R. K. Schuyler, Frank Foster, Thos. H. Albinson, Samuel Baxter; Seymour P. Gilbert, Inspector; Chas. H. Bailey, M.D., Health Physician; Wm. L. Johnson, Secretary.

Births reported, 189. Total deaths, 152; under 1 year, 21. Six cases of diphtheria, 22 of scarlet fever, 3 of typhoid fever and 2 of small-pox were reported.

About 1,200 dwellings are connected with the public water-supply. Length of sewers, 30 miles; number of premises connected with sewers, 435; number connected during year ending October 31st, 1899, 155. One hundred and fifty complaints were investigated, and all nuisances discovered were abated, 8 prosecutions being necessary to enforce the ordinances. Expenditures during the year were \$1,821. Twelve meetings were held.

Under date of March 27th the sanitary inspector of the township reported to the local board showing that sewage flowing through the trunk-sewer from the city of Orange was retarded because the capacity of the pipe was insufficient, and that the sewage escaped at numerous manholes in Bloomfield, and flowed across the surface of the ground into Second river.

BOROUGH OF CALDWELL.

MEMBERS AND OFFICERS—James Best, Wm. W. Wright, E. E. Peck, M.D., Thomas W. Briggs, Secretary; Adam Beam, Inspector.

Communicable diseases were reported as follows: Diphtheria, 3; scarlet fever, 2; typhoid fever, 3. Seven nuisances were investigated and abated. Three meetings were held.

CALDWELL TOWNSHIP.

MEMBERS AND OFFICERS—E. E. Peck, M.D., C. W. Leavitt, Peter Johnson, J. S. Vanness, J. W. Debaun, Theo. Vincent; G. M. Canfield, Secretary.

Births reported, 26; total deaths, 21; under one year, 3.

ESSEX COUNTY—*Continued.*

CLINTON TOWNSHIP.

MEMBERS AND OFFICERS—Wm. R. Ward, M.D., Lyons Farms; Caleb E. Jeffry, Park View; Jacob Fisher, Waverly; John J. Quinn, Park View; Leopold Leiber, Park View; W. H. Goldsmith, Newark.

Births reported, 7; total deaths 17—2 under one year. Two nuisances were abated—one suit being necessary in a case of violation of the ordinance relating to the depositing of night soil.

EAST ORANGE TOWNSHIP.

MEMBERS AND OFFICERS—Edwin R. Crippen, John H. Palmer, H. H. Snediker, Edward I. Condit, Geo. Dorer, C. H. Vanderhoff, Andrew Baigrie, Wm. Cardwell, S. W. Ougheltree, H. B. Whitman, T. W. Jackson, W. F. Rouches, D. C. Whitman, P. C. Williams, Israel Dodd, Chas. W. Matthews, Winthrop D. Mitchell, M. D., Secretary; Wm. T. Bowman, Inspector.

Thirty-one cases of diphtheria, 20 of scarlet fever and 11 of typhoid fever were reported. Seventy-one nuisances were abated, 8 prosecutions being necessary to enforce ordinances. Appropriation, \$2,000. Seven meetings were held.

FRANKLIN TOWNSHIP.

MEMBERS AND OFFICERS—Geo. B. Philhower, M. D.; J. A. Gilmore, S. E. Blair, Herman Zoener, H. A. Connolly, John D. Dittig, Frederick Carlisle, Chas. Kierstead, Secretary; Alfred Skinner, Attorney. All of Nutley.

Births reported, 38; deaths, 35. Two hundred and seventy-four dwellings are connected with the mains of the East Jersey Water Co., 60,000 gallons a day being used. Six nuisances were abated. Ten meetings were held.

BOROUGH OF GLEN RIDGE.

MEMBERS AND OFFICERS—H. C. Harris, M. D., F. C. Osterhout, E. E. Wright, Charles T. Howe, H. K. Benson, Secretary.

Births reported, 23; deaths, 18. The borough contains 29,327 feet of sewer mains, and fifteen meetings were held.

ESSEX COUNTY—*Continued.*

TOWN OF IRVINGTON.

MEMBERS AND OFFICERS—F. Ulrich, J. Jackson, A. Webb, Charles Bougas, F. Winkler, Edwin Berry, Secretary; Ira Meeker, Inspector.

Seven cases of diphtheria, eleven of scarlet fever and three of typhoid fever were reported. Appropriation, \$200. Eleven meetings were held.

LIVINGSTON TOWNSHIP.

MEMBERS AND OFFICERS—Geo. W. Morehouse, Livingston; B. M. Dickinson, Chatham; Wm. R. Johnson, Chatham; J. H. Parkhurst, Livingston; Ezra A. Williams, Roseland; Geo. E. DeCamp, Secretary, Roseland; E. E. Peck, M. D., Caldwell.

One meeting was held.

TOWN OF MONTCLAIR.

MEMBERS AND OFFICERS—David B. Duncan, Moses N. Baker, Richard P. Francis, M. D., Secretary; James S. Brown, M. D.; Chas. D. Thompson; M. O. Leighton, Inspector.

The following extracts are taken from the annual report of the board:

Probably the most important work that has been done during the past year, in addition to the work that has become part of the yearly routine, was the inauguration and carrying on the new, and, in this community, untried system of collection of garbage and ashes. At a conference held with a committee from the town council, the recommendation was made to the town council that four garbage wagons of the latest improved pattern be purchased by the town and the contract for collecting the garbage and ashes with these wagons be awarded to the lowest bidder, the necessary money having been voted by the towns people at the spring elections. Action by council was taken in accordance with this recommendation and in August, 1898, work was begun. Notwithstanding considerable opposition from some citizens, and in the face of unlimited and gratuitous criticism from many more, the great improvement of the new system over the old one was soon acknowledged, and at the end of the year, when the details of the system had been properly worked out, and mistakes, inevitable in the beginning, had been rectified, it was felt that an important step for improving the sanitary condition of the town had been taken.

ESSEX COUNTY—*Continued.*

There were two respects in which this was particularly noticeable. When the garbage was removed by a private contract between the various householders and the scavengers, there were many houses, especially in the poorer and more thickly settled portion of the town, from which the garbage was taken only at long and uncertain intervals, but was more likely allowed to accumulate in the back yard or the cellar. The advantage of having the garbage removed from these premises regularly once or twice a week, as is now done, is too obvious to need further comment.

The new garbage wagons, the bodies made of iron so that they can be thoroughly cleaned and from which there can be no leaking, and with tight, snugly fitting covers are a marked advance over the array of ram-shackle, broken-down vehicles which formerly carried the garbage through the streets, heralding their approach from afar by the odors that were wafted from them and often leaving behind them a trail of liquid filth that showed all too clearly what had passed.

The work of last year and the results accomplished convinced the members of the board of health that an expenditure much in excess of what was spent would be necessary if the ashes of the town, as well as the garbage, were to be taken care of by public contract. On the other hand, there was no question that the garbage alone could be handled more economically than was done last year. These facts, coupled with the conviction that the disposal of clean ashes is not a matter over which the board of health should have jurisdiction, led the board, before the spring election, to recommend to the town council that \$4,500 be appropriated for the collection and disposal of garbage only for the ensuing year, the collection of ashes to be done by private contract. \$4,000 was appropriated, and the contract having been awarded the work of garbage collection and disposal has been begun this year under favorable auspices and it is believed will prove satisfactory.

For some time there has been a strong feeling in the Board that the disposal of garbage by burying in shallow trenches, as is now done, at best a temporary expedient, is one that, in a few years, will not supply the needs of this rapidly growing community. Accordingly on June 30th, 1898, it was resolved: "That communications be sent to the boards of health of Orange, West Orange, East Orange, Glen Ridge and Bloomfield requesting each one to appoint a committee of two members or citizens to confer with a similar committee from Montclair and the other towns named, to consider some common system of garbage disposal." This conference was held on November 27th, 1898. The representatives of the different boards agreed that cremation would be the most sanitary and efficient method of garbage disposal and could be most economically managed by joint action on the part of the adjacent municipalities. Various sub-committees on site, legislation, method of cremation, etc., were appointed. These sub-committees have done a certain amount of work, but the general committee is not yet ready to make a report. In the spring of 1899 word was received that the board of health of East Orange had decided that its present method of garbage disposal filled all requirements and therefore that municipality would not join with the others. It is hoped that during the

ESSEX COUNTY—*Continued.*

coming year substantial progress will be made towards perfecting the plan of establishing such a garbage crematory as is needed.

Following the precedent established last year, nurses have been employed by the board to care for those cases of contagious disease that could not be properly quarantined and nursed without outside aid. The board has also paid for anti-toxin used in cases of diphtheria in which the family of the patient could not afford to pay for its use. On April 20th, 1899, the announcement was made to the board that a colored boy, a resident of Montclair, had been exposed to contagion from small-pox while in Orange and that he had been quarantined by the Orange authorities. As there were no cases of small-pox in Montclair, it seemed best that the suspect should be kept quarantined where he was, as the expense would be no greater and much care and anxiety would be avoided. Accordingly satisfactory arrangements were made with the Orange board of health, and as the patient subsequently developed varioloid, it became necessary to keep him quarantined until the disease had run its course. The whole period for which he was confined was six weeks, and the cost of this one case including doctor's fees, nursing board and lodging, special watchman, etc., was \$263.50.

Constant supervision is kept over the milk-supply of the town. Violations of the ordinance regulating the production and sale of milk are infrequent and are generally promptly rectified. In two cases milkmen who would not comply with the ordinance have been obliged to stop selling milk in Montclair.

It is gratifying to note that as more houses are connected with the sewer, complaints of brook-pollution grow less frequent. The majority of property owners are anxious to have their premises in the best sanitary condition and make sewer connections at the first available opportunity. In some instances it has been necessary for the board to take compulsory action, and the desired result has been obtained in every case.

Legal proceedings on behalf of the board have been less frequent during the past year than in some former years. I find a record of seven cases of overcrowding, resulting in convictions in each case. The defendants in every case were Italians who seemed to find it difficult to appreciate the value of a sufficiency of fresh air according to American standards. There have been two complaints resulting in convictions for not closing privy vaults when ordered; and one prosecution for refusal to connect with the sewer on notice. In this latter case the defendant pleaded guilty, and on his agreeing to make the connection at once was let off with the payment of costs. A conviction was had during the last year against Henry Lehrman for failure to connect with the sewer, and at the time of my last report this matter was pending on an appeal to the Court of Common Pleas. On the argument the Court of Common Pleas held that an appeal did not lie from a judgment of a justice of the peace for a penalty in health board cases, and that the defendant's only remedy was a writ of certiorari. The defendant has never sued out such a writ, but the matter has been allowed to lie in abeyance for two reasons, one being that Mr. Lehrman has, I am informed, connected his houses with the sewer as the

ESSEX COUNTY—*Continued.*

health board demanded; and the other being that other litigation with him has rendered it inexpedient to push matters to extremities in this case. So far as now known there is no person in the town refusing to connect with the sewer after due notification from the board of health.

The suit of Henry Lehrman against the individual members of the board of health for what was alleged to be an illegal closing of his well on Bay street, which was pending at my last report, has been tried before Judge Child and a jury. Unfortunately the result of the litigation has thrown no light upon the question of the right of the board of health in such case, for the reason that the decision of the case turned upon the fact that by an unfortunate error the well in question had been described in the various reports to the board and resolutions by the board as the well at No. 35 Bay street. After the well was closed it was discovered that it was situated at Nos. 27 and 31 Bay street. The reports and resolutions therefore had no bearing upon the case and the result was necessarily a verdict in favor of the members of the board of health and against Mr. Leighton, who had closed the well apparently without authority or right.

The total number of deaths during the past year is 186, an increase of 29 over the preceding year. The population of Montclair being about 13,800, the death-rate is therefore 13.7 per thousand.

In considering the death rate in Montclair, it should be borne in mind that the number of non-resident deaths, especially those occurring in the hospital, helps to increase in no small degree what should be our normal death-rate. Bloomfield, Glen Ridge, Verona and Caldwell are as directly interested in the hospital as Montclair, and have the same privileges therein as the latter, yet, when a death occurs within the institution it becomes a part of the Montclair record even though the deceased may have been a resident of one of the other municipalities. During the past year, ten deaths have occurred under such circumstances, which, if assigned to their proper localities, would vary somewhat the relative positions in Table I.

The deaths during the past year under five years of age number 51. This amounts to about 27 per cent. of the total number of deaths, or about 3.69 per thousand population. As urban settlement becomes more and more extensive, and the rural population correspondingly smaller, the problem of rearing children in surroundings less favorable than those of the country becomes serious from a public health point of view. Ordinarily, the number of deaths among children of a tender age in cities forms a fair indication of the hygienic condition of those cities, and the study of statistics of such mortality becomes important.

ESSEX COUNTY—*Continued.*DEATHS AMONG CHILDREN UNDER FIVE YEARS OF AGE, PER 1000 POPULATION
SINCE 1880.

Year.	Population.		Number of Deaths Under Five Years.		Rate per 1000 Population.	
	Town of Montclair.	State of N. J.	Town of Montclair.	State of N. J.	Town of Montclair.	State of N. J.
1880	5,147	7,407	20	6.54	3.89	
1881	5,382	7,617	21	6.56	3.90	
1882	5,618	10,512	40	8.83	7.12	
1883	5,853	8,710	29	7.24	4.95	
1884	6,089	7,971	34	6.38	5.58	
1885	6,325	9,120	23	7.13	3.79	
1886	6,810	8,536	21	6.51	3.09	
1887	7,295	9,245	44	6.88	6.03	
1888	7,780	10,508	41	7.64	5.27	
1889	8,265	10,354	33	7.35	3.99	
1890	8,750	19,748	32	7.42	3.65	
1891	9,357	10,685	42	7.22	4.49	
1892	9,965	12,369	49	8.18	4.92	
1893	10,572	11,307	43	7.35	4.09	
1894	11,180	9,264	78	5.86	7.03	
1895	11,887	9,074	69	5.42	5.79	
1896	12,465	9,643	60	5.61	4.81	
1897	13,102	8,504	44	4.82	3.36	
1898	13,610	7,283	53	4.02	3.89	

DEATHS FROM THE TEN MOST FATAL DISEASES DURING THE PAST FISCAL YEAR,
AND THE NUMBER FROM THE SAME CAUSES DURING THE YEAR PRECEDING.

	1898-99	1897-98.
Pneumonia	21	15
Consumption	19	16
Heart Disease.....	16	14
Diarrhœal Dis. of Children.....	11	16
Cholera Infantum	7	4
Apoplexy.....	6	5
Eclampsia (Infantile).....	5	8
Meningitis.....	4	5
Violent.....	8	6
Cerebral Hemorrhage	4	5

Pneumonia continues to be one of the most fatal of our common diseases, with a rate, in recent years, as great or greater than that of consumption. There is reason to believe, however, that such a condition will be improved, as the specific germ of the disease has been discovered and the disease itself placed in its proper position among the specific infectious diseases. This being the case, methods of treatment and isolation will be modified to suit the demands of such a disease.

ESSEX COUNTY—*Continued.*

It has already been observed that the number of complaints sent in by citizens, and the nuisances discovered in the house-to-house inspections have been considerably less than in previous years. This is an unmistakable indication of improved sanitary conditions, and may be due to the following causes: The people themselves have become accustomed to the enforcement of the nuisance laws and have voluntarily avoided the accumulation of waste products of all kinds which constitute the ordinary causes of complaint, familiar to most health authorities. This has given opportunity for the consideration of many deep-seated troubles, difficult to approach and hard to abolish. These are house drains in brooks, crowded tenement houses without adequate sanitary provisions, groups of houses on streets with no sewer, and overcrowding in the poorer class of lodging houses.

One of the first important matters taken up after the establishment of the board in 1894 was the removal of numerous house drains from the various brooks running through the town. At that time the amount of brook pollution was enormous, and consequently the vicinity of the brooks, especially of those which were dry a part of the year, was most intolerable and unhealthful. The sewerage system had just been established in a part of the town, and wherever it could be made to serve was quickly put into use. The extension of the sewerage system however was slow, and, in general, the streets most needing the sewer were the last to receive it. Long and continued search for the drains was therefore necessary, the discovery of which was made more difficult by the fact that property owners would often cunningly conceal the outlet pipes. There was another consideration, however, which made it necessary in some places to continue the pollution. Several streets were built upon land which, under the surface, was constantly wet. The close underlying stratum of clay made it impossible to build cesspools which would be in the least degree efficient, and the use of which would cause a greater nuisance than that which already existed. Under such circumstances, the extension of the sewerage system was the only means of relief, and the efforts which have been made in this direction have been generally successful. In all cases where cesspool maintenance was practicable brook drains were summarily cut off.

As a result of the work along these two lines, the brooks have been relieved almost entirely of house drainage. The work of the past year especially has been fruitful in this line, and the benefit derived has been a source of surprise to persons familiar with former discomforts. Although direct pollution has not yet been entirely abolished, and isolated cases, above described, are still in existence, this formerly fertile source of annoyance is relegated to the petty nuisance department.

The abatement of direct brook pollution does not, however, give to the brook the purity which it had before the occupation of the surrounding land. The earth drained by the various streams has, of necessity, qualities entirely different from those possessed by it in earlier times, and, therefore, the water running off the surface is not pure. There is no remedy for this evil, and although the danger is usually slight, it must be considered in the work of approaching an hygienic ideal. A system of covered aqueducts should be con-

ESSEX COUNTY—*Continued.*

structed, capable of conveying all such drainage without exposure. This has been accomplished in various places, and plans have been accepted by the town for a still more extensive system of culverts. This object is, I believe, a worthy one, and should receive the hearty co-operation of your board.

Every municipality containing a poor population, however small, contains tenement houses in poor sanitary condition. Montclair is no exception. During the past year, the corrections of many of these conditions has been accomplished, and a goodly number of constitutionally unsanitary houses have been repaired and renovated. In some places where more than a temporary wave of cleanliness has been despaired of, conditions have been made entirely conducive to health and comfort.

In working out the solution of the above problem, the lack of statutory authority along certain lines is painfully apparent. Local boards of health have no power to condemn and order vacant buildings in an unrepairable condition, or houses which by reason of location, construction or neglect, have become general nuisances to the community. Under the present laws the best that can be done is to specify each violation of the ordinances, and order that the same be corrected or abolished, as the case may be. Such a notice, when delivered, loses force by its very ponderousness, and fails to reach the root of the evil, which is constitutional in the structure itself.

TABLE SHOWING NUISANCES ABATED DURING THE YEAR ENDING MAY 31, 1899.

Overflowing cesspools.....	13
Garbage uncollected.....	32
Waste water on surface.....	17
Waste water in brook	9
Dead animals.....	7
Foul privies.....	114
Filthy houses.....	6
Overcrowding.....	13
Wells inspected.....	9
Miscellaneous.....	12
Complaints with no cause.....	16

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The practice in former years of inspecting all plumbing work constructed in Montclair has been continued with good results. One hundred and eighty-eight permits to do plumbing work have been granted. These have required inspection as follows:

Water tests.....	150
Smoke tests.....	140
Inspections.....	77
Rejections.....	18

ESSEX COUNTY—*Continued.*

The number of permits granted during the five years since the adoption of the ordinance is as follows:

1894-95	41
1895-96	147
1896-97	177
1897-98	192
1898-99	188

During the past year it was decided that when any physician was of the opinion that the plumbing in a house was a cause of or a factor in maintaining a disease, a test upon the plumbing would be made without charge, and in case defects were discovered, alterations would be made to comply with the plumbing ordinance. Accordingly, letters were sent to all the physicians practicing in this vicinity, informing them of the above mentioned action. As a result, 25 tests were made, and in 17 cases the plumbing was condemned.

The first step toward the establishment of a municipal system of garbage collection was made by your board in the year 1895, when the town council was requested to appoint two of its members to serve with two from the board of health upon a joint committee to consider the matter of collection and disposal of garbage. After deliberating upon the subject, the committee, in an exhaustive report, recommended that the sum of \$3,500.00 be appropriated for the collection and disposal of garbage during the fiscal year 1896-97. It was deemed wise by the council not to make the appropriation during that year, and so the matter was laid aside for a time.

During the following spring, however, the matter was again taken up by the board of health with the active assistance of the town improvement association. Through the efforts of the latter body, the collection and disposal of ashes was also considered, although the board of health could take no official action concerning the latter. The recommendation that an appropriation of \$7,000.00 be raised for the collection and disposal of ashes and garbage failed of indorsement at the primaries, and the matter was again laid over until the spring of 1898.

After carefully considering the cost of collection and disposal of garbage and ashes, and of other details in connection with the service, a committee from the board of health urged the council to recommend that an appropriation of \$8,000.00 be raised. This amount was, however, cut to \$7,000.00 and the recommendation which followed was indorsed at the primaries and carried at the spring election of 1898.

At the request of the council, the work of drawing up the specifications and superintendence of the service after the contract had been awarded was assumed by the board of health. The specifications called for alternate bids, one for collection from the sidewalk line; and the other from an accessible point chosen by the householder, within twenty feet of the rear of each house. They also provided that garbage should be collected twice per week between April 1st and November 1st, and once per week during the remainder of the

ESSEX COUNTY—*Continued.*

year, that ashes should be collected once in two weeks between the above-mentioned dates, and once per week during the remainder of the year.

The contract was awarded to Mr. John J. Alworth, for \$5,200.50, a reduction of about \$1,800.00 from the estimate made by your board.

The collection of garbage under the contract was productive of good results, and, considering that the first year is always more or less experimental and that the best service is never obtained at once, the undertaking may truly be termed a success. There were, to be sure, undesirable features, but it is clear to all who watched the work closely, that they were the result of unwise provisions in the ordinance and of the overwhelming quantity of ashes which necessitated at certain times in the winter the suspension of all garbage collection. Garbage collections in the summer months were not provided sufficiently numerous in the contract schedule, and the winter schedule was assumed too early in the fall and continued too late in the spring. These objections, however, lost force when compared with the immeasurable benefit derived in certain sections of the town where no service had been previously secured. Premises which had been offensive to a greater or less extent by reason of the accumulation of garbage in heaps about the yards, became objectionable. In addition to this, the foul, leaking wooden carts of former days, which left a trail of filthy water behind them, were abolished and the change for the better was appreciated by one and all.

In regard to the ashes service, however, little in the way of commendation can be said. The reasons for this are apparent and may be enumerated as follows:

1st. During the discussion of the appropriation, after its passage, and before the system could be inaugurated, many of our householders, anticipating a free collection, stored up their ashes for several months. These were loaded upon us during the first three months of the contract, so that no estimate of the normal output of a district could be obtained. Under these circumstances, no regular schedule could be made and the service was irregular.

2d. The collection of ashes from the rear of the houses instead of from the curb line led to many difficulties. In the first place, it consumed more than twice the amount of time required by a curb collection. Long driveways and deep lots extended the work, and the presence of the carts in the rear led to numerous disputes with the householders. Many of them expected the ashes to be removed from the cellars, and in various cases unreasonable favors were requested.

3d. The men were expected to remove cellar sweepings, old plaster, lawn grass and sometimes bricks and sand, while the appropriation was made sufficient only for the removal of ashes. These foreign substances were removed by the contractor rather than to take the time necessary to quarrel and explain.

4th. The amount of ashes was far beyond the normal for a town of this size. The reason for this was apparent upon examination of the loads collected.

ESSEX COUNTY—*Continued.*

Unburned coal in large proportions was mixed with the ashes, testifying to the extreme wastefulness of many of our citizens. Had the ashes been separated, and the black unburned coal used for fuel, the total collections would have been one-third less.

5th. Montclair is not properly situated for an *economical* system of garbage collection. With its houses built upon large lots, the length of time required to collect a load of ashes is much longer than it would be in a more thickly settled locality, while, at the same time, no greater number of people is served. This makes it necessary for a greater expenditure per capita than would be required in more closely settled localities.

Taking into consideration the dissatisfaction as expressed above, and the large amount of money which would be required to provide an efficient system of collection for another year, it was thought advisable not to attempt the collection of ashes after the expiration of the first contract. * * * This plan was indorsed by the town council and the appropriation for the coming year includes garbage only.

The amount of ashes and garbage collected during the first contract period is expressed in cubic yards as follows :

	Garbage.	Ashes.
August.....	194 cu. yds.	164 cu. yds.
September.....	255 "	278 "
October.....	208 "	373 "
November.....	138 "	856 "
December.....	204 "	1 041 "
January	125 "	1,278 "
February.....	145 "	1 045 "
March.....	142 "	998 "
April.....	162 "	362 "

At the time of writing my last report, the ordinance concerning the production and sale of milk had been in force for less than a month and therefore no trustworthy deductions could be made concerning its effects upon the milk-supply. Having made observations upon its practical effects during the past year, however, the advantages of its provisions are easily apparent. The changes which were required in order to secure compliance were made immediately by the majority of the dairy owners, who, having been made acquainted with the ordinance before its passage, were thoroughly informed upon all points. In only a few cases was there any unwillingness shown or any denial of the wisdom of its most radical requirements. Of these there was no one who required legal proceedings to force compliance. In one case, after oft repeated warnings and instructions, the owner was compelled to discontinue the sale of milk in Montclair. In other cases, where from one reason or another there was continued violation, the several dairy owners were summoned before your board for a hearing, and upon their promise to make the necessary

ESSEX COUNTY—*Continued.*

improvements were dismissed without punishment, provided their promise was immediately fulfilled. In such cases complete compliance has been rendered.

In applying the ordinance and enforcing its provisions it has been my endeavor to interpret the spirit rather than the letter of the law, bearing in mind that, first and foremost, the end to be attained is a pure and honest milk-supply. In certain cases where the immediate enforcement of such provisions would have worked hardship to the dairy owner, but where willingness and appreciation were shown, time has been extended and such light concessions made as would ultimately bring a better condition of affairs than could possibly be secured by immediate enforcement. By this method I am persuaded that the actual results have been greater, the final purpose of the board more harmoniously attained, and, more important than this, the enlistment of the dairymen in a rivalry in production the best product.

In addition to the above, the co-operation of the citizens and the general interest in matters pertaining to the supply has been of inestimable assistance, and, indeed, were it not for this, the application of our ordinance would not have produced as gratifying results as I am now able to record. After the typhoid epidemic of 1894, the confidence of our citizens in milk as a food was, naturally, extremely small, and a surprisingly large number of people still look upon milk with suspicion. This feeling has been largely instrumental in keeping public sentiment up to so high a plane in all matters pertaining to milk, supply. The lists of customers filed by the dairymen in this office show a constant increase in the consumption of milk, an increase which is greater than that accounted for by the rapid growth of the town. It indicates that confidence in milk as a food is rapidly returning.

The past year has been a very fortunate one in all matters pertaining to the occurrence of contagious disease. There has been no extended outbreak of any kind and the few cases here and there which have had a common origin have been neither sufficiently severe nor widespread to give cause for alarm. In addition to this there have been fewer cases reported than during any year since the organization of the board; this too, in spite of the fact that the population is increasing rapidly. Besides being few in number nearly all of the cases have been of a benign type, and therefore the fatality rate is almost nil. In three of the seven cases which resulted fatally, the patients were stricken in an army camp or fell ill with the disease soon after returning to Montclair.

This leaves only four deaths for which Montclair can in any way be responsible, or which by any possibility could have been contracted within our limits.

FATALITY FROM CONTAGIOUS DISEASES IN MONTCLAIR—1895-1899.

	1895.	1896.	1897.	1898.	1899.
Cases.....	106	117	153	162	161
Deaths.....	5	6	10	8	7
Per cent, deaths.....	4.72	5.13	6.54	4.91	4.35

ESSEX COUNTY—*Continued.*

The most important part of the work in connection with the quarantine and superintendence of contagious disease cases is the tracing of the source of the disease. This is attended by too many difficulties in single cases to make one certain of uniform success. Wherever there has been a series of cases with a common source it is generally an easy matter to reach the source of the trouble. But inasmuch as a large majority of cases have occurred singly and, seemingly sporadically, the final showing does not in anywise indicate the amount of work done along this line.

RESULTS OF DISEASE INVESTIGATIONS IN MONTCLAIR DURING THE YEAR ENDING
MAY 31ST, 1899.

	Cases.	Total Traced.	Total Untraced.	Infection Local.	Infection Elsewhere.
Diphtheria.....	13	8	5	7	1
Scarlet Fever.....	22	10	12	8	2
Typhoid Fever.....	29	20	9	1	19
Measles	90	64	26	61	3

There has been a slight increase in the number of cases of scarlet fever reported, over the total of last year, and the character of the disease has been somewhat more severe, two deaths resulting. No extended outbreak has occurred. In December, 1898, five cases were reported in George street, in which there were a large number of children. The cases of transmission were clearly defined, and the reason that the disease did not spread further among so susceptible a population is that the severe weather at the time kept them generally indoors. In 12 of the 22 cases reported, the disease was confined to the house in which it started. In 2 cases, the source of infection was out of Montclair.

Thirteen cases of diphtheria have been reported, 2 terminating fatally. This is the smallest number of cases since 1895, and the lightest fatality since 1894. Generally the disease has been of a mild form, the two fatal cases being almost the only ones of a severe type.

The bacteriological examination provided by the board free of charge, has been made use of quite extensively by the physicians, antitoxin has been made use of in the majority of cases. In one case tracheotomy was performed successfully.

Ninety cases of measles have been reported during the year. The center of infection in June, 1898, was the Cedar Avenue School, and in May, 1899, the Montclair Military Academy. No deaths have occurred since 1894, although throughout the state the number is fairly large.

Local typhoid fever has not been prevalent to any extent and the actual number of cases reported is the smallest since the organization of the board. Aside from the army cases, but thirteen have been reported, and of these four were brought here during the incubation period or in the early stages. The only deaths from the disease during the year have been those in which the patient was infected in the army camps. We have, therefore, the following summary :

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ESSEX COUNTY—*Continued.*

Total cases.....	29
Army cases.....	16
Cases from other points of infection.....	4
Montclair cases.....	9
Deaths (all army cases).....	3

Although this part of the state has been somewhat troubled with small-pox during the spring, we have been fortunate in not having a case within our borders. As our colored population is quite extensive, and the disease has been largely among that race, we are liable to be involved at any time. One of the cases at Orange, N. J., was a resident of Montclair, and we were therefore responsible for his quarantine expenses in that city.

The usual examination of the ice supply has been made during the year. The sources are the same as those of the past year and the quality continues to be excellent.

ANALYSES.

	Parts per 100,000.		
	Greenwood Lake Ice.	Pocono Mt. Ice.	Orange District Water Ice.
Total Solids.....	0.95	0.80	5.90
Loss on Ignition.....	0.75	0.55	1.35
Fixed.....	0.20	0.25	4.55
Chlorine.....	0.237	0.175	0.85
Nitrites	None.	None.	None.
Nitrates	0.016	None.	1.118
Free Ammonia.....	Trace.	Trace.	.0025
Albuminoid Ammonia.....	0.0068	0.0026	.0045
Bacteria per cubic C.....	16	18	1564.

The analyses of the municipal water-supply have been filed in this office monthly by the chemist. The average of these analyses and a comparison with the "Average Standard" will be found below:

	Average, '98-'99.	Average Standard.
Total Solids.....	5.273	4.668
Loss on Ignition.....	2.094	1.9
Fixed.....	3.12	2.768
Chlorine	.144	.187
Nitrites.....	None.	None.
Nitrates.....	.0224	.0246
Free Ammonia.....	.00102	.0025
Albuminoid Ammonia.....	.01024	.015

It will be seen that the nitrogen compounds in the water during the past year are lower in proportion than those set in the average standard, but that the sediment in the water is considerably higher in amount. This is accompanied by a greater number of bacteria in average for the past year than is set down in the average standard, the former being 483 while the latter is 177.

ESSEX COUNTY—*Continued.*

CITY OF NEWARK.

MEMBERS AND OFFICERS—Dr. H. C. H. Herold, M. Straus, A. H. Johnson, J. A. Furman, M. T. Gay, Dr. C. M. Zeh, Dr. D. L. Wallace, Dr. F. W. Becker, Dr. W. S. Disbrow, H. Smith, D. D. Chandler, Health Officer and Secretary.

NAMES AND ADDRESSES OF EMPLOYEES—Clerks: John J. Greene, 63 Newton street; Eugene W. Bellar, 45 Congress street. Stenographer: Marie Perier, 372 High street. Superintendent Bureau Contagious Diseases: Dr. E. E. Worl, 271 High street. Chief Disinfecting Corps: Samuel Knott, 279 Plane street. Chemist: Herbert B. Baldwin, 660 Clinton avenue. Meat Inspectors: Werner Runge, 130 Union street; Charles Wolz, 81 Ferry street. Plumbing Inspectors: John B. Sullivan, 204 Second street; William H. Grier, 37½ Third street; Henry Schroeder, 187 Bank street. Milk Inspector: William H. Lyle, 63 Newton street. Inspectors: Thomas E. Freeman, 42 Crawford street; Louis H. Bridgem, 59 Court street; Wm. H. Young, 179 Thirteenth avenue; Andrew J. Brady, 115 William street; John Wright, 70 Arlington street; Thomas F. Newton, 141 Clifton avenue; Morris Seidl, 411 South Eighth street; John L. Ball, 45 Nichols street; Forman J. Reynolds, 429 High street; Otto B. Schalk, 407 Bergen street; Chas. E. Burke, 125 Union street; William Parker, 233 Academy street; Hiram R. Stewart, 66 Thomas street; Leonard Gillen, 124 Halsey street; Bernard Cahill, 311 Warren street; Herbert O'Rourke, 92 Brunswick street; Michael Helmstaedter, 335 Mulberry street; Richard J. Corbley, 29 Providence street; Antonio Panzera, 66 Madison street. Meteorologist: Geo. C. Sonn, 285 Belleville avenue. Orderly at Isolation Hospital: Frank Fetridge, Isolation Hospital. Bacteriologist: Dr. R. N. Connolly, City Hospital. Assistant Bacteriologist: Dr. J. C. Houston, 111 Bloomfield avenue. Culture Collector: Herman Volk, 108 McWhorter street. Porter at Laboratory: Ernest Skillman, 58 Court street. City Apothecary: Wm. A. Smith, 1 Sherman avenue. Assistant City Apothecary: Albert Crater, 17 Court street. Dentist: Wm. M. Gould, 89 Halsey street. District Physicians: Wm. Schopfer, 43 Read street; Herbert W. Long, 119 Madison street; Wm. M. Goodwin, 66 Congress street; Matthew T. Gaffney, 211 Plane street; M. Louise Lefort Welzmler, 300 Washington street; Fred'k Weber, 3 Belmont avenue; Vincent Nager, 23 Beacon street; Wm. Gauch, 284 Orange street; Chas. W. Titus, 126 North Seventh street; Hugh M. Hart, 274 Broad street; Fred. Hagney, 21 Milford avenue.

Births reported, 5,188; total deaths, 4,303; under one year, 1,081. Communicable diseases were reported as follows: Diphtheria, 1,019; scarlet fever, 478; typhoid fever, 179. Average daily quantity of water used, 27,000,000 gallons. Dwellings connected with public water supply, 32,000. Premises connected with sewers, 25,385; premises connected during year ending October 1st, 1899, 665. About 5 miles of new sewer mains were built during past year. Nuisances

ESSEX COUNTY—*Continued.*

abated, 5,830. Numerous suits at law have been necessary to enforce ordinances. Appropriation, \$50,000. Monthly meetings are held by the board.

CITY OF ORANGE.

MEMBERS AND OFFICERS—John T. Platt, G. H. Richards, M.D., A. Eichhorn, John Burke, P. J. Hannagan, J. H. Brown, Stephen Collins; Wm. Schleuer, Secretary and Inspector; J. Ryan, Assistant Inspector; S. D. Philpot, Plumbing Inspector.

Communicable diseases were reported as follows: Diphtheria, 106 cases, 13 deaths; membranous croup, 2 cases, 2 deaths; scarlet fever, 48 cases, 4 deaths; typhoid fever, 25 cases, 1 death; small-pox, 10 cases, no deaths. Of the twenty-five cases of typhoid fever, eleven were returned soldiers; two other cases contracted the disease in Newark during March, 1899; one was contracted in Paterson; ten were traced to a milk dealer, and the cause of the other case was not ascertained. Average daily quantity of water pumped during the past year, 1,500,000 gallons. Premises connected with the sewers, 2,419; premises connected during past year, 201. Nuisances investigated during year, 241: nuisances abated, 211; prosecutions for failure to abate nuisances, 5. Appropriation, \$2,500. Monthly meetings are held by the board.

SOUTH ORANGE TOWNSHIP.

MEMBERS AND OFFICERS—Amos F. Brown, W. W. Menzel, C. W. Gandineer, J. H. Van Ness, Hilton; P. G. Woodruff, South Orange; T. C. Baker, Maplewood; W. W. Heberton, M.D., South Orange; Joseph H. Osborne, Secretary, Hilton.

Three cases of diphtheria, four of scarlet fever and three of typhoid fever were reported. Seven nuisances were abated. Three meetings were held.

BOROUGH OF VAILSBURG.

MEMBERS AND OFFICERS—Edward Zusi, Wm. F. Dehnirt, M. D., John Murphy, John V. Diefenthaler, Robert A. Glover, Secretary; Andrew Lentz, Inspector.

LOCAL BOARDS OF HEALTH.

Essex County—Continued.

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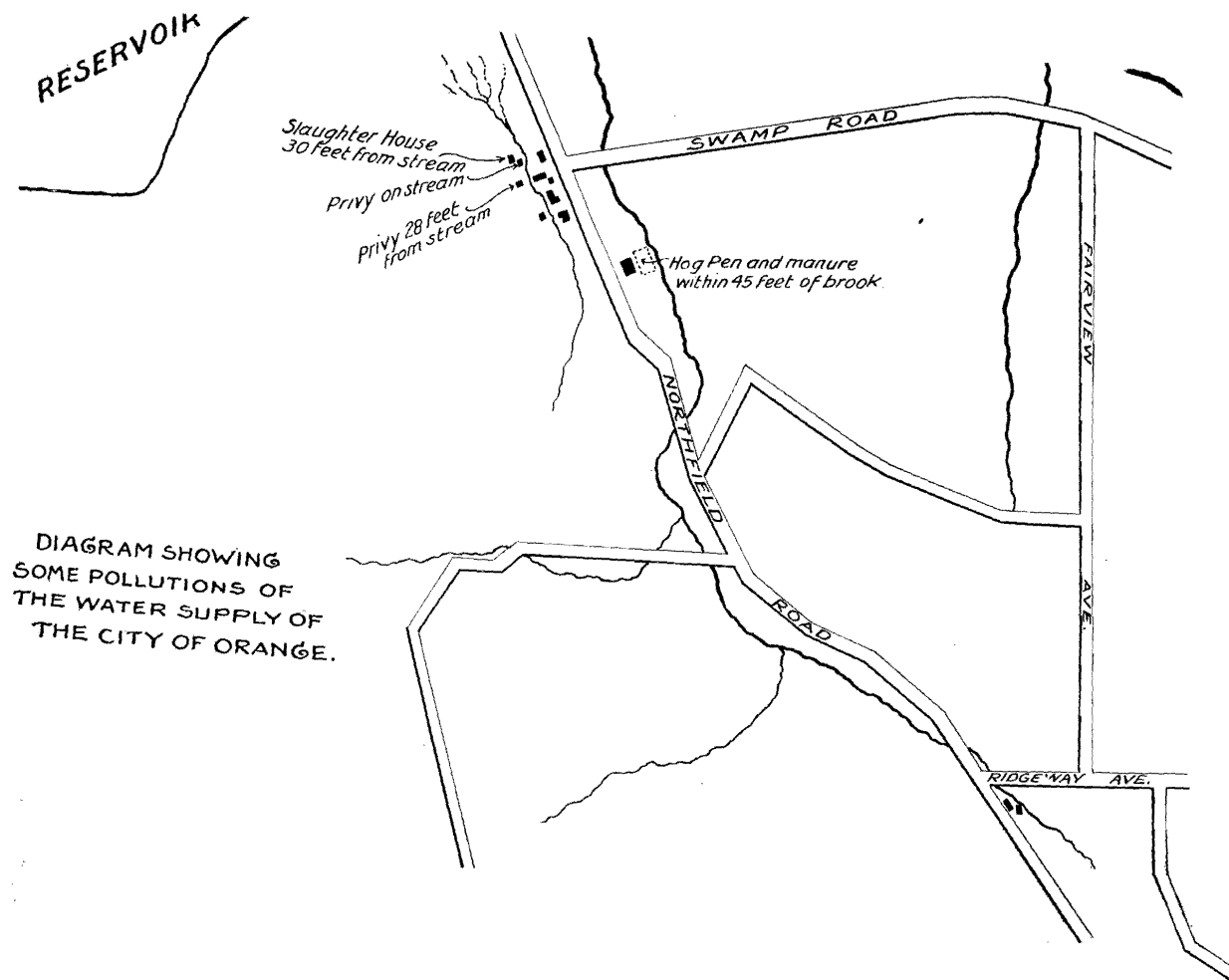


DIAGRAM SHOWING
SOME POLLUTIONS OF
THE WATER SUPPLY OF
THE CITY OF ORANGE.

ESSEX COUNTY—*Continued.*

Births reported, 33; total deaths, 30; under one year, 3. Two cases of diphtheria and three of typhoid fever were reported. Twenty-five nuisances were abated. Appropriation, \$200. Eighteen meetings were held.

WEST ORANGE TOWNSHIP.

MEMBERS AND OFFICERS—John Otterbein, Carl Fentzlaff, Wm. M. Brien, M. D., T. E. Holey, John Reid, James M. Maghee, M.D., Frank A. O'Connor, Secretary.

Births reported, 102; total deaths, 73. Thirty-eight cases of diphtheria, four of scarlet fever and four of typhoid fever were reported. Four hundred and eighty-two dwellings are connected with the public water mains. Nuisances abated, 45. Appropriation, \$600. Twelve meetings were held.

GLOUCESTER COUNTY.

BOROUGH OF CLAYTON.

MEMBERS AND OFFICERS—A. G. Silver, C. Burrows, James Kille, W. M. Pierce; C. L. Duffell, M.D., Inspector.

The water supply is obtained from artesian wells, about 25,000 gallons being pumped daily and 69 houses connected with the mains. Several nuisances were reported to the board, all of which were abated. One meeting was held.

DEPTFORD TOWNSHIP.

MEMBERS AND OFFICERS—A. W. Muller, Almonesson; B. F. Haines, Westville; Jos. Noblet, Wenonah; Wm. C. Cattell, Wenonah; H. A. Stout, M.D., Wenonah.

Births, 35; deaths, 23.

GLOUCESTER COUNTY—*Continued.*

EAST GREENWICH TOWNSHIP.

MEMBERS AND OFFICERS—Seth A. Warrington, Mickleton; Chas. Dormann, Mickleton; Henry L. Haines, Clarksboro; Chas. Haines, M.D., Clarksboro; Walter Heritage, Secretary, Mickleton.

Six cases of typhoid fever occurred. Two meetings were held.

ELK TOWNSHIP.

MEMBERS AND OFFICERS—Henry Ledden, Aura; Henry Lacy, Evans; Shepard Murphy, Aura; Kinsey Morgan, Hardingville.

Three cases of diphtheria and two of typhoid fever were reported. Three meetings were held.

FRANKLIN TOWNSHIP.

MEMBERS AND OFFICERS—A. B. Richman, Malaga; Chas. Trimmell, Malaga, Samuel Lowder, Newfield; A. A. Smith, M.D., Malaga; W. S. Richman; Secretary, Malaga.

Births reported, 30; deaths, 24; 4 under 1 year.

GLASSBORO TOWNSHIP.

MEMBERS AND OFFICERS—T. C. Allen, Benj. Crane, Ira Iszard; David Paulin, Assessor; Chas. H. Heritage, M.D., Secretary.

Births reported, 92; deaths, 36. Twenty-three cases of diphtheria, two of membranous croup, and three of typhoid fever were reported. Twenty-three premises are supplied with water from the public works. Four nuisances were abated. Appropriation, \$100. Three meetings were held.

GREENWICH TOWNSHIP.

MEMBERS AND OFFICERS—W. Scott Thomson, Paulsboro; Asa Harker, Gibbstown; Chas. Parker, Paulsboro; Geo. C. Laws, M.D., Paulsboro; Jacob Ballinger, Secretary and Assessor, Paulsboro.

GLoucester County—*Continued.*

Three cases of diphtheria and twelve cases of typhoid fever occurred. Twenty nuisances were abated. Appropriation, \$50. Four meetings were held.

HARRISON TOWNSHIP.

MEMBERS AND OFFICERS—W. W. Justice, Richwood; Samuel Stratton, Mullica Hill; N. S. Lloyd, Mullica Hill; S. F. Ashcroft, M.D., Mullica Hill; Eli Heritage, Secretary, Richwood.

Two meetings were held.

LOGAN TOWNSHIP.

MEMBERS AND OFFICERS—C. F. Myers, Bridgeport; S. Shoemaker, Bridgeport; Isaac Derrickson, Repaupo; E. T. Oliphant, M.D., Bridgeport; S. B. Platt, Secretary, Bridgeport.

Births reported, 19; total deaths, 21; under one year, 3. Appropriation, \$50. Three meetings were held.

MANTUA TOWNSHIP

MEMBERS AND OFFICERS—Robert G. Kincaid, Pitman Grove; E. L. Sharp, Sewell; Harry Mullin, Mantua; E. Z. Hillegas, M.D., Mantua; Geo. B. Hurff, Secretary, Sewell.

Three cases of diphtheria, 1 of membranous croup and 1 of scarlet fever were reported. Appropriation, \$75.00. Two meetings were held.

MONROE TOWNSHIP.

MEMBERS AND OFFICERS—H. B. Garwood, James M. Tweed, J. J. Eldridge, Clayton B. Tice, L. M. Halsey. All of Williamstown.

Three cases of diphtheria, 1 of membranous croup, 5 of scarlet fever and 5 of typhoid fever occurred. Appropriation, \$25.00. Four meetings were held.

GLOUCESTER COUNTY—*Continued.*

SOUTH HARRISON TOWNSHIP.

MEMBERS AND OFFICERS—Geo. Conover, Frank Kirby, Alfred Lippincott; Samuel Stanger, Secretary. All of Harrisonville.

One case of diphtheria was reported. One meeting was held.

WASHINGTON TOWNSHIP.

MEMBERS AND OFFICERS—John Wilkins, Turnerville; Allen Hurff, Crosskeys; Frank Garrison, Hurffville; Chas. B. Phelps, M.D., Hurffville; Chas. Nicholson, Secretary, Turnerville.

One case of typhoid fever occurred. One nuisance was abated. Two meetings were held.

BOROUGH OF WENONAH.

MEMBERS AND OFFICERS—Henry A. Stout, M.D., J. K. Schultz, Wm. Ott; J. W. English, Secretary.

Two nuisances were abated. Two meetings were held by the board.

WEST DEPTFORD TOWNSHIP.

MEMBERS AND OFFICERS—Jos. A. Moore, Woodbury; Jos. Low, Thoroughfare; R. M. Plum, Westville; James Hunter, Jr., M.D., Westville; Mark Clement, Secretary, Woodbury.

Births reported, 36. Total deaths, 19; under 1 year, 5. One case of diphtheria and one of typhoid fever were reported. Fifty premises are connected with the Newbold and Westville Water Co. Two complaints were investigated.

CITY OF WOODBURY.

MEMBERS AND OFFICERS—Warner Underwood, W. F. Williams, M.D., T. E. Parker, M.D., Jos. J. Summerill, Wm. M. Carter, Chas. Walton; Arthur Starr, Secretary; J. Dawson, Inspector.

GLOUCESTER COUNTY—*Continued.*

Births reported, 96; total deaths, 45; under one year, 12. One case of diphtheria, one of scarlet fever and three of typhoid fever were reported. Average daily quantity of water used, 312,000 gallons. Six hundred dwellings are connected with the public water mains. Ten nuisances were abated. Appropriation, \$125. Eleven meetings were held.

WOOLWICH TOWNSHIP.

MEMBERS AND OFFICERS—Chas. P. Batten, Lewis Warrington, James Horner, Samuel Avis, Benj. F. Buzby, M.D. All of Swedesboro.

Three meetings were held.

HUDSON COUNTY.

CITY BAYONNE.

MEMBERS AND OFFICERS—Egbert Seymour, Patrick Flanigan, H. Meigs, Vedder Van Dyck, Geo. A. Bradford, M.D., L. F. Donahoe, M.D., James Foerst, D. M. Hennessy, Secretary; A. C. Forman, M.D., Inspector; H. S. Winterhalter, Inspector; J. H. Nevins.

The following cases of communicable diseases were reported: Diphtheria, 38; scarlet fever, 66; typhoid fever, 11.

The total length of the sewer system of the city is 19 miles, considerable additions having been made during the past year. The points for discharge of sewage are on Newark bay and the Kill von Kull. The number of nuisances investigated during the year was 547, 489 of which were abated; three prosecutions being necessary for the enforcement of ordinances. A new hospital was erected during the year. The amount appropriated for the use of the board was \$1,200. Eighteen meetings were held.

GUTTENBERG.

No organized board of health.

HUDSON COUNTY—*Continued.*

TOWN OF HARRISON.

MEMBERS AND OFFICERS—Henry Allers, M.D.; M. O. F. Dolphin, M.D.; Clarence T. Van Deren, P. J. Cooney, Peter J. Goodman, Secretary.

The Secretary writes as follows :

Thirteen cases of diphtheria, 1 membranous croup, 23 scarlet fever and 7 typhoid fever cases reported with 3 deaths, all resulting from diphtheria. The total number of dwellings in the town is 1,450, and the estimated population is 12,000. The total number of privy vaults is 1,242, with 79 stables. We have $3\frac{1}{4}$ miles of sewers in our streets, with 682 connections. We made 62 new connections with the sewers last year. The board has adopted a supplement to the sanitary code which governs all plumbing and house drainage of buildings and factories in the town. It is the same system that the city of Newark has adopted and is now working under, and this board has 75 plans and specifications filed since the adoption of the same, August 20th, 1898. About 1,000 buildings are connected with the public water-supply, and the average daily consumption 328,543 gallons. There have been 284 complaints of nuisances investigated during the year, and the total number abated was 350. There has been one prosecution for failure to abate the sorting of rags at No. 21 Cleveland avenue, and the board has received a judgment of \$25 against the defendant. There are 6 more suits pending in the court for the same nuisance. There were 19,125 cubic yards of garbage removed during the year, costing \$1,200. The garbage from the city of Newark is used for filling in meadow land with top soil and ashes for covering the same. There were 125,900 cubic yards filled in by this system. All scavengers are under the supervision of the board of health. Our board has notified all the principals of both public and parochial schools that it will be necessary to have a certificate of vaccination from all children attending the same so the board of health can find out how many children will require free vaccination. The board would respectfully call your attention and would request your honorable board to render all assistance possible to assist in abating a nuisance, which, if something is not done soon will cause a plague, that is the filthy condition of the Passaic river. It is nothing more nor less than an open sewer, and the smell that arises from it is unbearable at times and causes sickness among the residents who are compelled to reside along both the east and west banks of the river, in all the cities and towns from Newark and Harrison to Passaic. There are at the present time on the east bank of the Passaic river several large and handsome residences that have cost several thousand dollars to build and are now lying idle. The owners cannot live in them nor can they rent them, as no one will live in them on account of the filthy condition of the river, and the smell that arises from it. While the matter has been discussed and commissioners appointed for the past two years to devise means to stop the pollution of the once beautiful river nothing has as yet been done. The people who have to suffer from this nuisance want quick action to stop the pollution.

HUDSON COUNTY—*Continued.*

Our board is endeavoring to have every street in the town sewered. It is compulsory on owners of property abutting on streets where there is a sewer to connect their dwellings at once. At the present time only communicable diseases are reported to our board. It is the intention of our board, in the near future, to have all marriages, births and deaths reported at this sanitary district, so that this board can carry out the rules and regulations of the state board of health.

CITY OF HOBOKEN.

MEMBERS AND OFFICERS—S. A. Helfer, M.D., A. Grassmann, John Podesta, G. M. Sinclair, E. T. Steadman, M.D.; James Havron, Secretary; Antonio Granelli, Inspector; Samuel Stanton, Inspector.

Births repored, 1,537. Deaths, 1,244—under one year, 313. Communicable diseases were reported as follows: Diphtheria, 183 cases, 19 deaths; typhoid fever, 30 cases, 12 deaths. About 4,200 cases, 27 deaths; membranous croup, 34 cases, 15 deaths; scarlet fever, dwellings are connected with the public water-supply. About 4,000 premises are connected with the sewers, 43 having been made during the past year. Nuisances abated, 173. Seventeen suits at law were instituted. Appropriation, \$2,700. Nineteen meetings were held.

HUDSON COUNTY.

MEMBERS AND OFFICERS—John E. West, M.D., John Connell, M.D., Chas. B. Converse, M.D.; C. J. Rooney, Jr., Clerk; John F. Nagle, Inspector; C. C. Hendrick, M.D., Inspector; M. Nevin, Inspector.

JERSEY CITY.

MEMBERS AND OFFICERS—Hugh H. Abernethy, President, Adolph Walter, Jr., P. W. M. West; D. W. Benjamin, Health Inspector.

The Health Inspector writes in part as follows:

The total number of complaints received in regard to nuisances of all kinds was 2,847. Nearly all of these have been investigated by our sanitary officers, and when unhealthy conditions were found, notices were sent to owners or occupants to abate the nuisance, and 2,255 abatements have been thus secured, showing that in a large majority of cases owners and others comply with the

HUDSON COUNTY—*Continued.*

notices sent to them by this department promptly, and I am pleased to state that there were only a few instances where it was necessary to cause a summons to be issued to compel action. Complaints made relating to offensive privy-vaults and cesspools are becoming less each year by reason of the extension of the sewerage system, and wherever it is possible, owners connect their vaults or cesspools with the sewer, or substitute water-closets. Complaints relating to the improper disposal of waste-fluids are also growing less frequent for the same reason, and this troublesome nuisance is being done away with as fast as sewers are extended. When nuisances of this character are discovered in parts of the city that are already sewered, peremptory notice is sent to the owners to at once abate the same. The majority of complaints made concerning nuisances of this kind come from the older parts of the city, where the plumbing work was done prior to the adoption of our plumbing code. In almost every case we find the nuisance was caused by poorly constructed plumbing work, put in before the laws compelled plumbers to do their work under proper supervision. The enforcement of this code has greatly benefited house-owners and their tenants, by securing the sanitary improvement of dwellings. Many of the complaints made relating to garbage accumulations show that the violation of our rules regarding it is caused either by the neglect of owners to provide their tenants with proper receptacles for refuse, or by the ignorant and careless habits of tenants, and the cellars and yards of apartment houses, where there is no janitor, are frequently found littered with all kinds of refuse. But little trouble is experienced in remedying these conditions after notice has been served on the responsible party. The garbage-dumps for the city's refuse are more of an annoyance than a nuisance to residents in their vicinity, and in the future will prove of benefit to all by gradually filling up the low and unhealthy meadow land and making other sanitary improvements possible. Occasionally complaints are made that unauthorized persons dump decayed fish, vegetables, butchers' refuse, etc., in exposed places. When such is the case one of the sanitary officers of this department is detailed to watch for the offenders and if caught they are at once arrested and punished. We have been able to regulate somewhat the dumping of offensive matters and compel its being put in suitable places where it will be quickly covered up and cease to be a source of offensive odors. There are comparatively few complaints received of stable nuisances because of the strict enforcement of the rules governing these places of business. During the summer vacation, accompanied by plumbing inspector James F. Blackshaw, I personally inspected schools nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, noting defects found in their sanitary condition, making reports to president John J. Mulvaney, of the board of education, at his request, and recommending such additions, alterations and repairs to the plumbing, drainage, heating and ventilation systems as would in my opinion result in decided improvement in their sanitary condition. These recommendations have been adopted where possible by the action of the board and by the co-operation of President Mulvaney and Superintendent Snyder. The results show great improvement in the sanitary conditions and appoint-

HUDSON COUNTY—*Continued.*

ments of our schools. The efforts of the board of health have also been directed toward securing better sites and construction, and more space both inside and outside of our school-houses. There are still some badly ventilated school buildings in the city.

I find by reference to our records that a decrease of about 500 cases of contagious diseases has occurred during 1899 compared with 1898. Diphtheria has been diminished by 145 cases, which I consider very remarkable. There has been a decrease of 257 cases of scarlet fever, 91 cases of typhoid fever and 7 cases of membranous croup. The only disease that shows an increase is measles, which has an increase of 134 cases over last year.

TOWN OF KEARNEY.

MEMBERS AND OFFICERS—Harvey Pierce, C. W. Burroughs, J. Pollard, M.D., Peter Boyle, W. E. Burtis; G. F. Lightfoot, M.D., Inspector; W. W. Keyler, Secretary; J. V. Laddy, D. V. S.; John McGlory, Inspector.

Communicable diseases reported as follows: Diphtheria, 18; membranous croup, 2; scarlet fever, 44; typhoid fever, 3. Ninety-six dwellings were connected with the public water-supply during the past year. Total length of sewers $16\frac{38}{100}$ miles. During the past year $1\frac{3}{4}$ miles of sewer pipe have been laid. Nuisances abated, 327. Appropriation, \$1,200. Monthly meetings are held.

NORTH BERGEN TOWNSHIP.

MEMBERS AND OFFICERS—M. F. Moylan, New Durham; I. W. Scholp, New Durham; H. Harm, Seacaucus; Geo. Bruce, Inspector, New Durham; S. Sullivan, New Durham; Chas. Dietz, W. Hoboken; John W. Culver, M.D., Jersey City; Emil J. Foerch.

Appropriation, \$300. Nuisances abated, 18. Monthly meetings are held.

WEST HOBOKEN TOWNSHIP.

MEMBERS AND OFFICERS—Wallace White, M.D.; Oscar O. Lauckner, John McCarthy, Frederick Cordes, A. O. Weisenburg, W. P. Fisk, Secretary.

Two cases of diphtheria were reported. One hundred and fifty nuisances were investigated and abated. Fourteen meetings were held.

HUNTERDON COUNTY.

ALEXANDRIA TOWNSHIP.

MEMBERS AND OFFICERS—Jerry Reed, Little York; R. A. Williams, Mt. Pleasant; M. D. Knight, M.D., Clinton; Wm. B. Wean, Assessor and Secretary, Mt. Pleasant.

BETHLEHEM TOWNSHIP.

MEMBERS AND OFFICERS—John B. Johnson, Norton; Wm. C. Crevelling, Pattenburg; J. V. Williver, Bloomsbury; S. O. Myers, Secretary, Bloomsbury; E. L. Reigle, M.D., Inspector, Bloomsbury.

Two nuisances were investigated and abated. Three meetings were held by the board.

CLINTON TOWNSHIP.

MEMBERS AND OFFICERS—W. E. Berkaw, M.D., Annandale; Cyrus A. Conover, Potterstown; Garret S. Kinney, Annandale; D. T. McCathrine, Lebanon; Bergen B. Berkaw, Secretary, Annandale.

Births reported, 24; total deaths, 27; under one year, 3. Thirty-three houses in the village of Annandale are supplied by the Clinton Water Company. One nuisance was reported and abated. Six meetings were held.

DELAWARE TOWNSHIP.

MEMBERS AND OFFICERS—Wm. H. Brewer, Sergeantville; Anderson Bray, Sergeantville; C. B. Johnson, Raven Rock; John E. Barber, Secretary, Oakdale; Geo. N. Best, Inspector.

Births reported, 22; deaths, 27. One case of diphtheria was reported. Two meetings were held.

HUNTERDON COUNTY—*Continued.*

EAST AMWELL TOWNSHIP.

MEMBERS AND OFFICERS—Wm. M. Clayhammer, Westville; J. S. Huder, Westville; C. C. Case, Reaville; Henry Apgar, Ringoes; P. C. Young, M.D., Secretary, Ringoes.

Two cases of scarlet fever and two of typhoid were reported. Monthly meetings were held.

FRANKLIN TOWNSHIP.

MEMBERS AND OFFICERS—John Anderson, Pittstown; W. A. Robinson, Quakertown; Wm. L. Scott, Quakertown; Q. E. Snyder, M.D., Quakertown; Isaac Suydam, Quakertown.

Two meetings were held.

BOROUGH OF FRENCHTOWN.

MEMBERS AND OFFICERS—Chas. H. Sigafos, Benj. Philkill, Wm. Hoffman.

Births reported, 22. Deaths, 17. Two meetings were held.

BOROUGH OF HIGH BRIDGE.

MEMBERS AND OFFICERS—P. H. Murray, Samuel Tait, Percival Christie, C. F. Halstead, M.D.; John L. Phillips, Secretary.

Births reported, 25. Total deaths, 17; under one year, 5. A new water-supply is being introduced. No sewers in the borough. Four nuisances were abated. Four meetings were held.

HOLLAND TOWNSHIP.

MEMBERS AND OFFICERS—Henry Sigafos, Reiglesville; Wm. Teats, Milford; Walter Bergstrasser, Milford; Geo. V. Wenner, M.D., Milford; F. Dalrymple, Secretary, Milford.

One case of diphtheria and 19 of scarlet fever were reported. Two nuisances were abated. Two meetings were held.

HUNTERDON COUNTY—*Continued.*

KINGWOOD TOWNSHIP.

MEMBERS AND OFFICERS—Isaac N. Search, Baptisttown; Thomas McAlone, Point Pleasant; John W. Hoff, Baptisttown; Samuel J. Snyder, Assessor and Secretary, Locktown; Frank S. Grimm, Inspector, Baptisttown.

Births reported, 30. Total deaths, 18; under one year, 1. One meeting was held.

CITY OF LAMBERTVILLE.

MEMBERS AND OFFICERS—John L. Coryell, Albert D. Anderson, William A. Cole, Chas. A. Jewell, Frank W. Larison, M.D., Samuel Stockton; James H. Reynolds, Secretary; John L. Coryell, Inspector.

Births reported, 76. Total deaths, 85; deaths under 1 year, —. Ten cases of diphtheria, 1 of membranous croup, 7 of scarlet fever and 7 of typhoid fever have occurred. There are 272 houses connected with the water-mains. Nuisances investigated, 26, all of which were abated. Appropriation, \$200. Thirty-four meetings were held.

LEBANON TOWNSHIP.

MEMBERS AND OFFICERS—Stewart Lance, Anthony; Wm. V. Prall, Change-water; Geo. Apgar, Califon; T. B. Fulper, Glen Gardner; A. S. Banghart, Glen Gardner.

Births reported, 36. Total deaths, 35; under 1 year, 4. Two cases of diphtheria and two of scarlet fever occurred. Twenty dwellings are connected with a public water-supply. Appropriation, \$50. Four meetings were held.

READINGTON TOWNSHIP.

MEMBERS AND OFFICERS—John R. Foster, Three Bridges; Wm. H. Regar, White-House Station; D. H. Miller, White House; F. L. Johnson, M.D., Stanton; Eugene Hoffman, Secretary, White-House Station.

HUNTERDON COUNTY—*Continued.*

TEWKSBURY TOWNSHIP.

MEMBERS AND OFFICERS—J. L. Hoffman, Cokesburg; H. F. Craig, New Germantown; Elias Conover, Fairmount; C. A. Kinkel, Secretary, New Germantown; Theo. Miller, Inspector, Califon.

UNION TOWNSHIP.

MEMBERS AND OFFICERS—Sylvester Taylor, Pittstwon; Jonas Sharp, Pattenburg; J. H. Hawk, Clinton; John Little, Secretary, Jutland; N. B. Boileau, Inspector, Jutland.

WEST AMWELL TOWNSHIP.

MEMBERS AND OFFICERS—Wm. M. Holcombe, Mt. Airy; John M. Smith, Lambertville; R. H. Fisher, Rocktown; F. W. Larison, M.D., Lambertville; Geo. H. Carr, Secretary, Lambertville.

One case of diphtheria was reported.

MERCER COUNTY.

EAST WINDSOR.

MEMBERS AND OFFICERS—R. W. Norton, Hightstown; E. R. Pickering, Hightstown; S. L. Mount, Secretary, Hightstown.

EWING TOWNSHIP.

MEMBERS AND OFFICERS—Samuel S. DeCou, Trenton Junction; J. H. Delp, Trenton Junction; J. S. Hough, Trenton Junction; Samuel T. Atchley, Ewingville; J. M. Matthews, Secretary, P. O. 676, Trenton.

Three nuisances were abated. Five meetings were held.

MERCER COUNTY—*Continued.*

HAMILTON TOWNSHIP.

MEMBERS AND OFFICERS—Geo. R. Robbins, M.D., Hamilton Square; Geo. C. Cubberly, Hamilton Square; Amos. H. Cole, Yardville; Colley M. Barcalow, Trenton; Timothy Scobey, Yardville; Azariah Cubberly, Secretary, Hamilton Square.

One nuisance was abated. Six meetings were held.

BOROUGH OF HIGHTSTOWN.

MEMBERS AND OFFICERS—Wm. F. Lott, D. H. Cunningham, Thomas Mason, D. W. Measarall, W. L. Wilbur, M.D., W. D. Wean, Secretary; F. B. Applegate, Inspector.

Appropriation, \$65. Monthly meetings are held.

BOROUGH OF HOPEWELL.

MEMBERS AND OFFICERS—W. W. Drake, S. V. Van Zandt, T. A. Pierson, Geo. E. Felter; W. I. Phillips, Secretary.

Births reported, 21; total deaths, 9; under one year, 3. Four meetings were held.

HOPEWELL TOWNSHIP.

MEMBERS AND OFFICERS—John Fleming, Pennington; P. B. Hunt, Titusville; David Stout, Stoutsburg; W. M. Radcliffe, M.D., Pennington; W. D. Hunt, Secretary, Harbourton.

Appropriation, \$100. Four meetings were held.

LAWRENCE TOWNSHIP.

MEMBERS AND OFFICERS—Clark Flock, Lawrence Station; James W. Phillips, Slackwood; John D. Cranstowne, Lawrenceville; Edwin Dewitt, Lawrenceville; Isaac B. Baker, Secretary, Lawrence Station.

On nuisance was abated.

MERCER COUNTY—*Continued.*

BOROUGH OF PENNINGTON.

J. C. Brown, borough clerk, reports that no board of health has been organized in this borough.

PRINCETON TOWNSHIP.

MEMBERS AND OFFICERS—E. H. Bergen, M.D., M. T. Pyne, B. Gulick, Richard Terhune; H. W. Van Dyke, Secretary.

CITY OF TRENTON.

MEMBERS AND OFFICERS—G. D. W. Vroom, President; Wm. Cloke, Secretary; W. H. Milburn, Treasurer; Adam Exton, Dr. Chas. P. Britton, Thomas S. Chambers and Dr. W. McD. Struble; Dr. Alton S. Fell, Health Officer; Wm. C. Allen, Assistant Health Officer; Edward L. Titus, Assistant Health Officer; Geo. W. Feaster, Inspector of Plumbing.

The Secretary writes as follows: The health of the city has been remarkably good during the year, owing in very large degree to the efficient administration of the law by the officers of the board. The city has several times during the year been threatened with outbreaks of virulent contagious diseases, but by the immediate adoption of drastic measures they have been promptly stamped out. The work of connecting houses with the excellent sewer system of the city is rapidly progressing under the energetic enforcement of the law of 1896 by the board. During the past year, 498 sewer connections have been ordered and made. The smallest number of such connections occurred in the month of February, and the largest in September. Month by month they were as follows: October, 55; November, 52; December, 22; January, 7; February, 3; March, 46; April, 30; May, 66; June, 56; July, 49; August, 45; September, 67; total, 498. During the same period, 81 cesspool connections were made. The sewers are so perfectly and frequently flushed that no sewer gas forms in them. The plumbing ordinance is also so comprehensive and is so thoroughly enforced that only modern, hygienic closet arrangements are permitted to be used. Every new house and building of every

MERCER COUNTY—*Continued.*

sort is constructed, as to its plumbing, in strict conformity with the law.

Since last year a new reservoir, with a capacity of 110,000,000 gallons, has been built, giving the city an ample water-supply.

The health laws, embodied in the code of the city of Trenton, have been strictly enforced, in every respect, as to food-supplies, the oversight and regulation of market-houses, slaughter-houses, etc., the suppression of nuisances of all sorts and the preservation of the public health.

WASHINGTON TOWNSHIP.

MEMBERS AND OFFICERS—F. Hutchinson, Windsor; H. H. Hutchinson, Hamilton Square; L. H. Brown, Robbinsville; George A. Silvers, M.D., Windsor; John B. Yard, Secretary, Robbinsville.

One case of typhoid fever was reported.

MIDDLESEX COUNTY.

CRANBURY TOWNSHIP.

MEMBERS AND OFFICERS—Isaac M. Cubberly, Cranbury; Edward Clayton, Cranbury; John D. Britton, Plainsboro; H. C. Symmes, M.D., Cranbury; James H. Goodwin, Assessor and Secretary, Cranbury.

Births reported, 16; deaths, 17. The board held 1 meeting.

EAST BRUNSWICK TOWNSHIP.

MEMBERS AND OFFICERS—John O. Cozzens, A. B. Rue, Geo. Rusher, Geo. Kohlhepp, Jos. Hodapp, Dr. Denelsback, Phil. Schlosser.

Ten cases of diphtheria and 1 of membranous croup were reported. Two nuisances were investigated.

MIDDLESEX COUNTY—*Continued.*

BOROUGH OF HELMETTA.

No board of health organized. J. L. Elliott, Borough Clerk.

MADISON TOWNSHIP.

MEMBERS AND OFFICERS—Ambrose Green, Old Bridge; W. H. Lambertin, Cheesequakes; James Fountain, Browntown; J. Crandall, M.D., Old Bridge; D. H. Brown, Secretary, Browntown.

Two meetings were held by the board.

BOROUGH OF MILLTOWN.

MEMBERS AND OFFICERS—T. E. Riva, M.D., G. C. Leas, B. Christ, R. M. Hustis, A. Wagner, C. Wagner; C. W. Kuhlman, Secretary.

No meetings were held.

MONROE TOWNSHIP.

MEMBERS AND OFFICERS—Chas. G. Hoffman, Jamesburg; Samuel F. Butcher, Applegarth; Chas. A. Morse, Prospect Plains; Willard Forman, Jamesburg; J. L. Suydam, M.D., Secretary, Jamesburg.

CITY OF NEW BRUNSWICK.

MEMBERS AND OFFICERS—H. R. Baldwin, M.D.; J. B. Smith, F. B. Kilmer, H. G. Cook; S. V. D. Clark, M.D., Secretary.

Births reported, 420; deaths, 453. Communicable diseases were reported as follows: Diphtheria, 15; membranous croup, 1; scarlet fever, 51; typhoid fever, 3. The total length of sewers is about 15 miles. Three miles of new sewers are under construction. Sixty-two nuisances were abated. Appropriation \$1,000. Monthly meetings are held by the board.

MIDDLESEX COUNTY—*Continued.*

NORTH BRUNSWICK TOWNSHIP.

MEMBERS AND OFFICERS—Nelson Williamson, New Brunswick; J. B. Herbert, New Brunswick; Thomas H. Buckalew, Deans; John Ten Eycke, M.D., Franklin Park; A. E. Bowman, Secretary, New Brunswick.

One case of typhoid fever was reported. Appropriation, \$100. Two meetings were held.

CITY OF PERTH AMBOY.

MEMBERS AND OFFICERS—Louis Fade, Jos. E. Chapman, Wm. D. Sofield, Geo. West, Jas. B. Toomey, P. P. Murray, J. H. Mulchahey; Wm. E. Ramsey, M.D., Secretary and Inspector.

The following cases of communicable diseases were reported: Diphtheria, 11; membranous croup, 6; typhoid fever, 4. There are about 10 miles of sewers. Nuisances investigated, 60, of which 53 were abated. Number of prosecutions, 3. All dairies supplying milk to inhabitants of the city are inspected. Two midwives have been fined \$50 each for failure to report births. Sixteen meetings were held.

PISCATAWAY TOWNSHIP.

MEMBERS AND OFFICERS—John M. Dayton, New Market; Jos. V. D. Fields, Bound Brook; J. H. Sebring, Bound Brook; M. J. Whitford, M.D., New Market; Chas. E. Kelly, Secretary, New Market.

One case of diphtheria was reported. Two meetings were held.

RARITAN TOWNSHIP.

MEMBERS AND OFFICERS—Wm. Thornal, Metuchen; Oscar Martin, Metuchen; James Morton, Metuchen; Wm. McKenzie, M.D., Metuchen; Wm. Van Sickel, Secretary, Metuchen.

MIDDLESEX COUNTY—*Continued.*

BOROUGH OF SAYREVILLE.

MEMBERS AND OFFICERS—Jos. Smith, Casper Boehm, John M. Blew; B. F. Samsel, Secretary.

Seven cases of diphtheria and 3 of scarlet fever were reported. Four meetings were held.

BOROUGH OF SOUTH AMBOY.

MEMBERS AND OFFICERS—J. L. White, M.D., Bernard Roddy, A. C. Parisen, John I. Taylor; J. F. Fulton, Secretary; Thos. Baker, Inspector.

One case of diphtheria, 1 of membranous croup, and 7 of scarlet fever were reported. Nuisances abated, 78. Appropriation, \$100. Fifteen meetings were held.

SOUTH BRUNSWICK TOWNSHIP.

MEMBERS AND OFFICERS—F. W. Stout, Monmouth Junction; John McDowell, Deans; Geo. W. McDowell, Dayton; Edgar Carroll, M.D., Dayton; H. E. Hathaway, Secretary, Monmouth Junction.

One case of diphtheria and 1 of scarlet fever occurred. One nuisance was abated. One meeting was held.

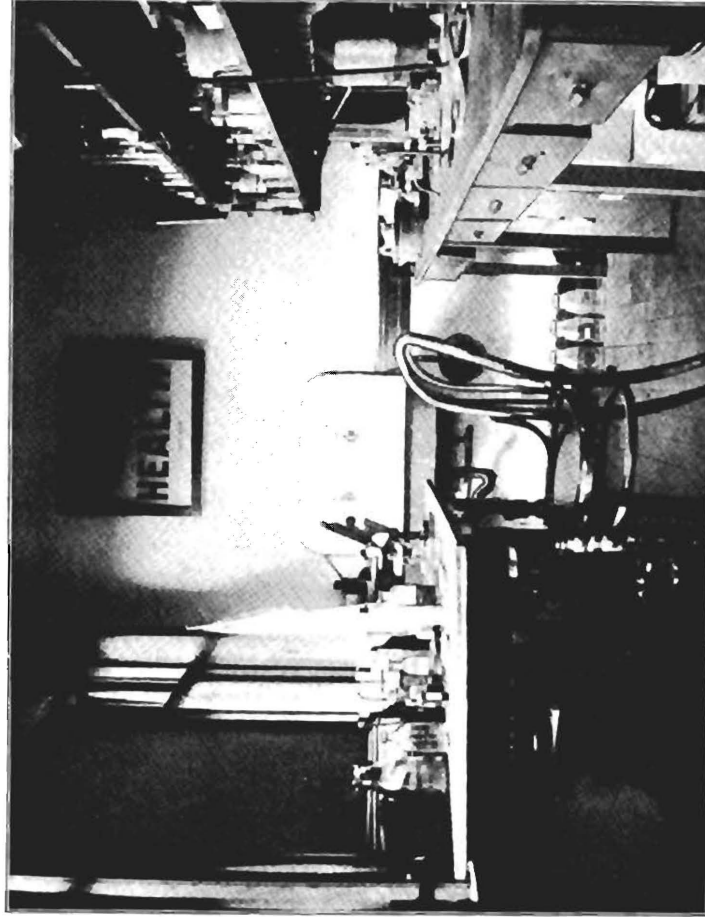
BOROUGH OF SOUTH RIVER.

MEMBERS AND OFFICERS—Wilbur Conover, John Bell, Wm. L. Roller; R. V. Reid, Secretary; Chas. B. Burnett, Inspector.

One case of diphtheria, nineteen of scarlet fever, and two of typhoid fever were reported. Six nuisances were abated. Appropriation, \$100. Fifteen meetings were held.

WOODBIDGE TOWNSHIP.

MEMBERS AND OFFICERS—Clarence W. Liddle, Woodbridge; Thomas Dunnigan, Woodbridge; Leon A. Chase, Carteret; Ira T. Spencer, M.D., Woodbridge; James V. Freeman, Secretary, Woodbridge.



Laboratory in Health Office, Asbury Park.

MIDDLESEX COUNTY—*Continued.*

Births reported, 140; total deaths, 90; under one year, 25. Five cases of diphtheria, one of membranous croup, six of scarlet fever, and three of typhoid fever were reported. Thirteen meetings were held.

MONMOUTH COUNTY.

ATLANTIC TOWNSHIP.

MEMBERS AND OFFICERS—Samuel T. Vanderveer, Colt Neck; L. Schanck, Holmdel; Daniel Shutts, Tinton Falls; Levi Scobey, Assessor, Scobeyville.

No organization.

CITY OF ASBURY PARK.

MEMBERS AND OFFICERS—N. E. Buchanan, President; Randolph Ross, Treasurer; James A. Bradley, David W. Sexton, Walter W. Davis, Theo. H. Beringer, Jesse Minot; D. C. Bowen, Inspector.

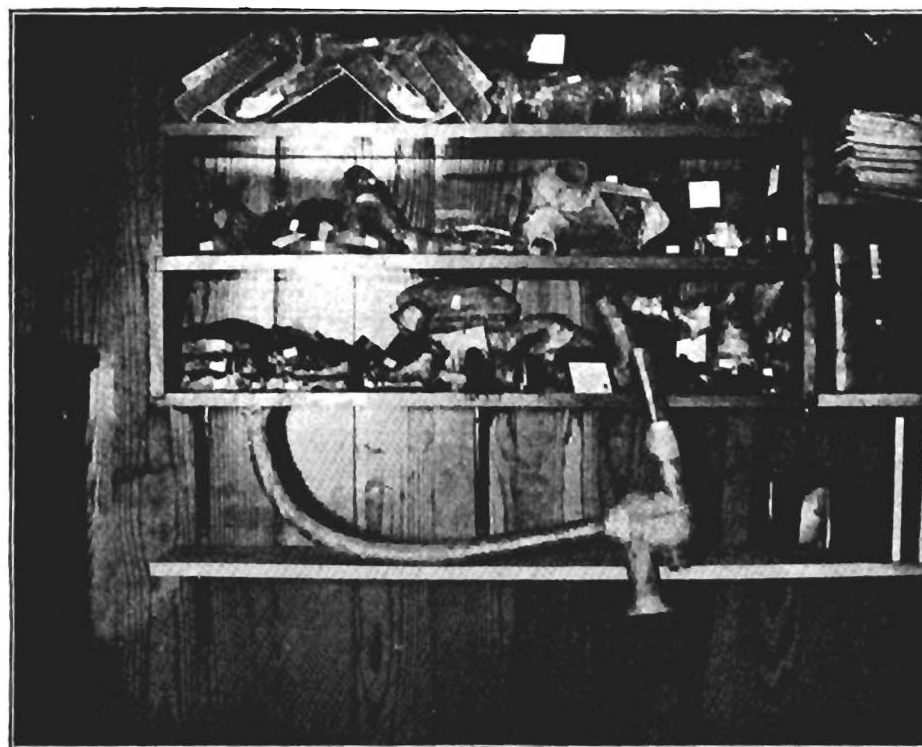
To the Board of Health of the State of New Jersey :

GENTLEMEN—In compliance with the provisions of section 37, of an act approved March 31st, 1897, the report of the local board of health of the city of Asbury Park, New Jersey, for the year ending October 1st, 1899, is herewith submitted. There has been no change in the membership of the board during the past year. Messrs. Randolph Ross and Theodore H. Beringer, whose term of office expired in May last, were re-appointed by the Common Council. There has been no epidemic of communicable disease and the number of cases of preventable diseases reported, compared with the population, has been small. The number of deaths which have occurred among the resident population, viz., twenty-two, is less than for any preceding year since 1888. The deaths among the transient population of the

MONMOUTH COUNTY—*Continued.*

city—37—exceed that for any preceding year, 1890 excepted, in the history of the town. This fact does not necessarily prove an increase in the non-resident population death-rate, but it is undoubtedly due to the fact that never before in the history of Asbury Park has the population of the locality been so large as during the past summer. The non-resident population is estimated only, and it so fluctuates from year to year that it is altogether probable that the figures used for sanitary purposes, in estimating the non-resident population, are far from accurate and cannot be relied upon to give a true death-rate. It is shown by the records of vital statistics for the State, published in the annual report of your board, that the death-rate has gradually decreased from 21.62 per 1,000 in 1892 to 15.10 per 1,000 in 1898, and as the year just closed has been marked for its healthfulness in this locality it is altogether probable that the death-rate, among the non-resident population, has not increased, and that it has in fact decreased in proportion to that of the resident population. It is fully realized by this board that people who leave homes, in which the sanitary arrangements are known to be complete, to seek health and recreation at a pleasure resort, are entitled to the protection which it is the purpose of the health laws to bestow. In order that such persons may learn the conditions which exist on the premises where they make their homes, while in Asbury Park, a sanitary record of the dwellings in this city is kept in the health office, and information is furnished, regarding the sanitary condition of any property, upon application at the office of the board of health.

There has been no change in the city's water-supply during the past year, and the supply, which is derived exclusively from artesian wells, has been equal to the demand. Some alarm was created among householders, at one time during the summer, when the water in the supply-pipes failed to rise above the first floor. This condition, which was not due to any failure in the source of supply, however, but to some mishap to the machinery or appliances at the pumping station, was speedily corrected, and the inconvenience caused by the temporary shortage was of short duration. The average daily consumption during the summer months has been about 800,000 gallons. There are but twelve dwellings in the city which are not supplied with water from the public water-works.



Specimens of Defective Plumbing Work in Asbury Park Health Office, Gathered by the Inspector during the Performance of his Official Duties.

MONMOUTH COUNTY—*Continued.*

The map upon which is recorded the number and character of the wells which now exist in Asbury Park, shows:

	1897	1898	1899
	Oct. 1st.	Oct. 1st.	Oct. 1st.
Surface (shallow) wells.....	93	96	90
Artesian (deep) wells	1	4	4
Wells on premises having no other water-supply....	17	13	12
Wells in public grounds.....	8	8	4
Total.....	127	121	110

No supervision being exercised by any public department of the city over the connection and construction of water-pipes in dwellings, householders are free to connect the water-pipes to any available source of supply. During the sanitary inspection of hotels and boarding-houses, conditions are sometimes shown to exist in the water-supply on such premises which show that the proprietors are not solely influenced concerning the quality, but sometimes by the cost, of this commodity when manipulating water pipes, as is shown by the following report:

To the Board of Health of Asbury Park:

GENTLEMEN—Inspection of the hotel, number st., shows that a surface well has been recently made on said premises and connected with the water-supply pipes, in the manner herein described:

The well is a driven well and has been sunk beneath the cement floor of an area at the rear of the hotel. A force-pump is attached to the well and water is pumped into an uncovered, copper-lined, wooden cistern, holding about 745 gallons, erected upon the back veranda on the fourth floor of the building. Said cistern has also been connected direct with the public water-supply pipes which distribute water through a meter from the street mains, to every drainage fixture and faucet on the hotel premises. The discharge pipe, from said cistern, has been fitted with a stop-cock near the cistern. The stop-cock is necessary, owing to the manner in which the pipes are connected, otherwise, when the water in the public standpipe is at a greater height than that in the tank (about thirty-five feet from the ground surface), water would be forced from the street mains into the tank in quantity sufficient to cause overflow. On the other hand, when the water in the standpipe falls below the level of the tank, with stop-cock open on the supply, well-water from the tank would be forced back, through the meter, into the street mains.

The visible sources of contamination about the well above referred to are as follows:

1st. The well, as before stated, is sunk beneath the cement surface of an area 2½ feet deep, 6 feet wide and 35 feet long, extending across the rear of the hotel. Garbage receptacles, rubbish and general refuse matter are stored in said area.

MONMOUTH COUNTY—*Continued.*

There being no drainage connection to carry off filthy fluids which gather in said area, three holes have been broken in the cement floor and two three-foot lengths of six-inch tile pipes have been sunk beneath the surface of the floor through which filthy fluids flow and percolate into the sandy soil about the well. One of the said tile waste-pipes enters the ground within two feet of the well.

2d. Two refrigerators in a room in which meats and provisions are stored in the basement discharge waste fluids upon the ground within five feet of the well, and the surface of the ground about the area has been polluted for several years past by filthy fluids.

3d. There is one privy vault, two catch-basins, one tile sewer and an old dis-used tile drain within fifteen feet of said well.

Respectfully submitted,

D. C. BOWEN, *Inspector.*

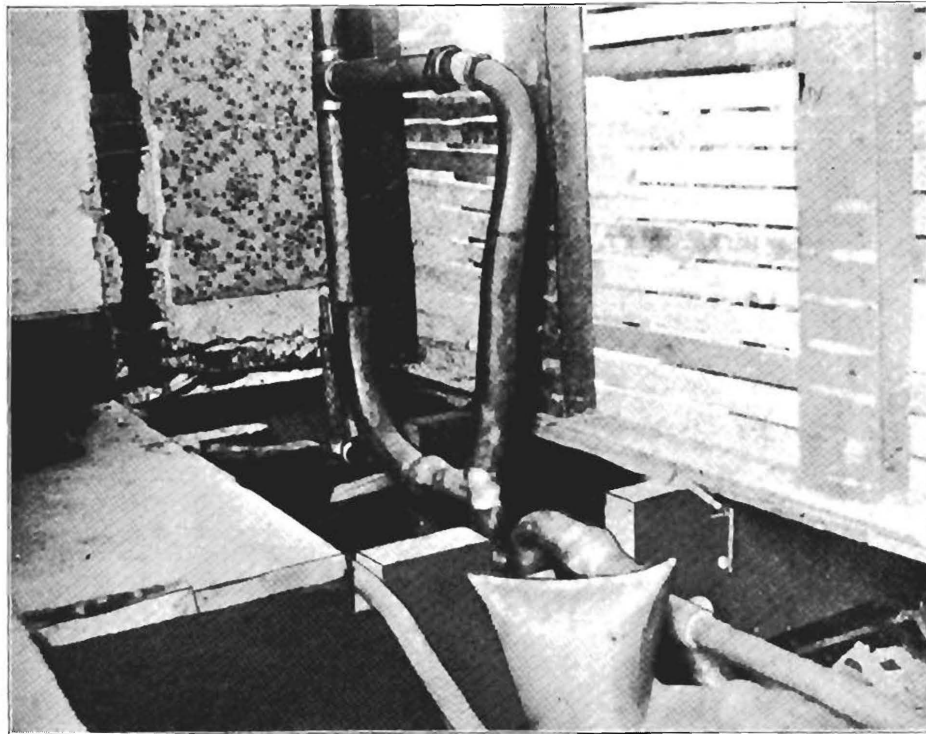
July 24th, 1899.

Subsequent analysis made of a sample of water taken from the well referred to in the above report, showed that the water was badly polluted and unfit for potable use.

The sewers have continued to work without interruption. They extend to all parts of the city and are within reach of every building. There are but twenty-nine premises in the city which have no connection with the sewers, and they can be classified as follows:

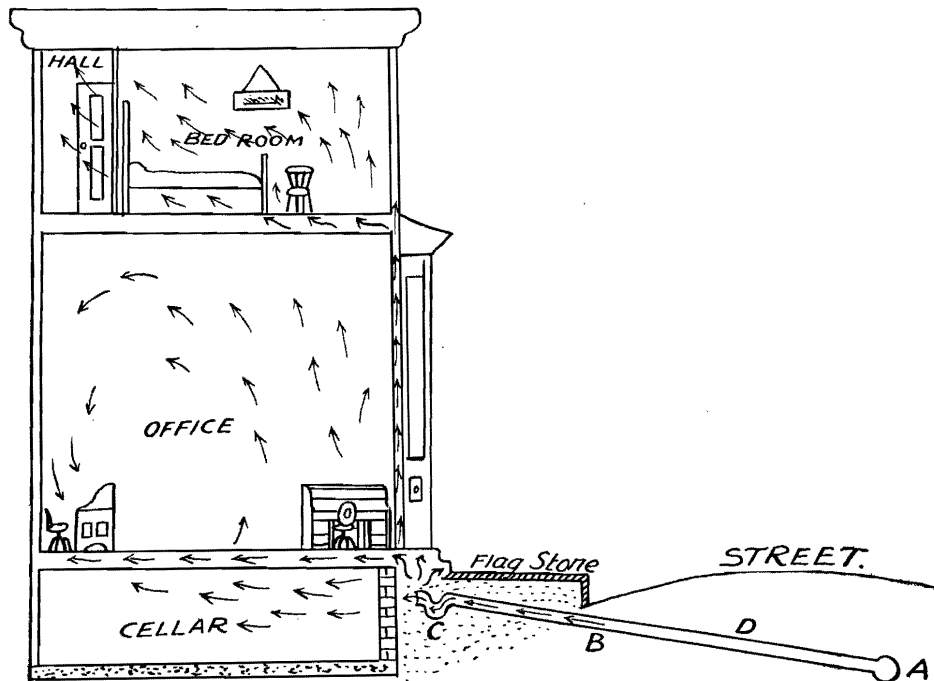
Dwellings.....	9
Churches.....	3
Business houses.....	6
Buildings not classified.....	11
Total.....	29

Ninety plans and specifications, for the construction of plumbing and drainage work in buildings, have been approved during the year. This work required 461 inspections, 109 air tests, and 83 smoke tests to be made. In addition to the above, 113 notices for minor alterations and repairs in drainage systems have been filed and inspection of the work, in each case, has been made. The use of a smoke machine, in connection with the inspection of plumbing and drainage work in this city, has been found to be indispensable in securing tight construction in the case of new plumbing work, as well as in conducting sanitary inspections of premises where it is desired to apply a reliable test to detect leaks in old plumbing and drains. The following sketch, taken from the inspector's note-book, shows how a smoke test is used, with good results, during the sanitary inspection of premises:



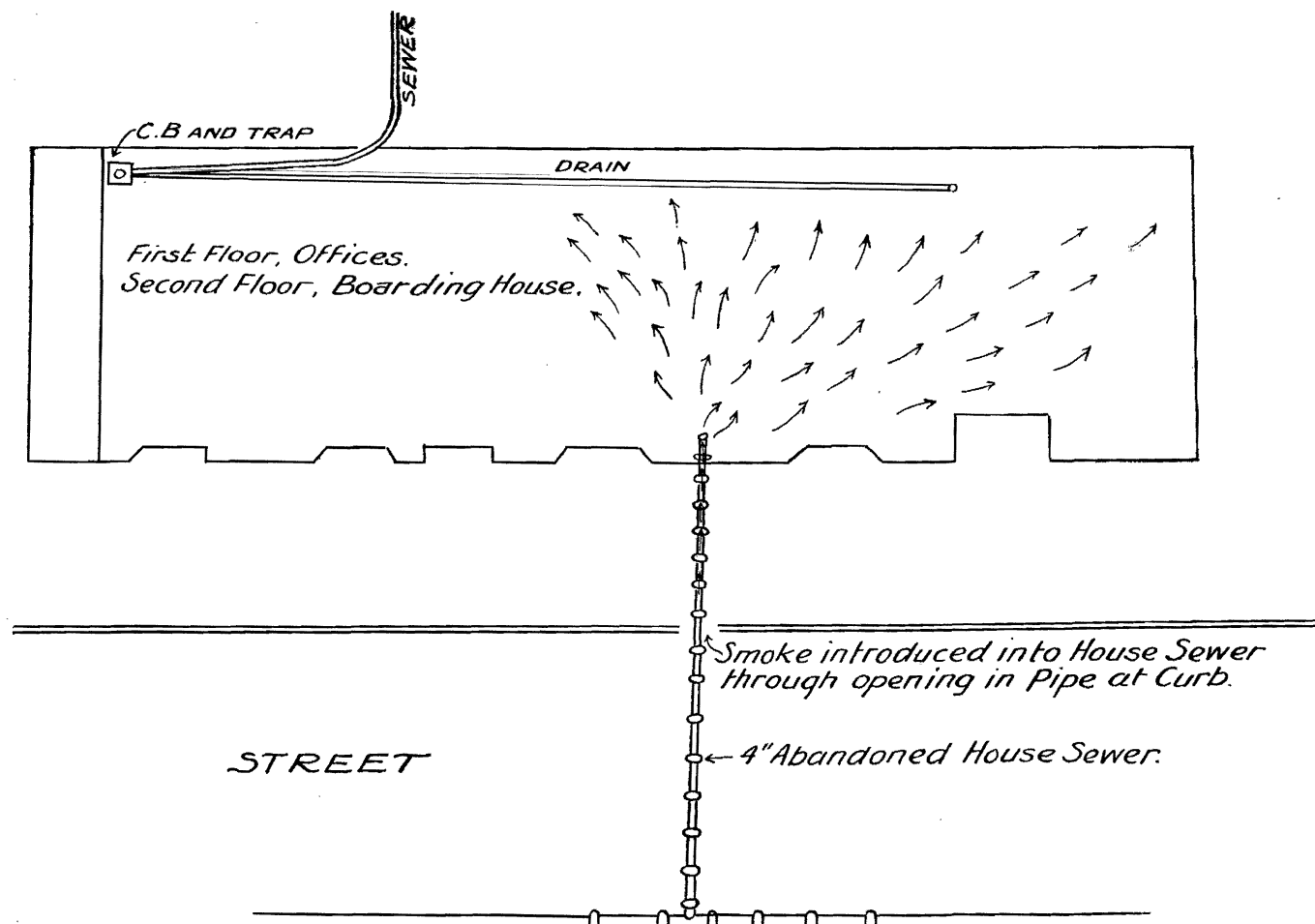
Vent-pipe Connected on House Side of Bath-tub Trap. This Work was Performed Under the Direction of a Master Plumber in the Year 1899.

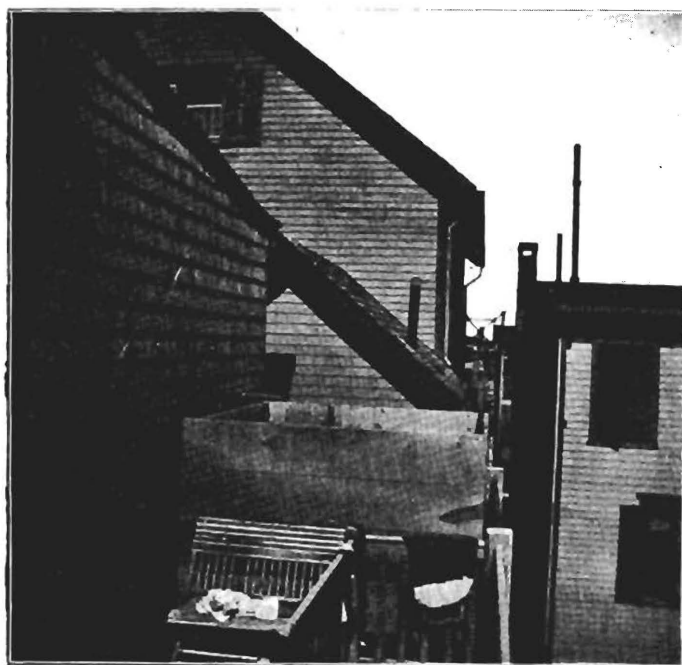
MONMOUTH COUNTY—Continued.



- A 8" STREET SEWER
 B SMOKE MACHINE ATTACHED HERE
 C UNSEALED TRAP ON HOUSE SEWER
 D ABANDONED HOUSE SEWER.

The building shown in the foregoing sketch is used for stores and offices on the first floor, and as a boarding-house on the second floor. For some time prior to the inspection, which revealed the conditions above shown, gases from the main-sewer found access into the building through the abandoned open drain, in such quantities that at times the occupants of one of the sleeping-rooms were obliged to vacate. The odors were also particularly bad in one of the office-rooms on the first floor of the building and caused considerable annoyance to the tenants.





The Storage Tank on the Upper Back-veranda, and Guests' Bathing Robes.

MONMOUTH COUNTY—*Continued.*

More complaints from citizens are received against the offensive odors created by the existence of privy-vaults than from any other one class of nuisances, and such complaints are generally found, upon investigation, to be well grounded. It is difficult to conceive just why owners, as a rule, so tenaciously cling to such an offensive structure as a privy-vault, when they have a sewer on the property, particularly in these days when the modern water-closet can be secured at a small cost, compared with the enhanced value of the property thus supplied over one equipped with the cold comfort afforded by the privy in the back yard. It is a fact, nevertheless, that in a large majority of cases this board, in its efforts to abate the privy-vault nuisance, has met with stubborn resistance from property-owners, but it may also be stated that there has uniformly been hearty approval on the part of the occupants of neighboring dwellings. That these efforts have not been without result, however, is shown by the following table:

Number of privy-vaults existing in Asbury Park on October 1st, each year, for four years—1896-1899:

1896, October 1st,	1897, October 1st,	1898, October 1st,	1899, October 1st,
417.	345.	314.	277.

The map record showing privy-vaults, corrected up to October 1st, 1899, shows that among the 277 privy-vaults, now in the city, there are—

Privy-vaults having connection with sewer.....	235
Privy-vaults having no connection with sewer.....	42
Privy-vaults known to be defective.....	3
Privy-vaults with citizens' complaints against them.....	44
Privy-vaults in the hands of the sanitary committee.....	4

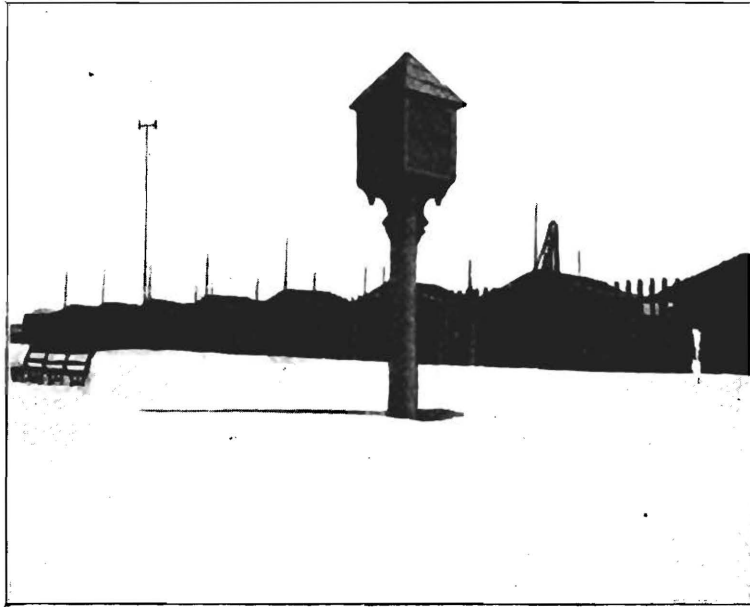
The use of a catch-basin on the line of every house-drain is required by the sewer company, in cases where water-closets are connected therewith. The map records show the number of catch-basins, on October 1st, 1899, to be:

Brick and cement.....	751
Wrought iron.....	15
Total.....	766

MONMOUTH COUNTY—*Continued.*

The supervision heretofore exercised by this board over the milk supply of the city has been continued, and information already possessed in the health office, concerning the sanitary conditions of dairy and milk-depot premises supplying milk to Asbury Park, is steadily being supplemented. Records of inspection of these premises are made for the purpose of learning the true sanitary conditions which exist on premises on which milk is produced or stored, in order that we may be able, as far as possible, to guard against the introduction and spread of the communicable diseases which are well known to be conveyed through this important article of diet. Consumers desiring to learn the conditions under which the milk supplied to their families is produced or handled, are free to examine these records upon personal application at the health office. It has been found necessary during the year to prevent the sale of milk, in this city, from several premises on account of polluted water-supplies, either upon the premises where the milk was produced or handled. The use of formaldehyde, which was found to be so freely employed as a milk preservative during the summer of 1898, has not been found in the samples taken for examination during the past summer. Twenty-five samples of milk were taken from the supply of as many different dealers during the summer of 1898, and 17 contained formaldehyde. Of the samples taken from the supply of 36 dairies, during the summer of 1899, not one showed the presence of formaldehyde. It would therefore seem that the steps which were taken by the health authorities during the summer of 1898, to prevent the addition of preservatives to milk, resulted in deterring dealers in this vicinity from continuing the practice.

A study of the meteorological records, kept in the health office for the past ten years, shows that the extremes in weather conditions, such as high and low temperatures, wet and dry seasons, are probably only learned for a locality after many years of continuous records. A summary of the weather conditions for each month in the year, compared with the corresponding month for each preceding year, for the past ten years, have been made during the past year and is shown as follows :



Meteorological Instrument Shelter on the Ocean Front, Asbury Park.

MONMOUTH COUNTY—*Continued.*

OCTOBER.—The mean temperature for the month of October, 1898, 59°, is 4.3° above the normal and .2° below the mean for the corresponding month of 1897. The highest temperature was 78° on the 4th and the lowest 32° on the 28th. The precipitation for the month, 5.75 inches, is 1.44 inches above the normal and 2.86 inches more than for the corresponding month of 1897. The weather conditions for the month of October, during the past nine years, have been as follows:

Temperature.—Mean temperature, 54.7°. The warmest October was in 1897 with a mean temperature of 59.2°. The coldest October was in 1895 with a mean temperature of 50.8°. The highest October temperature was 91° in 1897, and the lowest 69° in 1895 and 1896.

Precipitation.—Average for the month, 4.34 inches. Average number of days on which .01 inch or more fell, 7.8. The greatest monthly precipitation for October was 8.12 inches in 1890, and the smallest .28 inch in 1892. The greatest amount of precipitation in any twenty-four consecutive hours was 2.48 inches in 1895.

Clouds and Weather—

Average number of clear days.....	13.2
Average number of partly cloudy days.....	7.4
Average number of cloudy days.....	9.1

The prevailing winds were from the northwest.

NOVEMBER.—The mean temperature for the month of November, 1898, 43.1°, is 5° below the normal and 2.6° below the mean for the corresponding month for 1897. The highest temperature was 66°, on the 2d, and the lowest, 21°, on the 27th. The precipitation for the month, 8.52 inches, was 4.50 inches above the normal and 4.77 greater than for the corresponding month of 1897. The weather conditions for the month of November, during the past nine years, have been as follows:

Temperature.—Mean temperature, 43.6°. The warmest November was in 1896, with a mean temperature of 47.3°. The coldest November was in 1894, with a mean temperature of 40.3°. The highest November temperature was 76°, in 1892, and the lowest, 14°, in 1891.

Precipitation.—Average for the month, 3.82 inches. The greatest monthly precipitation was 8.67 inches, in 1892, and the smallest, .88 inch, in 1890. The greatest amount of precipitation in any 24 consecutive hours was 3.85 inches, on the 15th and 16th, 1892. Average number of days on which .01 inch or more fell, 8.8.

Clouds and Weather—

Average number of clear days.....	13.6
Average number of partly cloudy days.....	6.7
Average number of cloudy days.....	9.8

The prevailing winds were from the northwest.

MONMOUTH COUNTY—*Continued.*

DECEMBER.—The mean temperature for the month of December, 1898, 34.9°, is 1° below the normal and 2.1° below the mean for the corresponding month of 1897. The highest temperature was 65° on the 30th, and the lowest, 7° on the 11th. The precipitation for the month, 3.13 inches, was .02 inch above the normal and 1.89 inches less than for the corresponding month of 1897. The month was characterized by a thunder storm of some severity on the night of the 22d. The weather conditions for the month of December, for the past nine years, have been as follows :

Temperature.—Mean temperature, 35°. The warmest December was in 1891, with a mean temperature of 41.2°. The coldest December was in 1892, with a mean temperature of 30.4°. The highest December temperature was 67° in 1897, and the lowest, 52° in 1890 and 1896.

Precipitation.—Average for the month, 3.11 inches. The greatest monthly precipitation was 5.82 inches in 1894, and the smallest, 1.52 inches, in 1896. The greatest amount of precipitation in any twenty-four consecutive hours was 3.71 inches on the 26th and 27th, 1894. Average number of days on which .01 inch or more precipitation fell, 9.

Clouds and Weather—

Average number of clear days.....	12.0
Average number of partly cloudy days.....	8.7
Average number of cloudy days.....	10.3

The prevailing winds were from the west.

JANUARY.—The mean temperature for the month of January, 1899, 32.4°, is .7° above the normal and 1.8° below the mean for the corresponding month of 1898. The highest temperature was 59° on the 5th and 6th, and the lowest 0°, on the 2d. The weather conditions for the month of January, during the past ten years, have been as follows :

Temperature.—Mean temperature, 31.7°. The warmest January was in 1890, with a mean temperature of 41.2°. The coldest January was in 1893, with a mean temperature of 21.8°. The highest January temperature was 67°, on the 13th, 1890, and the lowest—5° on the 6th, 1896.

Precipitation (rain and melted snow.)—Average for the month 3.34 inches. Average number of days on which .01 inch or more fell, 8.7. The greatest monthly precipitation was 5.33 inches in 1891, and the smallest 1.05 inches in 1890. The greatest amount of precipitation in any twenty-four consecutive hours was 1.90 inches on the 13th, 1892. The greatest amount of snow recorded in any twenty-four consecutive hours (records extending back to 1893) was 12 inches on the 27th and 28th, 1897.

Clouds and Weather—

Average number of clear days.....	12.3
Average number of partly cloudy days.....	8.5
Average number of cloudy days.....	10.2

The prevailing winds were from the west and northwest.



Reading the Meteorological Instruments after the Heavy Snow-fall on 11th and 12th of February, 1899, Asbury Park.



A Street Scene in Asbury Park after the Heavy Snow fall on 11th and 12th of February, 1899.

MONMOUTH COUNTY—*Continued.*

FEBRUARY.—The mean temperature for the month of February, 1899, 27.5°, is 5.5° below the normal and 5.3° below the mean for the corresponding month of 1898. The highest temperature was 57° on the 20th, and the lowest—9.5° on the night of the 11th. This is the lowest temperature recorded during the ten years covered by the meteorological records in the health office. The dates on which zero weather have heretofore occurred in Asbury Park are as follows:

Year.	Month.	Date.	Temperature.
1893.....	January	16th.....	4° below zero.
		17th.....	3° " "
		18th.....	1° " "
1895.....	February.....	6th.....	4° " "
1896.....	January	6th.....	5° " "
1896.....	February.....	17th.....	1° " "
1898.....	February.....	4th.....	0°
		2d	0°
1899.....	January.....	2d	0°
	February.....	9th.....	1° below zero.
	"	10th.....	8° " "
	"	11th.....	9.5° " "

The precipitation for the month, 7.66 inches, is 3.38 inches above the normal and 3.32 inches above that for the corresponding month of 1898. The heaviest snow fall, for the ten years covered by the records in Asbury Park, occurred on the 11th, 12th and 13th, when 21.90 inches of snow fell. The total snow fall for the month was 27.40 inches. The weather conditions for the month of February, for the past ten years, have been as follows:

Temperature.—Mean or normal temperature, 33°. The warmest February was in 1890, with a mean temperature of 41.6°. The coldest February was in 1895, with a mean temperature of 25°. The highest February temperature was 71°, on the 18th, 1890, and the lowest, 9.5° (below zero), on the 11th, 1899.

Precipitation.—Average for the month, 4.28 inches. The greatest monthly precipitation was 7.66 inches in 1899, and the lowest, 1.05 inches, in 1890. The greatest amount of precipitation in any 24 consecutive hours was 2.89 inches on the 20th, 1898. The average number of days on which .01 inch or more precipitation fell, 10.2.

Clouds and Weather—

Average number of clear days.....	11.6
Average number of partly cloudy days.....	8.4
Average number of cloudy days.	9.3

The prevailing winds were from the west.

MONMOUTH COUNTY—*Continued.*

MARCH.—The mean temperature for the month of March, 1899, 38.8°, is .4° above the normal and 4.8° below the mean for the corresponding month of 1898. The highest temperature was 59° on the 13th, and the lowest, 18°, on the 21st. The precipitation for the month, 7.72 inches, is 3.02 inches above the normal, and 3.60 inches above that for the corresponding month of 1898. The precipitation for the month exceeds the amount of precipitation for the corresponding months for the past 10 years. The ground-water levels in the soil underlying the city were shown by measurements for the month of March to be higher than ever before recorded. This is due to the abnormal rain-fall for the year 1898, supplemented by an excessive amount of precipitation during the first 3 months of 1899. The total precipitations for the year ending January 1st, 1899, 61.22 inches, is 14.50 inches above the normal yearly precipitation for the past ten years. The yearly precipitation in this vicinity for the years 1895, 1896 and 1897, was deficient. The amount of precipitation for these years being:

Year.	Amount of Precipitation.
1895.....	37.14 inches.
1896.....	36.36 "
1897.....	44.43 "

About 42 per cent. of the average yearly precipitation fell in the three months from January 1st to April 1st, 1899.

The weather conditions for the month of March, for the past ten years, have been as follows:

Temperature.—Mean temperature, 38.8°. The warmest March was in 1894 and 1898, with a mean temperature of 43.6°. The coldest March was in 1896, with a mean temperature of 34.4°. The highest March temperature was 77° on the 17th, 1898, and the lowest 9° on the 7th, 1890.

Precipitation.—Average for the month, 4.70 inches. The greatest monthly precipitation was 7.72 inches, in 1899, and the smallest 2.26 inches, in 1894. The greatest amount of precipitation in any twenty-four consecutive hours was 1.94 inches on the 22d, 1890. The average number of days on which .01 inch or more precipitation fell, 11 2.

Clouds and Weather—

Average number of clear days.....	11.4
Average number of partly cloudy days.....	7.5
Average number of cloudy days.....	12.1

The prevailing winds were from the northwest.

APRIL.—The mean temperature for the month of April, 1899, 47.1°, is 2.2° below the normal and 1.1° below the mean for the corresponding month of 1898. The highest temperature was 74° on the 26th, and the lowest 26° on the 3d. The precipitation for the month, 1.36 inches, is 2.17 inches below the

MONMOUTH COUNTY—*Continued.*

normal, and the smallest amount of precipitation for the corresponding month during the past ten years. The weather conditions for the month of April, for the past ten years, have been as follows:

Temperature.—Mean temperature, 49.3°. The warmest April was in 1891, with a mean temperature of 52.2°. The coldest April was in 1899, with a mean temperature of 47.1°. The highest April temperature was 90° on the 17th, 1896, and the lowest 20° on the 6th, 1898.

Precipitation (rain and melted snow).—Average for the month, 3.53 inches. The greatest monthly precipitations was 6.66 inches in 1893 and 1895, and the lowest 1.36 inches in 1899. The greatest amount of precipitation in any twenty-four consecutive hours was 2.09 inches on the 8th and 9th, 1897. The only snow records, amounting to more than a trace or which did not melt as soon as the snow had fallen (records extending back to the winter of 1893), occurred on the 5th, 1898, when 3.50 inches fell. The average number of days when .01 inch or more fell, 8.1.

Clouds and Weather—

Average number of clear days..... 13.7

Average number of partly cloudy days..... 7.8

Average number of cloudy days..... 8.5

The prevailing winds were from the southeast.

MAY.—The mean temperature for the month of May, 1899, 59.1°, is .9° below the normal, and 3.7° above the mean for the corresponding month of 1898. The highest temperature was 87°, on the 28th, and the lowest, 41°, on the 5th. The precipitation for the month, 1.84 inches, is 2.04 inches below the normal and 4.84 inches lower than for the corresponding month of 1898. The weather conditions for the month of May, for the past ten years, have been as follows:

Temperature.—Mean temperature, 60°. The warmest May was in 1896, with a mean temperature of 65.6°. The coldest May was in 1893, with a mean temperature of 58.4°. The highest May temperature was 96°, on the 31st, 1895, and the lowest 35°, in 1891.

Precipitation.—Average for the month, 3.88 inches. Average number of days on which .01 inch or more fell, 10.2. The greatest monthly precipitation was 6.68 inches, in 1898, and the smallest, 1.84 inches, in 1899. The greatest precipitation in any 24 consecutive hours, 2.10 inches, was on the 15th and 16th, 1891.

Clouds and Weather—

Average number of clear days..... 13.8

Average number of partly cloudy days..... 8.3

Average number of cloudy days..... 9.9

The prevailing winds were from the southeast.

MONMOUTH COUNTY—*Continued.*

JUNE.—The mean temperature for the month of June, 1899, 70.6°, is 1° below the normal and 1.5° above the mean for the corresponding month of 1898. The highest temperature was 98° on the 6th, and the lowest 52° on the 17th. The precipitation for the month, 2.70 inches, is .60 inch below the normal, and .97 inch less than for the corresponding month of 1898. The weather conditions for the month of June, for the past ten years, have been as follows:

Temperature.—Mean temperature, 69.6°. The warmest June was in 1892, with a mean temperature of 72.4°. The coolest June was in 1897, with a mean temperature of 65.8°. The highest June temperature was 99° in 1895, and the lowest 44° in 1897.

Precipitation.—Average for the month, 3.3 inches. Average number of days on which .01 inch or more precipitation fell, 8.1. The greatest monthly precipitation, 5.28 inches, was in 1893, and the smallest, 1.35 inches in 1895. The greatest amount of precipitation in any twenty-four consecutive hours, was 2.85 inches in 1893.

Clouds and Weather—

Average number of clear days.....	14.6
Average number of partly cloudy days.....	7.5
Average number of cloudy days.....	7.9
The prevailing winds were from the southeast.	

JULY.—The mean daily temperature for the month of July, 1899, 72.2°, is .6° below the normal and 2.0° below the mean for the corresponding month of 1898. The hottest day was on the 27th with a mean temperature of 80° and a maximum temperature of 91°. The hottest day of July, 1898, was on the 3d, when the maximum temperature was 104° and the daily mean 87.5°. The precipitation for July, 1899, 4.71 inches, is .62 inches below the normal for the month and 7.01 inches less than for the corresponding month of 1898, when 11.72 inches of precipitation fell; this being the greatest rainfall, in July, on record. The weather conditions for the month of July, during the past ten years, have been as follows:

Temperature.—Mean temperature, 72.2°. The warmest July was in 1894 with a mean temperature of 76.4. The coolest July was in 1891 with a mean temperature of 70.1°. The highest July temperature was 104° on the 3d, 1898, and the lowest 51° on the 20th, 1890.

Precipitation.—Average for the month, 5.33 inches. Average number of days on which .01 inch or more precipitation fell, 9.5. The greatest monthly precipitation, 11.72 inches, was in 1898, and the smallest .97 inch in 1894. The greatest amount of precipitation in any twenty-four consecutive hours was 3.86 inches in 1898.

MONMOUTH COUNTY—*Continued.**Clouds and Weather—*

Average number of clear days.....	15.1
Average number of partly cloudy days	7.8
Average number of cloudy days.....	8.1

The prevailing winds were from the southeast.

AUGUST.—The mean temperature for the month of August, 1899, 71.3°, is 1° below the normal and 3.9° below the mean for the corresponding month of 1896. The highest temperature was 89° on the 5th, and the lowest 56° on the 9th. The precipitation for the month, 3.32 inches, is .88 inch below the normal and 3.09 inches lower than for the corresponding month of 1898. The weather conditions for the month of August, during the past ten years, have been as follows:

Temperature.—Mean temperature, 72.3°. The warmest August was in 1898, with a mean temperature of 75.2°. The coolest August was in 1890 and 1894, with a mean temperature of 70.8°. The highest August temperature was 96° in 1894 and 1895, and the lowest, 45°, in 1890.

Precipitation—Average for the month, 4.25 inches. Average number of days on which .01 inch or more precipitation fell, 8.5. The greatest monthly precipitation, 8.67 inches, was in 1893, and the smallest, .91 inch, in 1896. The greatest amount of precipitation in any twenty-four consecutive hours, was 3.75 inches in 1893.

Clouds and Weather—

Average number of clear days.....	15.6
Average number of partly cloudy days.....	8.8
Average number of cloudy days.....	6.6

The prevailing winds were from the southeast.

SEPTEMBER.—The mean temperature for the month of September, 1899, 65.9°, is .9° below the normal and 3.8° below the mean for the corresponding month of 1898. The highest temperature was 87° on the 8th, and the lowest 42° on the 28th. The precipitation for the month, 3.62 inches, is .42 inch above the normal and 2.13 inches above that for the corresponding month of 1898. The weather conditions for the month of September, during the past ten years, have been as follows:

Temperature.—Mean temperature, 66.8°. The warmest September was in 1898, with a mean temperature of 69.7°. The coolest September was in 1893, with a mean temperature of 63.9°. The highest September temperature was 99° on the 21st, 1895, and the lowest 38° on the 24th, 1896.

Precipitation.—Average for the month, 3.20 inches. Average number of days on which .01 inch or more precipitation fell, 7.1. The greatest monthly precipitation for September was 7.72 inches in 1894, and the lowest, 1.22 inches in 1892.

MONMOUTH COUNTY—*Continued.**Clouds and Weather—*

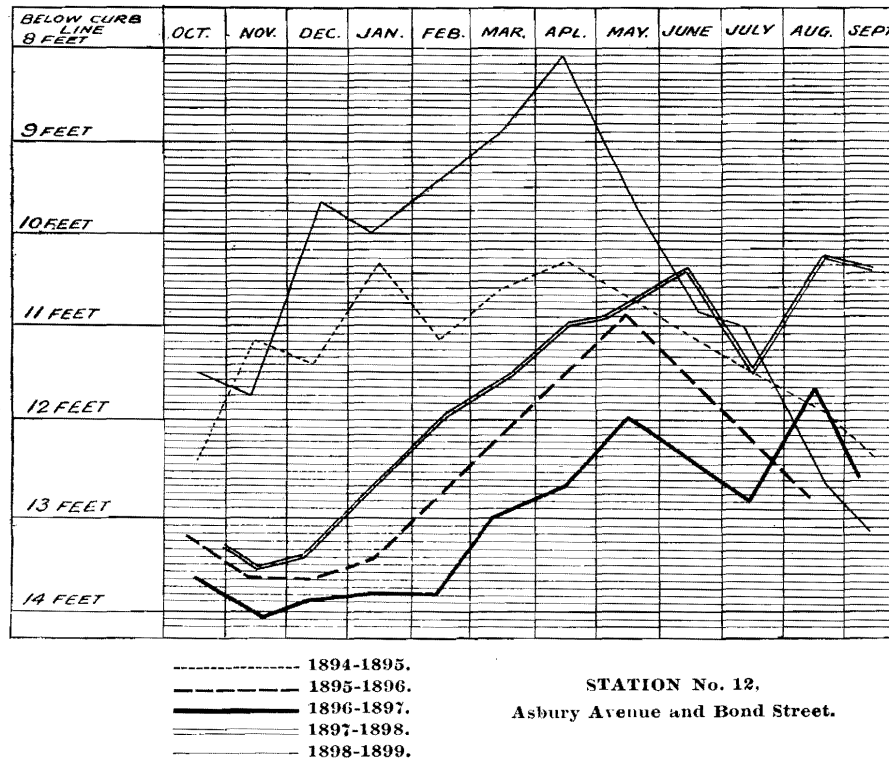
Average number of clear days..... 16.7

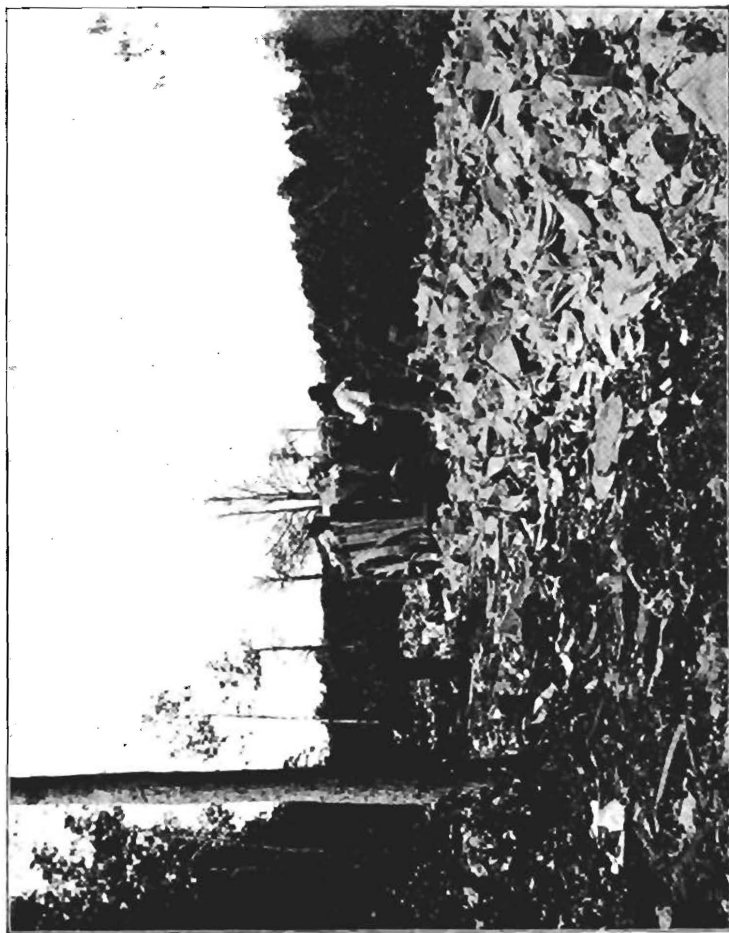
Average number of partly cloudy days..... 6.0

Average number of cloudy days..... 7.3

The prevailing winds were from the southeast and southwest.

The ground-water levels, in the soil underlying the city, during the past year, have been high. The top mark was reached in April, 1899, when the water stood 26 inches higher in the tube at station No. 12, corner of Bond street and Asbury avenue, than at any time since observations have been taken. These high ground-water levels were the result of the excessively heavy rainfall during the year 1898, and the first three months of the year 1899. The result was that many cellars never before known to have been wet were damp during this period. The following chart shows the ground-water levels for each month during the past five years :





A Rubbish Dump as it Appears Before Burning.

MONMOUTH COUNTY—*Continued.*

Efforts to improve the public garbage and rubbish service have been continued during the past year and a close study of this important branch of the sanitary administration of the city has been made for the betterment of the service. On the basis of information relating to the work, gathered during the summer of 1898, the following recommendations were made previous to the time of making a new contract for 1899 :

ASBURY PARK, N. J., April 17th, 1899.

To the Common Council :

GENTLEMEN—I am directed by the board of health to communicate to your honorable body the following information pertaining to the garbage and rubbish service during the past year, together with their recommendations relating to the same for the coming year.

The metal garbage carts and improved rubbish carts, purchased by the city during the past year, have proved satisfactory and their use has largely removed from our streets the nuisance created by the unsightly and offensive wooden-bodied garbage wagons formerly in use.

It has been shown by the daily reports furnished by the contractor, and by information gathered by the inspection service of this board, that the daily amount of garbage and rubbish removed from the city from August 1st to September 13th, 1898, exceeded that which the seven garbage and three rubbish carts, now owned by the city, could handle, and that four additional garbage carts and two additional rubbish carts are needed for the collection and transportation of waste materials during the summer of 1899. For the further improvement of this service the board makes the following recommendations :

1st. That four more garbage and two more rubbish carts, such as are now owned by the city, be purchased.

2d. That no more harness be purchased by the city, but that the contractor be required to furnish harness as well as horses.

3d. That in making a new contract for the collection, transportation and disposal of garbage, dead animals and rubbish, bids be asked for one, two and three years.

Specifications for the guidance of bidders for new garbage contracts are also enclosed herein. The specifications are the same as those under which the present contract was made, except that a few changes and modifications, intended to cover the defects found to exist in the old specifications, have been made.

The board would also advise that bids for a new garbage contract be advertised for at as early a date as practicable, in order that the successful bidder may have ample time to make arrangements to begin work at the expiration of the present contract on June 15th, 1899.

Very respectfully,

D. C. BOWEN, *Secretary.*

MONMOUTH COUNTY—*Continued.*

The recommendation for the purchase of four additional garbage carts and two additional rubbish carts was based on the quantities of these waste products which were collected and removed during the summer of 1898, and no allowance was made for any increase over these amounts for the summer of 1899.

The purchase of three additional garbage and two additional rubbish carts was authorized by the common council, and a contract for the removal of waste materials was made for a term of three years, dating from June 15th, 1899.

Owing to the large increase in our summer population for the summer of 1899 over that of 1898, the number of garbage carts now owned by the city was still found to be too small by five carts, and it was found necessary during the height of the season to again temporarily resort to the use of several of the objectionable wooden-bodied garbage wagons, which have been held in reserve for such an emergency.

The amount of garbage removed from June 15th to October 1st, 1899, was $32\frac{27}{100}$ per cent. greater than the amount removed during the same period of time in 1898.

The amount of rubbish did not increase in proportion to that of garbage, and the five rubbish carts were found to be sufficient to do the work.

The provisions of the specifications under which the work is now conducted, requiring the contractor to furnish strong, serviceable horses or mules of a given weight, has materially improved the appearance as well as the efficiency of the service.

Much hindrance to the satisfactory conduct of the work has been caused during the past summer by householders, particularly by the proprietors of some of the hotels and boarding houses in failing to comply with the provisions of the ordinance by supplying a sufficient number of suitable garbage receptacles. In some cases miscellaneous receptacles, such as baskets, boxes, tin pans, etc., would be pressed into service, and in other cases cans holding about 35 gallons are supplied. Cans of this size, when filled with garbage, are so heavy that two men cannot carry them and deposit their contents in the garbage carts.



A Rubbish Dump After Burning.

MONMOUTH COUNTY—*Continued.*

TABLE SHOWING NUMBER OF CUBIC YARDS OF GARBAGE REMOVED EACH WEEK FROM JUNE 15TH TO OCTOBER 1ST DURING 1898 AND 1899.

1898.		1899.		1898.	1899.
Week ending	Quantity removed weekly, in cubic yards.	Week ending	Quantity removed weekly, in cubic yards.	Weekly amount in cubic yards greater than 1899.	Weekly amount in cubic yards greater than 1898.
June 18.....	39.69	June 17..	30.10	9.59	.....
June 25.....	60.73	June 24.....	58.53	2.20	.....
July 2.....	61.08	July 1.....	84.86	.....	23.78
July 9.....	107.51	July 8.....	162.35	.....	54.84
July 16.....	92.46	July 15.....	156.78	.....	64.32
July 23.....	127.03	July 22.....	208.03	.....	81.00
July 30.....	154.33	July 29.....	230.06	.....	75.73
Aug. 6.	188.93	Aug. 5.....	243.98	.....	55.05
Aug. 13.....	235.69	Aug. 12.....	281.35	.....	45.66
Aug. 20.....	250.84	Aug. 19.....	318.29	.....	67.45
Aug. 27.....	254.01	Aug. 26.....	320.85	.....	66.84
Sept. 3.....	216.89	Sept. 2.....	275.92	.....	59.03
Sept. 10.....	166.88	Sept. 9.....	212.48	.....	45.60
Sept. 17.....	99.50	Sept. 16.....	141.78	.....	42.28
Sept. 24.....	68.26	Sept. 23.....	97.74	.....	29.48
Oct. 1.....	61.64	Sept. 30.....	67.65	.....	6.01
	2,185.47		2,890.75	11.79	717.07

It will be seen by the above table that there was 705,28 cubic yards ($32\frac{27}{100}$ per cent.) more garbage removed from June 15th to October 1st, 1899, than during the same period of time in 1898.

The largest weekly amounts removed in each year were during the week ending August 27th, 1898, and August 26th, 1899.

MONMOUTH COUNTY—Continued.

TABLE SHOWING THE NUMBER OF CUBIC YARDS OF RUBBISH REMOVED EACH WEEK
FROM JUNE 15TH TO OCTOBER 1ST, DURING 1898 AND 1899.

1898. Week ending	Quantity removed week- ly, in cubic yards.	1899. Week ending	Quantity removed week- ly, in cubic yards.	1898.	1899.
				Weekly amount in cubic yards greater than 1899.	Weekly amount in cubic yards greater than 1898.
June 18.....	232.3	June 17.....	128.2	104.1	.....
" 25.....	232.3	" 24.....	200.2	32.1	.....
July 2.....	242.4	July 1.....	244.4	.....	2.0
" 9.....	212.1	" 8.....	206.3	5.8	.....
" 16.....	303.0	" 15.....	293.4	9.6	.....
" 23.....	242.4	" 22.....	252.2	.....	9.8
" 30.....	252.4	" 29.....	256.0	.....	3.6
August 6.....	303.0	August 5.....	280.0	23.0	.....
" 13.....	292.9	" 12.....	276.0	16.9	.....
" 20.....	314.4	" 19.....	288.0	26.4	.....
" 27.....	276.2	" 26.....	336.0	.....	59.8
September 3...	236.6	Sept. 2.....	268.0	.....	31.4
" 10.....	242.7	" 9.....	300.0	.....	57.3
" 17.....	271.7	" 16.....	264.0	7.7	.....
" 24.....	150.3	" 23.....	216.0	.....	65.7
October 1.....	148.4	Oct. 30.....	172.0	.....	23.6
	3 953.1		3 980.7	225.6	253.2

The above table shows that there was but 27.6 cubic yards more rubbish removed, from June 15th to October 1st, during the summer of 1899, than for the same period of time during 1898. There should be 136.2 cubic yards added to this amount, however, this being the amount removed in the first two weeks of 1898 over that which was removed during the same period of time in 1899, which was evidently the accumulation left by the contractor in charge of the work prior to the time when the supervision of the collection and removal of garbage and rubbish was placed in the hands of the health department on June 15th, 1898.

The final disposal of these waste-products is conducted upon a farm in Ocean township, two miles from the city limits. Rubbish is burned in open fires, and it is found that after a rubbish pile is lighted the fire continues to burn until all organic matter contained therein has been consumed. The residue which is left, consisting of tin cans,



Boarding-house Garbage Stored in Leaky Receptacles and Upon the Ground. Observed by the Inspector but not by the Guests.

MONMOUTH COUNTY—*Continued.*

glass, crockery, &c., is used for filling low lands. There is no objection to this method of final disposal of rubbish when conducted in a locality far enough removed from habitations so that the smoke from the fires will not prove a nuisance.

The amount of heat-producing energy contained in the quantity of combustible rubbish which is annually collected and removed from this city would, if properly utilized, go a great way towards supplying fuel for the destruction, by fire, of Asbury Park's garbage.

Garbage is disposed of by feeding to hogs. It is spread over the surface of newly-cleared woodland, where it is left to decompose and eventually disappear into the soil, and portions of it are also spread broadcast upon cultivated land and plowed under. The last-named method of disposal, when the garbage is spread upon the land as soon as gathered and at once plowed under, is attended with but little nuisance, and the land, thus treated, is found to be very much enriched. The other method referred to, from a hygienic point of view, has nothing to recommend it, but very much to condemn it.

The number of cases of communicable diseases occurring during the year has been small, considering the large number of people dwelling in Asbury Park during the summer months.

From October 1st, 1898, to June 12th, 1899, there were four cases of scarlet fever, one case of typhoid fever, and two cases of tuberculosis, reported.

From June 12th to October 1st, 1899, there were two cases of scarlet fever, two cases of typhoid fever, two cases of diphtheria, and four cases of measles, reported.

Making in all six cases of scarlet fever, four cases of measles, three cases of typhoid fever, two cases of tuberculosis, and two cases of diphtheria; a total of seventeen cases during the year.

Three of the four cases of scarlet fever occurring during the winter were in a family residing in a tenement house in which there were no facilities for separating the sick from the well members of the family; the fourth case occurred in an over-crowded rear dwelling, from which the patient was removed to the isolation hospital. The sources of infection in these cases were not learned. The two cases which occurred during the summer months were in families occupying private cot-

MONMOUTH COUNTY—*Continued.*

tages and the source of contagion in each case is shown by the following report:

To the Board of Health of Asbury Park:

GENTLEMEN--On July 12th, 1899, a case of scarlet fever was reported in a family by the name of A--, residing at No. ---, ----- Avenue. The family consisted of Mr. and Mrs. A--, four children and two servants. They came from New York city early in the season. Inquiry into the history of the case failed to show, at the time, the source of contagion. The patient was isolated in charge of the nurse, in rooms on the second floor of the building and the usual precautions were taken to prevent the spread of the disease.

On August 13th another case of scarlet fever was reported in a family by the name of B--, residing on the same avenue. Inquiry into this case showed that Mr. and Mrs. B-- and four children came to Asbury Park from Albany, N. Y., on June 24th, and took rooms at the --- hotel, No. --- avenue, where they remained until June 28th; they then rented a cottage and began house-keeping. Inquiry shows that one of the B-- children had scarlet fever in Albany and had just recovered from the disease when the family came to Asbury Park. One of the servants, in the B-- family in Albany, was sickening with the disease at the time of the departure of the family for this city. This servant did not accompany the family, however, but was left in Albany.

The facts in this case seem to show conclusively that the B-- family brought the contagion of scarlet fever with them from their Albany home, and that after being in Asbury Park seven weeks one of the children developed the disease. The case was isolated upon the second floor of the building, in charge of the nurse, and measures were taken to prevent the further spread of the disease.

It was subsequently shown that the B-- family and the A-- family were friends and, prior to the case of scarlet fever in the A-- family, the patient had been a frequent visitor at the B-- household. It is, therefore, pretty conclusively shown that the case in the A-- family, although preceding the B-- case by twenty-five days, was due to the same contagion as that of the B-- case, *i. e.*, infection, which must have been brought by the B-- family from Albany.

The A-- case has been discharged and the house cleansed. Isolation is still maintained for the B-- case, and, although there were other children in both of the families who have not previously had scarlet fever, no other case has thus far occurred.

Respectfully submitted,

August 30th, 1899.

D. C. BOWEN, *Secretary.*

One case of typhoid fever occurred in January. The patient was a resident of this city and the history of the case unquestionably shows that the disease was contracted by the patient during a visit in

MONMOUTH COUNTY—*Continued.*

Philadelphia, Pa. The remaining two cases occurred during the summer months, and the source of contagion in either case was not learned. Four cases of measles were reported during the month of July, but no spread of the disease resulted therefrom. Two cases of diphtheria were reported during the summer. Both patients were adults, guests of a hotel and a boarding-house, from which buildings they were removed to the isolation hospital. Two cases only of tuberculosis have been reported. Undoubtedly other cases of this disease have existed in our city, but the provision of the ordinance requiring reports of this disease has evidently been complied with only partially. The isolation hospital has been occupied sixty-two days during the year. The need of permanent and more suitable buildings for isolation hospital purposes has been clearly demonstrated during the past summer. The protection of the city against the spread of communicable diseases, which are liable at any time to occur in crowded houses, demands that a more suitable building be provided to which cases of this nature can be removed and in which they may be cared for. The following table shows the number of cases of communicable diseases reported and the number of deaths which have occurred therefrom in Asbury Park for fifteen years, 1885 to 1889:

MONMOUTH COUNTY—Continued.

YEARS.	POPULATION.		NUMBER OF CASES REPORTED.						DEATHS.					
	Resident.*	Non-resident†	Measles.	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Consumption.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Consumption.	Small-pox.
1885.....	2,000	15 320	14	3	1	...	...	...	2	1	...	2	...	...
1886.....	2,125	17,108	4	2	9	...	...	...	...	4	...	5	...	...
1887.....	2,250	18 896	82	7	7	...	...	...	...	7	...	3	...	...
1888.....	2,375	20,684	...	20	2	1	...	...	1	1	...	4	...	...
1889.....	2,500	22,472	10	3	...	1	...	...	...	1	...	3	...	...
1890.....	2,625	24,260	...	16	6	...	...	...	1	2	...	4	...	...
1891.....	2,750	26,048	1	6	2	...	...	...	...	...	...	5	...	...
1892.....	2,875	27,836	36	4	7	1	...	...	1	3	1	4	...	...
1893.....	3,000	29,624	...	7	6	...	...	...	...	1	...	3	...	...
1894.....	3,380	31,412	7	7	2	4	1	8	...	...	1	5	1	...
1895.....	3,761	33,200	6	5	5	7	1	...	...	3	...	2	...	...
1896.....	4,141	35,000	39	3	2	1	...	1	...	1	...	7	...	...
1897.....	4,521	36,800	5	14	15	2	1	...	...	2	1	2	...	...
1898.....	4,901	38,600	5	3	1	1	...	...	...	...	...	1	...	...
1899.....	5,281	.....	4	6	2	3	2	...	...	...	...	3	...	...
Totals.....			213	106	67	21	5	8	1	5	26	3	53	1

*Resident population estimated, except for the years 1880 and 1895.

†Non-resident population estimated.

Owing to the wide-spread prevalence of small-pox existing throughout the country during the early part of the year, the following circular letter was prepared and mailed to all physicians practicing in this vicinity:

....., M. D.

DEAR DOCTOR—Small-pox has prevailed as a wide-spread epidemic in some of the Southern and Western States during the past year, and recently it has occurred in New York State and in Pennsylvania, and its course thus far has been largely unrestricted. Thirteen cases have recently appeared in Hudson and Essex counties, New Jersey. We particularly desire to call your attention to errors in diagnosis which have been made all along the line from Canada around the Great Lakes through Virginia and North Carolina and up into Ohio and Pennsylvania. This error has consisted in mistaking small-pox for chicken-pox. Unquestionably an epidemic of small-pox will occur before long in New Jersey, because vaccination has been ruthlessly neglected until not less than one-fourth of the whole population of this State is now unprotected.

MONMOUTH COUNTY—*Continued.*

We therefore solicit your most careful inquiry into every case of a suspicious nature which may come under your professional care, and trust that we may have instant information, without waiting for final diagnosis.

Very respectfully,

D. C. BOWEN, *Secretary.*

Later, upon the appearance of a number of cases of small-pox in Monmouth county, another circular letter was mailed to all practitioners in this vicinity, as follows :

....., *M. D. :*

DEAR DOCTOR—Owing to the wide-spread prevalence of small-pox throughout the country, and especially because of the existence of nine cases in Monmouth county, it seems necessary that every physician should be on the lookout for the premonitory symptoms of this disease. We therefore call your attention to the matter, and urge that any case coming under your professional care, in which there are symptoms of this disease, shall be instantly isolated, and that notification be at once sent to this board.

Very respectfully,

D. C. BOWEN,
Secretary.

Vigilance was exercised by this board in keeping itself advised concerning the development and progress of the disease throughout the county. Fortunately, however, no case occurred in this city.

In exposing the contents of a room to the action of formaldehyde gas, for the purposes of disinfection, the room is first made as tight as possible. This is best accomplished by pasting strips of paper over all visible openings through which air can freely pass, and if the construction of the room is such that it cannot be rendered fairly tight the results obtained are found to be worthless. The second step is to arrange every article in the room so as to expose every part of its surface to the action of the gas. This is best accomplished by suspending such articles as clothing, bedding, etc., from lines stretched in the room. The best results are secured when the air in the room is moist and warm. After everything has been made ready, one quart of a twenty per cent. aqueous solution of formaldehyde gas is employed to each one thousand cubic feet of space, sprinkled over the contents of the room by means of a sprinkling pot (more solution being used if the room is not a tight one); care being taken to spread the solution over as much surface

MONMOUTH COUNTY—*Continued.*

as possible. The room is then closed and the cracks around the door sealed up and the gas allowed to act from six to eighteen hours. The efficiency of the work is tested by exposing in the room silk threads infected with different micro-organisms contained in glass tubes. These tubes are placed about the room in such a manner as to show whether or not all parts of the room and its contents have been rendered sterile by the operation.

The test cultures used in this work have been furnished by the State Laboratory of Hygiene, and after exposure the threads are returned to the laboratory for examination.

The following tables show some of the results which have been obtained by the use of formaldehyde gas in the manner above described:

RESULTS SECURED IN THE DISINFECTION OF DWELLINGS.

Micro-organisms employed.	Manner of exposure.	Length of exposure.	Results.	Place and conditions under which the work was performed.
Typhoid	{ In folds of woolen garment..... }	17 hours....	Growth	Two rooms in a dwelling containing 2,500 cubic ft. of space. Floors bare and having numerous cracks. Openings about windows and doors sealed by strips of paper. Temperature of room from 50° to 60° F. Four pounds of a 20% solution of formaldehyde gas sprinkled over floors and contents of rooms.
Typhoid	{ Covered with three thickness of Canton flannel..... }	17 hours....	Growth	
Diphtheria.....	{ In folds of calico garment..... }	17 hours....	Growth	
Diphtheria.....	Free	17 hours....	Growth	
Anthrax	Free	17 hours....	Growth	
Anthrax	Covered with sheet....	17 hours....	Growth	Bed-room containing 700 cubic feet of space. Sixteen ounces of a 40% solution of formaldehyde gas sprayed into room by means of a force pump and spray nozzle. No precautions were taken to close the openings about window frames in the one window in room. Temperature of air in room about 55° F. One room containing 800 cubic feet of space, two windows and one door. No carpets on floor, and openings around windows and door plugged up with cotton batting. Twelve ounces of a 40% solution of formaldehyde gas sprinkled about room and over contents. Flies in the room were found to have been killed by gas, but spiders were found to be alive when the room was opened. Control culture of diphtheria gave no growth, showing cultures of diphtheria to be unreliable.
Typhoid	On floor.....	40 hours....	No growth..	
Diphtheria.....	{ Under carpet on floor..... }	40 hours....	No growth..	
Anthrax	{ On mattress covered with quilt.... }	40 hours....	No growth..	
Control cultures.....	.....	.....	Growth	
Anthrax	{ Suspended near ceiling..... }	18 hours....	No growth..	Control culture of diphtheria gave no growth, showing cultures of diphtheria to be unreliable.
Anthrax	On floor.....	18 hours....	No growth..	
Diphtheria.....	On floor.....	18 hours....	No growth..	
Diphtheria.....	{ Suspended in air four feet from floor..... }	18 hours....	No growth..	
Control culture (anthrax).....	.....	.....	Growth	
Control culture (diphtheria)			No growth..	

NEW JERSEY STATE LIBRARY



Card-board Shield on Vaccinated Arm.

MONMOUTH COUNTY—*Continued.*

RESULTS SECURED IN THE DISINFECTION OF DWELLINGS.

Micro-organisms employed.	Manner of exposure.	Length of exposure.	Results.	Place and conditions under which the work was performed.
Anthrax	{ Threads placed in a bundle of clothes at different depths from inner to outer layer of bundle. }	24 hours.....	No growth..	Clothing and bedding sprinkled with a 1% solution of formaldehyde gas and rolled in a large bundle, placed in a closet and closet door sealed up.
Anthrax		24 hours.....	No growth..	
Diphtheria.....		24 hours.....	No growth..	
Diphtheria.....		24 hours.....	No growth..	
Typhoid		24 hours.....	No growth..	
Typhoid	{ On mattress covered with pillow }	24 hours.....	No growth..	Bed-room, bare floor, containing 1,480 cubic feet of space. Openings about windows and door caulked tight with cotton. Temperature about 70° F. One quart of a 20% solution of formaldehyde gas sprinkled over room and contents.
Control cultures.....		24 hours.....	Growth	
Anthrax		21 hours.....	Growth	
Anthrax		21 hours.....	No growth..	
Anthrax		21 hours.....	No growth..	
Anthrax		21 hours.....	No growth..	
Control culture.....		21 hours.....	Growth	
Anthrax	Free.....	43 hours.....	No growth..	Quilts, blankets and bed-spreads were sprinkled with a 20% solution of formaldehyde gas, folded and placed in a box, one upon another, and lid to box closed. The box used for the purpose was made of one-inch tongued and grooved white pine boards, lined upon the inside with building paper, and contains, when empty, about 52 cubic feet of space.
Anthrax	{ Between folds of quilt..... }	43 hours.....	No growth..	
Anthrax	{ Between leaves of closed book..... }	43 hours.....	No growth..	
Anthrax	{ Between folds of quilt..... }	43 hours.....	No growth..	
Anthrax	{ Between folds of quilt..... }	43 hours.....	No growth..	
Diphtheria.....	{ Between leaves of closed book..... }	43 hours.....	No growth..	
Diphtheria.....	Free.....	43 hours.....	No growth..	
Diphtheria.....	Free.....	43 hours.....	No growth..	
Diphtheria.....	{ Between folds of blanket..... }	43 hours.....	No growth..	
Typhoid	{ Between folds of quilt..... }	43 hours.....	No growth..	
Typhoid	{ Between folds of quilt..... }	43 hours.....	No growth..	
Typhoid	{ Folded in dry quilt placed in box..... }	43 hours.....	No growth..	
Control cultures.....	.....	.....	Growth	

In accordance with the usual custom of this board, free vaccination has been offered during the year, and eighty-four persons have availed themselves of this opportunity to secure protection against small-pox.

Preceding the holiday vacation the school board, in accordance with the provisions of section 22, laws of 1887, made announcement in each of the schools requesting that each pupil in attendance upon the public schools should furnish a certificate of successful vaccination performed during the previous five years.

In order that no pupil should be deprived of the protection against small-pox which vaccination affords, all children whose parents could not afford or had failed to have the service performed by their own physician were offered free vaccination by the board of health. It was

MONMOUTH COUNTY—*Continued.*

arranged to do the work in the high school building, and the plan adopted was found to work so admirably that we briefly state the details, which were as follows:

Blanks were furnished by the board of health, upon which any person desiring to be vaccinated could write his name and address, and by presenting one of these blanks, properly filled out, at the assembly hall in the high school building on the date assigned for the work, free vaccination was obtained. The applicants were seated in the assembly hall under the eye of a teacher, to maintain order, and they were admitted, one at a time, from the assembly hall to the laboratory where the vaccination was performed. As the applicant entered the laboratory an attendant uncovered the arm and securely fastened up the sleeve. The applicant was then taken in charge of by an assistant, who thoroughly washed the arm and made it clean, and then passed the applicant along to the physician to be vaccinated. A separate sterile needle was used for scarifying in each operation, and the virus was applied with a sterile wooden spatula. The needle and spatula were then cast aside to be destroyed. After the operation the abrasion on the arm was covered with a sterile card-board shield, to protect it against the introduction of any foreign substance and from being contaminated by the clothing.

Out of the eighty-two persons vaccinated, seventy-seven were subsequently examined and the vaccination found to be successful in seventy-four cases and unsuccessful in three. In the remaining five no opportunity was given for an examination of the arm.

Glycerinated lymph, purchased from the department of health of New York city, was used in the work. Sterile cardboard shields were used to cover the scarifications made on the arm. The shields were two inches in diameter, with convex centers, and were held in place by narrow strips of adhesive plaster.

The total number of deaths for the year ending October 1st, 1899, has been fifty-nine. Thirty-nine deaths occurred among the non-resident population and twenty-two among the resident population. This is the lowest number of deaths which have occurred among the resident population in any one year since 1888, and gives the lowest death rate since the establishment of the board of health in 1880.

MONMOUTH COUNTY—*Continued.*

While the number of deaths occurring during the year among the non-resident population is higher (1890 excepted) than for any one year in the history of the city, it does not follow that the death rate is higher. The migratory character of the non-resident population, together with the absence of trustworthy facts in regard to the actual number of summer sojourners, renders the result, as far as showing the true death rate is concerned, of but little or no value.

The following table shows the number of deaths occurring among resident and non-resident population each year, 1881 excepted, for the past twenty years for the city of Asbury Park:

YEARS.	* Resident Population.	DEATHS.			Resident Death-Rate.
		Resident.	Non-Resi- dent.	Total.	
1880.....	1,640	19	13	32	11.58
1881.....					
1882.....	1,784	30	18	48	16.81
1883.....	1,856	18	12	30	9.69
1884.....	1,928	24	15	39	12.44
1885.....	2,000	20	14	34	10.00
1886.....	2,125	21	23	34	9.88
1887.....	2,250	20	29	49	8.88
1888.....	2,375	16	18	34	6.73
1889.....	2,500	28	28	56	11.20
1890.....	2,625	32	39	71	12.19
1891.....	2,750	34	28	62	13.36
1892.....	2,875	35	24	59	12.17
1893.....	3,000	30	19	49	10.00
1894.....	3,380	40	21	61	11.86
1895.....	3,761	39	17	56	10.36
1896.....	4,141	34	25	59	8.21
1897.....	4,521	43	19	62	9.51
1898.....	4,901	28	13	41	5.71
1899.....	5,281	22	37	59	4.17

* Resident population estimated, except for the years 1880 and 1895.

MONMOUTH COUNTY—*Continued.*

TABLE SHOWING AGES AT DEATH FOR THE CALENDAR YEAR 1898 IN THE CITY OF ASBURY PARK.

	Males.	Females.	Totals.
Under one year.....	7	6	13
From 1 to 2 years.....	2	.....	2
“ 2 “ 5 “.....	3	.....	3
“ 5 “ 10 “.....	.....	1	1
“ 10 “ 20 “.....	2	2	4
“ 20 “ 30 “.....	.....	2	2
“ 30 “ 40 “.....	1	.....	1
“ 40 “ 50 “.....	5	4	9
“ 50 “ 60 “.....	.....	3	3
“ 60 “ 70 “.....	3	5	8
“ 70 “ 80 “.....	5	4	9
“ 80 “ 90 “.....	3	1	4
	31	28	59

Among the 13 deaths occurring among infants under one year of age premature births caused 3; cholera infantum, 3; pneumonia, 2; tubercular meningitis, 1; entero-colitis, 2; gastro intestinal catarrh, 1; marasmus, 1. Out of the 59 deaths occurring during the year four were due to tuberculosis.

There were 51 marriages, 31 deaths and 1 still birth reported during the year.

The reports of marriages and births are incomplete owing to failure on the part of some ministers and physicians to fully comply with the requirements of chapter 39, laws of 1838.

The usual examinations of kerosene oil sold by dealers in this city have been made during the year, and no sample has been found below the standard established by law. The highest flashing point of any sample examined was 120 and the lowest 101.

No accident due to the use of illuminating oil has been brought to the attention of this board, but several accidents due to the use of gasoline as fuel have occurred.

OFFICE AND INSPECTION WORK.

Number of violations of health ordinances reported by inspectors during the year.....	937
Number of re-inspections of premises after notices to abate nuisances had been sent.....	349



Well in Polluted Ground Beneath Building.

MONMOUTH COUNTY—*Continued.*

Number of citizens' complaints investigated.....	191
Number of written orders for abatement of nuisances.....	410
Number of cases in which the order to abate nuisances were known to have been complied with without further action	194
Number of cases referred to board with request for instructions.....	54
Number of written communications sent from office.....	951
Number of inspections of plumbing work under construction during year.....	469
Number of air-pressure tests applied to plumbing work.....	109
Number of smoke tests applied to new plumbing and drainage work.....	83
Number of notices for minor alterations and repairs in plumbing work, filed by plumbers, and inspections made of same.....	113
Number of plumbing plans filed	95
Number of plumbing plans approved.....	90
Number of plumbing plans disapproved.....	5
Number of newly connected drainage fixtures reported to water depart- ment.....	455
Number of specimens sent to State bacteriological laboratory for exam- ination through this office.....	34
Number of samples of water analyzed.....	1
Number of disinfections of dwellings.....	12
Number of samples of milk examined.....	86
Number of samples of kerosene oil examined.....	22

TABLE SHOWING NUMBER OF WRITTEN PERMITS ISSUED DURING YEAR, BY MONTHS.

MONTHS.		Certificate of approval of plumbing plans.	Final approval of plumbing work.	Constructing catch-basins.	To lay sub-surface drains.	Scavengers' permits.	For construction of stable manure receptacles.	For collection of butchers' offal and fat.	Burial and transit permits.	Transit permits, local.	Total during month.
October, 1898.....		6	9	.....	.....	14	.....	.....	3	.....	32
November, ".....		8	5	.....	.....	5	1	.....	3	.....	22
December, ".....		2	4	.....	.....	3	.....	.....	1	1	11
January, 1899.....		4	6	.....	.....	6	.....	.....	3	.....	19
February, ".....		7	3	.....	.....	2	.....	.....	1	.....	13
March, ".....		10	5	.....	1	6	.....	.....	7	.....	29
April, ".....		12	6	.....	.....	14	.....	.....	4	.....	36
May, ".....		18	10	1	.....	13	.....	1	3	2	48
June, ".....		10	14	1	.....	27	3	2	4	.....	61
July, ".....		6	13	.....	.....	14	.....	.....	12	1	49
August, ".....		5	5	.....	.....	18	.....	.....	11	2	41
September, ".....		2	4	.....	.....	3	.....	.....	7	.....	16
Totals.....		90	84	2	1	125	4	3	59	9	377

MONMOUTH COUNTY—Continued.

The following table shows the number and nature of citizens' complaints which have been received and investigated during the year.

MONTHS.	Complaints of neglect of garbage contractor. Overflowing and offensive privy vaults. Filthy accumulation of rubbish, etc., in back- yards. Waste fluids on ground. Overflowing catch-basins. Private stables, offensive. Obstructed drains and defective plumbing. Leaky and offensive garbage receptacles. Damp cellars. Livery stables, offensive. Unclean streets and street gutters. Offensive water-closet apartments. The keeping of chickens. Dead animals in streets. Burning of garbage and offensive substances. Beating carpets in public parks and grounds. Offensive odors in dwellings due to causes unknown to occupants Objectionable manner of storing stable manure Placing contents of catch-basins and vaults upon the ground and in garbage receptacles. Defective gas pipes. Miscellaneous. Totals.																					
1898.																						
October,	11	1	1	1	1			1			2										19	
November,	1									1	1										3	
December,				1																	1	
1899.																						
January,	2																				2	
February,	3	1	2	1	1																10	
March,	2	2		2		1				1			2								9	
April,	3	1	1																		7	
May,	6	6	2	2	1	1	2			1											24	
June,	4	6	3	2	2	2	1			2			1								32	
July,	8	2	1	1	4	2	1		3				1	1							37	
August,	6	4		5	4			5	2		4		1								37	
September,	2	1		2						1	1			1							10	
Totals,	50	24	10	12	18	5	5	8	3	1	3	16	1	5	2	1	8	5	3	1	10	191

Of the 191 complaints received, 152 were found to be well founded, and in the remaining 39 no cause was found to justify the complaints.

Eleven meetings of the board of health were held during the year.

Eight cases have been referred to the attorney for prosecution; three were withdrawn upon the abatement of the nuisances before the papers were served; three convictions were secured and two cases are now pending.

BOROUGH OF BELMAR.

MEMBERS AND OFFICERS—Chas. H. Thompson, M. D.; Joab Titus, Wm. M. Bergen, Geo. W. Oswald, F. S. Hutchinson, F. B. Philbrick, Neil H. Miller, Secretary; S. C. Hoppock, Inspector.

Births reported, 19; deaths, 17; deaths under 1 year, 5. Three cases of typhoid fever were reported, the origin of which in each case was traced to sources outside of the borough.

MONMOUTH COUNTY—*Continued.*

The water-supply is obtained from four artesian wells, the average daily quantity pumped being 68,428 gallons. The number of dwellings connected with the water mains is 260. The total length of the sewer system is eight miles, 288 dwellings being connected. Connections made during past year, 63. The outfall of the sewers is into the ocean.

Ashes are not removed by the authorities. Garbage is removed under contract. Four meetings were held.

BOROUGH OF BRADLEY BEACH.

MEMBERS AND OFFICERS—Samuel Layton, Thomas Layton, Elmer Benner, Chas. Crawford, Jos. Steward, B. F. Gant, Inspector; John Morris, Clerk.

BOROUGH OF ENGLISHTOWN.

MEMBERS AND OFFICERS—Edward Anderson, B. D. Conover, Daniel Laird, Samuel B. Benison, J. L. Stratton, Secretary.

Births reported, 6; deaths, 4; two under 1 year. Four complaints were investigated. Two nuisances were abated.

TOWN OF FREEHOLD.

MEMBERS AND OFFICERS—I. S. Long, M.D., O. R. Freeman, M.D., D. P. Smith, S. L. Bennett, W. S. Comlis, J. O. Burt, Secretary.

Water-supply from artesian wells. Number of premises connected to sewer, 278; during past year, 17. Appropriation, \$200. Four meetings were held.

FREEHOLD TOWNSHIP.

MEMBERS AND OFFICERS—Peter F. Conover, M. F. Conover, John P. Walker, John B. Parker, Smithburg; O. R. Freeman, M.D., Ruliff B. Lawrence, Secretary.

Two cases of diphtheria were reported. Appropriation, \$100. Two meetings were held.

MONMOUTH COUNTY—*Continued.*

HOLMDEL TOWNSHIP.

MEMBERS AND OFFICERS—Wesley Mason, J. O. Lambertson, Jonathan I. Holmes; Aaron Longstreet, Secretary, Keyport.

HOWELL TOWNSHIP.

MEMBERS AND OFFICERS—Stephen A. Disbrow, M. D., Farmingdale; Benj. M. Cooper, Lakewood; Rob't H. Morris, Turkey; Chas. E. Ferry, Farmingdale; James H. Butcher, Secretary, Ardena.

Births reported, 35; deaths, 44; appropriation, \$75; five nuisances were abated; six meetings were held.

TOWN OF KEYPORT.

MEMBERS AND OFFICERS—Augustus Maurer, Frank Mason, E. E. Cline, Wm. Con. Smith, Abram Huyler, Sec'y; J. M. Walling, Inspector.

Five cases of diphtheria were reported; five nuisances were abated; appropriations, \$150; Board holds monthly meetings.

COMMISSION OF LONG BRANCH.

MEMBERS AND OFFICERS—Paul F. Brazo, Wm. T. Smythe, Jr., Theo. Howland, E. H. Clark, Lewis Rothenberg, John Eaton, E. B. Blaisdell, Secretary; B. S. Van Huel, Inspector; S. F. McCloud, Plumbing Inspector.

Births reported, 60; total deaths, 167; under one year, 19. Fifty-one cases of diphtheria; forty-one of scarlet fever; ten of typhoid fever and nine of small-pox were reported. For records of these cases of smallpox see "Epidemic Outbreaks" on subsequent pages of this report. About 950 dwellings are connected with the public water mains; three thousand feet of water pipes have been laid during the year; average daily consumption of water, 1,500,000 gallons; total length of sewers, $14\frac{1}{2}$ miles; premises connected, 665; extensions during past year, 11,000 feet. A franchise has been given to a private corporation for a term of 20 years for the

MONMOUTH COUNTY—*Continued.*

collection and disposal of garbage; the garbage furnace will be in operation May 1st, 1900; nuisances abated, 150; nine suits were instituted for collection of penalties for violation of ordinances; appropriation, \$300; forty meetings were held.

MANALAPAN TOWNSHIP.

MEMBERS AND OFFICERS—J. C. Sutphen, Tennent; D. S. Aumack, Englishtown; Asher S. Ely, Tennent; A. T. Applegate, M.D., Englishtown; S. C. Bowne, Assessor, Tennent; G. B. Conover, Town Clerk and Secretary, Englishtown.

Births reported, 16. Total deaths, 46; under one year, 4. Fourteen cases of diphtheria were reported. Two nuisances were abated. Appropriation, \$39. Four meetings were held.

BOROUGH OF MANASQUAN.

MEMBERS AND OFFICERS—D. H. Ammermon, H. Miller, George Mount, W. A. Morton, M. R. Mulford, Secretary.

One case of diphtheria and 1 of typhoid fever were reported. Twelve nuisances were abated. Appropriation, \$100. Thirteen meetings were held.

BOROUGH OF MATAWAN.

MEMBERS AND OFFICERS—I. W. Bedle, Edwin Lambert, Wm. Hardwick, John Horner, A. J. Jackson, M.D.; Wm. A. Rodgers, Secretary; J. W. Maggs, Inspector.

Appropriation, \$100.

MIDDLETOWN TOWNSHIP.

MEMBERS AND OFFICERS—D. W. Vanote, Belford; G. C. Morris, New Monmouth; Geo. E. Jenkinson, Atlantic Highlands; O. W. Budlong, M.D., Belford; Omar Sickles, Secretary, Navesink.

MONMOUTH COUNTY—*Continued.*

Births reported, 92. Total deaths, 70; under one year, 16. Three cases of diphtheria were reported.

MILLSTONE TOWNSHIP.

MEMBERS AND OFFICERS—Wm. Parker, Etra; John H. Ely, Perrineville; John B. Ely, Ely; W. T. McMillan, M.D., Perrineville; Geo. J. Ely, Secretary, Perrineville.

Total deaths, 10; under one year, 1. Six cases of scarlet fever and 2 of typhoid fever were reported. Two meetings were held.

BOROUGH OF NEPTUNE CITY.

MEMBERS AND OFFICERS—Edward Finley, James Estelle, A. H. King, Walter Harris, C. D. Snyder, Secretary.

Two cases of typhoid fever occurred. Fifty-eight dwellings are connected with the public water-supply and sewers. Four nuisances were abated. Appropriation, \$100. Five meetings were held.

OCEAN TOWNSHIP.

MEMBERS AND OFFICERS—T. R. Wooley, James Conover, Joseph Flannigan, S. J. Wooley, M. D., Howard Brinley, Secretary. All of Long Branch.

OCEAN GROVE ASSOCIATION.

MEMBERS AND OFFICERS—A. E. Ballard, James L. Hays, Newark; H. W. Murphy, Freehold; J. R. Daniels, Geo. W. Evans, John H. Alday, H. B. Alday, M. D., Secretary.

Three cases of diphtheria, 2 of scarlet fever, and 4 of typhoid fever were reported. Twelve nuisances were investigated and abated. Six meetings were held.

MONMOUTH COUNTY—*Continued.*

RARITAN TOWNSHIP.

MEMBERS AND OFFICERS—C. F. Sproul, John S. Hendrickson, Richard C. Bedle, John Fitzgerald, Secretary. All of Keyport.

Twelve meetings were held.

TOWN OF RED BANK.

MEMBERS AND OFFICERS—Chas. D. Warner, Samuel Sabath, John Sheehan, H. J. Childs, Secretary; Wm. H. Wilson, Inspector.

Eight cases of scarlet fever and one of typhoid fever were reported. Fifteen nuisances were abated. One suit was instituted, but was discontinued upon payment of the penalty. Appropriation, \$250. Four meetings were held.

UPPER FREEHOLD TOWNSHIP.

MEMBERS AND OFFICERS—Wm. Kirby, Cream Ridge; J. S. Daws, Imlaystown; E. A. Hyers, Red Valley; Wm. Quicksell, Assessor, Hornerstown; F. C. Price, M.D., Secretary, Imlaystown.

Births reported, 31; total deaths, 23; under one year, 5. Two cases of typhoid fever were reported. One meeting was held.

WALL TOWNSHIP.

MEMBERS AND OFFICERS—R. A. Algar, Como; Chas. Gifford, Allenwood; Benj. E. Alger, New Bedford; Geo. E. Rogers, New Bedford.

Ten cases of diphtheria, three cases of scarlet fever and three cases of typhoid fever occurred. Appropriation, \$100. Six meetings were held. The following are reports of conditions on two dairy premises situated in this township.

MONMOUTH COUNTY—*Continued.*

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

August 2d, 1899.

NAME OF DAIRYMAN—H. C. Hance [Tenant].

ADDRESS—Belmar.

TOWNSHIP—Wall. COUNTY—Monmouth.

Stable.

1. Size of stable—69x18 feet.
2. Area of stable—9,936 cubic feet. Cubic feet per cow—473.
3. Stable well lighted? Yes; fairly well.
4. Number and size of windows in stable—One 27x44 inches; one 24x20 inches; two 33x35 inches.
5. Material, construction and drainage of floor—Wood; so constructed that fluids fall in gutter and drain out of end of building.
6. Method and frequency of cleaning—Cleaned out daily with fork, shovel and broom.
7. Floor ever washed? Gutter washed out.
8. Are sidewalls, ceilings and ledges kept free from cobwebs and dust? No.
9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Well at barn, under milk-house. (Sample of water taken marked H. C. H., No. 18.)
11. Distance of well from stable—48 feet.
12. Distance of well from manure pile—Two feet.
13. Distance of well from privy vault—About 150 feet.
14. Is well apparently liable to contamination? Yes.
15. Source of water-supply for washing utensils and cans—Well at house.
16. If from well, describe surroundings—Well is located under pump-house, about 20 feet from house and 40 feet from privy.
17. Was sample taken for analysis? Yes. Marks—H. C. H., No. 19.

Cattle.

18. Number of cows—21. Breed—Grade.
19. State of health—Apparently good.
20. Ever examined? No.
22. Cows groomed? No.
23. Amount, kind and quality of feed used—Corn meal, wheat, bran and shorts mixed together; about two quarts given each cow.
24. Cows pastured? Yes.

MONMOUTH COUNTY—*Continued.**Manure.*

- 25. How and where stored? In yard, adjoining stable.
- 26. How frequently removed? About four times yearly.
- 27. Quantity of manure at time of this inspection—Small quantity; about 12 cubic yards.

Utensils.

- 28. How washed and dried? Washed with hot water and placed in open air to dry.
- 29. Where are the utensils washed? In pump-house at house.
- 30. Any appliance for sterilizing cans, pails and dippers? No.
- 31. Bottles—how washed and dried? Washed with hot water and placed in open air to dry.

Collection of Milk.

- 32. Quantity of milk produced daily? About 145 quarts.
- 33. Are milkers' hands washed before milking? No.
- 34. Are clean garments put on? No.
- 35. Udders of cows cleaned? Yes. How? Washed with sponge and water.
- 36. When pail is full of milk what is done with it? Poured in cooler and runs through cooler in can.
- 37. Where does the can stand? In milk-house.
- 38. Is can kept covered? Yes.
- 39. Is milk cooled? Yes. How? By running through cooler.
- 40. How long after milking? Directly.
- 42. Is milk bottled? Yes.
- 43. How long after cooling? Directly.
- 44. Where is milk bottled? In pump-house.
- 45. Where is milk store? In pump-house.
- 46. How long is milk stored before being shipped? About 12 hours.
- 47. Source of ice-supply—None used.
- 48. If shipped, to whom, and where? All retailed in Asbury Park.

Distribution.

- 50. Quarts sold from cans? About 70 quarts.
- 51. Quarts sold in bottles? 75 quarts.
- 52. Ever run short? Very seldom.
- 53. If so, where is supply obtained? From neighboring dairies.
- 54. How many persons handle the milk? Four.
- 55. All in good health? Yes.
- 58. Remarks—A hog-yard extends up to within 20 feet of well at house. Well at barn is very liable to contamination from fluids from cow-yard.

C. J. MERRELL,

Inspector.

MONMOUTH COUNTY—*Continued.*

BOARD OF HEALTH OF THE STATE OF NEW JERSEY.

RECORD OF DAIRY INSPECTION.

August 7th, 1899.

NAME OF DAIRYMAN—Jas. V. Martin [Owner].

ADDRESS—Glendola.

TOWNSHIP—Wall. COUNTY—Monmouth.

Stable.

1. Size of stable—12x15 feet.
2. Area of stable—1,260 cubic feet. Cubic feet per cow—420.
3. Stable well lighted? No. One cow stabled in enclosed hovel.
4. Number and size of windows in stable—One; 21x24 inches.
5. Material, construction and drainage of floor—Earth; level; no drainage.
6. Method and frequency of cleaning—Cleaned daily with fork.
7. Floor ever washed? No.
8. Are sidewalls, ceiling and ledges kept free from cobwebs and dust? No.
9. Ever limewashed? No.

Water-Supply.

10. Source of water-supply for watering stock—Well at barn.
11. Distance of well from stable—About 27 feet.
12. Distance of well from manure pile—Two feet.
13. Distance of well from privy vault—About 120 feet.
14. Is well apparently liable to contamination? Yes.
15. Source of water-supply for washing utensils and cans—Well at house.
16. If from well, describe surroundings—Dug well located under pump-house, which forms part of house. Privy, about 36 feet distant. Waste fluids on ground near by.
17. Was sample taken for analysis? Yes. Marks—J. V. M., No. 15.

Cattle.

18. Number of cows—Four.
19. State of health—Said to be good.
20. Ever examined? Yes. By whom? Dr. Peter Davidson.
21. Date of last examination—About a year ago.
23. Amount, kind and quality of feed used—Four quarts of wheat bran daily, with a small amount of potato parings.
24. Cows pastured? Yes.

Manure.

25. How and where stored? In yard adjoining stable.
26. How frequently removed? About four times yearly.
27. Quantity of manure at time of this inspection—About 15 cubic yards.

MONMOUTH COUNTY—*Continued.**Utensils.*

- 28. How washed and dried? Washed with hot water and soda, rinsed with cold water and placed in open air to dry.
- 29. Where are the utensils washed? In pump-house.
- 30. Any appliance for sterilizing cans, pails and dippers? No.
- 31. Bottles—how washed and dried? Same as utensils.

Collection of Milk.

- 32. Quantity of milk produced daily? About 40 quarts.
- 33. Are milkers' hands washed before milking? Yes.
- 34. Are clean garments put on? No.
- 35. Udders of cows cleaned? Yes. How? Washed with cloth and water.
- 36. When pail is full of milk what is done with it? Poured in can.
- 37. Where does the can stand? On shelf in cow-stable.
- 38. Is can kept covered? Yes.
- 39. Is milk cooled? Yes. How? By stirring in open air, then suspending can in well at house.
- 40. How long after milking? Directly.
- 42. Is milk bottled? Yes.
- 43. How long after cooling? About one and one-half hours.
- 44. Where is milk bottled? In pump-house adjoining house.
- 45. Where is milk stored? In cans hung in well.
- 46. How long is milk stored before being shipped? About 12 hours.
- 47. Source of ice supply—None used.

Distribution.

- 50. Quarts sold from cans? About 20 quarts.
- 51. Quarts sold in bottles? About 20 quarts.
- 52. Ever run short? Yes.
- 53. If so, where is supply obtained? Wm. Willett, near-by dairyman.
- 54. How many persons handle the milk? Two.
- 55. All in good health? Apparently.
- 56. Date of last sickness among persons on dairy premises? About three years ago.
- 57. Diseases? Measles.
- 58. Remarks—Well at barn is apparently liable to contamination from fluids from cow-yard, where manure is stored.

C. J. MERRELL,
Inspector.

MORRIS COUNTY.

TOWN OF BOONTON.

MEMBERS AND OFFICERS—W. I. Powers, Robert H. Wilson, Henry T. Peck, Geo. W. Blanchard, Secretary; James Gilmartin, Inspector.

Births reported, 30; total deaths, 61; deaths under 1 year, 8. Two cases of diphtheria and 4 of scarlet fever were reported. Nuisances investigated, 112, of which 100 were abated.

The amount appropriated for the uses of the board was \$125.

One meeting was held.

BOONTON TOWNSHIP.

MEMBERS AND OFFICERS—Wm. R. Bailey, Andrew Kincaid, James H. Hopler, James Steventon, C. Wigg, M. D., G. D. Crane, Secretary; Jos. Steventon, Inspector. All of Boonton.

Two cases of scarlet fever were reported. Monthly meetings have been held by the board.

CHATHAM BOROUGH.

MEMBERS AND OFFICERS—Geo. H. Kirkpatrick, Addison H. Day, Wm. Elder, Geo. M. Swaim, M. D.; Melville H. Hopping, Secretary.

One case of scarlet fever was reported. One nuisance was investigated.

CHATHAM TOWNSHIP.

MEMBERS AND OFFICERS—L. M. Noe, Madison; C. A. Johnson, New Providence; C. L. Chovey, Madison; W. J. Wolfe, M.D., Chatham; J. H. Bebout, New Providence; Nathaniel Clark, Secretary, Madison.

One nuisance was abated and one meeting of the board was held.

MORRIS COUNTY—*Continued.*

CHESTER TOWNSHIP.

MEMBERS AND OFFICERS—E. C. Blazure, A. W. Cooper, S. F. Leek, Jos. D. Budd, Secretary; A. W. Green, M. D. All of Chester.

CITY OF DOVER.

MEMBERS AND OFFICERS—Eugene Buchanan, A. W. Condit, M.D., Henry S. Peters, R. W. Kirton, D. R. Hummer, Secretary; John G. Tayter, Inspector.

Births reported, 103; total deaths, 84; under one year, 23. The following cases of communicable diseases were reported: Diphtheria, 1; scarlet fever 18; typhoid, 2.

BOROUGH OF FLORHAM PARK.

MEMBERS AND OFFICERS—Wm. A. Hopping, Stuart H. Reed, M.D., Henry W. Young, Secretary; Charles H. Gemung, Inspector.

MENDHAM TOWNSHIP.

MEMBERS AND OFFICERS—Calvin Willett, Mendham; Harry Baldwin, Brookside; Chas. Day, Brookside; J. S. Stiger, M.D., Mendham; John Kennedy, Secretary, Gladstone.

Births, 21. Deaths, 13.

MONTVILLE TOWNSHIP.

MEMBERS AND OFFICERS—John H. Capstick, Montville; John Husk, Glenville; Joseph Starkey, Boonton; Asa T. Cook, Assessor, Montville; H. C. Baldwin, Secretary, Montville.

Births reported, 5. Total deaths, 8; under one year, 1. Four cases of diphtheria were reported.

MORRIS COUNTY—*Continued.*

MORRIS TOWNSHIP.

MEMBERS AND OFFICERS—Chas. Y. Swan, M.D., Morristown ; H. L. Pruden, Morristown ; G. B. Parsons, Morris Plains ; C. M. Phillips, Secretary, Morristown.

One case of scarlet fever was reported. One nuisance was abated. One meeting was held.

BOROUGH OF MT. ARLINGTON.

MEMBERS AND OFFICERS—Richard Choplin, Freeman Tappen, Wm. Sisco, H. C. Upehurst.

Seven cases of diphtheria were reported. Seven nuisances were abated. Twelve meetings were held.

MT. OLIVE TOWNSHIP.

MEMBERS AND OFFICERS—D. H. Wolfe, Budds Lake ; J. W. Lidabury, Bartey ; Ira B. Stephens, Mt. Olive ; W. S. Foster, M. D., Flanders ; S. W. Salmon, Secretary, Mt. Olive.

Births reported, 23 ; total deaths, 13 ; under one year, 4 ; four cases of scarlet fever and two of typhoid fever were reported ; appropriation, \$50 ; four meetings were held.

BOROUGH OF MT. TABOR.

MEMBERS AND OFFICERS—H. L. Coit, M. D., Newark ; C. L. Pitts, Newark ; F. N. Barrett, Bayonne ; Jos. Shaw, Newark ; J. L. Cox, Inspector, Mt. Tabor ; P. F. Cook, Secretary, Mt. Tabor.

Two hundred and five dwellings are connected with the public water-supply ; cesspools are depended upon for the disposal of waste fluids ; one meeting was held.

MORRIS COUNTY—*Continued.*

NEW HANOVER TOWNSHIP.

MEMBERS AND OFFICERS—Geo. C. Davis, Wrightstown; James Murphy, Jacobstown; Richard Harker, Pointville; Amos Shaw, M. D., Jacobstown; Benj. Remine, Secretary, Wrightstown.

One meeting was held.

PASSAIC TOWNSHIP.

MEMBERS AND OFFICERS—Samuel Ortman, Stirling; Louis Kritcher, Long Hill; Henry Lindsley, New Vernon; F. C. Jones, Basking Ridge; J. A. Harvey, Stirling.

Appropriation, \$50; two meetings were held.

BOROUGH OF PORT ORAM.

MEMBERS AND OFFICERS—Henry W. Kice, M. D., J. J. Langdon, Robert F. Oram; James Williams, Secretary; Jos. Mankee, Inspector.

One case of membranous croup and one of scarlet fever were reported. Appropriation, \$50.

RANDOLPH TOWNSHIP.

MEMBERS AND OFFICERS—D. L. Bryant, Landing; Geo. Wolfe, Mine Hill; James A. Carroll, Dover; T. O. Bassett, Assessor and Secretary, Dover.

One case of diphtheria and one case of scarlet fever were reported.

BOROUGH OF ROCKAWAY.

MEMBERS AND OFFICERS—John Norris, H. D. Tuttle, Edward Todd, Dr. Dearborn, F. W. Flagge, M.D.; Wm. May, Secretary.

MORRIS COUNTY—*Continued.*

ROCKAWAY TOWNSHIP.

MEMBERS AND OFFICERS—James Arthur, Port Oram; Thomas Heslin, Hibernia; Morris Fox, Rockaway; F. W. Flagge, M. D., Rockaway; David A. Wiggins, Secretary, Rockaway.

Births reported, 57; total deaths, 53; under one year, 18. Five cases of scarlet fever and two of typhoid were reported. Four meetings were held.

ROXBURY TOWNSHIP.

MEMBERS AND OFFICERS—Theo. F. King, Ledgewood; Geo. Gillig, Succasunna; Joseph McConnell, Port Morris; F. M. Flower, Secretary, Landing.

One case of diphtheria, one of membranous croup and five of scarlet fever were reported. Two meetings were held.

WASHINGTON TOWNSHIP.

MEMBERS AND OFFICERS—Gilbert T. Welsh, German Valley; Mathis Fleming Parker, John A. Parker, Schooley's Mountain; Edward Sutton, M.D., German Valley; Wm. A. Flock, Secretary, Schooley's Mountain.

OCEAN COUNTY.

BERKLEY TOWNSHIP.

MEMBERS AND OFFICERS—Peter E. Runyon, Toms River; Thomas J. Harvey, Bayville; Geo. A. Cross, Toms River; Devine Butler, Secretary and Assessor, Bayville.

Births reported, 4; deaths, 17; two deaths under one year. Two cases of typhoid fever were reported. Nine meetings were held.

OCEAN COUNTY—*Continued.*

BRICK TOWNSHIP.

MEMBERS AND OFFICERS—W. A. Longstreet, Point Pleasant; J. B. Stillwell, Mantoloking; Geo. W. Van Note, Secretary, Burrsville; F. Whitaker, M. D., Point Pleasant; A. W. Downey, Assessor, Burrsville.

One meeting was held.

DOVER TOWNSHIP.

MEMBERS AND OFFICERS—R. B. Goudy, Monroe Irons, John Tilton; Thomas B. Irons, Secretary; R. B. Disbrow, M. D. All of Toms River.

Births reported, 64; deaths, 61. A portion of the borough is supplied by the Toms River Water Company.

Monthly meetings are held.

Following is a report relating to the school-house located at Toms River:

Board of Health of the State of New Jersey:

GENTLEMEN—My attention was called to the condition existing at the public school located at Toms River, Ocean county, and an inspection was made of the building March 21, 1899, and I would make the following report:

The building is of wooden construction and is located in a lot, the approach to which is a narrow street running from the main street of the town. The sidewalk leading to the school is in poor condition, and in wet weather it is almost impossible for the children to reach the school without getting their feet wet. The building faces the south. It is the shape of a T. The first floor has the following rooms: The entrance hall and on either side of it two cloak-rooms, each of them 8x8. Back of these are two class-rooms, each of them being 27x24 feet in size. The room on the southwest side, known as No. 1, has five windows. The teacher's desk is located at the north end of the room, and the desk faces the south. The windows are on the west and south sides, and the light therefore passes over the right shoulders of the children when at their desks. The room is heated by a coal-stove which at times gives out gas so that it is noticed by both teacher and pupils. The heating power of the stove is insufficient in cold weather. The water pail is located on a shelf in the southwest corner of the room. The floor in this room was in bad condition and is in need of repair. The walls and ceilings also show need of attention. The number of pupils in this room varies from 60 to 70. In this room there are 36 desks of the old type. At the time of the inspection there were 60 pupils in attendance in this room and there have been as high as 83. The number of pupils in the room, according to

OCEAN COUNTY—*Continued.*

the estimated floor-space which should be allowed each pupil, is almost double what it should be. Class-room No. 2 is similar in size and condition to class-room No. 1, with the exception that it is situated on the east side of the building, and the comments in regard to No. 1 apply to this. In the rear of these two class-rooms there is a narrow hall, with a stairs to second story and with doors at either end opening east and west, and in the rear of these is class-room No. 3. This room is 24x26 feet, and has ceilings 8½ feet in height. The average number of pupils in attendance in this room varies from 40 to 48. The stove is situated on the north side of this room, and the water pail in the northwest corner. This room is very well lighted, and aside from the low ceiling is the better room of the three on the ground floor. The chief objection to the room is that privy vaults; for the use of both males and females, are located immediately behind it and within 24 feet of the north windows, and I was informed that odors are very frequently noticed in this room when the windows are open toward the north. The closets at the time of the inspection had been cleaned, and no odors were noticeable. The rooms upon the second floor consist of a large room 48x24 feet, covering the same area occupied by the rooms Nos. 1 and 2 on the first floor. The number of pupils in this room varies from 50 to 60. The ceiling is 11 feet in height, and there are 33 double desks. The teacher's desk is situated on the west end. This room is fairly well lighted, and the number of seats and pupils more nearly within the requirement. The room to the rear of this, and on the other side of the hall, is a room similar to room No. 3, down-stairs. In this room there are from 36 to 45 pupils in attendance. The room is 24x26 feet. After carefully examining the building the following points are considered worthy of comment:

(1) The approach to the building is unsatisfactory and improvements should be made by the construction of some suitable form of walk. (2) The method of heating the building should be improved, as the stoves at present in use are liable to give out gas and affect the health of both teachers and pupils. (3) There is no system of ventilation whatever, and the only way fresh air can be obtained is by the opening of windows, which causes drafts on the pupils, and therefore is attended with great risk. (4) The cloak-rooms are small in size and not properly arranged, the clothing of one pupil touching the clothing of another, so that in case of contagious disease the disease may be transmitted from one pupil to another. (5) The well is located too near the building and is liable to contamination from outside sources. (6) The privies are entirely too near the building, and new and improved closets should replace those in use. (7) The building has no cellar under it excepting a small cellar on the southwest corner. As a result the floors must necessarily be cold and damp, and therefore tend to affect the health of the pupils. (8) Within the building the floor space for the number of pupils is insufficient, and the light in some of the rooms is insufficient. (9) The floors throughout the building are either in need of repair or replacement. (10) The hallway through which the children pass to the second story is narrow and the construction of the stairs such as to render them unsafe should a fire occur in the

OCEAN COUNTY—*Continued.*

building. (11) The plan of having the water-pail in the corner of each room is unsanitary, and the pupils should be compelled to use individual cups and the water should be obtained from a faucet.

After examining the building and noting the various improvements which are needed, the trustees charged with the care of this school should take immediate steps to make such changes as shall insure the health and comfort of the pupils in attendance. The question, of course, must be decided by them as to whether a new school-house shall be constructed or improvements made in the one at present in use, but it would seem as though any expenditure upon the present building would be merely temporizing with the conditions, and if the taxpayers were aware of the conditions, they would decide to construct a new building on a modern plan and with modern improvements, such as would be a credit to the people of Toms River. In conclusion, I would state that it is my view that the school-house is at present unsuited for school purposes.

Respectfully submitted,

A. CLARK HUNT.

Sanitary Inspector.

EAGLEWOOD TOWNSHIP.

MEMBERS AND OFFICERS—John M. Holman, Westcreek; John W. Salmons, Westcreek; E. F. Cranmer, Westcreek; J. C. W. Parsons, Secretary, Westcreek; M. W. Reeves, M. D., Tuckerton.

Births reported, 6; deaths, 12. One nuisance was abated.

JACKSON TOWNSHIP.

No organized board of health.

LACEY TOWNSHIP.

MEMBERS AND OFFICERS—Geo. Frazee, Forked River; Henry Stout, Lanoka; A. G. Wilbert, Forked River; B. F. Matthews, Secretary, Forked River.

LAKEWOOD TOWNSHIP.

MEMBERS AND OFFICERS—Wm. C. LeCompte, Wm. Sculthorpe, Chas. H. Dix, H. H. Cate, M.D.; John B. Peters, Secretary; R. B. Robbins, Inspector.

Births reported, 73; total deaths, 58; under one year, 13. Four cases of scarlet fever and 1 of typhoid fever occurred. Two hundred

OCEAN COUNTY—*Continued.*

and seventy-one dwellings are connected with the public water-supply. Average quantity of water used, 290,000 gallons. Total length of sewers, 6.4 miles. Premises connected, 260. Three meetings were held by the board.

BOROUGH OF LAVALLETTE.

No board of health has been organized in this borough.

MANCHESTER TOWNSHIP.

MEMBERS AND OFFICERS—Frank Brower, M.D., Lakehurst; W. Howland, Lakehurst; Gilbert Hankins, Lakehurst; James Bowers, Whitings; P. H. Emley, Secretary, Lakehurst.

Births reported, 12; total deaths, 6.

One case of diphtheria, 1 of typhoid fever and 1 of small-pox were reported.

Three meetings were held.

OCEAN TOWNSHIP.

MEMBERS AND OFFICERS—Charles F. Jones, Oscar D. Brown, J. H. Wilkins, Secretary; Elvin R. Penn, Inspector. All of Waretown.

One meeting was held by the board.

PLUMSTEAD TOWNSHIP.

MEMBERS AND OFFICERS—Elmer Cowperthwait, New Egypt; John Headley, New Egypt; Dayton Hopkins, Hornerstown; E. E. Woodward, M.D., New Egypt; Daniel M. Busson, Secretary, New Egypt.

One case of membranous croup and 1 of typhoid fever was reported. One nuisance was abated. One meeting was held.

OCEAN COUNTY—*Continued.*

BOROUGH OF SEA SIDE PARK.

J. B. Wood, Borough Clerk, states that no board of health has been organized.

STAFFORD TOWNSHIP.

MEMBERS AND OFFICERS—W. K. Barrets, M.D., Manahawkin; C. H. Cranmer, Manahawkin; E. E. Predmore, Manahawkin; Geo. S. Cranmer, Cedar Run; J. B. Courtney, Secretary, Manahawkin.

One case of typhoid fever occurred.

UNION TOWNSHIP.

MEMBERS AND OFFICERS—Edwin Bennett, Geo. H. Van Note, John R. King, L. G. Mitchell, E. R. Wills, Secretary. All of Barnegat.

PASSAIC COUNTY.

ACQUACKANONK TOWNSHIP.

MEMBERS AND OFFICERS—Wm. Hoffmeister, Delawanna; Nicholas Alyea, Clifton; John Prentiss, Albion Place; John Cocker, Lake View; Wm. Comadi, Richfield; Richard Berry, Secretary and Inspector, Clifton.

Number of births, 44; number of deaths, 40; deaths under 1 year, 16. Communicable diseases are regularly reported, and a record is kept of the same by the secretary. Nine cases of diphtheria and 6 of scarlet fever occurred during the year. There is no system of sewers in the township; cesspools being used for the disposal of waste liquids. The board held two meetings during the year. Annual appropriation for the uses of the board, \$100.

PASSAIC COUNTY--*Continued.*

BOROUGH OF HAWTHORNE.

MEMBERS AND OFFICERS—Iroy Myers, Edwin B. Ackerman, Wm. J. Gurnee, John Shields, Jr., S. Utter, M.D.; Wm. J. O'Keefe, Secretary; Wm. Nelson, Attorney.

Estimated population, 200. Total number of dwellings, 500. Ordinances have been adopted.

MANCHESTER TOWNSHIP.

MEMBERS AND OFFICERS—G. M. Daniels, Paterson; Phineas Bridge, Paterson; Adolph Branch, Haledon; Frank Breem, Haledon; Joseph Graham, Paterson; G. Planten, Secretary, Paterson; S. Utter, M.D., Inspector, Hawthorne.

Appropriation, \$500. Sixteen meetings were held.

CITY OF PASSAIC.

MEMBERS AND OFFICERS—F. R. Low, W. F. Gaston, G. D. Bogart, D. R. Cromise, M.D., P. J. Delaney; C. E. Denholm, Secretary; A. H. Smith, Inspector; Wm. B. Davidson, Plumbing Inspector; J. P. Lowe, V.S., Veterinarian.

Communicable diseases were reported as follows: Diphtheria, 33; membranous croup, 1; scarlet fever, 74; typhoid fever, 36; small-pox, 1. Average daily consumption of water, 3,000,000 gallons. About 13 miles of sewers have been added during the past year. Total length of sewers, 28 miles. Premises connected with sewer, 1,790. Connections made during past year, 126. Nuisances investigated, 325. Two cases of glanders were reported during the year. Four suits were instituted for the enforcement of ordinances. Appropriation, \$1,800. Monthly meetings were held.

POMPTON TOWNSHIP.

MEMBERS AND OFFICERS—James E. Sloat, Midvale; John F. Sisco, Bloomingdale; Walter C. White, Bloomingdale; Edward R. Brown, Midvale; D. R. Sloan, Secretary, Bloomingdale.

PASSAIC COUNTY—*Continued.*

WAYNE TOWNSHIP.

MEMBERS AND OFFICERS—Wm. Birchenough, Paterson; Geo. W. Colfax, Pompton; Garret Berdan, Paterson; Geo. Van Houten, Paterson; G. F. Mercelis, Paterson; Andrew P. Hopper, Secretary, Hamilton ave., Paterson.

WEST MILFORD TOWNSHIP.

MEMBERS AND OFFICERS—M. J. Shippen, Echo Lake; W. W. Eckhart, Newfoundland; Wm. McGirr, Macopin; Jos. L. Hand, Hewitt; Eugene Kimble, Stockholm; Jos. H. Schulzter, Echo Lake; R. G. Maines, M.D., West Milford; W. C. Oliver, Secretary, Oak Ridge.

SALEM COUNTY.

ALLOWAY TOWNSHIP.

MEMBERS AND OFFICERS—Henry Jarman, Yorktown; John H. Vanleer, Friesburg; Joseph Kerlin, Alloway; Warren L. Ewen, M.D., Inspector, Alloway; Wm. E. Simkins, Aldine.

Births reported, 18; deaths, 22. Twelve cases of diphtheria, 3 of scarlet fever and 3 of typhoid fever were reported. One nuisance was abated. Following is a report relating to diphtheria in Alloway township:

Board of Health of the State of New Jersey:

GENTLEMEN—A communication was received October 25th, giving the history of a number of cases of diphtheria occurring in Salem city and its vicinity. October 31st, I made an appointment to meet the board of health of Salem city. In company with the president of the board of health I went over the action which should be taken by their board under such circumstances, and urged upon them the necessity for dealing with each case singly. I then drove to Alloway township and called upon Dr. E. L. Ewen, physician of the board of health.

SALEM COUNTY—*Continued.*

I found that there had been no systematic reporting of cases of the disease in the township, and that at least ten or twelve cases had occurred within a radius of five or six miles. In the communication sent us by Mr. Walton, the sanitary inspector of Salem, the names of a number of these cases were given. The physician of the board was requested to call a meeting of the board and urge the members to a sense of their duties in regard to dealing with contagious diseases.

Respectfully submitted,

A. CLARK HUNT,
State Inspector.

ELSINBORO TOWNSHIP.

MEMBERS AND OFFICERS—J. B. Nicholson, Samuel Powell, Isaac Smith, Jr., Chas. S. Farnkopf, Secretary, all of Salem.

Births reported, 2. Deaths, 4; all under one year.

LOWER ALLOWAY'S CREEK TOWNSHIP.

MEMBERS AND OFFICERS—Francis Harris, M.D., Canton; E. F. Brown, Canton; Isaac Smith, Canton; Warren Smith, Hancock's Bridge; Richard Grier Secretary, Salem.

LOWER PENNS NECK TOWNSHIP.

MEMBERS AND OFFICERS—R. D. Battin, David Dixon, Hance Jaquett, W. H. James, M.D.; Isaac Fowler, Secretary; John G. Mitchell, Assessor. All of Pennsville.

Births reported, 25. Deaths, 19.

MANNINGTON TOWNSHIP.

MEMBERS AND OFFICERS—S. L. Lippincott, Salem; Aaron E. Fogg, Salem; P. R. Ware, Sharpstown; Jonathan D. Grier, Salem.

The proportion of births reported in this township is estimated by the assessor to be less than 10 per cent. of the number that occur.

SALEM COUNTY—*Continued.*

OLDMANS TOWNSHIP.

MEMBERS AND OFFICERS—Joseph Roberts, Auburn; F. J. Gaventa, Pedricktown; Henry Reymer, Pedricktown; Levi C. Justice, Secretary, Pedricktown; Allen B. Black, Pedricktown.

Births reported, 16; total deaths, 13; under one year, 1. One case of scarlet fever and 1 of typhoid fever occurred. One meeting was held by the board.

BOROUGH OF PENNSGROVE.

MEMBERS AND OFFICERS—Henry Flanagin, M.D., Richard Shannon, W. C. English, James Springer; H. E. Crompton, Secretary.

Births reported, 32; total deaths, 30; under one year, 5. Two cases of diphtheria, 1 of scarlet fever and 3 of typhoid fever were reported. Six complaints were investigated and 3 nuisances were abated. Appropriation, \$50. Ten meetings were held.

PILESGROVE TOWNSHIP.

MEMBERS AND OFFICERS—D. W. Hinchman, Sharpstown; Edgar C. Moore, Woodstown; John G. Borton, Woodstown; D. F. Davis, Secretary, Woodstown.

Two meetings were held.

QUINTON TOWNSHIP.

MEMBERS AND OFFICERS—J. T. Harris, Quinton; J. G. Fowser, Salem; W. Davis, Shiloh; W. S. Good, M. D., Quinton; Charles M. Fox, Secretary, Alloway.

Six cases of scarlet fever were reported. Two meetings were held.

CITY OF SALEM.

MEMBERS AND OFFICERS—Lewis Holzel, Thomas Hewes, Lewis Panccast, J. F. Sinnickson; Clinton Bowen, Secretary; Austin T. Walton, Inspector.

SALEM COUNTY—*Continued.*

Thirteen cases of diphtheria, 8 of scarlet fever and 1 of typhoid fever were reported. Appropriation, \$200. Twelve meetings were held.

UPPER PENNS NECK TOWNSHIP.

MEMBERS AND OFFICERS—J. M. Bevis, J. E. Clark, Jos. Hutchinson, J. M. Summerell, M.D., Geo. W. Hewitt, Secretary. All of Pennsgrove.

Two meetings were held.

UPPER PITTSBORO TOWNSHIP.

MEMBERS AND OFFICERS—Israel F. Newkirk, Elmer; Henry Coombs, Elmer; Wm. F. Meyhew, Pittsgrove; Jos. N. Gray, Secretary, Pittsgrove; Geo. W. Fitch, M.D., Daretown.

Births, 22; total deaths, 24; under one year, 7. One meeting was held.

SOMERSET COUNTY.

BEDMINSTER TOWNSHIP.

MEMBERS AND OFFICERS—J. M. Pickel, Peapack; R. B. Duyckinck, Lamington; W. P. Sutphen, Bedminster; H. L. Kennedy, Secretary, Gladstone; E. F. Farrow, Inspector, Peapack; J. B. Beekman, Inspector, Pluckamin; M. C. Smally, Inspector, Gladstone.

Number of births, 47; number of deaths, 37, of which 3 were under one year. Communicable diseases are not reported from this township. Nuisances were caused by two slaughter-houses. Two meetings were held by the board.

BERNARDS TOWNSHIP.

MEMBERS AND OFFICERS—Henry Scheurman, Basking Ridge; E. H. Schley, Bernardsville; John A. Layton, Liberty Corner; F. Sutphen, M.D., Bernardsville; L. H. Bowers, Secretary, Basking Ridge.

SOMERSET COUNTY—*Continued.*

Births reported, 17. Total deaths, 59. Ten deaths under one year. Fourteen cases of scarlet fever were reported and one of typhoid fever. Two nuisances were inquired into. The board held two meetings.

BOROUGH OF BOUND BROOK.

MEMBERS AND OFFICERS—R. H. Brokaw ; C. R. P. Fisher, M.D. ; W. E. Messimer ; W. L. Negers, Secretary ; Charles McNab, Inspector.

Births reported, 65. Total deaths, 40. Nine deaths under one year. Communicable diseases were reported as follows : Diphtheria, 1 ; scarlet fever, 3 ; typhoid, 4. Four nuisances were investigated, all of which were abated. In one case prosecution was required. Amount appropriated for board, \$150. Fourteen meetings were held.

BRANCHBURG TOWNSHIP.

MEMBERS AND OFFICERS—James Mingle, North Branch ; Henry Van Fleet, Readington ; Wm. Dolliver, Neshanic Station, L. T. Schenck, Secretary, Readington ; Adonis Nelson, M.D., Inspector, Neshanic.

One meeting was held by the board.

BRIDGEWATER TOWNSHIP.

MEMBERS AND OFFICERS—John H. Bartles, Martinsville ; James Q. Ten Eyck Somerville ; John Hornby, Jr., Raritan ; C. L. Voorhees, Secretary, Somerville ; L. M. Lanning, M.D., Inspector, Somerville.

Three meetings were held by the board.

FRANKLIN TOWNSHIP.

MEMBERS AND OFFICERS—S. G. Voorhees, Middlebush ; Peter J. Staats, South Bound Brook ; Wm. Gibson, Kingston ; J. H. Cooper, M.D., Middlebush ; Sanford Snyder, Assessor, East Millstone ; Edward Fisher, South Bound Brook.

Births, 61 ; deaths, 40. One meeting was held.

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SOMERSET COUNTY—*Continued.*

HILLSBOROUGH TOWNSHIP.

MEMBERS AND OFFICERS—Wm. Merrill, M.D., South Branch; J. V. Opie, Somerville; Peter T. Hoff, Montgomery; G. S. Van Cleef, Raritan; J. H. Saums, Secretary, Millstone.

Four cases of diphtheria and five of scarlet fever were reported. One meeting was held.

BOROUGH OF MILLSTONE.

MEMBERS AND OFFICERS—Wm. Esler, John P. Ditman, R. T. Cook, Joseph Prisson, S. O. B. Taylor, M.D.; Wm. H. Polhemus, Secretary.

One case of scarlet fever was reported. Two meetings were held.

MONTGOMERY TOWNSHIP.

MEMBERS AND OFFICERS—J. Hervey Stout, Stoutsburg; Garret Durling, Harlingen; Wm. S. Terhune, Harlingen; Jno. S. Hoagland, Secretary; A. B. Mosher, M.D.

Three meetings were held.

BOROUGH OF NORTH PLAINFIELD.

MEMBERS AND OFFICERS—Andrew Love, D. D. Adams, M.D., L. E. Barklew, D. J. Shreve; Rev. W. E. Honeyman, Secretary; Wm. N. Pangborn, Inspector.

Births reported, 112. Total deaths, 73; under 1 year, 12. Communicable diseases occurred as follows: diphtheria, 11; membranous croup, 1; scarlet fever, 1; typhoid fever, 12.

Four suits at law were instituted for enforcement of ordinance. Appropriation, \$400. Nine meetings were held.

SOMERSET COUNTY—*Continued.*

NORTH PLAINFIELD TOWNSHIP.

MEMBERS AND OFFICERS—Chas. P. Sebring, Dunellen; Thomas H. Taylor, Plainfield; Benj. A. Clark, Scotch Plains; D. C. Adams, M.D., Plainfield; Wm. H. Moeris, Secretary, Dunellen; Geo. Steward, Inspector, Plainfield.

Births reported, 3; deaths, 7. Three nuisances were abated. Five meetings were held.

BOROUGH OF BARITAN.

MEMBERS AND OFFICERS—Rev. W. H. De Hart, J. P. Hecht, M.D., Geo. D. Ehin, James Cooper; Wm. Killiger, Secretary; A. H. Conyne, Inspector.

Two cases of diphtheria, 14 of scarlet fever, and 6 of typhoid fever were reported. About 275 houses are connected with the public water-supply. About 300 premises are connected with the sewers. Forty nuisances were abated. Appropriation, \$134. Fourteen meetings were held.

TOWN OF SOMERVILLE.

MEMBERS AND OFFICERS—A. L. Stillwell, M.D., L. T. Reed, L. R. Vredenburg, J. B. Betts; W. R. Sutphen, Secretary.

Two cases of diphtheria, 9 of scarlet fever, and 24 of typhoid fever occurred. Thirty-nine nuisances were abated, one suit being brought for enforcement of the ordinance against dumping garbage in a prohibited locality; a fine of \$5 was imposed. Nine meetings were held.

WARREN TOWNSHIP.

MEMBERS AND OFFICERS—Wm. H. Rogers, Plainfield; Thomas C. Bird, Gallia; H. P. Williams, Warrenville; Peter Newmiller, Secretary, Warrenville.

One case of diphtheria occurred. One meeting was held.

SUSSEX COUNTY.

ANDOVER TOWNSHIP.

MEMBERS AND OFFICERS—Wm. M. Slater, Newton; B. K. Stiff, Andover; W. S. Vansickle, Andover; J. C. Clark, M.D., Andover; Wm. Iliff, Secretary, Newton.

Births reported, 12. Deaths, 14; two of which were under one year. Two nuisances caused by slaughter houses were reported and abated. Three meetings were held by the board.

Following is a report of an investigation concerning a complaint received from the New York city health authorities :

Board of Health of the State of New Jersey :

GENTLEMEN—A report was received March 28th from the board of health of the city of New York, stating that a carcass of beef had been shipped by Mr. W. C. Cooper, of Andover, New Jersey, which carcass was seized as unfit for food on account of tuberculosis. April 17th I went to Andover and visited Mr. W. C. Cooper, the person who had shipped the beef. I learned that Mr. Cooper has during the winter been buying cows and shipping them to the New York market. He stated that he seldom bought beef, but in this instance Mr. Weaver, who lives on a farm owned by George Durling, of Hackettstown, had sold him the cow. It was slaughtered on Mr. Weaver's place, and the forequarters were brought to his place just before he was starting for town. He did not himself examine the meat, but asked his men to immediately put it in bags for shipment. He was notified by the consignee that the beef had been seized by the health authorities, and therefore lost the price of the meat. He stated that he is out of business entirely and does not intend to buy any more cows—in fact, he intends to leave this section of the country next spring.

Respectfully submitted,

April 17th, 1899.

A. CLARK HUNT,
State Sanitary Inspector.

BYRAM TOWNSHIP.

MEMBERS AND OFFICERS—Samuel Peterson, Stanhope; Theo. Conn, Andover; Peter S. Genderman, Stanhope; Edwin O. Valentine, Secretary, Stanhope; C. K. Davison, Inspector, Stanhope.

Births reported, 12; total deaths, 15; under one year, 3. One nuisance was abated. One meeting was held.

SUSSEX COUNTY—*Continued.*

BOROUGH OF DECKERTOWN.

MEMBERS AND OFFICERS—L. H. Decker, W. Quick, J. B. Kittle, Geo. Demarest, Inspector; James M. Martin, Secretary.

Births reported, 22; deaths, 27; under one year, 1. Seven nuisances were abated. Ten meetings were held. Following is a report relating to nuisance caused by sewer outlet:

Board of Health, State of New Jersey:

GENTLEMEN—In response to a request from Mr. S. S. Vandruff, Mayor of Deckertown, an examination was made of the sewer outlet, and I would report as follows:

There is no general sewer system in the borough of Deckertown, but two sewers have been laid, one starting from the main street and receiving the drainage from about ten buildings, and the other coming from the rear of the houses facing on Bank and Main streets, and receiving the drainage also from about ten dwellings. Originally a brook ran through the hollow between Bank and Main streets, and the houses were drained into the brook. At the present time this brook is covered, and the house drains lead into it, and the closets are placed directly over it. The drain first described passes down from the rear of Main street, crosses Bank street, and has its outlet at the brook in the rear of the creamery. This sewer is not connected in any way with the public water-supply, and therefore is not flushed in the same way as the Bank street sewer is. The sewer coming from between Bank street and Main street, at the corner of Newton avenue and Bank street, enters the street culvert, and from this point the sewage is carried to the brook where the Newton avenue bridge crosses it. The outlet of the sewer at this point is five or six feet above the level of the brook, and the sewage falls upon the rocks and the ground, and then flows off into the stream. As a result of this deposit complaints have been made that at certain times of the year and under certain atmospheric conditions the odors which arise therefrom constitute a nuisance, and this is noticed especially by those passing, either as foot passengers or driving over the bridge. The second sewer which has its outlet in the rear of the creamery empties directly into the stream, and there was no deposit around the outlet and no complaint as to the odors arising from the discharge of sewage at this point. The brook into which both sewers empty is known as Clow brook, and the waters of the brook reach the Walkill river and thence to the Hudson river. No water is taken for potable purposes from the brook at any point. Up to within a year ago there was a dam on the brook about 300 feet below the Newton avenue bridge, and heretofore the discharge from the creamery would be stopped by the dam and would give rise to acid odors. This dam has been removed. The brook was examined for quite a distance below the outlets of the sewers and no nuisance was noticed. In fact, upon the day of the inspection the conditions were such that a nuisance would probably not be noticed as the air was very clear and

SUSSEX COUNTY—*Continued.*

a brisk wind was blowing. The only satisfactory remedy for the conditions complained of would be the introduction of a complete sewer system, and it was suggested to the mayor of the borough that they should at once put into operation one or two trunk sewers to relieve the present conditions. A main sewer carried down Bank street, and having its outlet from a quarter to a half a mile below the Newton avenue bridge would give relief, and would overcome any tendency to a nuisance. Until such time as this can be done it was suggested that the outlet at the Newton avenue bridge should be extended so that there would be no deposit of sewage and that whatever sewage comes through the pipes should be delivered directly into the brook and not allowed to flow over the surface of the ground. It was suggested that at some future time when the conditions are different another examination should be made so as to determine the real extent of the nuisance complained of.

Very respectfully,

A. CLARK HUNT,
State Sanitary Inspector.

FRANKFORD TOWNSHIP.

MEMBERS AND OFFICERS—Victor Compton, Branchville; Manning Frantz, Augusta; Jacob A. Coursen, Branchville; John DeKay, Secretary, Papakating.

GREEN TOWNSHIP.

MEMBERS AND OFFICERS—J. J. Decker, Andover; P. R. Hardin, Freedom; M. W. Worthrup, Secretary, Huntsville; Dr. Rosenberg, Inspector, Andover.

Two meetings were held.

HAMPTON TOWNSHIP.

MEMBERS AND OFFICERS—John H. Williams, Baleville; John W. Thompson, Blair; Alonzo Emmans, Halsey; Shepard Voorhees, M.D., Newton; Frank Emmans, Secretary, Newton.

One fatal case of diphtheria occurred. One meeting was held.

HARDYSTON TOWNSHIP.

MEMBERS AND OFFICERS—John P. Wilson, Caleb Farber, Smith Simpson; James K. Smith, Secretary. All of Hamburg.

Births reported, 42; deaths, 34. Two meetings were held.

SUSSEX COUNTY—*Continued.*

LAFAYETTE TOWNSHIP.

MEMBERS AND OFFICERS—John D. Ackerson, Martin W. Mabee, John E. Plots; John Demarest, Secretary. All of Lafayette.

MONTAGUE TOWNSHIP.

No report received.

TOWN OF NEWTON.

MEMBERS AND OFFICERS—Shepard Voorhees, M.D.; James Northrup, F. D. Whynes, Chas. Steel; Geo. Hardin, Secretary; I. L. Halleck, Inspector.

SANDYSTON TOWNSHIP.

MEMBERS AND OFFICERS—J. J. Van Sickle, Layton; Edwin Smith, Bevans; Wm. Clark, Hainesville; Edwin Snook, Layton; M. D. Hughes, M.D., Secretary, Layton.

Eight cases of diphtheria and 1 of typhoid fever occurred.

SPARTA TOWNSHIP.

MEMBERS AND OFFICERS—Whitfield Beatty, D. L. Kinney, L. C. Burd, M.D., Ogdensburg; S. S. Byram, Assessor, Houses.

STILLWATER TOWNSHIP.

MEMBERS AND OFFICERS—J. A. Wintermute, Middleville; C. R. Westbrook, Stillwater; W. E. Tilman, Swartswood; A. W. Cassidy, M. D., Stillwater; F. C. Hoff, Secretary, Middleville.

One nuisance was abated. Five meetings were held.

SUSSEX COUNTY—*Continued.*

VERNON TOWNSHIP.

MEMBERS AND OFFICERS—R. J. Rhodes, Glenwood; James Stidworthy, New Milford; Geo. M. Cooper, Vernon; Abram Van Winkle, Secretary, Glenwood.

WALPACK TOWNSHIP.

MEMBERS AND OFFICERS—E. T. Roe, Walpack Center; Nathaniel Van Auken, Flatbrookville; Daniel S. Smith; C. D. Gunn, Assessor.

WANTAGE TOWNSHIP.

MEMBERS AND OFFICERS—J. I. Brink, J. Emmet Wilson, Lebbeus Martin, Martin Coykendall; S. M. Parcell, Secretary, all of Deckertown.

UNION COUNTY.

CLARK TOWNSHIP.

MEMBERS AND OFFICERS—Benj. King, Picton; Edward Mays, Rahway; Isaac Terhune, Rahway; W. E. Cladek, M.D., Rahway; F. P. Bullman, Rahway.

Births reported, 3; deaths, 5. One meeting was held by the board.

CRANFORD TOWNSHIP.

MEMBERS AND OFFICERS—John H. Cromwell, John H. Thompson, Alfred McIntire, Crossman Lyon, Joseph H. Severance, Joseph K. McConnell, M. D., Edward S. Crane, Secretary and Assessor.

Total deaths, 24; under one year, 8. Two cases of diphtheria were reported. Water-supply of the village of Cranford is obtained from Netherwood. Two hundred and thirty-six houses are connected with the sewer—fifteen during the past year. The sewers dis-

UNION COUNTY—*Continued.*

charge into the Rahway river at tide-water. Fifteen hundred feet of sewer pipe were laid since our last report. Eight nuisances were abated. Four meetings were held.

CITY OF ELIZABETH.

MEMBERS AND OFFICERS—John Whalen, James S. Green, M.D., Edward R. O'Reilly, M.D., Louis Quien, M.D., Arthur Stern, M.D., Norton L. Wilson, M.D., Victor Mravlag, M.D., Jas. J. Manning, Secretary; Louis J. Richards, Inspector; Patrick J. Connell, Assistant Inspector.

Births reported, 988; deaths, 904; deaths under one year, 253. The following communicable diseases were reported: Diphtheria, 347; scarlet fever, 122; typhoid, 17. Total length of sewers, 47½ miles; house connections, 339. About 1½ miles of sewers laid during past year. Nuisances investigated, 463; abated, 449. Two prosecutions were undertaken for violation of the ordinances. Appropriation, \$1,500. Twelve meetings were held.

A decision was rendered October 20th, 1899, by a jury in the District Court, against Frank Ratti for maintaining a public nuisance detrimental to health, and he was sentenced to pay a fine of five dollars and costs.

"Ratti is a confectioner and ice-cream manufacturer, and used the engine in connection with his business. He ran it from 9 o'clock in the morning until 4 o'clock the next morning, and its incessant pounding noise racked the nerves of the women of the neighborhood, who complained to the board of health, which ordered Ratti to suppress the engine, but he refused to do so.

"The board of health consulted city attorney Connolly, who informed them that they had no case; and he declined to prosecute the offender. Then the health board hired two lawyers to proceed against Ratti, and he engaged a couple of lawyers to defend him. The case was tried by Judge Atwater and a jury of eleven business men, and lasted all day. Ratti may appeal."

BOROUGH OF FANWOOD.

MEMBERS AND OFFICERS—F. W. Westcott, M.D., F. D. Warren, W. E. Gibbs; Geo. F. Carter, Secretary; B. P. Hall, Inspector.

One nuisance was abated. One meeting was held.]]

UNION COUNTY—*Continued.*

FANWOOD TOWNSHIP.

MEMBERS AND OFFICERS—Thomas J. Nichol, Scotch Plains; Wm. H. Terry, Plainfield; Theo. Bruchman, Scotch Plains; F. W. Wescott, M.D., Fanwood; Chas. H. French, Secretary, Westfield; Wm. R. Coddington, Attorney, Plainfield.

Nine meetings were held.

BOROUGH OF LINDEN.

MEMBERS AND OFFICERS—H. B. Hardenburg, Wm. McDonagh, Ambrose Welch, H. L. Browning, W. C. Hill, Chas. G. Pearson, Fred. Blanke, E. S. Lundy; M. O. Loudon, Inspector.

Births reported, 4; total deaths, 3; under one year, 1. Appropriation, \$50. Five meetings were held.

BOROUGH OF NEW PROVIDENCE.

MEMBERS AND OFFICERS—David R. Runyon, West Summit; James Golden, West Summit; S. H. Bassinger, M.D., Murray Hill; Lewis C. Rubsamen, Murray Hill; W. S. Bingham, Murray Hill; J. T. Scott, Secretary, West Summit; Jonathan Osborne, Inspector, West Summit.

Four nuisances were abated. Six meetings were held.

NEW PROVIDENCE TOWNSHIP.

MEMBERS AND OFFICERS—S. P. Debbie, Scotch Plains; Harvey Dean, Scotch Plains; Casper Fuchs, Berkley Heights; A. M. Cory, M.D., New Providence; W. C. Johnson, Secretary, New Providence.

Appropriation, \$50. Four meetings were held.

CITY OF PLAINFIELD.

MEMBERS AND OFFICERS—Henry B. Newhall, J. A. Smith, B. Van D. Hedges, M.D., F. W. Dunn; Wm. H. Murray, M.D., Secretary; Wm. Addis, Sr., Inspector.

UNION COUNTY—*Continued.*

Births reported, 312 ; total deaths, 248 ; under one year, 60. Communicable diseases were reported as follows : Diphtheria, 32 cases, deaths, 3 ; scarlet fever, 13 cases, no deaths ; typhoid fever, 24 cases, deaths, 3. Three prosecutions were instituted for failure to comply with the ordinances. Appropriation, \$1,000. Thirteen meetings were held.

CITY OF RAHWAY.

MEMBERS AND OFFICERS—C. B. Holmes, M.D., H. Page Hough, M.D., John M. Randolph, M.D., W. E. Cladek, M.D., H. W. Gibbons ; S. R. Ryno, Secretary ; F. J. Mix, Inspector.

Five cases of diphtheria, 6 of scarlet fever, and 2 of typhoid fever were reported. Seventy nuisances were abated. Appropriation, \$400.

BOROUGH OF ROSELLE.

MEMBERS AND OFFICERS—H. C. Pierson, M.D.; J. N. Meeker, J. W. Hope, Minot W. Sewall, Van S. Roosa, Secretary ; John Christ, Inspector.

Eight nuisances were abated. Eight meetings were held.

SPRINGFIELD TOWNSHIP.

MEMBERS AND OFFICERS—L. T. Terry, Geo. Goff, A. P. Carter, T. W. Harris, M.D.; J. J. Hoff, Secretary.

Ten cases of diphtheria, 2 of scarlet fever and 2 of typhoid fever occurred. Two nuisances were abated. Two meetings were held.

CITY OF SUMMIT.

MEMBERS AND OFFICERS—W. H. Lawrence, M.D.; A. B. Wallace, Geo. H. Hodenpyl, Gustav Pollock, F. E. Dana, Dr. J. E. Rowe, Jr., Secretary.

UNION COUNTY—*Continued.*

Eight cases of scarlet fever and one of typhoid fever were reported. About 700 dwellings are connected with the public water-supply. Monthly meetings are held by the board.

UNION TOWNSHIP.

MEMBERS AND OFFICERS—Wm. A. Bembridge, Lorraine; O. H. Beach, Union; John H. Doremus, Lyons Farms; Hobart Sayre, Union.

Four cases of diphtheria, 1 of membranous croup and 8 of scarlet fever were reported. Seventeen nuisances were abated. Seven meetings were held.

WESTFIELD TOWNSHIP.

MEMBERS AND OFFICERS—J. A. Dennis, C. M. Harden, Martin Wells, Jos. B. Harrison, M. D., John M. C. Marsh, Secretary.

About 400 dwellings are connected with the public water-supply. Appropriation, \$300. Thirteen meetings were held.

WARREN COUNTY.

ALLAMUCHY TOWNSHIP.

MEMBERS AND OFFICERS—Wm. H. Young, Hackettstown; T. G. Dunlap Allamuchy; P. G. Hawk, Allamuchy; Wm. H. Wilson, Allamuchy; John-N. Hieler, Tranquillity; Benj. A. Hendershot, Secretary and Assessor, Allamuchy.

Births, 4; deaths, 3. One case of typhoid fever was reported.

WARREN COUNTY—*Continued.*

BLAIRSTOWN TOWNSHIP.

MEMBERS AND OFFICERS—A. S. Rice, Vails; W. C. Howell, Blairstown; Abram L. Smith, Vails; H. C. Carhart, M.D., Blairstown; Wm. S. Perry, Secretary, Vails.

One case of typhoid fever occurred. Appropriation, \$100. Two meetings were held.

FRANKLIN TOWNSHIP.

MEMBERS AND OFFICERS—John W. Cline, New Village; Frank P. Smith, Broadway; Wm. M. Simantine, Asbury; V. G. Crevelling, M.D., Broadway; M. B. Bowers, Secretary, Broadway.

Births reported, 7; deaths, 3. One meeting was held.

FRELINGHUYSEN TOWNSHIP.

MEMBERS AND OFFICERS—Wm. Durling, Johnsonsburg; Wm. Kerr, Marksboro; Geo. Armstrong, Marksboro; Fred. Rorback, M.D., Johnsonsburg; W. H. Ackerman, Secretary, Johnsonsburg.

Four meetings were held.

GREENWICH TOWNSHIP.

MEMBERS AND OFFICERS—Geo. Hamlen, Stewartville; A. P. Kinney, Stewartville; Jacob Shillenger, Stewartville; F. W. Curtis, M.D., Stewartville; Wm. Sherrer, Secretary, Bloomsbury.

Three cases of diphtheria were reported. One meeting was held.

TOWN OF HACKETTSTOWN.

MEMBERS AND OFFICERS—Alden E. Martin, M.D., John S. Cook, M.D., Alven C. Vansyckle, M.D., Augustus W. Cutter, Richard G. Clark, Thomas Nolan, Thomas S. White, O. A. Mattison, Secretary; J. M. Everett, Inspector.

WARREN COUNTY—*Continued.*

Births reported, 47; total deaths, 37; under one year, 8. One case of diphtheria and one of scarlet fever occurred. Six nuisances were abated. Appropriation, \$300. Nine meetings were held.

HARMONY TOWNSHIP.

MEMBERS AND OFFICERS—Peter E. Cole, Montana; Geo. M. Amoy, Harmony; Ervin B. Smith, Roxbury; James D. De Witt, M.D., Harmony; H. Pittinger, Secretary, Harmony.

Births reported, 6; total deaths, 14; under one year, 8. One meeting was held.

INDEPENDENCE TOWNSHIP.

MEMBERS AND OFFICERS—T. W. Haggerty, M.D., Vienna; John Merrill, Danville; Abram Hance, Vienna; James F. Boyd, Vienna; W. J. Barker, Secretary, Vienna.

Births reported, 15; total deaths, 36; under one year, 7.
No meetings were held by the board.

KNOWLTON TOWNSHIP.

MEMBERS AND OFFICERS—Lewis C. Brands, Columbia; Philip B. Mercle, Columbia; Geo. W. Dewitt, Columbia; Wm. B. Moore, Secretary, Columbia; Wm. C. Allen, Inspector, Delaware.

Births reported, 19; total deaths, 23; under one year, 3.
Two cases of diphtheria, one of membranous croup, and four of typhoid fever, occurred. One nuisance was abated. Appropriation \$25. One meeting was held.

MANSFIELD TOWNSHIP.

MEMBERS AND OFFICERS—E. S. Hoover, Port Murray; J. Beaty, Port Murray; H. S. Funk, M.D., Port Murray; Fred. Dellicker, Assessor, Port Murray.

WARREN COUNTY—*Continued.*

PAHAQUARRY TOWNSHIP.

MEMBERS AND OFFICERS—Hiram Zimmerman, Millbrook; Moses M. Depue, Millbrook; Mason Dickson, Millbrook; Jason K. Hill, Millbrook.

CITY OF PHILLIPSBURG.

MEMBERS AND OFFICERS—E. C. Parker, C. J. Pfeiffer, J. C. Peedoe, Wm. Smith, Daniel Zeigler, Dr. Creveling; Frank Kneedler, Secretary; Howard Cary, Inspector.

Eight cases of diphtheria, five of scarlet fever and three of typhoid fever were reported.

POHATCONG TOWNSHIP.

MEMBERS AND OFFICERS—John R. Kelly, Finesville; Wm. W. Sherrer, Shriners; Thomas M. Crouse, Finesville; Chas. H. Boyer, M.D., Rieglesville; Jacob O. Boyer, Assessor, Carpenterville; W. B. Laubach, Clerk, Finesville.

Births reported, 35. Total deaths, 15; under 1 year, 2. Six cases of diphtheria, 1 of membranous croup, 2 of scarlet fever and 1 of typhoid fever were reported. Three meetings were held.

BOROUGH OF WASHINGTON.

MEMBERS AND OFFICERS—H. M. Cox, M.D.; Geo. C. Campbell, Thomas B. Dawes, John Hombaker, A. J. Bigler, Chas. M. Wallace, M.D.; A. J. Craft Secretary.

Four cases of diphtheria and 5 of scarlet fever were reported. Births reported, 96. Total deaths, 59; under one year, 11. About 500 dwellings are connected with the public water-supply and about 45 premises are connected with the sewer. Nuisances abated, 22. Appropriation, \$100. Nine meetings were held.

WARREN COUNTY—*Continued.*

WASHINGTON TOWNSHIP.

MEMBERS AND OFFICERS—R. Y. Bowers, Washington; Wm. Miller, New Hampton; Wm. Apgar, Port Colden; C. B. Smith, M.D., Washington; Samuel Rinehart, Secretary, Washington.

One meeting was held.

Institutions.

Following is a list of the most important public institutions in New Jersey devoted to the care or custody of the dependent and criminal classes :

LIST OF INSTITUTIONS, INCLUDING HOSPITALS, ARRANGED BY COUNTIES, WITH THE
NAMES OF SUPERINTENDENTS.

INSTITUTION.	LOCATION.	SUPERINTENDENT.
Atlantic County—		
County Almshouse.....	Smiths Landing.....	T. L. McConnell.
County Insane Asylum.....	Smiths Landing.....	T. L. McConnell.
County Jail.....	Mays Landing.....	S. E. Johnson.
Bergen County—		
County Jail.....	Hackensack.....	Jacob L. Van Buskirk.
Englewood Hospital.....	Englewood... ..	Helen A. Lord, M.D.
Tri-Township Almshouse...	Oradell.....	C. E. Cole.
Burlington County—		
County Almshouse.....	Pemberton... ..	Theodore B. Gaskill.
County Hospital.....	Mount Holly.....	
County Insane Asylum.....	Pemberton... ..	Theodore B. Gaskill.
County Jail.....	Mount Holly.....	Joseph S. Fleetwood.
Camden County—		
Cooper Hospital.....	Camden.....	Thomas Waring.
County Almshouse.....	Blackwood.....	Robert W. Jaggard.
County Insane Asylum.....	Blackwood.....	Charles F. Currie.
County Jail.....	Camden.....	
Cape May County—		
County Almshouse.....	Cape May Court House,	John W. Reeves.
County Jail.....	Cape May Court House,	
Cumberland County—		
County Almshouse.....	Bridgeton.....	Benjamin F. Roray.
County Insane Asylum.....	Bridgeton.....	David Elwell.
County Jail.....	Bridgeton.....	Reuben Cheesman.
Institution for Feeble- Minded Women	Vineland.....	Mary J. Dunlap, M.D.
N. J. Home for the Educa- tion and Care of Feeble- Minded Children.....	Vineland.....	Prof. S. O. Garrison.
Essex County—		
County Insane Asylum.....	Newark.....	Livingston S. Hinkley.
County Jail.....	Newark.....	C. G. Underhill.
County Penitentiary.....	Caldwell.....	Henry M. Stone.
German Hospital.....	Newark.....	P. M. Deheck.
Memorial Hospital.....	Orange.....	Mary I. Chambers.
Newark City Almshouse....	Newark.....	D. F. Olvaney.

LIST OF INSTITUTIONS, INCLUDING HOSPITALS, ARRANGED BY COUNTIES, WITH THE NAMES OF SUPERINTENDENTS—*Continued.*

INSTITUTION.	LOCATION.	SUPERINTENDENT.
Essex County—<i>Con.</i>		
Newark City Home.....	Verona.....	C. M. Harrison.
Newark City Hospital.....	Newark.....	Frank E. Baker, M.D.
Orange City Almshouse.....	Orange.....	
St. Barnabas' Hospital.....	Newark.....	Sisters of St. Margaret.
St. Michael's Hospital.....	Newark.....	Sister Perpetua, Superior.
Township Almshouse.....	Belleville.....	Arthur R. McCluskey.
Township Almshouse.....	Near Bloomfield.....	Adam Lind.
Township Almshouse.....	Millburn.....	B. Townley.
Township Almshouse.....	Montclair.....	John Goman.
Township Almshouse.....	Vailsburg.....	Frederick Helmlinger.
Gloucester County—		
County Almshouse.....	Clarksboro.....	George G. Weatherby.
County Insane Asylum.....	Clarksboro.....	George G. Weatherby.
County Jail.....	Woodbury.....	
Hudson County—		
Bayonne Hospital.....	Bayonne.....	Miss Margaret Orr.
Christ Hospital.....	Jersey City.....	K. Johnston.
County Almshouse.....	Snake Hill.....	Robert Ryan.
County Insane Asylum.....	Snake Hill.....	George W. King, M.D.
County Jail.....	Jersey City.....	G. R. Patterson.
County Penitentiary.....	Snake Hill.....	John Grimes.
Jersey City Hospital.....	Snake Hill.....	George O. Osborne.
St. Mary's Hospital.....	Hoboken.....	
St. Francis Hospital.....	Jersey City.....	Sisters of the Poor of St. Francis.
Hunterdon County—		
County Jail.....	Flemington.....	John Ramsey.
Township Almshouse.....	Clover Hill.....	
Mercer County—		
County Jail.....	Trenton.....	W. B. Van Horn.
County Workhouse.....	Trenton.....	S. Judson Allen.
Mercer Hospital.....	Trenton.....	George F. Wilson.
Municipal Hospital.....	Trenton.....	Dr. A. S. Fell.
New Jersey State Hospital.....	Trenton.....	John W. Ward.
New Jersey State Prison.....	Trenton.....	Samuel S. Moore.
St. Francis Hospital.....	Trenton.....	Sister Mary Hyacintha.
State Industrial School for Girls.....	Trenton.....	Mrs. Myrtle B. Eyler.
Township Almshouse.....	Hamilton Square.....	C. T. Hendrickson.
Township Almshouse.....	Hopewell.....	Harry Hunt.
Township Almshouse.....	Princeton.....	Thomas R. Farr.
Trenton City Almshouse.....	Trenton.....	John Hazlett.
Trenton City Hospital.....	Trenton.....	Dr. E. B. Witte.
Middlesex County—		
County Jail.....	New Brunswick.....	Isaiah D. Barclay.
John Wells Memorial Hospital.....	New Brunswick.....	Miss Elizabeth McDougall.
New Brunswick Almshouse.....	New Brunswick.....	Michael Anderson.
Perth Amboy City Almshouse.....	Perth Amboy.....	John E. Morris.
State Reform School.....	Jamesburg.....	Ira Otterson.

LIST OF INSTITUTIONS, INCLUDING HOSPITALS, ARRANGED BY COUNTIES, WITH THE
NAMES OF SUPERINTENDENTS—*Continued.*

INSTITUTION.	LOCATION.	SUPERINTENDENT.
Middlesex County— <i>Con.</i>		
Township Almshouse.....	Menlo Park.....	H. G. Hammer.
Township Almshouse.....	Stelton.....	
Monmouth County—		
County Jail.....	Freehold.....	Mrs. W. D. Harper.
Isolation Hospital.....	Asbury Park.....	
Isolation Hospital.....	Red Bank.....	
Memorial Hospital.....	Long Branch.....	
Township Almshouse.....	Holmdel.....	
Township Almshouse.....	New Bedford.....	
Morris County—		
All Souls' Hospital.....	Morristown.....	Sister J. C. Panet, Sup.
County Almshouse.....	Boonton.....	Giles E. Miller.
County Jail.....	Morristown.....	Dr. B. D. Evans.
State Asylum for the Insane	Morris Plains.....	
Ocean County—		
County Jail.....	Toms River.....	
Passaic County—		
County Insane Asylum.....	Paterson.....	John F. Buckley.
County Jail.....	Paterson.....	
Ladies' Hospital.....	Paterson.....	Reuben O'Brien.
Passaic City Almshouse.....	Passaic City.....	Thomas C. Mather.
Paterson City Almshouse...	Paterson.....	Reuben O'Brien.
Paterson General Hospital..	Paterson.....	
Paterson Isolation Hospital	Paterson.....	John Warr.
St. Joseph's Hospital.....	Paterson.....	Sisters of Charity.
Salem County—		
County Almshouse.....	Woodstown	Samuel D. White.
County Insane Asylum.....	Woodstown	
County Jail.....	Salem	
Somerset County—		
County Jail.....	Somerville.....	John E. De Hart.
Township Almshouse.....	Near Harlingen.....	
Township Almshouse.....	Middlebush.....	A. G. Grench.
Township Almshouse.....	Neshanic.....	Charles S. Agans.
Township Almshouse.....	Somerville.....	C. V. Conover.
Sussex County—		
County Almshouse.....	Branchville.	A. O. Smith.
County Jail.....	Newton.....	J. C. Andress.
Union County—		
County Jail.....	Elizabeth.....	Charles W. Dodd.
Elizabeth City Almshouse..	Elizabeth.....	Nathaniel Green.
Elizabeth Small-pox Hos- pital.....	Elizabeth.....	Nathaniel Green.
Muhlenberg Hospital.....	Plainfield.....	Miss Louise Moss.
Rahway City Almshouse....	Rahway	Edward W. Castor.
Warren County—		
County Almshouse.....	Townsbury.....	G. A. Leida.
County Jail.....	Belvidere	

List of Sanitary Districts, Showing Population and Names and Addresses of Officers.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Cities.</i>				
Asbury Park.....	Monmouth.....	3,761	D. C. Bowen.....	D. C. Bowen.
Atlantic City.....	Atlantic.....	18,329	Thos. D. McDevitt.....	A. T. Glenn.
Bayonne.....	Hudson.....	19,856	D. M. Hennessy.....	W. H. Marrow,
Belvidere.....	Warren.....	1,834	.....	B. F. Soby, M. D.
Beverly.....	Burlington.....	1,924	Jos. V. Carter.....	C. D. Allen.
Bordentown.....	Burlington.....	4,185	Wm. H. Shipps, M. D.	Frank L. Hewitt.
Bridgeton.....	Cumberland.....	13,292	Isaac T. Nichols.....	J. F. Cline.
Burlington.....	Burlington.....	7,844	Alfred P. Silpath.....	H. C. Kramer.
Camden.....	Camden.....	63,467	Eugene B. Roberts.....	John W. Thompson.
Cape May City.....	Cape May.....	2,451	L. T. Stevens.....	D. R. Hummer.
Dover.....	Morris.....	5,021	D. R. Hummer.....	V. P. Hoffman.
Egg Harbor City.....	Atlantic.....	1,557	V. P. Hoffman.....	J. J. Manning.
Elizabeth.....	Union.....	43,834	Jas. J. Manning.....	Robert Jamieson.
Englewood.....	Bergen.....	5,433	P. F. Kenney.....	Daniel F. Lane.
Gloucester City.....	Camden.....	6,225	D. Lane.....	J. M. Gamewell.
Hackensack.....	Bergen.....	7,282	A. E. Conklin.....	Jas. H. Reynolds.
Hoboken.....	Hudson.....	54,083	James Havron.....	L. H. Hogate.
Jersey City.....	Hudson.....	182,713	D. W. Benjamin.....	Marshall O. Leighton.
Lambertville.....	Hunterdon.....	4,620	Jas. H. Reynolds.....	Thos. Martin.
Millville.....	Cumberland.....	10,466	L. H. Hogate.....	Jas. F. Connelly.
Montclair.....	Essex.....	11,753	Richard P. Francis, M. D.	Geo. H. Denizer.
Morristown.....	Morris.....	10,290	Thos. Martin.....	Daniel A. Dugan.
Newark.....	Essex.....	215,806	D. D. Chandler.....	Geo. F. Grear.
New Brunswick.....	Middlesex.....	19,910	S. V. D. Clark.....	John T. Pollitt.
Orange.....	Essex.....	22,792	Wm. Schluer.....	John F. Reilley.
Passaic City.....	Passaic.....	13,894	C. E. Denholm.....	Frank Kneedler.
Paterson.....	Passaic.....	97,334	Jas. P. McNair.....	B. Van D. Hedges, M.D.
Perth Amboy.....	Middlesex.....	13,030	W. E. Ramsey, M. D.	
Phillipsburg.....	Warren.....	9,081	Frank Kneedler.....	
Plainfield.....	Union.....	13,629	B. Van D. Hedges, M. D.	

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Cities—Con.</i>				
Rahway.....	Union.....	7,945	S. R. Ryno.....	S. Rusling Ryno.
Salem City.....	Salem.....	6,337	Clinton Bowen.....	Clinton Bowen.
Trenton.....	Mercer.....	62,518	William Cloke.....	C. Edward Murray.
Woodbury.....	Gloucester.....	3,853	Arthur Starr.....	D. T. Mathers.
<i>Boroughs.</i>				
Allendale.....	Bergen.....	539	G. G. Smith.....	G. G. Smith.
Allentown.....	Monmouth.....	656	.....	David M. Bunting.
Anglesea.....	Cape May.....	247	.....	E. M. Shivers.
Atlantic Highlands.....	Monmouth.....	1,715	.....	Thos. J. Emery.
Avalon.....	Cape May.....	105	.....	Walter A. Smith.
Avon.....	Monmouth.....	.....	.....	C. D. Snyder.
Bay Head.....	Ocean.....	201	.....	J. R. Hall.
Beach Haven.....	Ocean.....	230	W. F. Beer.....	F. Howard Potts.
Belmar.....	Monmouth.....	.....	Neil H. Miller.....	Neil H. Miller.
Bergen Fields.....	Bergen.....	544	H. Demarest.....	Howard Demarest.
Bogota.....	Bergen.....	.....	Peter F. Hopper.....	H. M. Brinkerhoff.
Bound Brook.....	Somerset.....	2,030	W. L. Negus.....	Chas. McNabb.
Bradley Beach.....	Monmouth.....	707	John Morris.....	Frank Herbert.
Branchville.....	Sussex.....	.....	.....	C. A. Dalrymple.
Brigantine.....	Atlantic.....	.....	.....	D. J. Lawrence.
Brooklyn.....	Sussex.....	.....	.....	.....
Caldwell.....	Essex.....	984	Thomas W. Briggs.....	J. J. Van Orden.
Cape May Point.....	Cape May.....	136	.....	Lafayette Miller.
Carlstadt.....	Bergen.....	1,965	Herman Foth.....	Herman Foth.
Chatham.....	Morris.....	.....	M. H. Hopping.....	M. K. Hopping.
Chesilhurst.....	Camden.....	271	.....	Albert Ladyuski.
Clayton.....	Gloucester.....	2,130	.....	Geo. W. Duffield.
Cliffside Park.....	Bergen.....	592	.....	Jean Henri Raas.
Clinton.....	Hunterdon.....	895	.....	Edward C. Moke.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Boroughs—Con.</i>				
Collingswood.....	Camden.....		Robt. S. Duff.....	Robt. S. Duff.
Cresskill	Bergen.....	450	E. B. Westervelt.....	Edwin D. McCracken.
Deal	Monmouth.....			
Deckertown	Sussex.....	1,090	James M. Martin.....	F. B. Whittle.
Delford	Bergen.....	594	Geo. F. Moore, Oradell.....	H. A. Bingham, Oradell.
Dumont	Bergen.....	572	J. E. Prall, M.D.	Wm. P. Cox.
Dunellen.....	Middlesex.....	1,215	J. Peters.....	Chas. A. Coriell.
East Rutherford.....	Bergen	2,250	J. J. McGolrick.....	Wm. E. Novo.
Elmer	Salem.....	1,145		C. H. Hughes.
Englishtown.....	Monmouth		J. L. Stratton.....	E. T. Reid.
Englewood Cliffs.....	Bergen.....			John G. Ropes, Fort Lee.
Fairview.....	Bergen		Geo. A. Storms.....	John C. Bush.
Fanwood.....	Union.....		Geo. F. Carter.....	Wm. E. Collins.
Fieldsboro.....	Burlington.....		Wm. Leatherbury.....	C. H. Fennimore.
Florham Park	Morris.....		Henry W. Young	Henry W. Young, Afton.
Frenchtown.. ..	Hunterdon.....	1,052		Frank Maxwell.
Garfield.....	Bergen.....		P. J. Scanlon.....	P. J. Scanlon.
Glen Ridge.....	Essex.....	1,644		Nathan Russell.
Glen Rock.....	Bergen		J. Marinus, Ridgewood.....	Wm. H. Berry, Paterson.
Haddonfield.....	Camden.....	2,580	W. H. Harrison.....	Wm. H. Harrison.
Hasbrouck Heights	Bergen	842	John G. Martin.....	John G. Martin.
Hawthorne.....	Passaic.....		Wm. J. O'Keefe.....	S. E. Barnes, N. Paterson.
Helmetta.....	Middlesex.....			Isaac L. Elliott.
High Bridge.....	Hunterdon.....	1,032	John L. Phillips.....	C. F. Halsted.
Hightstown	Mercer.....		W. D. Wean.....	Fred. B. Applegate.
Holly Beach.....	Cape May.....	300	A. C. Pentland.....	Geo. J. Reed.
Hopewell.....	Mercer.....		W. I. Phillips.....	E. V. Savidge.
Island Heights.....	Ocean.....	246		John C. Manolt.
Junction	Hunterdon.....	975		E. E. Riddle.
Lavalette.....	Ocean.....		Geo. Keer, M.D.....	Geo. E. Willits.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Boroughs—Con.</i>				
Leesburgh.....	Cumberland.....	.....	.....	H. M. Thompson.
Leonia	Bergen .....	.....	.....	J. C. Jepson.
Linden.....	Union .....	.....	M. O. Loudon.....	James Farish.
Linwood.....	Atlantic.....	.....	.....	A. Woods.
Little Ferry.....	Bergen.....	1,113	A. Woods.....	Jacob Van Hook.
Lodi.....	Bergen.....	1,403	Jacob Van Hook.....	E. B. Blaisdell.
Long Branch Com.....	Monmouth.....	7,333	E. B. Blaisdell.....	.....
Longport.....	Atlantic.....	.....	.....	C. E. Cook.
Madison.....	Morris.....	3,250	.....	M. R. Mulford.
Manasquan.....	Monmouth.....	1,427	M. R. Mulford.....	F. C. Beale.
Matawan.....	Monmouth.....	.....	Wm. A. Rodgers.....	F. T. May.
Maywood.....	Bergen.....	283	F. T. May.....	Wm. B. Stewart.
Merchantville.....	Camden.....	1,339	W. B. Stewart.....	Thos. Holt.
Midland Park.....	Bergen.....	1,254	Jacob Leenas.....	Arthur C. Phillips.
Millstone.....	Somerset.....	.....	Wm. Polhemus.....	Robert A. Harkins.
Milltown.....	Middlesex.....	.....	C. W. Kuhlman.....	John B. Hering.
Montvale.....	Bergen.....	354	.....	Cyrus F. Cook.
Mount Arlington.....	Morris.....	348	.....	C. G. McMurray, Westfield.
Mountain Side.....	Union.....	.....	.....	C. D. Snyder, Avon.
Mount Tabor.....	Morris.....	.....	P. F. Cook.....	Frank King.
Neptune City.....	Monmouth.....	.....	C. D. Snyder.....	.....
Netcong.....	Morris.....	877	.....	J. T. Scott.
New Market.....	Middlesex.....	.....	.....	Fred. L. Baldwin, Caldwell.
New Providence.....	Union.....	.....	J. T. Scott, W. Summit.....	Rev. W. E. Honeyman, Plainfield.
North Caldwell.....	Essex.....	.....	.....	F. L. Allen, Spring Lake Beach.
North Plainfield.....	Somerset.....	4,245	Rev. W. E. Honeyman.....	Ira S. Champion.
North Spring Lake.....	Monmouth.....	262	.....	.....
Ocean City.....	Cape May.....	921	Wm. Lake.....	.....
Ocean Grove Associat'n.....	Monmouth.....	.....	H. R. Alday, M. D.,.....	.....
Old Tappan.....	Bergen.....	261	.....	R. B. Haring, River Vale.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Boroughs—Con.</i>				
Palisades Park.....	Bergen		G. W. Gardner.....	
Park Ridge.....	Bergen	753	Henry Stroschall.....	Henry Stroschall.
Pemberton.....	Burlington.....	816	Jas. B. Hankins.....	Anthony J. Morris.
Pennington.....	Mercer.....		J. C. Brown.....	Joseph C. Bunn.
Pennsgrove.....	Salem.....	1,497	H. E. Crompton.....	H. M. Flangin.
Pleasantville.....	Atlantic.....	1,543	John Sanders.....	John Sanders.
Point Pleasant.....	Ocean.....			Jas. T. Havens.
Point Pleasant Beach.....	Ocean.....	660		D. C. Leaw, Point Pleasant.
Pompton Lakes.....	Passaic.....	675		H. J. Smith.
Port Oram.....	Morris.....		Jas. Williams.....	James Williams.
Princeton.....	Mercer.....	923		M. W. Hubbard.
Raritan.....	Somerset.....	2,693	Wm. Killiger.....	Wm. Killiger.
Ridgefield.....	Bergen.....	518	M. A. Lemm.....	B. F. Underwood, M.D.
Riverside.....	Bergen.....	569	W. W. Herrick, River Edge.....	J. H. Weston, Cherry Hill.
Riverside.....	Burlington.....		W. T. Stecher.....	Wm. T. Stecher.
Riverton.....	Burlington.....	1,250		Edward H. Pancoast.
Rockaway.....	Morris.....	1,334	Wm. May.....	Wm. May.
Roselle.....	Union.....	1,367	Van S. Roosa.....	G. A. Rawlins.
Rutherford.....	Bergen.....	3,972	F. E. Milner.....	Chas. Van Winkle.
Saddle River.....	Bergen.....		S. Chittenden, P. O., Paterson.....	T. Nelson Woodruff.
Seabright.....	Monmouth.....			D. C. Read.
Sea Isle City.....	Cape May.....	824	W. A. DeRoche.....	Henry O. De Roder.
Seaside Park.....	Ocean.....		J. B. Wood.....	
Somers Point.....	Atlantic.....			W. R. Fox.
South Amboy.....	Middlesex.....	5,571	J. F. Fulton.....	J. F. Fulton.
South Atlantic City.....	Atlantic.....		Chas. Hart.....	Chas. Hart.
South Bound Brook.....	Somerset.....	833		
South Cape May.....	Cumberland.....	66		
South River.....	Middlesex.....		R. V. Reid.....	R. Van Dyke Reid.
Spring Lake Beach.....	Monmouth.....			F. M. Hunt.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Boroughs—Con.</i>				
Spring Lake.....	Monmouth.....	331	.....	John Middleton, Spring Lake Beach.
Stockton.....	Hunterdon.....	.....	.....	Wm. V. Reed.
Tenafly.....	Bergen.....	1,532	J. B. W. Lansing, M. D.....	J. B. W. Lansing, M. D.
Totowa.....	Passaic.....	.....	.....	Wilbur Demott, Paterson.
Edgewater.....	Bergen.....	.....	.....	Edward Fischer
Upper Saddle River.....	Bergen.....	.....	H. Zabriskie, Saddle River.....	H. G. Kramer, Ramsey, Box 12.
Vailsburg.....	Essex.....	1,563	.....	Wm. Billington.
Vineland.....	Cumberland.....	4,126	W. E. Bates.....	W. E. Bates
Wallington.....	Bergen.....	1,063	.....	Jas. Brennan, Carlton Hill.
Washington.....	Warren.....	3,538	A. J. Craft.....	A. J. Craft.
Wenonah.....	Gloucester.....	473	J. W. English.....	Jesse W. English.
West Cape May.....	Cape May.....	209	.....	Horace E. Swain, Cape May City.
Westwood.....	Bergen.....	646	.....	John E. Haring, Westwood.
Wildwood.....	Cape May.....	109	M. S. Hays.....	Jed. DuBois.
Woodcliffe.....	Bergen.....	421	G. J. Wortendyke.....	G. J. Wortendyke.
Wood Ridge.....	Bergen.....	526	Wm. H. White.....	W. H. White.
Woodstown.....	Salem.....	1,470	.....	H. H. Stepler.
<i>Towns.</i>				
Absecon.....	Atlantic.....	522	.....	Geo. B. Lutts.
Boonton.....	Morris.....	3,276	Geo. W. Blanchard.....	Geo. W. Blanchard.
Freehold.....	Monmouth.....	3,157	J. O. Burt.....	R. V. Lawrence.
Guttenberg.....	Hudson.....	3,626	.....	.....
Hackettstown.....	Warren.....	2,594	O. A. Mattison.....	O. A. Mattison.
Hammonton.....	Atlantic.....	3,428	J. L. O'Donnell.....	J. Louis O'Donnell.
Harrison.....	Hudson.....	9,674	.....	.....
Irvington.....	Essex.....	3,388	Edwin Berry.....	Mahlon Stockman.
Keyport.....	Monmouth.....	3,386	Abram Huyler.....	.....
Red Bank.....	Monmouth.....	4,888	H. J. Childs.....	H. J. Child.
Somerville.....	Somerset.....	4,514	W. R. Sutphen.....	W. R. Sutphen.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Towns—Con.</i>				
Town of Union.....	Hudson	13,336	.....	
<i>Villages.</i>				
Ridgefield Park.....	Bergen.....	.....	.....	Thos. Terhune, Hohokus.
Ridgewood	Bergen.....	.....	.....	Dr. W. W. Heberton.
South Orange.....	Essex.....	.....	.....	
<i>Townships.</i>				
Acquackanonk.....	Passaic.....	3,598	Richard Berry.....	Richard Berry, Clifton.
Alexandria	Hunterdon.....	1,202	Wm. B. Wean.....	Wm. B. Wean, Mt. Pleasant.
Allamuchy.....	Warren.....	653	Benj. Hendershot, Allamuchy..	E. J. Harden, Allamuchy.
Alloway	Salem.....	1,628	.....	Wm. E. Simpkins, Yorktown.
Andover	Sussex	1,072	Wm. Iliff.....	Wm. Iliff, Newton.
Atlantic.....	Monmouth	1,455	Levi Scobey.....	Levi Scobey, Scobeyville.
Bass River.....	Burlington.....	853	A. E. Mathis.....	A. E. Mathis, New Gretna.
Bedminister..	Somerset..	1,789	H. L. Kennedy	H. L. Kennedy, Gladstone.
Belleville.....	Essex	4,568	J. J. Hannan.....	Wm. Connolly, Belleville.
Bergen	Bergen.....	499	.....	Daniel Saviello, Wood Ridge.
Berkley.	Ocean.....	737	Devine Butler	Devine Butler, Bayville.
Bernards	Somerset.....	2,558	L. H. Bowers.....	L. H. Bowers, Basking Ridge.
Bethlehem.....	Hunterdon	1,761	S. O. Myers.....	S. O. Myers, Bloomsbury.
Beverly.....	Burlington.....	.....	Jos. B. Carter.....	Jos. B. Carter, Delanco.
Blairstown	Warren.....	1,601	Wm. S. Perry.....	Wm. S. Perry, Kuowlton.
Bloomfield.	Essex	8,093	Wm. L. Johnson.....	Samuel H. Baxter, Bloomfield.
Boonton	Morris.....	691	G. D. Crane, Boonton,.....	Jos. Steventon, Boonton.
Bordentown,.....	Burlington.....	991	.....	H. B. Ford, Bordentown.
Burlington.....	Burlington.....	1,062	.....	Ellsworth Mount, Burlington.
Branchburg.....	Somerset	1,074	L. T. Schenck	L. T. Schenck, Readington.
Brick	Ocean.....	2,118	Geo. W. Vannote, Burrsville.....	A. W. Downey, Burrsville.
Bridgewater... ..	Somerset.....	1,700	C. L. Voorhees	C. L. Voorhees, Somerville.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Townships—Con.</i>				
Byram.....	Sussex.....	1,218	E. O. Valentine.....	E. O. Valentine, Stanhope.
Buena Vista.....	Atlantic.....	1,424	Douglass Reed Buena.....	Alfred Pennock, Buena.
Caldwell.....	Essex.....	1,658	G. M. Camfield.....	Theodore Vincent, Caldwell.
Centre.....	Camden.....	2,047	J. H. Jackson, Magnolia.....	F. H. Jackson, Magnolia.
Chatham.....	Morris.....	2,547	Nathaniel Clark, Madison..	J. H. Bebout, New Providence.
Chester.....	Burlington.....	4,227	Benj. Rogers.....	Benjamin Rogers, Moorestown.
Chester.....	Morris.....	1,562	Jos. D. Budd.....	Jos. D. Budd, Chester.
Chesterfield.....	Burlington.....	1,298	C. B. Holloway.....	C. B. Holloway, Chesterfield.
Cinnaminson.....	Burlington.....	1,202	Timothy Morton.....	Timothy Morton, Parry.
Clark.....	Union.....	384	.....	F. P. Bullman, Picton.
Clayton.....	Gloucester.....	38	.....	.....
Clinton.....	Essex.....	2,082	.....	Wm. H. Goldsmith, Newark, Box 243.
Clinton.....	Hunterdon.....	1,941	Bergen B. Berkaw.....	Bergen B. Berkaw, Annandale.
Commercial.....	Cumberland.....	.....	.....	E. J. Cook, Port Norris.
Cranbury.....	Middlesex.....	1,456	Jas. H. Goodwin, Cranbury.....	Ancil Davison, Cranbury.
Cranford.....	Union.....	2,145	Edward S. Crane.....	Edward S. Crane, Cranford.
Deerfield.....	Cumberland.....	3,115	Chas. C. Phillips, M.D., Deerfield St..	Elijah R. Parvin, Deerfield St.
Delaware.....	Camden.....	1,611	W. B. Jennings, Haddonfield.....	Wm. Graff, Ellisburg.
Delaware.....	Hunterdon.....	2,819	John E. Barber.....	John E. Barber, Oak Dale.
Delran.....	Burlington.....	938	D. A. Kendall.....	Daniel A. Kendall, Riverton.
Dennis.....	Cape May.....	2,370	.....	Leaming M. Rice, Jr., Dennisville.
Deptford.....	Gloucester.....	1,883	.....	Wm. C. Cattell, Wenonah.
Dover.....	Ocean.....	2,580	Thomas B. Irons.....	Thos. B. Irons, Toms River.
Downe.....	Cumberland.....	1,808	George E. Butcher, Dividing Creek...	Willis A. Stites, Newport.
Eagleswood.....	Ocean.....	589	J. C. W. Parsons, West Creek.....	Eugene F. Cranmer, West Creek.
Eastampton.....	Burlington.....	654	George W. Craig, Smithville.....	Jos. Powell, Jr., Smithville.
East Amwell.....	Hunterdon.....	1,273	B. C. Young, Ringoes.....	Wm. Clayhauer, Wertsville.
East Brunswick.....	Middlesex.....	4,928	.....	Asher B. Rue, Old Bridge.
East Greenwich.....	Gloucester.....	1,363	Walter Heritage.....	Walter Heritage, Mickleton.
East Orange.....	Essex.....	17,927	Winthrop D. Mitchell, M.D.....	S. M. Long, East Orange.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Townships—Con.</i>				
East Windsor	Mercer.....	2,671	J. M. Matthews, Trenton.....	S. L. Mount, Etra.
Eatontown.....	Monmouth.....	2,661	.....	A. L. Scoby, Eatontown.
Egg Harbor.....	Atlantic.....	.....	Edmund R. Vickers, Bakersville.....	V. P. Hoffman, Egg Harbor City.
Elk.....	Gloucester.....	935	.....	Kinsey Morgan, Hardingville.
Elsinboro.....	Salem.....	498	Chas. P. Farnkoff.....	Chas. P. Farnkoff, Salem.
Evesham.....	Burlington.....	1,413	P. V. B. Stout, Marlton.....	Samuel D. Farrow, Marlton.
Ewing.....	Mercer.....	3,569	J. M. Matthews.....	Jas. M. Matthews, Trenton, Box 676.
Fairfield	Cumberland.....	1,802	Ephraim H. Whiticar, Fairton.....	J. B. Mulford, Fairton.
Fanwood.....	Union.....	1,600	C. H. French.....	C. H. French, Westfield.
Florence.....	Burlington.....	1,762	John Adams, Florence.....	Walter Scully, Florence.
Frankford.....	Sussex.....	1,430	John De Kay.....	John De Kay, Papakating.
Franklin	Bergen.....	1,825	John W. Ackerman.....	John W. Ackerman, Oakland.
Franklin	Essex.....	3,076	Chas. Kierstead, Nutley.....	F. Carlisle, Nutley.
Franklin	Gloucester.....	2,256	W. S. Richman.....	W. S. Richman, Malaga.
Franklin	Hunterdon.....	1,278	.....	Isaac Suydam, Quakertown.
Franklin	Somerset.....	2,854	Sanford Snyder.....	Sanford Snyder, East Millstone.
Franklin	Warren.....	1,338	M. B. Bower.....	Michael B. Bower, Jr., Broadway.
Freehold	Monmouth.....	2,356	Ruliff B. Lawrence.....	John B. Parker, Smithville.
Frelinghuysen.....	Warren.....	864	W. H. Akerson.....	Walter H. Akerson, Johnsonburg.
Galloway.....	Atlantic.....	2,375	F. W. Somers, Oceanville.....	Anthony Krengle, Egg Harbor City.
Glassboro	Gloucester.....	2,664	Chas. H. Heritage.....	David Paulin, Glassboro.
Gloucester	Camden.....	3,479	W. T. Gibbs.....	Willard T. Gibbs, Clementon.
Green.....	Sussex.....	588	M. W. Northrup.....	M. W. Northrup, Huntsville.
Greenwich.....	Cumberland.....	1,323	Morris Bacon, Bridgeton.....	J. W. Butler, Othello.
Greenwich.....	Gloucester.....	2,157	Jacob Ballenger.....	Jacob Ballenger, Paulsboro.
Greenwich.....	Warren.....	886	Wm. Sherrer.....	Wm. Sherrer, Bloomsbury.
Haddon.....	Camden.....	1,266	Jas. Macaulay, Westmont.....	Wm. H. Harrison, Haddonfield.
Hamilton.....	Atlantic.....	.....	Chas. Cain, Mays Landing.....	Jos. Hammill, Mays Landing.
Hamilton.....	Mercer.....	3,860	Isariah Cubberly, Hamilton Square...	R. Ellsworth Haines, Hamilton Sq.
Hampton.....	Sussex.....	859	Frank Emmans.....	Frank Emmans, Newton.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Townships—Con.</i>				
Hanover.....	Morris.....	4,524	.....	L. B. Ford, Whippany.
Hardwick.....	Warren.....	470	.....	Philip S. Savercool, Hardwick.
Hardyston.....	Sussex.....	2,531	Jas. K. Smith, Hamburg.....	Smith Simpson, Hamburg.
Harmony.....	Warren.....	1,100	H. Pittinger, Harmony.....	Freman Shuler, Rocksburg.
Harrington.....	Bergen.....	2,989	Wm. J. Demarest.....	Wm. J. Demarest, Norwood.
Harrison.....	Gloucester.....	1,508	Eli Heritage.....	Eli Heritage, Richwood.
High Bridge.....	Hunterdon.....	1,032	.....	George F. Hummer, High Bridge.
Hillsborough.....	Somerset.....	2,847	J. H. Saums.....	John H. Saums, Millstone.
Hohokus.....	Bergen.....	2,377	John Ackerman.....	John Ackerman, Wyckoff.
Holland.....	Hunterdon.....	1,706	F. A. Dalrymple.....	F. A. Dalrymple, Milford.
Holmdel.....	Monmouth.....	1,429	Aaron Longstreet.....	Aaron Longstreet, Keyport.
Hope.....	Warren.....	1,321	.....	Alvin A. Vanhorn, Hope.
Hopewell.....	Cumberland.....	1,849	.....	Walter L. Minch, Shiloh.
Hopewell.....	Mercer.....	4,418	W. D. Hunt.....	Wilson D. Hunt, Harbourton.
Howell.....	Monmouth.....	3,246	Jas. H. Butcher.....	Jas. H. Butcher, Ardena.
Hudson County.....	Hudson.....	.....	C. J. Rooney, Jr. ....	.....
Independence.....	Warren.....	960	W. J. Barker.....	Wm. J. Barker, Vienna.
Jackson.....	Ocean.....	1,650	.....	Walter S. Hendrickson, Jackson's Mill.
Jefferson.....	Morris.....	1,590	.....	Charles Chamberlain, Woodport.
Kearny.....	Hudson.....	10,487	W. W. Keyler.....	.....
Kingwood.....	Hunterdon.....	1,375	Samuel J. Snyder.....	Samuel J. Snyder, Locktown.
Knowlton.....	Warren.....	1,294	Wm. B. Moore.....	William B. Moore, Columbia.
Lacey.....	Ocean.....	759	B. F. Matthews.....	B. F. Matthews, Forked River.
Lafayette.....	Sussex.....	703	John Demarest.....	John Demarest, Lafayette.
Lakewood.....	Ocean.....	2,201	John B. Peters.....	R. B. Robbins, Lakewood.
Landis.....	Cumberland.....	4,660	.....	Howard M. Dolbey, Vineland.
Lawrence.....	Cumberland.....	1,729	Henry S. Long, Cedarville.....	Furman B. Sheppard, Cedarville.
Lawrence.....	Mercer.....	1,705	Isaac B. Baker, Lawrence Station.....	Frank Pierson, Lawrenceville.
Lebanon.....	Hunterdon.....	1,794	.....	A. S. Banghart, Glen Gardner.
Linden.....	Union.....	1,061	.....	Asa Collins, Linden.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers - Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Townships—Con.</i>				
Little Egg Harbor.....	Ocean.....	1,821	.....	Otis Jones, Tuckerton.
Little Falls.....	Passaic.....	2,410	.....	F. W. Van Ness, Little Falls.
Livingstone.....	Essex.....	1,311	Geo. R. DeCamp.....	Geo. R. DeCamp, Roseland.
Lodi.....	Bergen.....	638	J. Preis.....	J. Preis, Wood Ridge.
Logan.....	Gloucester.....	1,526	S. B. Platt.....	S. B. Platt, Bridgeport
Long Beach.....	Ocean.....	.....	.....	Wm. F. Gaskill, Barnegat City.
Lopatcong.....	Warren.....	1,781	.....	E. Frank Cline, Shimmers.
Lower Alloways Creek..	Salem.....	1,300	Richard Grier.....	Richard Grier, Salem.
Lower.....	Cape May.....	1,063	Wm. C. Rutherford.....	Wm. C. Rutherford, Cold Spring.
Lower Penns Neck.....	Salem.....	1,350	Isaac Fowler, Pennsville.....	John G. Mitchell, Pennsville,
Lumberton.....	Burlington.....	1,715	.....	H. D. Culin, Hainsport.
Madison.....	Middlesex.....	1,557	D. H. Brown.....	D. H. Brown, Browntown.
Manalapan.....	Monmouth.....	1,944	G. B. Conover, Englishtown.....	Samuel C. Bowne, Tennent.
Manchester.....	Ocean.....	979	P. H. Emley.....	P. H. Emley, Lakehurst.
Manchester.....	Passaic.....	4,993	G. Planten.....	Garrett Planten, Paterson.
Mannington.....	Salem.....	1,931	.....	Jonathan B. Grier, Salem.
Mansfield.....	Burlington.....	1,612	.....	Amos Keeler, Columbus.
Mansfield.....	Warren.....	1,368	Fred Dellicker, P. Murray.....	Jas. Beatty, Port Murray.
Mantua.....	Gloucester.....	2,012	Geo. B. Hurff.....	George B. Hurff, Sewell.
Marlboro..	Monmouth..	1,851	.....	W. F. Nivison, Morganville.
Matawan.....	Monmouth.....	2,874	.....	Chris. Winter, Clifwood.
Maurice River..	Cumberland.....	2,116	.....	Henry Reeves, Jr., Leesburg.
Medford.....	Burlington.....	1,989	J. Reeve Medford.....	Wm. M. Potts, Medford.
Mendham.....	Morris.....	1,452	John Kennedy, Gladstone.....	John D. Lindsley, Mendham.
Middle.....	Cape May.....	2,500	Stilwell H. Townsend.....	Stilwell H. Townsend, Cape May C. H.
Middletown.....	Monmouth.....	6,330	Omar Sickles.....	Omar Sickles, Navesink.
Midland..	Bergen.....	1,829	Nicholas G. Hopper, Ridgewood.....	John D. Bogert, Ridgewood.
Millburn.....	Essex.....	2,762	.....	John M. Drake, Millburn.
Millstone.....	Monmouth.....	1,723	Geo. J. Ely.....	George J. Ely, Perrineville.
Monroe.....	Gloucester.....	2,542	.....	Clayton B. Tice, Williamstown.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Townships—Con.</i>				
Monroe.....	Middlesex	3,042	J. L. Suydam, M. D., Jamesburg	Charles G. Hoffman, Jamesburg.
Montague.....	Sussex.....	858	.....	George N. Cole, Montague.
Montgomery	Somerset	1,614	Ernest S. Taggart.....	Ernest S. Taggart, Griggstown.
Montville.....	Morris.....	1,370	H. C. Baldwin, Montville.....	Asa T. Cook, Montville.
Morris.....	Morris.....	2,525	C. M. Phillips.....	C. M. Phillips, Morristown.
Mount Laurel.....	Burlington.....	1,653	.....	William P. Lippincott, Hartford.
Mount Olive.....	Morris.....	1,273	S. W. Salmon.....	S. W. Salmon, Mount Olive.
Mullica.....	Atlantic.....	825	John T. Irving, Elwood.....	W. W. Phillips, Elwood.
Neptune	Monmouth.....	7,253	.....	Samuel A. Cliver, Asbury Park.
New Barbadoes.....	Bergen.....	.....	.....	.....
New Hanover.....	Burlington.....	1,896	.....	Benj. Romaine, Wrightstown.
New Providence.....	Union.....	934	W. C. Johnson.....	W. C. Johnson, New Providence.
Newton.....	Sussex.....	3,426	.....	Geo. B. Case, Newtown.
Northampton.....	Burlington.....	5,750	M. H. Girvin.....	M. H. Girvin, Mount Holly.
North Bergen.....	Hudson.....	8,427	Geo. Bruce, New Durham... ..	.....
North Brunswick.....	Middlesex.....	1,394	A. E. Bowman.....	A. E. Bowman, New Brunswick.
North Plainfield	Somerset.....	634	W. H. Morris.....	W. H. Morris, Dunellen.
Ocean.....	Ocean.....	526	J. H. Wilkins.....	Jonathan H. Wilkins, Waretown.
Ocean.....	Monmouth.....	3,600	H. A. Brinley.....	Howard A. Brinley, Long Branch.
Oldmans.....	Salem.....	1,423	Levi C. Justice.....	Levi C. Justice, Pedricktown.
Orvil	Bergen.....	993	J. B. Ver Nooy.....	J. B. Ver Nooy, Waldwick.
Overpeck.....	Bergen.....	.....	Carl Hallberg.....	William H. Hunter, Ridgefield Park.
Oxford.....	Warren.....	3,436	.....	Michael Mountain, Oxford.
Pahaquarry.....	Warren.....	304	.....	Jason K. Hill, Millbrook.
Palisade.....	Bergen.....	689	William Ely.....	William Ely, New Bridge.
Palmyra.....	Burlington.....	2,310	.....	F. Blackburn, Palmyra.
Passaic.....	Morris.....	1,843	.....	J. A. Harvey, Stirling.
Pemberton.....	Burlington.....	1,704	.....	Barclay Leeds, Pemberton.
Pensauken.....	Camden.....	3,966	.....	H. E. Horner, Merchantville.
Pequanook.....	Morris.....	8,166	.....	Chas. A. Decker, Butler.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Townships—Con.</i>				
Pilesgrove.....	Salem.....	1,779	D. F. Davis.....	David F. Davis, Woodstown.
Piscataway.....	Middlesex.....	382	Chas. E. Kelly.....	Chas. E. Kelly, New Market.
Pittsgrove.....	Salem.....	1,865	.....	Geo. Schalick, Centreton.
Pohatcong.....	Warren.....	1,648	Jacob O. Boyer.....	Jacob O. Boyer, Carpenterville.
Plumstead.....	Ocean.....	1,288	Daniel W. Bussom.....	Daniel W. Bussom, New Egypt.
Pompton.....	Passaic.....	2,045	D. R. Sloan.....	D. Reeve Sloan, Bloomingdale.
Princeton.....	Mercer.....	3,488	H. W. Van Dyke.....	F. C. Borden, Princeton.
Quinton.....	Salem.....	1,317	Chas. M. Fox, Alloway.....	Josiah T. Harris, Quinton.
Randolph.....	Morris.....	3,669	F. O. Bassett.....	F. O. Bassett, Dover, Box 98.
Raritan.....	Hunterdon.....	3,924	.....	Chas. Alpaugh, Flemington.
Raritan.....	Middlesex.....	3,914	W. Vansiclen.....	W. Vansiclen, Metuchen, Box 301.
Raritan.....	Monmouth.....	1,349	John Fitzgerald, Keyport.....	Asbury F. Bedle, Keyport.
Readington.....	Hunterdon.....	2,776	Eugene Hoffman, White House Sta.....	David Schomp, Pleasant Run.
Ridgefield.....	Bergen.....	4,081	.....	Thos. F. Mallon, Fort Lee.
Rockaway.....	Morris.....	4,461	David A. Wiggins.....	David Wiggins, Rockaway.
Roxbury.....	Morris.....	2,189	F. M. Flowers, Landing.....	Edgar N. Corwin, Succasunna.
Saddle River.....	Bergen.....	3,662	S. Chittenden.....	S. Chittenden, Paterson, Box 628.
Sandyston.....	Sussex.....	1,006	M. D. Hughes, M. D., Layton.....	John J. Van Sickle, Layton.
Sayreville.....	Middlesex.....	3,420	.....	B. F. Samsel, Sayreville.
Shamong.....	Burlington.....	965	E. E. Bowker, Tabernacle.....	S. L. Doughy, Oriental.
Shrewsbury.....	Monmouth.....	3,649	.....	A. L. Ivins, Red Bank.
Southampton.....	Burlington.....	2,039	.....	John O'Leary, Vincentown.
South Brunswick.....	Middlesex.....	2,467	H. E. Hathaway.....	H. E. Hathaway, Monmouth Junc.
South Harrison.....	Gloucester.....	704	Samuel Stanger, Harrisonville.....	D. C. Lippincott, Harrisonville.
South Orange.....	Essex.....	5,108	Jos. H. Osborne, Hilton.....	Thos. C. Baker, Maplewood.
Sparta.....	Sussex.....	1,970	S. S. Byram, Houses.....	John W. Maseker, Sparta.
Springfield.....	Burlington.....	1,523	Aaron H. Burtis.....	Aaron H. Burtis, Mount Holly.
Springfield.....	Union.....	930	J. J. Hoff.....	J. J. Hoff, Springfield.
Stafford.....	Ocean.....	1,099	J. B. Courtney.....	John B. Courtney, Manahawkin.
Stillwater.....	Sussex.....	1,225	F. C. Hoff, Middleville.....	A. C. Huff, Middleville.

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LIST OF SANITARY DISTRICTS.

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List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Townships—Con.</i>				
Stoe Creek.....	Cumberland.....	966	Chas. D. Fogg.....	Chas. D. Fogg, Shiloh.
Summit.....	Union.....	4,450	Dr. J. E. Rowe, Jr.....	Dr. J. E. Rowe, Summit.
Teaneck.....	Bergen.....	811	J. Hawkins.....	Jonathan Hawkins, Teaneck.
Tewksbury.....	Hunterdon.....	1,942	C. A. Kinkel.....	C. A. Kinkel, New Germantown.
Union.....	Bergen.....	1,852	.....	Thos. E. Buckley, Lyndhurst.
Union.....	Hudson.....	5,005	.....	.....
Union.....	Hunterdon.....	1,073	John Little.....	John Little, Jutland.
Union.....	Ocean.....	1,055	E. R. Wills.....	E. R. Wills, Barnegat.
Union.....	Union.....	3,412	.....	D. Hobart Sayre, Union.
Upper Freehold.....	Monmouth.....	2,247	F. C. Price, M. D., Imlaystown.....	Wm. Quicksill, Hornerstown.
Upper Penns Neck.....	Salem.....	803	Geo. W. Hewitt.....	Geo. W. Hewitt, Pennsgrove.
Upper Pittsgrove.....	Salem.....	1,741	J. N. Gray.....	J. N. Gray, Pittsgrove.
Upper.....	Cape May.....	.....	Jesse T. Young, Beesley's Point.....	Albert G. Corson, Palermo.
Vernon.....	Sussex.....	1,837	A. Van Winkle, Glenwood.....	A. E. Rutherford, Vernon.
Verona.....	Essex.....	1,631	.....	Wm. L. Scott, Verona.
Voorhees.....	Camden.....	.....	S. H. Gardiner.....	S. H. Gardiner, Ashland.
Wall.....	Monmouth.....	3,853	.....	Geo. E. Rogers, New Bedford.
Walpack.....	Sussex.....	2,362	C. D. Gunn.....	Cornelius D. Gunn, Walpack Centre.
Wantage.....	Sussex.....	.....	S. M. Purcell.....	S. M. Purcell, Deckertown.
Warren.....	Somerset.....	1,086	Peter Newmiller.....	Peter Newmiller, Warrenville.
Washington.....	Bergen.....	1,259	N. Cleveland.....	N. Cleveland, Westwood.
Washington.....	Burlington.....	310	A. E. Koster.....	A. E. Koster, Green Bank.
Washington.....	Gloucester.....	1,206	C. D. Nicholson.....	Chas. D. Nicholson, Turnersville.
Washington.....	Mercer.....	1,142	J. B. Yard.....	J. B. Yard, Robbinsville.
Washington.....	Morris.....	2,278	W. A. Flock, Schooley's Mountain.....	Geo. H. Sliker, Pleasant Run.
Washington.....	Warren.....	1,287	Samuel Rhinehart.....	Samuel Rhinehart, Washington.
Waterford.....	Camden.....	2,789	M. S. Bittle, Berlin.....	C. D. Heath, Berlin.
Wayne.....	Passaic.....	2,099	Andrew P. Hopper.....	Andrew P. Hopper, Paterson.
Weehawken.....	Hudson.....	2,577	.....	.....
Westampton.....	Burlington.....	593	H. B. Haines.....	Hudson B. Haines, Rancocas.

List of Sanitary Districts, Showing Population and Names and Addresses of Officers—Continued.

SANITARY DISTRICT.	COUNTY.	Population by Census of 1895.	NAME AND ADDRESS OF SECRETARY.	NAME AND ADDRESS OF REGISTRAR OF VITAL STATISTICS.
<i>Townships—Con.</i>				
West Amwell.....	Hunterdon.....	896	Geo. H. Carr.....	Geo. H. Carr, Lambertville.
West Deptford.....	Gloucester.....	1,717	Mark Clement.....	Mark Clement, Woodbury.
Westfield.....	Union.....	3,753	John M. C. Marsh.....	John M. C. Marsh, Westfield.
West Hoboken.....	Hudson.....	18,296	W. P. Fisk, West Hoboken.....	Jos. H. Schulster, Echo Lake.
West Milford.....	Passaic.....	2,169	W. C. Oliver, Oak Ridge.....	Benj. L. Williams, West Orange.
West Orange.....	Essex.....	5,854	Frank A. O'Connor, W. Orange.....	Chas. H. Mather, Lawrence Station.
West Windsor.....	Mercer.....	1,244	.....	Providence W. Flanagan, Tuckahoe.
Weymouth.....	Atlantic.....	575	B. M. Godfrey, Tuckahoe.....	Jas. M. Stokes, Rancocas.
Willingboro.....	Burlington.....	704	.....	Michael G. Burdsall, Tansboro.
Winslow.....	Camden.....	2,034	M. G. Burdsall.....	John H. Leiser, Woodbridge.
Woodbridge.....	Middlesex.....	5,802	Jas. V. Freeman, Woodbridge.....	Geo. Bozarth, Chatsworth.
Woodland.....	Burlington.....	387	Geo. Bozarth.....	Samuel Avis, Swedesboro.
Woolwich.....	Gloucester.....	2,224	.....	

Contagious Diseases of Animals.

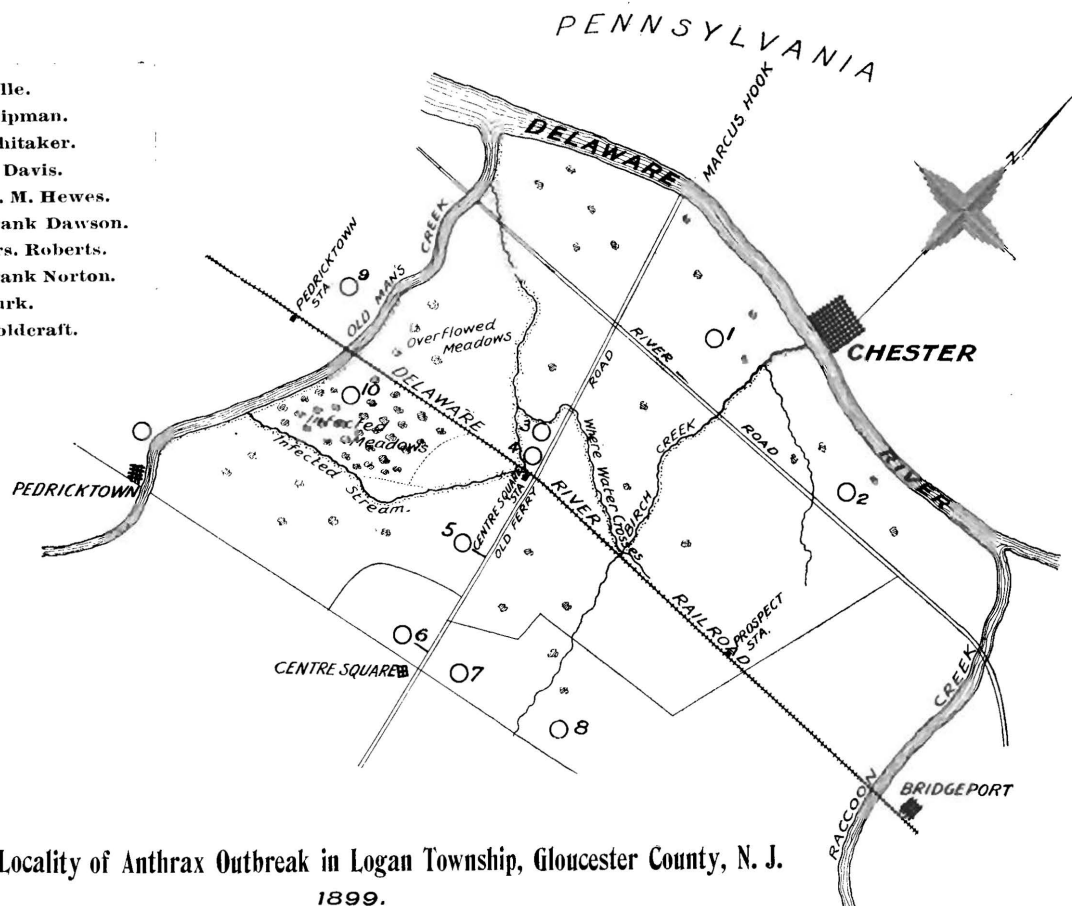
During the past year communicable diseases of animals were reported as follows:

LIST OF CONTAGIOUS DISEASES OF ANIMALS REPORTED BETWEEN NOVEMBER 7, 1898, AND OCTOBER 1, 1899.

When Reported.	Owner's Name and Address.	Disease.	By Whom Reported.	Action Taken.
Nov. 7.....	Elizabeth.....	Tuberculosis.....	Dr. Zucker.....	Animal destroyed.
" 7.....	West Orange.....	".....	Dr. Ogden.....	Referred to Tuberculosis Commission.
" 10.....	Tokey & Sons, 200 Passaic Av., Harrison.....	Glanders.....	1 Dr. Runge.....	Animal examined.
" 10.....	Beesley's Point.....	Tuberculosis.....	Willard Young.....	Referred to Tuberculosis Commission.
Dec. 7.....	Karrsville.....	Diseased meat.....	M. Cole.....	Advised action.
" 10.....	Louis Cohen, Rose St., Newark.....	Glanders.....	1 Dr. Runge.....	Animal destroyed.
" 12.....	Lusenhop, Kearny.....	".....	2 Health officer.....	"
Jan 27.....	Clifton.....	".....	1 Dr. Lowe.....	Destroyed
" 30.....	Woodbury.....	Rabies.....	10 Dr. T. B. Rogers.....	Referred to law.
Feb. 27.....	Henry Phiffer, Cologne.....	Cerebro-spinal meningitis.....	3 Wm. S. Fink, D. V. S.....	Died.
" 27.....	Rio-Grande.....	Tuberculosis.....	Wm. A. Harris.....	Referred to Tuberculosis Commission.
Mar. 9.....	F. Yokow, Belleville.....	Glanders.....	4 Dr. Runge.....	Two destroyed.
" 21.....	Julius Lehy, Harrison.....	".....	1 ".....	Animal destroyed.
" 21.....	Taggerts, Kearny.....	".....	1 ".....	"
" 28.....	Merz, Jacob St., Newark.....	".....	1 ".....	"
" 28.....	Schiengert, Newark.....	".....	1 ".....	"
" 30.....	Jersey City.....	".....	24 Mr. Benjamin.....	Animals
April 26.....	Hartman, Elizabeth.....	".....	1 Dr. Zucker.....	Animal
May 22.....	George Taylor, Cedar Grove.....	Tuberculosis.....	James McDonough.....	Tuberculosis Commission.
" 22.....	Reservoir Place, Newark.....	Glanders.....	2 D. D. Chandler.....	Animals destroyed.
" 23.....	Clayton.....	Tuberculosis.....	W. M. Pierce.....	Tuberculosis Commission.
" 23.....	John Blair, Hanover Neck.....	Pleuro-pneumonia.....	Dr. Runge.....	No case.
July 4.....	Little Ferry.....	Glanders.....	1 A. Woods.....	Animal destroyed.
" 7.....	Traders' Express, Orange.....	".....	1 D. D. Chandler.....	"
" 10 to.....	".....	".....	".....	"
Aug. 15.....	Logan Twp., Glo. Co.....	Anthrax Cases.....	27 Dr. Rogers.....	Inoculation of 205 animals.
" 13.....	Louis Brinkerman, Passaic.....	Glanders.....	1 Dr. J. P. Lowe.....	Animal destroyed.
" 14.....	S. Faber, Passaic.....	".....	1 ".....	"
Anthrax cases reported.....		27	Cases of rabies reported.....	10
Deaths.....		22	Cases of cerebro-spinal meningitis.....	3
Glanders cases reported.....		44	Cases of supposed pleuro-pneumonia examined.....	1
Animals destroyed.....		44	Animals inoculated (see report which follows).....	205
Cases of bovine tuberculosis reported.....		7		

(245)

1. Kille.
2. Shipman.
3. Whitaker.
4. J. Davis.
5. W. M. Hewes.
6. Frank Dawson.
7. Mrs. Roberts.
8. Frank Norton.
9. Burk.
10. Holdercraft.



Map of Locality of Anthrax Outbreak in Logan Township, Gloucester County, N. J.
1899.

Following is a report of the outbreak of anthrax, which occurred in Gloucester county during the months of July and August, 1899.

To the Board of Health of the State of New Jersey :

GENTLEMEN—On July 15th, 1899, you requested me to assume the control of measures for suppressing the outbreak of anthrax in Logan township, Gloucester county, N. J., giving me authority to use such restrictive and preventive measures as should be necessary. I have the honor to report to you that when I ceased work on August 18th, 1899, the infected district was entirely free from cases of the disease, and that two hundred and five head of stock, mostly cattle, had been rendered immune by inoculation with anthrax vaccine. These injections were made without the loss of a single animal, without the development of any local irritation and without diminution in the milk-flow from the inoculated herds. The virus used was obtained from the laboratory of the H. K. Mulford Company, of Philadelphia. It is a three-injection virus, the second injection following five days, and the third fourteen days, after the first. In my opinion this slow method is fraught with much less danger than the method of Pasteur, the two-injection method. Great care was taken with the injections, the skin being sterilized by destruction of the hair and superficial layer of epithelium with the thermo cautery. This is a more rapid way of skin sterilization than the method of shaving the hair and disinfecting the skin with creolin or bichloride of mercury, there being no risk of weakening the virus by admixture with antiseptics, and the cautery mark prevents the same animal from being inoculated twice with the same virus. Especial precautions were taken against any loss of virus from the injection wounds, this step being necessary to prevent insufficient protection. Several tubes were condemned, these being evidently contaminated; two of them having the deep yellow color that is seen in cultures of certain chromogenetic species of bacteria. It is, in my opinion, essential that the field-worker in this department of preventive medicine should himself be a bacteriologist, as lack of this knowledge may lead to discredit of good laboratory work by careless field methods, or on the other hand, careless laboratory methods can receive no check if the field-worker has to take things on trust.

A written release was taken from each owner and the injection dates endorsed on the back thereof; these releases are submitted with this report. The cadavers were deeply buried, and the burial plots fenced in; but this is not a good way to dispose of them, as reinfection of the pasture through the agency of earth worms is a possibility, and I recommend to your favorable notice the method used in Delaware. In that State nine dollars is allowed for wood, oil and labor, and the bodies are thoroughly cremated. I trust that we shall be enabled to follow this method in dealing with future outbreaks.

An isolated case of acute anthrax occurred on Mantua creek, between Mount Royal and Paulsboro. A bacteriological diagnosis was made from blood from this case, through the kindness of the Messrs. Mulford, and their bacteriologist's letter anent the matter is submitted herewith. Two owners declined to allow their herds to receive the third injection, but a prospect of quarantine for their herds, and the urgent remonstrances of their influential neighbors, brought them to their senses, and the inoculations were completed. The origin of this

outbreak must always remain in doubt. From the map submitted herewith, it will be seen that all the cases except one (the Burk case) occurred, either on one piece of overflowed meadow, or on streams flowing from it. The infection may have been washed there from the Wilmington tanneries, or it may be that the meadow contained the germ, which only waited for proper "*milieu*" for its development, or it may be from other sources beyond our ken. An old resident described an outbreak of disease in this locality that certainly must have been anthrax, which destroyed a large number of horses and cattle some fifty years ago, and I have seen two isolated outbreaks in Salem county, one on the farm of Michael Hogan, in Mannington township. I think Mr. Hogan lost nearly twenty head of horses and cattle. A report of these cases was made to the State Board of Health about fifteen years ago.

It is interesting to note that anthrax exists in the State of Delaware at this writing. The successful stamping-out of this outbreak in Logan township was much facilitated by the cordial co-operation of a most intelligent body of farmers. Especial mention should be made of Messrs. Holdcraft, Dawson, West and Fletcher Myers. To the last-named gentleman I am indebted for the accompanying map of the infected area.

My assistant, Dr. L. D. Horner, of Woodstown, proved to be one of the most untiring and painstaking workers that it has been my pleasure to meet, and though he had a long daily drive in most oppressive weather he was always on time to a minute. Below you will find a list of cases and of the infected herds. I have the honor to be

Your obedient servant,

THOMAS B ROGERS,
D. V. S.

Woodbury, N. J., August 25th, 1899.

LIST OF OWNERS OF ANIMALS INFECTED WITH ANTHRAX, WITH NUMBER OF CASES.

OWNER.	No. cases.	Cows.	Horses.	Hogs.	Recoveries	Deaths.
Wm. Norton.....	3	3	.....	.....	.....	3
Wm. M. Hewes.....	3	2	1	.....	.....	3
Libby Roberts (Mrs.)....	1	1	.....	.....	.....	1
Joseph G. Davis.....	2	.....	2	.....	.....	2
F. A. Norton.....	1	1	.....	.....	.....	1
S. L. Kille.....	5	5	.....	.....	1	4
Wm. M. Shipman.....	4	3	.....	1	1	3
Frank Dawson.....	5	5	.....	.....	1	4
Geo. Whitaker.....	1	1	.....	.....	.....	1
Wm. Burk.....	1	1	.....	.....	1	.....
Robert M. Holdercraft.....	1	1	.....	.....	1	.....
Total.....	27	23	3	1	5	22

NAMES OF OWNERS OF ANIMALS INOCULATED WITH ANTHRAX VACCINE, LOGAN TOWNSHIP, GLOUCESTER COUNTY, N. J., BETWEEN JULY 15 AND AUGUST 25, 1899.

OWNER.	No. Cows,	No. Horses,
C. F. Myers	5	.....
F. S. Dawson	6	.....
Jacob Zane.....	2	.....
S. L. Kille.....	5	.....
James Brannan.....	3	.....
Robert M. Holdcraft.....	2	.....
James West	3	.....
Wm. H. Shipman.....	8	.....
Wm. L. Chew	6	.....
Wm. Reisner.....	4	.....
Clarence B. Hampton..	7	.....
Sam'l Holdcraft.....	3	.....
F. A. Norton.....	8	.....
J. B. Wright.....	1	.....
Wm. C. Kelly.....	6	.....
E. J. Dawson.....	4	.....
J. G. Myers.....	8	.....
Wm. R. Hewes.....	1	.....
C. R. Richardson	3	.....
Hugh McGlincy.....	4	.....
Wm. H. Moore.....	7	.....
S. Stokes Hunt.....	12	.....
Wm. M. Burk.....	15	.....
Wm. S. Norton	5	.....
Elsie Weatherby.....	15	.....
R. F. Davis.....	5	.....
Joseph G. Davis	1	2
Isaac N. Patterson	5	.....
S. Russell Parker.....	11	.....
Fred Rapp.....	3	.....
Lidie Whitaker.....	.....	1
Harry R. Steward.....	10	.....
O. J. Zeigler.....	4	.....
Geo. Messick	5	.....
Thos. Lyons.....	4	.....
E. M. Springer.....	.....	.....
Total.....	202	3

Reports of Inspection of Sources of Pollution of Public Water- Supplies.

The following reports relating to the examination of the sources of public water-supplies have been placed before the board during the past year.

REPORT RELATING TO THE WATER-SUPPLY OF THE CITY OF ORANGE.

To the Board of Health of the State of New Jersey :

GENTLEMEN—Upon request of the board of health of the city of Orange an inspection was made this day of the brook which has its rise near the corner of Ridgway and Northfield avenues, in the township of West Orange, and which empties into the reservoir which supplies water to the city of Orange.

At a point about 125 feet east from said corner of Northfield and Ridgway avenues is located a dwelling owned by Josiah O. Ward. Mr. Ward's post-office address is 59 High street, Orange. This dwelling is occupied by a family named Wallman. The waste fluids from the dwelling discharge on the surface of the ground near the fence-line, and about 50 feet from the brook which crosses Ridgway avenue, near the corner of Northfield avenue, and flows into the reservoir supplying water to the city of Orange. These waste fluids pass over the surface of the ground and find their way directly into the said brook. The privy-pit on this premises is located 15 feet from the said brook, and at the time of the inspection the filthy contents of the said privy-pit was overflowing directly into the brook. Further down stream is located the premises owned by Joseph Merishoffer. Said premises front on Northfield road, West Orange. On this premises a hog-pen is situated about 50 feet from the said brook. Said hog-pen contains stable manure to a depth of about 4 feet, and the fluids which flow from this mass of filth go into the brook. Still further down stream, and nearly opposite the last-mentioned premises, is a house owned by John Bennett, and occupied by William Blake. A privy-pit on this premises is located about 28 feet from the said brook. It was found that this privy-pit had recently been excavated, and that its filthy contents had been placed upon the surface of the ground near the privy and 26 feet from the brook, and that the recent rains had washed more or less of this material into the brook. Adjoining the last-mentioned place is another premises owned by John Bennett (post-office address, 16 Main street, West Orange). On this

premises a new slaughter-house, 12 x 12 feet, has recently been erected, and the slaughter of calves is carried on there. A privy-pit is situated between the slaughter-house and the brook, the slaughter-house being 40 feet distant from the said brook, and the privy-pit being 12 feet from the said brook. In this locality the ground is low and miry, and filth from both the slaughter-house and the privy gains access to the brook. The brook crosses the two last-mentioned premises between the dwelling-houses and the privies, and much defilement of the waters of the brook is sure to occur as long as the brook in this situation remains open and uncovered.*

Action was taken concerning the conditions above described as follows:

1. Notice to discontinue the pollution of said brook was sent by hand of Wm. Schleur, health officer of the city of Orange, to J. O. Ward, John Bennett, and Joseph Merishoffer.†
2. Notice was sent by mail to James M. Maghee, health officer of West Orange township, advising action by the board of health of West Orange, to require prompt removal of excreta from the banks of said stream.

Very respectfully,

HENRY MITCHELL,

Secretary.

March 24th, 1899.

Following are copies of letters sent Bennett, Ward, and the local board of health of Orange:

OFFICE STATE BOARD OF HEALTH, }
TRENTON, N. J., March 30th, 1899. }

Mr. John Bennett, 16 Main Street, West Orange N. J.:

DEAR SIR—An inspection made March 24th, 1899, by officers of the State Board of Health, shows that the overflow from the privy-pit owned by you, situated on Northfield road, opposite the St. Cloud school, in the township of West Orange, passes directly into the brook which flows into the stream supplying the reservoir which furnishes drinking-water to the inhabitants of the city of Orange. Said privy-pit is located within 15 feet of said brook. Said inspection has also shown that a new building has recently been erected on the said premises within 40 feet of the said brook, and that said new building is being used as a slaughter-house, and that the surface of the ground beneath and near the slaughter-house is being defiled by the blood and offal from the slaughtered animals, and that the washings from the said slaughter-house flow into the brook above referred to. Your attention is called to the act to secure the purity of the public supplies of potable waters in this State, approved March 17, 1899, and you are hereby notified that the provisions of said act

* For map showing location of premises on which pollution of streams supplying waters to city of Orange occurs, see page 133.

† In response to the notices sent to the parties named in the foregoing report, all of the sources of direct pollution mentioned therein have been removed. During the dry weather of the past summer the small stream, between the slaughter-house and the dwellings owned by John Bennett, has entirely disappeared, but with the fall rains the bed of this brooklet will doubtless again be filled with water, and the accumulated surface filth will be washed onward toward the reservoir as heretofore.

require that the contents of said privy-pit shall be removed, and that hereafter no polluting material shall be deposited upon the ground along the borders of said brook.

Very respectfully,

HENRY MITCHELL,
Secretary.

OFFICE STATE BOARD OF HEALTH. }
TRENTON, N. J., March 30th, 1899. }

Mr. Josiah O. Ward, 59 High Street, Orange, N. J.:

DEAR SIR—An inspection made March 24th, 1899, by officers of this board, shows that the overflow from the privy-vault and the discharge of filthy fluids from the house-drain on the premises owned by you, situated on Northfield avenue, near the corner of Ridgeway avenue, township of West Orange, flows into the brook which crosses said Ridgeway avenue near the corner of Northfield avenue, and said brook flows into the main stream supplying water to the reservoir which furnishes drinking water for the citizens of Orange. Your attention is called to the act to secure the purity of the public supplies of potable waters in this State, approved March 17th, 1899, and you are hereby notified that the provisions of said act require that the contents of said privy-vault shall be immediately removed, and that there shall be no further deposit of polluting material upon the banks or borders of said brook.

Very respectfully,

HENRY MITCHELL,
Secretary.

OFFICE STATE BOARD OF HEALTH, }
TRENTON, N. J., March 30th, 1899. }

Mr. William Schleur, Health Officer, Orange, N. J.:

DEAR SIR—An inspection made March 24th, 1899, by officers of this board, disclosed several sources of pollution affecting the waters of the brook flowing nearly parallel with Northfield road, and which also flows into the reservoir supplying drinking-water to the inhabitants of the city of Orange. The law will be enforced to secure the removal of these sources of pollution, but we desire to draw the attention of the authorities of your city to the danger which attaches to the passage of the brook referred to through several door-yards in the vicinity of the dwelling owned by John Bennett. In this situation the brook will, in our judgment, constantly receive more or less polluting matter from the occupants of the dwelling-houses, and it is impossible to prevent this defilement of the waters of the brook by any practicable method of sanitary inspection. We believe that an effectual remedy for the pollution of the brook in this locality would be provided if the water was here carried for a few hundred feet through tile pipes of suitable size.

Very respectfully,

HENRY MITCHELL,
Secretary.

REPORT OF EXAMINATION OF PARVIN'S BROOK, VINELAND.

Board of Health of the State of New Jersey :

GENTLEMEN—Parvin's brook, which starts in the borough of Vineland, is a branch of the Maurice river, and at a point ten or twelve miles below Vineland the city of Millville obtains its water-supply from the river. The attention of the Board of Health of the State of New Jersey was called to the conditions existing at this point last year, and an investigation was made, in company with members of the board of health of the city of Millville. The authorities in Vineland had their attention drawn to conditions causing pollution of the stream, and an effort was made to remove the contaminations. A number of houses have been cut off from connection with the brook, but the present examination showed that there are still some contaminations existing which should receive attention from the board. The brook is covered throughout the entire length of South Sixth street, Vineland, by a culvert. The local health inspector stated that wash-water from a Chinese laundry, located at No. 15 South Sixth street, is discharged into the culvert; also, at 109 and 111 South Sixth street is a double house, Mr. Nelson occupying one portion and Willard C. McMahon the other. The health inspector states that drippings from the sink are allowed to empty into the brook, but no dish-water or house-drainage is permitted, only the drippings of the city water. Below this point, on South Sixth street, is a shoe factory, owned by Charles Kreighley & Son. The ink from this factory is emptied into the culvert. Below this point the brook is uncovered, and passes across the property upon which is located a rug factory, owned and operated by Thomas Hirsh. This factory discharges all the waste from the dyeing-vats into the brook, and the brook then passes under the West Jersey Railroad, and thence across property owned by Thomas Hirsh. In one of the fields a settling basin has been dug along the line of the brook, and here the coloring matter is supposed to be deposited, and the clear effluent allowed to continue on its course down the stream. A small dam is placed at the head of this pond, and at the time of the inspection the water was colored with dye-stuffs, and the flow over the dam and beyond showed that the settling of the materials was imperfect, and the discoloration was noticed for some distance beyond this point. Beyond the property of Mr. Thomas Hirsh the brook enters the woods, and thence to the river, and there are no dwellings located upon any portion of it.

Respectfully submitted,

May 6th, 1899.

A. C. HUNT,
Sanitary Inspector.

DEEP WELL NEAR SUMMIT.

Upon request of the mayor and the local board of health of Summit, an investigation was made concerning the character of the water obtained from an artesian well recently added to the sources of the water-supply of the city. An inspection of the locality in which the

well has been sunk shows that it is situated upon the property of the Essex-Union Water and Light Company, near the Passaic river.

There does not appear to be any near-by source of ground pollution, and the sewage-disposal beds are about one mile distant.

The fact that the water in the tubing of the well rises to a point about twelve and one-half feet above the surface of the river seems to wholly exclude any danger of communication between the surface-waters of the immediate locality and the water of the well.

Samples of the water of the well were taken for analysis, and were delivered to Prof. W. S. Myers, of Rutgers College. Samples of the water had already been examined by Mr. H. E. Baldwin, chemist Newark, N. J., and by Prof. C. F. Chandler, of Columbia College, New York. Copies of the reports of these examinations have been furnished us by the water company and by the local board of health and they are presented as follows:

CERTIFICATE OF ANALYSIS.

NEWARK, N. J., June 15th, 1899.

The Commonwealth Water Company, Summit, N. J.:

GENTLEMEN—I beg to submit the following report of my examination of the several samples of water from your new ten-inch well:

Date of sample.....	Parts per 100,000		
	Jan. 30.	May 26.	June 5.
Odor.....	None.	None.	None.
Free Ammonia.....	.0047	.0350	.0760
Albuminoid Ammonia.....	.0048	.0026	.0048
Chlorine	.5	.6	.6
Nitrogen as Nitrites		None.	None.
Nitrogen as Nitrates.....		None.	None.
Hardness (equivalent to carbonate of lime).....		13.00	14.00
Loss of ignition (with no blackening of residue).....		2.50	4.00
Fixed mineral matter.....	16.80	19.60	
Total Solids.....	19.30	23.60	

The above data indicate a water practically free from organic impurity. The comparatively large amount of free ammonia, I am convinced, has no unfavorable significance in this case, and is undoubtedly due to chemical changes occurring in the water, which have no connection with the question of its purity.

The information furnished me regarding the character of the soil penetrated by the pipe, the fact that the water rises some distance above the surface and river-level, and a personal inspection of the well, all tend to corroborate the good quality of the water indicated by the chemical examination, and make the liability of local pollution from the river extremely remote, if not impossible.

A bacteriological examination is now in progress, and the result will be reported in a few days.

Very respectfully,

HERBERT B. BALDWIN.

To Dr. Henry Mitchell, State Board of Health, Trenton, N. J.

All of these analyses, except that of Mr. Baldwin, made January 30th, show an unusual amount of free ammonia, and further inquiry was proposed by Prof. Myers to learn whether this excessive quantity could be accounted for by the character of the bedrock at the bottom of the well, or by the strata through which the water percolates, but further investigation was rendered unnecessary by reason of the disconnection of the well from the pumps supplying the city with water, and by the determination of the water company to sink the well deeper.

WATER SUPPLY OF CLINTON AND ANNANDALE, HUNTERDON
COUNTY.

Board of Health, State of New Jersey:

GENTLEMEN—In response to a request received from Dr. Berkaw, president of the board of health of Clinton township, I visited the locality and examined the sources of the water-supply of that place, and would report as follows:

The water is obtained from two streams located on the top of the hills about three miles from the village of Annandale. An examination was made of the stream above the reservoir which has been discontinued. The water company are anxious to know whether they may be allowed to use this stream or whether it is necessary to abandon it. I found that the brook was very small, and that after crossing the main road that its source is in a field filled with small springs and on property owned by Mr. Sylvester Alpaugh. This springy ground is used as a hog pasture, and the hog-pens are located on it, and the drainage from the pens flows over the ground and there is a small rivulet carrying refuse from the pens into the brook. Also the wash-house made use of by Mr. Alpaugh drains into the meadow, and the waste from this point in time finds its way into the stream. Although the contamination is somewhat remote, as it is fully one-half to three-quarters of a mile from this point to the reservoir, nevertheless it is of such a character as to lessen the purity of the stream. Although it is possible under the law to compel Mr. Alpaugh to stop contaminating the stream, an examination of the brook from this point to the reservoir indicates that it is not a satisfactory source of water-supply, as the quantity is very insignificant except in times of freshet, and if it is possible it would be better to obtain the required quantity of water from some other source.

Very respectfully,

May 22d, 1899.

A. CLARK HUNT,
Inspector.

To the Board of Health of the State of New Jersey:

GENTLEMEN—An examination was made this day of the sources of supply of the water for the reservoir furnishing water for Clinton and Annandale in the township of Clinton, county of Hunterdon. The reservoir is mainly supplied with water from wells near Beaver Creek. This water is piped for a distance

of one mile and enters the reservoir near the southwest corner. On the northern side of the reservoir a small quantity of water is admitted, which is obtained from the ditches by the roadside of the immediate vicinity and in the adjoining fields, the remotest apparent sources of this supply being from a boggy field on property owned by Sylvester Alpaugh, about one mile from the reservoir. This springy lot is used as a hog-yard, four animals being on the premises at the time of my visit. No visible stream could be traced from Alpaugh's farm to the ditches conveying water to the reservoir. At present no water is flowing through any of the said ditches, so far as they were opened, and apparently they carry very little water except during heavy rainfalls. The water company owning the reservoir above referred to was advised that the Beaver creek supply, which we are informed is sufficient if its resources are developed, shall be wholly depended upon, and that the use of the ditch-water shall be discontinued.

Very respectfully,

HENRY MITCHELL.

Secretary.

July 12, 1899.

THE DELAWARE RIVER.

To the Board of Health of the State of New Jersey :

GENTLEMEN—The complaint received by this board in regard to the disposal of garbage by the city of Easton was referred to me for inquiry. On June 14th I visited Easton, and would report as follows :

The city of Easton, together with South Easton, has a population of about 22,000. There is no general system for the collection or disposal of garbage by the city authorities, but individuals dispose of it in different ways. Some of it is burned, some buried and about 25 or 30 barrelsful are collected daily from the lower part of the city and carted to the river, where it is loaded on boats, taken down the stream about 600 yards below the Northampton street bridge, which crosses the river between Easton and Phillipsburg, and is dumped into the middle of the river. The current of the river at this point is such that part of the material is carried over against the bank on the New Jersey side of the stream, and several complaints have been made in regard to this nuisance. A portion of the ashes and street-sweepings from the city are dumped along the river bank, about 100 yards above the Northampton street bridge on the Pennsylvania side of the river.

The city of Phillipsburg has a population of about 10,000. There is no general system for the collection or disposal of garbage, but the people hire men to cart it away for them. It is dumped on the river bank, together with rubbish and ashes, in several heaps, one of them extending into the water, about 100 yards above the Northampton street bridge on the New Jersey side of the river. Mr. Frank Kneedler, secretary of the board of health of Phillipsburg, stated that it is kept covered with ashes and earth, so that foul odors seldom arise from it. At the time of the inspection the garbage was well covered with ashes and no foul odor was noticeable.

Very respectfully,

CHARLES J. MERRELL,

Inspector.

TRENTON, N. J., June 14th, 1899.

Report of Bacteriologist.

NEW JERSEY STATE LABORATORY OF HYGIENE, }
PRINCETON, N. J., October 14th, 1899. }

To the Board of Health of the State of New Jersey :

GENTLEMEN—I have the honor to submit the following report on the work done in this laboratory during the year ending September 30th, 1899 :

As in previous years, the work of the laboratory has consisted chiefly in the bacteriological diagnosis of specimens sent in by physicians of the State from tuberculosis, diphtheria and typhoid fever suspects. The conduct of the work, the methods of reporting and recording cases, etc., have not been materially changed. The methods employed for sending specimens to the laboratory from diphtheria and tuberculosis patients have been eminently satisfactory when the regulation mailing-cases were used and the enclosed instructions followed. Occasionally specimens are received with no data whatever, so that it is impossible to report on the same until a complaint is made. It is respectfully urged upon all who send specimens to carefully fill out the blanks and to notify the laboratory if a report is not received within a reasonable length of time.

In the diagnosis of typhoid fever, by the Widal method, the laboratory has not been as generally made use of as in the two diseases above mentioned, nor have the results been as uniformly satisfactory. Owing to the fact that the specimens are usually improperly prepared—the blood being smeared on the paper instead of being allowed to dry in neat drops, or the quantity of blood being too small, it has often been impossible to make a satisfactory test. The use of glass slides for blood and of capillary tubes for blister serum is about to be instituted. These have been found by the writer to be satisfactory, and it is hoped that by their use the work will become more efficient as a means of early diagnosis.

Specimens from cases suspected of having other diseases have been examined, but these have not been sufficiently numerous to render it expedient to classify them. These diseases include malaria, gonorrhœa, glanders, hydrophobia, streptococcus infection, pneumococcus

infection and meningitis. A few specimens also of water, and of milk, have been examined bacteriologically.

The usefulness of the laboratory has been gradually increasing, but there are a few localities from which we still seldom or never receive specimens, and which perhaps, are not acquainted with the objects of the laboratory. This is strikingly brought out in the appended tables, which give the number of specimens received from the several counties.

A number of new stations have been established for the distribution of our mailing-cases, and a movement is on foot to establish a considerable number more, so that they may be readily accessible to all physicians.

During the year ending September 30th, 1899, 1,682 specimens were examined for diphtheria, tuberculosis and typhoid fever, besides sundry other examinations. Of these 1,682 examinations, 577 were for diphtheria, 766 were for tuberculosis and 339 for typhoid fever. The number of cases in which diphtheria bacilli were found to be present was 178. In these 178 positive cases of diphtheria the sex was indicated in 172. Seventy-nine, or forty-six per cent., were male and 93, or 54 per cent., were female. (See Table I.) The ages were given in 175 of the positive cases, of which 25 per cent. were 5 years and under, 30 per cent. between 5 and 10 years, 15 per cent. between 10 and fifteen years, 12 per cent. between 15 and 20 years, 10 per cent. between 20 and 30 years, 6 per cent. between 30 and 50 years, and 10 per cent. over 50 years. (See Table III.)

The day of the disease was stated in 156 of the positive cases. In 20 per cent. the first examination was on the first day, 24 per cent. on the second day, 17 per cent. on the third day, 10 per cent. on the fourth day, 2 per cent. on the fifth day, 1 per cent. on the sixth day, 6 per cent. on the seventh day and 19 per cent. after the seventh day. (See Table II.)

As seen in Table IV, there were 297 cases in which tubercle bacilli were present. In 281 of these cases the sex was indicated, showing 154, or 55 per cent., to be male, and 127, or 45 per cent., to be female. In 234 of the positive cases the duration of the disease was stated. In 16 the duration was one month or less, in 122 between one month and six months, in 57 between six months and one year, and in 39 over one year. (See Table VI.) The ages were given in 265 of the positive cases:

In the first decade there were.....	None.
In the second decade there were.....	24 cases.
In the third decade there were.....	113 cases.

In the fourth decade there were..... 75 cases.
 In the fifth decade there were..... 27 cases.
 In the sixth decade and beyond there were..... 26 cases.

(See Table VII.)

In 131 positive cases of typhoid fever the sex was indicated in 125. Of these, 65, or 52 per cent., were males, and 60, or 48 per cent., females. (See Table IX.)

The day of the disease on which the first positive diagnosis was made by the Widal test, was stated in 97 cases, as indicated in table X. The ages were stated in 119 of these positive cases. Of these:

15 or 13% were in the 1st decade;
 31 or 26% were in the 2d decade;
 40 or 34% were in the 3d decade;
 16 or 13% were in the 4th decade;
 9 or 8% were in the 5th decade;
 8 or 7% were in the 6th decade, and beyond.

The oldest case was 66 years old and the youngest 3 years.

In the tables which follow, a more detailed analysis is given. In Tables I, V and IX are given by months the number of examinations, primary and secondary, the sex and the results of the examinations; in Tables II, VI and X, the duration of the disease at the time the bacteriological diagnosis was made in positive cases; in Tables III, VII and XI, the ages at which the diseases occurred. Tables IV, VIII and XII are instructive, partly in roughly indicating the prevalence of the different diseases in the several counties, but chiefly in showing the extent to which the physicians in the different counties have made use of the laboratory in the diagnosis of these diseases.

Respectfully submitted,

EDWIN C. BALDWIN, M.D.,
Director.

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TABLE I.—DIPHTHERIA.—SHOWING THE EXAMINATIONS FOR EACH MONTH.

MONTH.	PRIMARY EXAMINATIONS.						SECONDARY AND SUBSE- QUENT EXAMINATIONS.					Total Examinations.
	Male.		Female.		*Total.		Total Primaries.	Positive when Pri- mary was Nega- tive.	Positives.	Negatives.	Total Positive and Negative.	
	Positive.	Negative.	Positive.	Negative.	Positive.	Negative.						
October.....	5	6	7	14	12	20	32	.....	24	8	32	64
November.....	10	7	13	12	25	21	46	.....	7	5	12	58
December.....	11	22	13	10	24	34	58	.....	11	8	19	77
January.....	8	6	10	10	18	17	35	.....	8	8	16	51
February.....	2	15	8	8	10	25	35	.....	8	5	13	48
March.....	5	9	4	11	9	22	31	.....	2	4	6	37
April.....	7	9	8	14	15	23	38	.....	9	4	13	51
May.....	8	7	5	6	16	19	35	.....	4	7	11	46
June.....	5	8	5	4	10	12	22	.....	.....	7	7	29
July.....	10	8	8	4	18	12	30	2	5	9	14	44
August.....	6	5	7	9	14	14	28	.....	1	6	7	35
September.....	2	2	5	4	7	6	13	1	15	9	24	37
Total for year....	79	104	93	106	178	225	403	3	94	80	174	577

* The sex is not indicated in all cases, hence the discrepancy.

TABLE II.—DIPHTHERIA.—SHOWING THE DAY OF THE DISEASE ON WHICH PRIMARY EXAMINATIONS WERE MADE, WITH POSITIVE RESULTS.

	DAY OF DISEASE.								Total cases in which day of disease was given.
	1	2	3	4	5	6	7	Over 7	
Number of cases	31	37	26	16	4	2	10	30	.....
Total positives in which ages were given.....	.....	.....	.....	.....	.....	.....	.....	.....	156

TABLE III.—DIPHTHERIA.—SHOWING THE AGES IN POSITIVE CASES, WHEN GIVEN.

	AGES.								Total cases in which ages were stated.
	Under 2 years	2-5.	6-10.	11-15	16-20.	21-30.	31-50.	Over 50	
Number of cases	2	42	53	26	21	18	10	3	175
Per cent.....	1+	24	30+	15—	12	10+	6—	1+	.....

TABLE IV.—DIPHTHERIA.—SHOWING EXTENT TO WHICH PHYSICIANS IN THE DIFFERENT COUNTIES HAVE MADE USE OF THE LABORATORY IN DIPHTHERIA CASES.

COUNTIES.	No. Positive Cases.	No. Negative Cases.	Total.	COUNTIES.	No. Positive Cases.	No. Negative Cases.	Total.
Atlantic	4	2	6	Middlesex.....	9	12	21
Bergen	6	8	14	Monmouth.....	9	15	24
Burlington.....	7	11	18	Morris.....	13	23	36
Camden	18	12	30	Ocean.....	0	0	0
Cape May.....	0	0	0	Passaic.....	7	4	11
Cumberland	3	0	3	Salem	0	0	0
Essex.....	7	4	11	Somerset	0	2	2
Gloucester.....	3	0	3	Sussex	1	2	3
Hudson	1	1	2	Union	48	65	113
Hunterdon	1	6	7	Warren	7	4	11
Mercer.....	34	54	88				

TABLE V.—TUBERCULOSIS.—SHOWING EXAMINATIONS FOR EACH MONTH.

MONTHS.	PRIMARIES.						SECONDARIES.				Total Primary and Secondary.	
	Male.		Female.		*Total.		Total Primaries.	Positives Primarily Negative.	Total Positives.	Total Negatives.		Total Secondaries.
	Positive.	Negative.	Positive.	Negative.	Positive.	Negative.						
October.....	8	14	7	18	15	32	47	.....	.....	.....	.....	.....
November.....	9	12	9	17	19	29	48	.....	.....	.....	.....	.....
December.....	11	13	9	21	21	37	58	.....	.....	.....	.....	.....
January.....	9	15	7	21	17	38	55	.....	.....	.....	.....	.....
February.....	5	19	5	19	10	40	50	.....	.....	.....	.....	.....
March.....	12	21	11	19	25	42	67	.....	.....	.....	.....	.....
April.....	20	22	4	39	24	68	92	.....	.....	.....	.....	.....
May.....	16	16	23	27	43	47	90	.....	.....	.....	.....	.....
June.....	21	20	12	15	36	37	73	.....	.....	.....	.....	.....
July.....	15	10	14	14	31	28	59	.....	.....	.....	.....	.....
August.....	17	9	6	16	23	26	49	.....	.....	.....	.....	.....
September.....	11	11	20	13	33	24	57	.....	.....	.....	.....	.....
Totals for year	154	182	127	239	297	448	745	3	13	9	21	766

*The sex was not always indicated, hence the discrepancy.

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TABLE VI.—TUBERCULOSIS.—SHOWING DURATION OF THE DISEASE AT THE TIME FIRST POSITIVE BACTERIOLOGICAL DIAGNOSIS WAS MADE.

	DURATION				Total Cases.
	One Month and Under.	Over one Month, up to six Months.	Over six Months, up to one Year.	Over one Year.	
Number of cases.....	16	122	57	39	.....
Total positive cases in which ages were given.....	.....	.....	.....	.....	234

TABLE VII.—SHOWING AGES, WHEN GIVEN, IN CASES IN WHICH A POSITIVE BACTERIOLOGICAL DIAGNOSIS WAS MADE.

	AGES.						Total.
	Under ten Years.	Eleven to twenty Years.	Twenty-one to thirty Years.	Thirty-one to forty Years.	Forty-one to fifty Years.	Over fifty Years.	
Number of cases.....	0	24	113	75	27	26	.....
Total cases ages given.....	.....	.....	.....	.....	.....	.....	265

TABLE VIII.—SHOWING NUMBER OF PRIMARY SPECIMENS EXAMINED FROM THE DIFFERENT COUNTIES.

COUNTIES.	Cases Positive.	Cases Negative.	Total.	COUNTIES.	Cases Positive.	Cases Negative.	Total.
Atlantic.....	9	14	23	Middlesex.....	25	39	64
Bergen.....	11	16	27	Monmouth.....	33	35	68
Burlington.....	17	16	33	Morris.....	21	18	39
Camden.....	27	35	62	Ocean.....	0	0	0
Cape May.....	3	0	3	Passaic.....	7	16	23
Cumberland.....	17	35	52	Salem.....	17	7	24
Essex.....	18	60	78	Somerset.....	7	11	18
Gloucester.....	3	4	7	Sussex.....	6	8	14
Hudson.....	8	9	17	Union.....	38	81	119
Hunterdon.....	3	4	7	Warren.....	7	13	20
Mercer.....	20	27	47				

TABLE IX.—TYPHOID.—SHOWING EXAMINATIONS BY MONTHS, OF BLOOD FROM PATIENTS SUSPECTED OF HAVING TYPHOID FEVER.

MONTHS.	PRIMARIES.						SECONDARIES.					Total Primary and Secondary.	
	Male.		Female.		Total.		Total Primar es.	Positives Primarily Negative.	Negatives Primarily Positive.	Total Positives.	Total Negatives		Total Secondaries.
	Positive.	Negative.	Positive.	Negative.	Positive.	Negative.							
October	5	5	5	3	11	9	20	.....	.....	1	.....	1	21
November	9	4	5	2	15	6	21	.....	.....	.....	.....	.....	21
December	5	2	8	0	13	2	15	.....	.....	.....	1	1	16
January	3	3	3	4	6	9	15	.....	.....	1	.....	1	16
February	8	6	6	3	15	9	24	.....	.....	1	.....	1	25
March	12	12	15	7	27	19	46	2	.....	2	.....	2	48
April	10	4	7	11	20	17	37	1	.....	1	.....	1	39
May	3	14	5	6	8	22	30	.....	.....	2	.....	2	32
June	1	5	1	4	2	12	14	.....	.....	.....	1	1	15
July	3	20	1	5	4	25	29	1	.....	2	5	7	36
August	3	14	2	6	5	23	28	4	.....	4	3	7	35
September	3	17	2	5	5	23	28	3	.....	3	4	7	35
Total	65	106	60	56	131	176	307	11	0	15	17	32	339

TABLE X.—TYPHOID.—SHOWING DAY OF DISEASE ON WHICH FIRST POSITIVE DIAGNOSIS WAS MADE.

	DAY OF DISEASE.													Total cases.
	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Third week.	After third week.
Number of cases.....	1	5	5	6	15	5	5	13	2	4	1	14	12	9
Total cases, day of disease given.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	97

TABLE XI.—SHOWING AGES, WHEN GIVEN, IN CASES GIVING THE TYPHOID SERUM REACTION.

	AGES.						Total cases.
	Ten years and under.	Eleven to twenty.	Twenty-one to thirty.	Thirty-one to forty.	Forty-one to fifty.	Over fifty.	
Number of cases.....	15	31	40	16	9	8	119
Per cent.....	13—	26	34	13+	8—	7.	.....

TABLE XII.—SHOWING NUMBER OF PRIMARY SPECIMENS EXAMINED FROM THE SEVERAL COUNTIES.

COUNTIES.	Cases Positive.	Cases Negative.	Total.	COUNTIES.	Cases Positive.	Cases Negative.	Total.
Atlantic.....	13	8	21	Middlesex.....	7	13	20
Bergen.....	6	8	14	Monmouth.....	3	7	10
Burlington.....	9	14	23	Morris.....	2	6	8
Camden.....	29	13	42	Ocean.....	0	0	0
Cape May.....	0	0	0	Passaic.....	5	4	9
Cumberland.....	10	17	27	Salem.....	0	1	1
Essex.....	2	20	22	Somerset.....	2	3	5
Gloucester.....	0	0	0	Sussex.....	0	0	0
Hudson.....	1	3	4	Union.....	8	16	24
Hunterdon.....	0	0	0	Warren.....	1	0	1
Mercer.....	33	43	76				

Epidemic Outbreaks.

The legislative enactment creating a State board of health makes it one of the duties of the board to make inquiries into the causes of epidemics. Whenever, therefore, an unusual number of cases of any communicable disease occurs an investigation is made of the possible causes, and the local authorities are given advice and assistance in every possible way. Prior to 1895 there was no law in this State which required local boards of health to report cases of infectious diseases to the State board of health.

The law which was passed at that time is explicit in its requirements, but on account of new members being appointed to local boards of health, and especially where the secretary of a local board is replaced, the reporting is sometimes neglected.

Each year, however, shows a definite improvement over the preceding one, and in most instances reports are made promptly.

The year closing December 31st, 1899, has been marked by a number of cases of small-pox, which have appeared in various localities.

The investigation of the source of infection in almost every instance showed that the disease was contracted from persons coming from the south, especially from points in Virginia. Over 90 cases of this disease were reported during the year, and a short description is given of the cases in each locality. It is especially interesting to note that by isolation of patients and free vaccination in every instance the extension of the disease was prevented.

Following the reports as to small-pox will be found records of transmission of diphtheria by means of milk, which caused a number of cases at Plainfield, and also action taken at Irvington and Hilton to prevent the spread of typhoid fever from dairies.

SMALL-POX.

BLOOMFIELD.

The following is a history of two cases of small-pox which occurred in Bloomfield. A man by the name of Max Johnson, who lived in

the brick row on Franklin street, received an injury to his hand and went to the Memorial Hospital, Orange, for treatment. After a week he was discharged, but on Monday, the twelfth of June, he returned to the hospital to have his hand dressed. The physician in charge noticed an eruption on his face and ordered him to return home. Dr. Lockwood, of Bloomfield, saw him and stated that he was suffering from small-pox. On Tuesday Dr. Bailey was notified, and he suggested that Dr. White, who has had an extensive experience in the diagnosis of small-pox, be called in. Dr. White confirmed the diagnosis already made. The house in which the patient resided was quarantined and Johnson was removed to the poor-farm on Thursday night. At the time of inspection the premises from which the patient had been removed were examined, and it was found that they had been thoroughly disinfected. The walls and woodwork had been drenched thoroughly with a bichloride solution, and formaldehyde had been used in all of the rooms. The parties living in the house were vaccinated, and the board carried on systematic vaccination as rapidly as possible. About the first of July a brother of Johnson, who had been exposed, contracted the disease and was sent to the isolation hospital. The origin of the first case is uncertain, but Johnson states that while in Orange he watched some colored boys playing on the street, and it may be possible that some of them had come from infected houses. There is a very slight possibility that the disease may have been contracted at the hospital in some way, as early in May a case was removed from the Memorial Hospital by the Orange authorities and taken to the contagious disease hospital.

DOVER.

Three cases of small-pox were reported as occurring in Dover. These cases are directly traced to the outbreak in Rockaway. Maria Copeland, a colored girl, who went to Dover from Mr. Tuck's house in Rockaway, and who had recovered from small-pox, obtained employment at the house of Mr. P. Jenkins, on Prospect street, Dover, remaining there until November 16th. On the date of November 16th, a daughter of Mr. Jenkins, Annie, 15 years of age, was taken ill, and diagnosis of varioloid was made. She had not been to school within a week before her attack. The second child, a son, 17 years of age, was taken ill at the same time; diagnosis made on the 16th. The servant girl was discharged and left with her clothing for New York, November 16th. At a later date another case developed. The board of health of Dover quarantined the house, vaccinated

over 400 persons, closed the school and stopped all communication between Rockaway and Dover, and a trained nurse was employed and placed in charge. The quarantine of the house was not removed until December 26th, 1899.

HACKENSACK.

About May 15th, 1899, a colored man named Turner and his wife came to Hackensack from Norfolk, Virginia. They secured lodgings with a colored family in Clay street, between Railroad avenue and Park street.

The first case of small-pox was reported June 1st by Dr. McFadden, and the local board of health took immediate action. The house was placarded and placed under quarantine restrictions, watchmen being employed to see that no one entered or left the premises. In the evening the patient was removed to the hospital at Oradell. Saturday, June 17th, two more cases were reported from the same house, one being Mrs. Turner and the other Mrs. Austin, with whom she boarded. The patients were at once removed to the hospital. One other case was reported. The house was thoroughly disinfected and every precaution taken to limit the spread of the contagion.

HACKETTSTOWN.

November 29th, 1899, a case of small-pox was reported in the person of Milton Marlatt, aged 20 years, who was employed as a grocery clerk by Mr. James Smith. As soon as a diagnosis was made, he was removed to his house at Mt. Bethel, Mansfield township. The store where he worked, and the persons living over it, were quarantined, and also the house to which he was removed. General vaccination was recommended, and the school board notified to comply with the law as to vaccination of school children. The origin of the case is not definitely known, but as he visited Newark just two weeks before, the supposition is that he was exposed to the contagion while there. No further cases were reported.

LONG BRANCH.

Following is a list of the cases of small-pox which have occurred in Long Branch :

1. William Weldon, a colored man, came from a house in Trenton where he had been living for some time, and on June 1st the diagnosis of small-pox was made in his case. He was removed to the hospital.

2. Mrs. Rosa Weldon, his wife, was also sent to the hospital, June 5, suffering from the same disease.

3. A colored man by the name of Clark was found walking in the streets suffering from the disease and was removed to the hospital.

4. June 6, Elizabeth Matthews, colored, was removed to the hospital.

5. James Readdy, removed to the hospital.

6. June 7, Andrew Mead, also removed to the hospital.

Following these cases three more were reported, occurring in one of the infected houses.

All cases were removed to the infectious disease hospital, and placed under the care of Dr. Crater. The four houses from which cases had been removed were quarantined, and those living in the houses were not allowed to go out until three weeks had passed from the date of removal of the last case. The origin of the disease is directly traced to exposure of patients to infected persons at Seabright.

MANCHESTER, OCEAN COUNTY.

A telegram was received from Manchester stating that a case of small-pox had been discovered at that place, and requesting that an inspector be sent. Fred. Carr, a man who works in the depot at Seabright as agent, left Seabright on June 5th, and went to the house of his mother, in Manchester. He stated that while in Seabright a colored man had spent nearly two hours in the railway station, waiting for a train, and that he was in the same room with him a good part of the time. The colored man has since been removed to the hospital in Monmouth county, suffering from small-pox, and at the time he was in the station Mr. Carr noticed that he had an eruption all over his face and hands. A physician was called to see Mr. Carr on Sunday, June 11th, and was suspicious of small-pox. The diagnosis was made June 13th, by Dr. Field, of Red Bank. The house was quarantined, the only persons living in the house being the mother and the sisters. Two brothers had been sleeping in the house and taking their meals outside, but at the time of the investigation they had left the house and were sleeping somewhere in the woods. One of them had been working on the railroad up to June 12th as baggage-master. June 12th he was notified that his services would be no longer required. A farm-house some two miles from Manchester was hired by the local board of health for the purpose of removing patients from town. The house is well located on the road leading to Lakewood. It is situated 125 feet from the roadway, and all preparations

were made for the reception of the patient. An immune was secured as nurse, and the patient was removed to the hospital on the night of June 14th. No more cases were reported.

MONTCLAIR.

On June 20th, the health authorities of Montclair were notified that a man by the name of Samuel Lozier, an aged colored person, was suffering from small-pox. The board of health had him removed to the poor-house farm, and erected a small building for a temporary hospital. All persons who had been exposed to the disease were vaccinated. It was stated by Mr. Leighton, the health officer, that from the 8th to the 15th of June, Lozier had worked at Great Notch for a man by the name of Croker, and that he had returned to the Great Notch for a single day since he had been sick. Paterson was visited for the purpose of meeting with the Acquackanonk township board of health and getting them to take such action as was necessary in the premises. The counsel of the board employed Dr. Leal, of Paterson, to investigate the matter, and accompanied by an officer of this board, an investigation was made. The superintendent of the works was interviewed, and also Mr. Larossi, who has charge of the Italians employed at that point. It was learned that Lozier came to the Great Notch on June 16th, and stayed around during the morning. At noon Mr. Croker, who lives in Montclair, needed a teamster to drive his team, and Mr. Jones, the superintendent, said that he might employ the colored man to assist him. Lozier was therefore put at work and drove the team all the afternoon of June 15th. At night he went home to Montclair with Mr. Croker and slept in the barn. Mr. Jones noticed while he was working that he had an eruption on his face. Mr. Jones states positively that Lozier did not work the week before as his name does not appear on the time card, and he was not noticed on the grounds. Mr. Jones was requested to send Mr. Croker home if he came the next day to work, and not to allow him to come back under two weeks. Mr. Larossi stated that Lozier had not been around the Italian camp, and that there had been no exposure of his men to the disease by coming in contact with him. Also that every Italian he had at work had been vaccinated by the health officers of the Port of New York on their arrival in this country. The superintendent of the work was requested to have a physician examine the workmen every day, and also to at once notify the health authorities if anyone was taken sick in the camp so that they might be immediately removed. No other cases were reported in Montclair.

MORRISTOWN.

December 1st, 1899, a case of small-pox in the person of Albert Huland, Race street, was reported to the local authorities, and the patient was removed to the hospital. The house in which he lived was quarantined. The history given by the patient showed that he had visited Rockaway, and had been exposed to the disease while there. December 14th, Mrs. Huland, D. Dupue, Sr., and John Huland were reported as having small-pox.

December 30th, David Depue, 5 years of age, and an infant child of David Depue, were reported. The infant died from the disease.

This makes a total of 6 cases up to December 31st, 1899. All of the persons reside in a house in Race street, and, with the exception of the children of Mr. Depue, were removed to the hospital. Vaccination is being extensively practiced, and the removal to hospital lessens somewhat the danger of extension of the disease.

NEWARK.

March 14th, 1899, a case of small-pox was reported in the person of a colored woman who had recently come from the South. She had a suspicious eruption while on the steamer, and was told to go to her friends as soon as possible, as she might have small-pox. She went to Newark and the physician called to see her and made a diagnosis at once. To this case were traced all of those which afterward occurred in Newark and Orange. The total number of cases which occurred in Newark was 22. All patients were removed to the hospital and extensive vaccination effected.

NORTH BERGEN TOWNSHIP.

Early in January, 1899, a case of small-pox was reported as existing in the township, and three cases developed from exposure to the disease. Three houses were under quarantine, and one of the cases developed after the party had gone to New Haven. The exact origin of the outbreak was not traced. Although a number of persons were exposed no other cases developed.

ORANGE.

At the special meeting of the board of health of Orange, held on March 24th, 1899, it was reported by the health officer that small-

pox had broken out in that city and that two cases in the Green family, living at 67 Hill street, and one case at Memorial Hospital, had been discovered. According to instructions received at that meeting the common council was notified that an epidemic of small-pox was threatened and that a larger sum than that already appropriated was necessary to stop the spread of the disease. At a special meeting of the common council, held March 25th, 1899, a resolution was passed placing \$1,000 to the credit of this board for the above purpose.

The first step taken was to quarantine the Hill street house, placing an officer in the front and one in the rear of the house. The cottage at the hospital, occupied by the small-pox patient, was also quarantined. The house in Hill street was occupied by 4 families; Green, 4 persons; Leveridge, 2 persons; Degrooth, 2 persons; McKinley, 3 persons. An effort was made to hire houses to which the well persons of the Hill street house might be moved, so that the house could be used as a hospital, but without success. As a last resource, the East Orange authorities were appealed to, and at the ardent solicitations of health commissioner Dr. G. H. Richards, the East Orange board of health gave permission to build a pest-house on the Orange poor-farm. No time was lost in erecting a one-story structure, with a floor space of 20x40 feet, divided into 4 rooms, and to this the three patients, accompanied by a male and female nurse, were removed in the night of March 30th. The Newark board of health allowed the use of their ambulance in removing the patients. The rooms occupied by the Green family were disinfected with a solution of bichloride of mercury and all furniture, bedding and clothing that could not be rendered safe by additional disinfection were burned and the apartments were thoroughly scrubbed and white-washed. Dr. Walter Dodge, who was engaged to take charge of the medical part, started at once on a systematic tour of inspection and vaccination among the colored people of the city, besides attending to the patients. On April 11th, two more cases were discovered—Whitfield and Lewis, both of 50 Hill street. The same course as that pursued at 67 Hill street was followed in this case, except that a wagon and harness were bought and a horse hired to carry the patients to the pest-house. These cases were traced to the Green family, Whitfield having been a constant visitor, up to the time the cases were discovered, and Lewis was a lodger at Whitfield's. The data collected with reference to those cases showed that a large number of persons had visited the house, particularly servant girls living in East Orange. Effort was made to ascertain the names and

addresses of as many of these persons as possible, and to inform the East Orange authorities of the facts. One man, living in Montclair, was found in the house, and, on communicating with the Montclair board of health, the latter requested the Orange authorities to quarantine the man until the incubation time had passed, and they to pay all costs. This was done.

On April 20th Frank Shiver, a nephew of Whitfield, presented himself at the Hill street house with a pronounced small-pox eruption on his face. It appears that this man lived with Whitfield up to April 9th, when he removed to Newark, and finding that he had contracted the disease he returned. All his movements from the time he left until he returned to Orange were traced and the Newark authorities were notified. The patient was removed the same night. To get competent quarantine officers was a difficult task, not because there were not enough persons to do the work, but to get reliable men. The Hill street house was quarantined by two officers at the same time—from March 24th to April 1st—then the force was reduced to one man. At the hospital one man was always on guard from March 24th to March 30th, when the patient was removed to the pest-house. The pest-house was opened March 30th, and two officers at day and two at night were on duty there until April 1st. One officer was kept on duty in the day time and two at night until April 19th, when the force was reduced to one man during the day and one at night time.

The origin of the outbreak is somewhat in doubt. The most authentic information thus far obtained is that Frank Green suffered with a light attack of varioloid, probably contracted from his sister, Delia Green, who had come from Norfolk, Virginia, and who, as we are informed, had a rash on her face some time before Frank broke out. His sickness was attributed to mineral poison, because the man worked in a factory in Brooklyn where much paris green was used. It is known that Frank Green stopped at the house on Hill street about two weeks before Rebecca Green was discovered with varioloid and that he had an eruption on his face, but when found seven days after quarantining 67 Hill street his face showed no signs of eruption. The three original cases were discharged as cured. Rebecca Green on April 15th, Richard Green on April 19th, and William Green on April 21st.

On April 28th three more cases were discovered at 32 Hill street. They were Mrs. Proctor and her two children, a boy and a girl. All these were removed to the pest-house on the same day, the bedding and furniture used by them were burned, and the rooms were

thoroughly disinfected and cleaned. The inmates of the house were vaccinated. From observations made in the early part of the outbreak it was thought that the safety of the public could be guarded without the heavy expenses which a close quarantine of suspects entailed, and after consulting the sanitary committee on the subject it was decided that the people living in the house be placed under medical supervision instead of close quarantine. This was done. In tracing the source of these cases it was found that Mrs. Proctor had lived in Orange since November, 1898, and that the children left New Berne, N. C., on March 29th, 1899, to join their mother; that they stopped in Norfolk, Va., on March 31st, and reached Orange in the first week in April. From the time of their arrival until the 28th of April their movements were traced and all people who were in close contact with them were vaccinated and placed under observation.

The most probable theory of the origin of the cases is that the children became infected while at Norfolk, Va., the boy having been sick for more than a week when the cases were discovered.

Chas. Abbott, a suspect held here at the request of the board of health of Montclair, showed symptoms of small-pox, and was removed to the pest-house on April 29th. On the same day the quarantine placed over the suspects in this city was raised. The pest-house was closed May 27th, 1899, and was burned, with its contents, June 14th, 1899.

PASSAIC CITY.

Dr. Demarest, of Passaic, on May 27th reported a suspected case of small-pox, and asked for some one to assist him in making diagnosis. On the following day, May 28th, the diagnosis was confirmed. The name of the patient was Mrs. MacPonce. She was removed to the hospital Monday, May 29th. No history could be obtained showing the source of the infection. The case is one of mild varioloid. The house was quarantined and thoroughly disinfected. Up to the present time no new cases have been reported.

ROCKAWAY BOROUGH AND TOWNSHIP.

The following is the history of an outbreak of small-pox in the above locality, the first case being reported November 6th, 1899. A Mr. Tuck, who lives in the borough of Rockaway, on New street, is engaged in the laundry business for persons residing in Rockaway and its vicinity. He also has furnished colored help to persons living

in Dover and in Rockaway. Some weeks ago he went on a trip to Norfolk, and returned with eight colored girls for whom he had secured places. One of these girls, by the name of Maria Copeland, was taken sick upon her arrival; no physician was called, and the history given is that she had headache, fever and backache, and an eruption on her face. She recovered from the disease. After recovery she was sent to Dover as a servant in the house of Mr. P. Jenkins, of Prospect street, taking her clothing with her. Sunday, November 5th, a child living on Hibernia avenue, Rockaway township, by the name of Jennie Blanchard, was seen by a physician. Wednesday, November 8th, diagnosis was made of varioloid. November 12th, a girl that had been brought from the south by Mr. Tuck, and who had been at his home while the first case mentioned was suffering from varioloid, and who had gone to service at Mr. Beach's house in Rockaway, was taken ill, and was returned to the Tuck house suffering from varioloid. It will be seen from the above history that the colored girl first taken ill at Mr. Tuck's, and the one upon whom the diagnosis was made November 12th at Mr. Beach's, are intimately connected, but the case of Jennie Blanchard was more difficult to trace.

After looking up the history carefully it was ascertained that Mrs. Blanchard was accustomed to assist the Tucks in washing, and that Mr. Tuck owed her a certain sum of money and in partial payment for her services he sent her a lounge which was placed in Mr. Blanchard's home, and exactly two weeks afterward the daughter was taken with the disease. The first three cases occurring in Rockaway township and borough are, therefore, traced to the infection brought from Norfolk. The action taken by the authorities is as follows: Mr. Tuck's house, where the colored girl is recovering, is under strict quarantine with guard. The house of Mr. Blanchard, located in the township, is likewise carefully guarded. The Blanchard child died Friday evening, November 17th, and the body was immediately buried. Mr. Beach's family was quarantined and the house has been fumigated with sulphur, but the room in which the girl was taken sick is still locked up, and, although a large quantity of sulphur has been burned in the room, her clothing still remains as she left it. The Blanchard girl had been in attendance upon school in mornings, but had not been to school for one week before the time of her illness. The school has been closed and free vaccination has been offered to the children. It was suggested that the school-house should be thoroughly cleaned. Over 800 vaccinations have been made and this will be continued until, as nearly as possible, every-

one in the borough and township have been protected in this way. Following the first case in the Blanchard family, there have been five other cases of a mild type and all have recovered. The infected houses have been thoroughly disinfected and up to December 20th no new cases were reported.

SEABRIGHT.

On the evening of May 25th, a telegram was received from Mayor Hall Packer, of Seabright, requesting that a visit should be made at once to the borough, and that a few cases of varioloid had been discovered. Arrangement was made to meet with Dr. Fields at Seabright at 10:30 Friday morning—the day following. On May 24th, a telegram was sent to Dr. Mitchell requesting him to go to Seabright. Upon reaching Seabright, the following facts were ascertained:

In a house on the corner of South street, and opposite the ice-house, James Branch and his wife live with their two children, and in a small house in the rear two brothers, Will and John, and a boy by the name of Charles Jenkins. About the tenth of April, John Branch returned from the South and passed through Norfolk, stopping there over night.

Two weeks after his arrival in Seabright, about the 24th or 25th of April, he showed signs of an eruption, and about ten days or two weeks after his brother Will showed the same symptoms, and later still the wife of James Branch showed the same eruption. Charles Jenkins also had the eruption. At the present time James Branch, who does not know whether he has had the disease or not, is working away from home, and the two brothers, Will and John, have been working around Seabright. The boy, Charles Jenkins, was found at the house, and showed the eruption quite clearly, although the appearances indicate that he is about recovered. The wife of James Branch shows the eruption very clearly. Across the street, and over the livery-stable owned by Irvin & Herbert, Andrew Ballard was found thoroughly broken out with the disease. In this house are his wife and one child. A colored man by the name of George Rand is also supposed to have had the disease and to have recovered.

Dr. Fields confirmed the diagnosis of varioloid, and arrangements were made with him to take charge of the epidemic for the borough, and to make the necessary house-to-house inspection and vaccinations. A guard was immediately placed over the house, and an arrangement was made with the Long Branch board of health by which the infected persons should be taken to the hospital owned by the

Long Branch authorities, and that Dr. Crater, of Oceanport, should be charged with the care of the cases at the hospital. It was suggested that a house-to-house inspection should immediately be started, and that all who had been exposed to the disease should be vaccinated. An arrangement was made by which Mr. Bowen, of Asbury Park, was to come to Seabright the following day and supervise the disinfection of the infected premises. The board of health appeared willing to take any action necessary, and the work of disinfection and vaccination was arranged to take place on the following morning.

On May 27th we were informed that three patients had been taken to the hospital, namely, Andrew Ballard, Charles Jenkins and Mrs. James Branch, and also that during the night they had escaped from the guard and were roaming about the township. The authorities at Long Branch and at various places surrounding the isolation hospital were notified, and parties were immediately sent to arrest the patients, and return them at once to the hospital. Late that afternoon Mrs. Branch was captured at Branchport, and the other two patients were found in the woods and returned to the hospital, and the guard was increased, so that they might not again escape. While in Seabright word was received that another boy, by the name of Louis, had for four or five days been loafing around the bath-houses, in the rear of the Peninsula House. In company with an officer a search was made for him, and he was found and immediately taken to the Branch house, and from thence to the hospital. He was thoroughly broken out with the small-pox eruption. Dr. Fields examined the houses and vaccinated all the persons in the block in which the disease originated. Vaccination was carried on rapidly, and it was suggested that all school children should at once be vaccinated. It became necessary for the board of health to purchase a horse and wagon for transporting patients and for carrying provisions to the isolation hospital.

May 29th it was found, upon visiting Seabright, that everything was progressing favorably, that there were no new cases, and that infected premises have been thoroughly disinfected. Will Branch, one of those who had had the disease and recovered, and who had run away from Seabright, returned and was placed in one of the rooms in the small building in the rear of the James Branch place. After his clothing had been disinfected he was released. He was placed in the only room which had not been disinfected.

WOODBIDGE TOWNSHIP.

A telephonic communication was received on December 21st from Dr. Spencer, of Woodbridge, in reference to a suspicious case, and on the same day Dr. Cladek, of Rahway, visited the patient, and diagnosis of small-pox was made. An inspection was made December 22d. The house where the persons having the disease reside is located north of the Iselin depot. It is a farm-house placed about 75 feet back from the road. It is occupied by two families. Wm. Clarkson lives on the east side of the house, and his family consists of his wife, his sister-in-law, his brother-in-law, aged 11 years, and a hired man named Mathews. Mr. and Mrs. Emmet occupy the west side of the house.

The history of the cases is as follows: Early in November Mrs. Clarkson went to Newark, and, while shopping, noticed a woman in a store who stood next to her and had an eruption on her face. Exactly 14 days after her return a slight eruption appeared, but no attention was paid to it, and she recovered without a suspicion as to the nature of the disease. About the first of December the husband was indisposed, and a similar eruption appeared on his face. He had possibly 100 pimples, as he described them, on his face and body. Both husband and wife had been vaccinated. December 12th the sister-in-law and the man Mathews were taken sick and treated for a few days, but on Thursday, December 20th, the consultation was held, and there was no doubt, as Mathews has the disease in an aggravated form, and Miss Moore is a well-marked case. The boy was taken ill with varioloid on December 27th. The family have had visitors from time to time during their illness, and Mr. Clarkson has been threshing at different places and carting logs. The local board of health placed Dr. Spencer in charge. The house is quarantined. Parties known to have had exposure were visited and vaccination suggested, and the school trustees were requested to have all children vaccinated, as the boy has been in regular attendance at the school up to last week. On account of the free exposure of so many to the disease the probabilities are that other cases will be reported.

Resumé—The following list shows the places where small-pox occurred during the year ending December 31st, 1899, and the number of cases in each instance, together with the total number of earlier cases which had existed and recovered before the authorities were aware of the presence of the disease are included in the list in several instances:

Bloomfield, 2; Dover, 3; Hackensack, 4; Hackettstown, 1; Long Branch, 9; Manchester township, 1; Montclair, 1; Morristown, 6; Newark, 22; North Bergen township, 4; Orange, 10; Rockaway borough, 3; Rockaway township, 6; Seabright, 16; Woodbridge, 5. Total, 93.

DIPHTHERIA.

There have been several instances already recorded in this State where epidemics of diphtheria have occurred as the result of infected milk-supply.

An outbreak which occurred several years ago at Hightstown, Mercer county, was most direct evidence that the greatest amount of care should be exercised by local boards of health to secure immediate reports of all cases of communicable diseases located on dairy premises. The Legislature has given the State board of health power to at once stop the sale and transportation of milk from infected premises, and during the year the power has been exercised whenever typhoid fever or diphtheria has been reported in the families of dairymen.

The result of such action in each instance has been to check the spread of the disease.

The record of an outbreak of diphtheria which occurred in Plainfield, and in which the origin of the disease was traced to infected milk, is as follows:

PLAINFIELD.

Under date of July 14th, 1899, a telegram was received from Plainfield requesting that investigation should be made of an outbreak of diphtheria which was suspected to have been caused by contaminated milk.

It was ascertained that the following cases had been reported, and that all of them had been using the milk from a dairy of a Mr. Schenck, who lives near New Market: July 13th, Margery Leland; July 12th, Helen Gilbert; July 13th, Ellen Grover; July 13th, Allen Squires; July 13th, Monroe L. Squires; July 13th, Grace R. Squires; July 14th, Henry Uhrig; July 18th, Helen Johnston; July 19th, James Borrowman; July 20th, Elbert Morris. In addition to the cases cited above, several cases had been reported in North Plainfield as using the milk from the same dairy. An inspection was made of the dairy and the general conditions noted. It was found that the water from the wells on the premises was unfit for potable purposes.

chemical examinations having been made by the Plainfield board of health. Upon examining the two children of Mr. Schenck, one of them a boy three or four years of age named Elmer, and the other a girl named May, it was found that there was a little redness around the nares in each instance. The father stated that the boy had run a rye straw into his nose and that the nose had bled somewhat, and that since that time he had shown some irritation, but that he had not been at all sick and that there was nothing the matter with him. Careful examination of the daughter led to the suspicion that there might be nasal diphtheria present, and specimens were taken from the nostrils and sent to the laboratory at Princeton, and the report received stated that Klebs-Löffler bacilli were present. The premises were promptly quarantined and suggestions were made to Mr. Schenck in reference to the obtaining of a new water-supply, and an entire separation of the collection of milk from the household operations. Explicit instructions were given in regard to matters of detail. Mr. Schenck supplies 50 families in Plainfield and 7 in North Plainfield. The epidemic which started in Plainfield was put entirely under control by the stopping of milk from the dairy, and the quarantine was maintained on the premises of Mr. Schenck until removed by the secretary in September, 1899, after a new water-supply had been introduced, and the premises put in a sanitary condition.

WOODBIDGE TOWNSHIP.

The following telegram was received January 16th, 1899: "Dr. A. C. Hunt—We are advised that there is diphtheria in the family of the operator and agent at Colonia. I would be glad if you would go there and advise me, if necessary, to close the station to the public. An early reply will oblige me. R. M. Patterson, Supt. Pennsylvania Railroad." In response to the above an inspection was made of the premises on the afternoon of January 16th, and the history is as follows:

The station agent is Mr. F. Donahue. His family consists of his wife and six children. Four of the children have been ill. One of them seen by Dr. Cladek, January 16th, had diphtheria. It was ascertained that the children were accustomed to play in the waiting-room of the station, and that no precautions whatever had been taken to keep the children isolated. The depot is also used as the post-office for this locality. The following telegram was sent to Mr. R. M. Patterson, Superintendent. "I think it best to close depot to

the public for a few days. As soon as boy is well the premises should be disinfected."

In accordance with the above, the depot was at once closed to the public, and a temporary telegraph station and post-office erected on the platform. On February 2d a notice was received from Dr. Cladek that the premises were ready for disinfection, and as the Woodbridge authorities, within whose jurisdiction the premises are situated, are not properly equipped for the work, an employe of the State Board of health was requested to disinfect the premises, and, in accordance with instructions, the work was completed February 4th, and the following day the depot was opened to the public.

TYPHOID FEVER.

In two instances during the year prohibition has been placed upon the sale of milk from premises where typhoid fever existed, or where a number of cases of the disease pointed to infection of milk in an indirect manner. The history of cases occurring in Orange, and traced to a dairy in Hilton, Essex county, is here detailed.

HILTON, ESSEX COUNTY.

A telegram was received July 4th from Mr. Schleur, health officer of Orange, stating that four cases of typhoid fever had occurred in Orange, and that the milk supply in each case had been obtained from a dairyman by the name of James K. Looby. By inquiry at a later date, eight additional cases, occurring in South Orange and Orange, were found to have used milk from the same dairy. July 5th, Mr. Looby's dairy was inspected, and an examination made of the premises. Mr. Looby has been in the dairy business for some 30 years. He supplies customers in South Orange, Mount Rose and Orange. He sells on an average 200 quarts of milk a day. His farm is located about one mile south of Hilton on what is known as Bernards street, or road. He has on the premises 60 cattle. The water-supply for the premises is obtained from a well located south of the barn. The well is 34 feet in depth. The water-supply for domestic purposes is also obtained from the same well. The well is located on a slight knoll, and the drainage is away from it on every side. The hog-pen is located northeast of the well and at a distance of about 130 feet. The cow-stables are west of the well and about 35 feet away. The manure thrown out from the stables is at least 100 feet from the well, but at the time of the inspection, all of the manure

had been removed. The privy-vault is at least 150 feet away from the well in a southwesterly direction, and is located on a much lower level. The well could be contaminated from the surface, but none of the usual sources of contamination are located near enough to it to render the water suspicious. The water-supply for washing utensils and cans is obtained from this well, but the house where the utensils are kept is at least 60 feet from the well. The utensils are first washed in water at the well, and then taken to the milk-house and scalded out with water and then dried. There is no sterilizing of cans, pails or dippers, except by boiling water. The quantity of the milk produced each day is 200 quarts. Those engaged in milking are compelled to wash their hands before milking the cows. The night's milk is cooled by being taken to a spring, which is located at least a quarter of a mile south of the barn and in a pasture lot. The spring is a small one, but a small constant stream of water flows through the tank in which the milk is cooled. The night's milk is allowed to stand in the spring-house during the night. The morning's milk is cooled in the tank by the well at the barn. Twenty-four bottles of milk are put up each day in the milk-room near the house. No ice is used for cooling purposes. There are eleven persons in Mr. Looby's family. The family consisting of Mr. Looby and his wife, four sons and five daughters. Two men are employed on the premises. One, a colored man, has worked for Mr. Looby nine years, and the other, a Hungarian, nine months. Neither of them are married.

There has been no sickness whatever in the family in over a year. Dr. Runyon, of South Orange, is the family physician. As far as could be ascertained from a careful survey of the premises it would seem that the only way in which the milk could be contaminated would be by the well-water. The water from the well was examined chemically and pronounced unfit for potable use.

July 12th the sale and transportation of milk collected on the premises was prohibited, and the dairy was removed to another farm, and the use of milk therefrom continued under satisfactory conditions. August 24th the restriction placed upon the sale of milk from the premises of Mr. Looby was removed. No further cases were reported.

HILTON, ESSEX COUNTY.

In response to a request received from Mr. Chandler, health officer of Newark, an appointment was made to meet him upon date of August 16th, 1899, and he reported that a case of typhoid fever had occurred upon the milk route owned by Michael Dorer. Michael

Dorer furnishes about 280 quarts of milk a day to customers, 150 quarts being retailed by himself and 30 distributed by Mr. Himple, a dealer, living in Newark. The following is a list of dates of the typhoid cases reported in Newark and having any connection with Michael Dorer's dairy.

1. May 23d.
2. May 23d.
3. May 23d.
4. May 29th.
5. May 31st.

Note.—The total number of cases of typhoid fever reported in Newark during the month of May was 27.

6. June 3d.
7. June 10th.

Note.—This case was supplied by Himple.

8. June 12th.

Note.—This case was Himple himself. During the month of June there were nine cases of typhoid fever reported in the city of Newark, and three of them as having obtained milk from either Dorer or Himple.

9. July 3d.—Supplied by Himple.
10. July 10th.—Supplied by Dorer.

11. August 5th.—This was a man who worked for Dorer at the dairy from June 10th to July 10th, and was not well a portion of the time, and Mrs. Dorer informed us that just before leaving he was taken with a severe nose-bleed. During the month of July there were 19 cases of typhoid fever reported in the city of Newark. Two of these obtained milk from Dorer's supply. Up to August 16th, during the month of August, 16 cases of typhoid fever have been reported in Newark, and the workman is the only one at all connected with the Dorer milk-supply. In some of the cases mentioned above the milk-supply was obtained from other sources as well as from Dorer. The premises of Michael Dorer, located on Stuyvesant avenue, Irvington, were visited and the following was ascertained: Mr. Dorer himself was taken sick July 29th, although he had been ailing for some time before that, and his case was diagnosed as one of typhoid fever. He is just convalescing and is able to walk around. He has some 30 cows and the stables are located on a side-hill. The water-supply for all purposes is obtained from a deep well located between the house and cow-barn. The milk is cooled in a spring-house surrounding this pump. Before the time of inspection the closet had been located some 30 feet higher up the hill and in the

rear of the well, but this had been removed to another location. It was not a vault-closet, but was supplied with a drawer. The well is driven down through rock to a depth of 100 feet, and it was driven through an old well, the outside casing being used to exclude surface-water from the deep well-water. The milk is cooled in a cement cooling-tank, and the water is allowed to flow onto a field below the house. The barns themselves were in a cleanly condition. The water in the well had been examined by the Newark health authorities, and the chemist reported unfavorably. There is an old well located about one hundred yards in front of the house and near the road. It was suggested to Mr. Dorer that he would have to give up the use of the deep well for the present, and that it would be necessary for him probably in future to obtain some new source of supply. As Mr. Dorer expressed a doubt as to the number of cases and wished to verify it himself, it was suggested that it would be well for him to call that afternoon at the office of the board of health in Newark and see the names of those reported as having typhoid fever and as having used his milk. A telephone message was received the same evening from Mr. Chandler, stating that Mr. Dorer had called at the office and expressed an entire willingness to do whatever was desired. Mr. Dorer stated that he would remove the pump at once, that the milk would be cooled in water taken from the well near the road, and that he desired the authorities to come up and fully disinfect the cooling-tank. Before leaving Newark he made a contract to have a new well sunk, and also agreed to everything that had been requested of him.

Under the circumstances no prohibitive notice was needed and no further action was taken.

Although the well-water was unfit for use, and typhoid had existed on the premises, a careful examination of the cases does not point directly to this dairy as the cause of the number of cases occurring in Newark, and it will be noted that the dates of onset of the disease in persons using the milk are not grouped together, and the total number of cases using Dorer's milk, and occurring in any one month, are but a small percentage of the total cases occurring in the city in any given month.

The illness of the owner of the dairy would have, however, caused restriction of the business had he not made required changes, as the State board of health would have been unwilling to assume the responsibilities when any cases had occurred in persons using the milk obtained from this dairy.

It may be well to note at this point that serious objection has been made to the operation of the law in regard to restriction of the sale of milk from infected premises, on account of pecuniary loss to owners.

The owners of each of the dairies which have been described, namely, Mr. Looby and Mr. Dorer, by immediately acquiescing in the orders given by the authorities, were able to continue business with but slight inconvenience.

New Jersey Sanitary Association.

The twenty-fourth annual meeting of this Association was held in Lakewood, December 9th and 10th, 1898. Among the papers presented were the following:

THE RELATION OF THE SCHOOL TO THE HEALTH OF THE PUPIL.

BY V. L. DAVEY, PH.D., EAST ORANGE.

The most impressionable period of man's life—not only mentally but physically—is that of childhood, and the precautions and safeguards which adults throw about themselves in their homes should be increased and extended in buildings to be occupied by children. The tendency in past years has been largely in the direction of considering the school as solely a place for strengthening mental powers and acquiring knowledge, with a slight attention to morality, but with hardly a thought with reference to physical condition, except to see that the rooms were warm. In all progressive communities, and, to a certain extent, in most localities, this has changed during recent years and the health of the pupil and his physical improvement have come to be considered as not only worthy of consideration, but as of at least equal importance with the three R's. Much has been accomplished in this direction, but there is a great and crying need in New Jersey, as well as other States, for more earnest attention to this matter. Unfortunately all good things are expensive, and the proper housing and care of children involve a greater outlay than is required by a system that ignores their health. The New Jersey Sanitary Association is made up of influential members of communities in many parts of the State. Through its membership it should be able to accomplish much in educating the people of the entire State to a proper conception of the fact that a generous outlay along the lines of securing and maintaining commodious, well-lighted and thoroughly-ventilated buildings is a wise and economical policy. The purpose of this paper is not to enter into a scientific discussion of some one important topic connected with this subject, but rather to enumerate the simple necessities of a modern sanitary school system and to urge the members of the association to see to it that the school buildings of their own towns are made to conform to such a system. It is desirable that every school-room should contain at least eighteen square feet of floor space to the pupil, and if possible twenty feet. The windows should contain one-fifth as great an area as the floor and should always be on the long side of the room. If this rule is

followed, and the rooms are 25 by 32 feet or 28 by 32 feet, there should be ample light even on cloudy days. The air of the hallways and the basement is certain to find its way to some extent into the class-rooms. The halls, therefore, should not be used as cloak-rooms, and the basement should be light, dry and airy, and kept scrupulously clean. The floors constitute an important item in the sanitation of the school house. Too often they are constructed of a low grade of North Carolina pine, the strips being 4 or 4½ inches wide and poorly seasoned. The inevitable result is that with the dry air of winter the boards shrink, and wide-open joints yawn to receive all the indescribable filth that comes in from the street on the shoes of the pupils, and there are soon seventy-five or a hundred lines of solidifying filth, to be softened with every moistening of the floor, and to give off into the air no-one-knows-what germs of disease. Floor-boards, unless cone-grained, will soon form splinters upon the surface and present a roughness which will catch lint and dirt, and prevent the best janitor from cleaning the floor with either mop or broom. Floors should invariably be of kiln-dried maple or cone-grained Georgia pine, and the width of the individual boards should never exceed three inches. Of late numerous dustless floor-oils have been put on the market. An application of this oil once in three months will cause it to sink slightly into the wood. Any particles of dust falling on the floor will then, by capillary attraction, draw up a minute quantity of the oil. Thus loaded it cannot readily be blown about the room, and the janitor can sweep it up without raising any apparent dust in the air. It is claimed that filth cannot penetrate a floor thus cared for, and that the absence of dust from the air means a reduction of the chances of acquiring disease. While there is undoubtedly a great gain in the absence of dust, it is unfortunately true that where there is oil enough to be drawn up by particles of dust, there is enough to be drawn up by dress skirts touching the floor, and the result is soiled and ruined garments. As now made, it seems, on the whole, advisable to use some brands of these oils, provided they are applied sparingly, and the floor is then brushed over with clean sawdust to take up the surplus oil. Sawdust so used should be burned at once to prevent any possibility of spontaneous combustion. The toilet-rooms, whether in the building or out, should be thoroughly ventilated. There is no true and proper ventilation of such a room except downward through the apparatus, so that no odor can exist in the room under any circumstances for even a second of time. If this cannot be secured, the toilet-rooms should be in a separate out-building. Such an exhaust is impossible, except with a flue kept heated by a special furnace or furnished with a fan. The color of the walls of school-rooms is important as affecting the eyes. If tinting in colors is felt to be too expensive, a sand-finish will have much less glare than hard-finish, and will, without the addition of any color, give a soft diffused light. One of the safest tints for school-room walls is a very pale neutral green. The ventilating system should supply and remove thirty cubic feet of out-door air for every pupil every minute. It is a very poor system of ventilation that will not supply this amount of air in the winter, when the difference between the temperature of the out-door and in-door air is great, and every minute crevice, and even every pore of a brick wall, becomes a ventilating-flue; but during April and October and the mild days of March and November, when the furnaces or steam coils are barely warm, the aspiration by these means

is slight, even when a heated exhaust-flue is striving to produce an outgoing current, and there cannot be good ventilation. There has never yet been, and there cannot be, a gravity system of ventilation which will properly ventilate a school-house in mild weather. Forced ventilation must be resorted to. The fan has become an indispensable part of good ventilation. Time was when the seating arrangement was simply a means for doing away with the necessity of standing. The rest consisted in the change, not in the ease of the position assumed. Of late years the proper shape and size of the school-desk have received much attention, and all desk-makers are now manufacturing desks and chairs which are adjustable to the height of the pupil, and many of which have a forward and backward—or horizontal—as well as a vertical adjustment. Measuring-rods are used to determine the proper height of both chair and desk, and every pupil can readily be fitted with a seat of exactly the right size. The cost of such desks of the best quality is but a few cents greater than that of medium-grade desks of the non-adjustable type, and the people of every community should see to it that either these desks are purchased, or that every school-room contains several sizes of non-adjustable desks, as it is not at all unusual to find in the same grade pupils varying six inches in height. The inevitable result of such misfits is not only discomfort, but where the seat is too small, a tendency on the one hand to sit well forward on the edge of the seat, letting the shoulders lie against the back of the seat while the feet are sprawled out under the desk ahead, or on the other hand to throw the feet far back under the seat and let the body recline against the edge of the desk ahead. The small child with the too large desk finds his feet swinging above the floor and is even more uncomfortable. The bad results of such abnormal positions are too evident to require mention. It has been a popular theory that there must be a recess at least every eighty minutes, and that the pupil must be allowed to go out upon the play-ground and indulge in active play, or, if he preferred to remain indoors, he must be forced to leave the room and stand about in the basement or out of doors for fifteen minutes. Of late years heretics have arisen who have boldly asserted that the recess is, for a majority of the school, a source of harm rather than good. They feel that many of the less robust pupils will become chilled and will contract colds and lay the foundations of catarrh and affections of the pulmonary system. They assert that when the air of the school-room was seldom changed and therefore became foul and unfit for respiration, it became necessary to choose between two evils—the recess and the bad air—and the recess was the less and so was justified; but when anything like proper ventilation is provided the pupils can be given light calisthenic exercises, the subjects of study and recitation can be so arranged as to avoid any long-continued mental strain, and both the physical and mental well-being of the pupil will be conserved by keeping him in the comfortable school-room, with its large supply of fresh air drawn in free from the dust of the playground or the stagnation of the basement. The youngest pupils will, it is admitted, become wearied by a session of more than two hours without a break, and it is therefore necessary to shorten their periods of labor and give them somewhat frequent recesses, always seeing to it that they are properly shielded from the wet and cold. It is, of course, a part of the no-recess system that pupils should be allowed to leave the room when necessary. Many physicians, remembering the stuffy and ill-smelling school-

rooms of their boyhood, with the sleep-inspiring atmosphere surcharged with carbonic acid gas from many lunzs, have condemned the no-recess plan in all places; but there can, in my opinion, be no doubt that under proper conditions the doing away with the out-of-door recess for all but the lowest grades is greatly to the advantage of the health of the children, and should be encouraged wherever the proper conditions exist. I have said that the members of this association should be able to inspire the communities in which they live to erect and equip school-houses in accordance with the general principles here stated. They should also be able to arouse a sentiment that will induce boards of education and teachers to entertain more than an accidental interest in the physical growth and well-being of the children. Properly planned and constructed buildings are essential, but the best equipment, managed without proper knowledge or interest, is little better than a poor one. It is coming to be felt by practical educators that there should be some sort of supervision of the physical side of the pupil—not merely in the way of giving a few minutes daily to light calisthenics, but in securing a frequent professional observation of the pupil's physical condition. This may include not only a daily scrutiny of a class as a whole, but an occasional examination of each individual, with particular reference to his sight, hearing and the condition of his lungs. This examination should not be accompanied by a careful diagnosis and prescription by the school examiner, but should, when necessary, be followed by a note to the parent, suggesting the wisdom of consulting a physician. In the schools of East Orange the Director of Physical Training has this matter in charge. Every pupil in the grammar and high schools is examined twice each year with reference to certain points. The results are noted for comparison and for the information of the class teacher, who is expected to modify and adapt her treatment of the pupil according to any peculiar needs that may be found to exist. The card used is designed to last five years. Somewhat reduced in size it is as follows:

DEPARTMENT OF PHYSICAL TRAINING, EAST ORANGE, N. J.

.....School.	
Name.....	
Nationality, {	Father
	Mother
Occupation of Father.....	
Have had of the following diseases those checked (✓):	
Measles,	Rheumatism,
Scarlet Fever,	Constipation,
Typhoid Fever,	Scrofula,
Diphtheria,	Persistent Pallor,
Persistent Loss of	Frequent Nose Bleed,
Appetite,	Disease of Eyes,
Curvature of Spine,	Frequent Headaches,
Enlarged Glands in Neck.	
Injuries	
Remarks.....	
Examiner.....	

(Reverse Side.)

Name.....									
Date,									
Class,									
Age,									
Weight, lbs., . . .									
Height, in.,									
Ht. Sitting,									
Lung capacity, . .									
Acuteness of vision—									
R. Eye,									
L. Eye,									
Acuteness of hearing									
R. Ear,									
L. Ear,									
Girth biceps—									
R.,									
L.,									
Girth forearm—									
R.,									
L.,									
Grip,									
Strength—									
Back,									
Legs,									
Chest,									

It will be noticed that the scope of this card is limited and is directed to the detection of defects and to securing proper development and care, rather than to the detection of illness. It has, however, in an inexpensive way accomplished great good, and has met with the hearty approval of the community. The most noticeable result has been the increased attention given to the condition and care of the eyes. Several children from poor homes have been found to be affected with curvature of the spine, in spite of which most injurious work and exercise were being indulged in daily. The class-teacher has in many cases been brought into confidential relations with the parents with reference to the physical nature of the child, and the pupils, seeing a practical side to the physical work of the school, have developed an unusual interest. Not only should the school-house be innocent of disseminating any ills of its own germination, but the greatest care should be taken that it does not become a center to which disease-laden children come to spread contagion throughout the community.

There must be so close a relation between the board of health and school superintendent or principal that all members of families living in infected houses shall be immediately excluded from the schools, to remain until there can be no question as to the safety of their return. In one city of New Jersey a plan is now under consideration by which, whenever a child attending any public school is reported as sick with diphtheria or scarlet fever, health inspectors shall be sent to the school that night to fumigate it thoroughly, and next day either the district physician or the chief of the bureau of contagious diseases shall take a culture from the throat of every child in the seats near that of the one known to be affected, so that within twenty-four hours all affected may be known and isolated. This is an expensive method of dealing with the matter, and perhaps but few localities will at present feel that it is possible to handle it in this way. It is, however, a hopeful sign that such a plan is seriously considered, and we may hope to see something of the kind generally adopted in the larger cities within a dozen years. Prevention is better than cure, and it is probable that if teachers were more observant of the physical appearance of their pupils, and felt a greater degree of responsibility for their health, fewer cases would be reported in which children have sat in school even when stricken with disease. Teachers should invariably send home at once pupils whose faces are flushed or who manifest signs of lassitude. It often happens that, through fear of criticism, teachers allow pupils who have been soaked with rain on the way to school to remain at school in their cold and clinging garments, even though there be no proper facilities for drying them. It is a wise and blessed teacher who on such days devotes her first energies to getting her pupils dry or sending them back to their mothers. This is hardly the place in which to devote time to the consideration of the treatment of nervous and excitable children by the teacher. There is no doubt that the health of such children may be largely affected by the relations existing between them and their teachers. It is an important part of the teacher's duties to determine whether the irregular and unsatisfactory deportment of such pupils arises from original sin, or is simply the outward manifestation of diseased and jangling nerves. If the latter is the case, the teacher must soothe and quite the irritation, and consider it a medical rather than a moral question. This is due to the health of the pupil as well as to his mental progress. The great fault of our schools has been that children have been too much thought of and dealt with as a mass. There must be more individualization. The school authorities must consider the school as a whole, but the teacher must have a more definite regard for the health and proper development of each child.

THE POWERS, DUTIES AND LIMITATIONS OF BOARDS OF HEALTH,

BY SAMUEL A. PATTERSON, COUNSELOR-AT-LAW, ASBURY PARK

It is essential in considering the subject of this paper to keep in mind constantly the fact that boards of health are the creatures of the statute laws of the State. Their powers and authority are exclusively derived from and limited by the creative law, which cannot be derogated from or exceeded without defeating the object sought to be accomplished. Such organizations or corporate bodies are now recognized as indispensable. They sprung into existence as the result of the tremendous stride made in the march of civilization and enlightenment which has especially characterized the people of our country during the present generation. Notwithstanding the admitted fact that boards of health perform the most indispensable functions of a properly-governed community, the creation of such boards by general statutes was but of comparatively recent origin in this State. The first general statute touching this subject and authorizing the creation of local boards of health and defining their powers was adopted April 27th, 1886, but the significance and value of such a general law was apparently not wholly recognized until the act of 1887, entitled, "An act to establish in this state boards of health and a bureau of vital statistics, and to define their respective powers and duties," was adopted by the Legislature of New Jersey, which law, with some amendments, has remained in successful operation to the present time. The powers, duties and limitations of health boards in New Jersey are controlled absolutely by the last-mentioned statute and its various amendments. Time will necessarily evolve important interpretations of these laws, but this can only be accomplished through the untiring energy and zeal of the members and inspectors of the boards of health in prosecuting vigorously violators of the health laws. For in constant enforcement of these laws there will ultimately be evolved a perfect system for the protection of the public health. It may be added that it is doubtful if there has been more careful and conscientious attention given to the enforcement of health laws than in New Jersey, both by State and local boards of health, and the officials entrusted with the enforcement of the statutes relating to milk and food. Perhaps the most fruitful subject for the consideration of boards of health, and one which is constantly brought to their attention, is what is known to the law as nuisances. In legal phraseology this term is applied to that class of wrongs that arise from the unreasonable, unwarrantable or unlawful use by a person of his own property, or from his own improper or unlawful conduct, working an obstruction of or injury to a right of another, or to the public. In legal contemplation nuisances are divided into two classes—public nuisances and private nuisances. A public nuisance, as defined by the Court of Chancery of New Jersey in *Westcott vs. Middleton*, 16 Stewart, page 478, is what injures citizens generally who may be so circumstanced as to come within its influence. A private nui-

sance has been defined to be that which affects only one person or a determinate number of persons. The author of a public nuisance may be prosecuted criminally, but a private nuisance is a ground for a civil proceeding only. From the standpoint of health boards the term nuisance deals principally with the sources or spreading of contagious or infectious diseases, or the dissemination of foul or obnoxious odors from animal or vegetable matter, or other sources of foulness. Health boards in New Jersey are authorized and required by the 13th section of the act of 1887 to protect the public health so far as is possible by the suppression of all nuisances, and by this section it is enacted "That whenever such nuisances, noxious odors, gases or vapors, or cause of ill health or disease shall be found upon public property or on the highway, notice shall be given officially by the said board to the person in charge thereof officially, and such person shall be notified to remove and abate the same, and if there be failure or neglect to comply with such notice, the mode of procedure shall be the same as is hereinafter provided in case of private individuals." The 14th section of the act of 1887 provides: "That where such nuisance, noxious gases or vapors, or cause of ill health or disease shall be found on private property, the said board shall cause notice thereof to be given to the owner or owners to remove and abate the same at his own expense within such time as the board shall deem proper; a duplicate of the notice shall be left with one or more of the tenants or occupants of the premises; where the owner resides out of the State, or cannot be reached with notice speedily, notice left at the house or posted on the premises shall be deemed sufficient, and if the owner or owners thus notified shall not comply with such notice or order of the local board of health within the time specified, the board shall proceed to abate such nuisance. * * * Such boards shall have the right to recover by action of debt the expenses incurred by the said board in the abatement or removal from any person or persons who shall have caused or allowed said nuisance, * * * and from any owner, tenant or occupant of the premises who, after notice as aforesaid, shall have failed to remove such nuisance * * * within the time specified in such notice." While the language here employed authorizes the cost of abating the nuisance to be collected by legal proceedings, yet before a judgment can be recovered for this expense, the person against whom it is sought to impose the liability must be notified to appear before the health board and show cause why the conditions existing on the premises in question should not be declared a nuisance and abated. This requirement is not found in the act of 1887, or in any of the amendments thereto, the notice referred to in the act being simply a notice to remove an alleged nuisance, but is made necessary by a decision of the Supreme Court of New Jersey announced in the case of *Hutton vs. The City of Camden*, reported in 10 Vroom, page 182. In this case, which construed a section of a statute somewhat similar to the one under consideration, the Court said: "It is not within the competence of the Legislature of this State to authorize any tribunal to recover a judgment against the person or property of a citizen without a notice and an opportunity afforded him to be heard. A judgment in any court without in anywise summoning the defendant would be void and not merely voidable." Therefore, it will be observed that two notices are necessary to be given by the health board in order to collect the expense of abating a nuisance from the party responsible

for its existence or maintenance, first, the notice to show cause before the health board at a specified time and place why the obnoxious conditions existing on the premises in question should not be declared a nuisance and abated. This notice should also set forth the ground or cause of complaint. At the time fixed by this notice, the health board should, upon evidence then and there presented, determine whether or not the conditions complained against constitute a nuisance or menace to health, and if the decision reached is that such conditions do constitute a nuisance, then, secondly, the notice prescribed as above set forth in the fourteenth section of said act should be given to the owner or occupant of the premises, as the case might be, to abate the nuisance. This course, if pursued, will undoubtedly fix a liability upon the person creating or maintaining the nuisance for its removal and abatement. The law does not prescribe any particular length of time to be given the owner or occupant of the premises to appear before the health board or to abate the nuisance. This is left to the discretion of the health board, which would be required to give a reasonable notice, and whether or not a reasonable notice was given would depend upon the circumstances of each particular case. Neither of these notices is necessary where the health board simply seeks the abatement of the nuisance, but are necessary where the expense of such abatement is intended to be collected from an owner or tenant. The second subdivision of the twelfth section of the act of 1887 states that boards of health shall have power to pass ordinances, "to define and declare what shall constitute nuisances in lots * * * and all public or private places." The language here employed is clear and apparently without qualification, yet it has been judicially declared in New Jersey in the case of *The State vs. Jersey City*, in 5th Dutcher, page 171, in construing a grant of power similar to this, that the courts will recognize the right of local authorities to the exercise of a reasonable discretion as to what shall constitute a nuisance, but if the contention of the local authorities be palpably oppressive or unreasonable in declaring that to be a nuisance which is manifestly not so, such action would be void. A similar principle has been asserted in both the States of Illinois and Ohio. These cases hold that the legislative grant of power to municipal bodies to define and declare nuisances, as is authorized in sub-section 2 of section 12 of the act of 1887, simply confers upon such bodies the power to declare that to be a nuisance which is in fact a nuisance within the well-defined legal interpretation of what constitutes a nuisance. The conclusion reached, from a consideration of these cases, is that it is always necessary for health boards, in anticipation of possible suits for damages, where their action involves the destruction of public or private property, to exercise much circumspection in the institution of summary proceedings for the abatement of alleged nuisances, but by the fifteenth section of the act of 1887 a person prosecuting a suit for damages against a health board, its officers or agents, would be obliged to show that the alleged nuisance or cause of disease did not exist, and that the same was not hazardous to the public health, and also that the health board acted without reasonable and probable cause in believing that such nuisance did exist. A source of considerable annoyance to health boards, especially in densely populated communities, is livery stables. Persons living adjacent to or near such places sometimes experience great discomfort from a failure to keep the stable in a state of cleanliness, thereby creating a

positive nuisance. A nuisance of this character could be suppressed by an injunction from the Court of Chancery at the suit of one or more private individuals. In the case of McCray et al. against Combs Brothers, which came under my observation in Asbury Park during the year 1897, it was alleged that the stable was operated in such a manner as to be highly offensive to persons living in that neighborhood. The Court of Chancery held that the evidence showed this to be true, and directed the defendants to conduct their stable in such a manner as to not render the enjoyment of life physically uncomfortable to those persons who lived near the stable. The defendants failed to comply with the order of the Court, and upon a second suit being instituted the Court enjoined absolutely the defendants from further carrying on the livery business at that place in any manner whatsoever. This order of the Court closed the stable permanently. Whether a health board could maintain an action in Chancery under the 28th section of the act of 1887 for the entire abatement of a livery stable shown to be a nuisance, would depend, under the language of the 28th section of the act of 1887, upon the question whether the stable was conducted in such a manner as to make it hazardous to public health. If the proof showed that the stable was run so as to produce nausea, headache, vomiting, dizziness, loss of appetite, or to lower the general condition of vitality of individuals living near the stables, undoubtedly health boards could, under the case of *The Board of Health vs. Lederer*, in 7th Dickinson, N. J., page 675, maintain such a suit, or a suit for the suppression of any other nuisance of like character. They could also, under the 4th and 5th subdivisions of section 12, prescribe in an ordinance the method of keeping the horses in the stable and also regulations for the preservation of a certain degree of cleanliness therein, or the board could proceed in a summary way, as already indicated, to cleanse the stable and collect the expense thereof from the person operating it. The more efficacious way of dealing with persons who maintain a livery-stable in a manner detrimental to the comfort of persons living near by would be by the imposition of an adequate fine, under an ordinance prescribing certain methods to be used daily for the thorough cleansing of the stable, and a violation of this ordinance twice within six months could, under the 18th section of the act of 1887, be punished by imprisonment in the county jail of the offending party for any period not exceeding one hundred days. It would seem, from an examination of the acts of February 22d, 1888 (Revision, page 1642), and March 29th, 1892 (Revision, page 1644), that health boards possess the power to enact ordinances requiring the owners of livery-stables to construct water-tight floors in that part of their stables where horses are kept; but the Supreme Court of New Jersey declared, in the February term, 1898, in the case of *Morford vs. The Board of Health, &c.*, that health boards possess no such power, and that if the stable is a nuisance the owner must be prosecuted for maintaining a nuisance. It is certainly highly desirable that the water used for domestic purposes in the neighborhood of stables should not be contaminated by reason of the absence of water-tight floors in stables, and there should be an act passed authorizing health boards to require the owners of livery stables to construct water-tight floors, and upon their failure to do so, empowering health boards to enter the premises and construct such floors, and to record in the county clerk's office the cost thereof against the livery-stable premises, making it a lien in the same

manner that the cost of making street improvements, where done by municipal authorities, becomes a lien. Health boards have, by the first subdivision of section 12 of the act of 1887, power to enact ordinances to aid in the enforcement of the law as to the adulteration of all kinds of food and drink. This provision authorizes the adoption of an ordinance prohibiting, under a penalty of one hundred dollars, any adulteration of milk. From an examination of the laws of this State regulating the sale of milk, it will be found that the only act under which prosecutions can be conducted, excepting the act found in section 12, above quoted, is an act entitled "An act to prevent the adulteration of and to regulate the sale of milk," P. L. of 1882, page 97, and the supplements thereto. This act, under the proceedings for its enforcement, does not afford adequate protection to the community from adulterated milk. By a supplement passed in 1884, a jury trial is afforded the defendant, which, in my judgment, materially weakens the salutary provisions of the original act, which did not confer the right of a jury trial. Now, however, the right of a trial by jury may appeal to persons, from a sentimental standpoint, as being an inalienable right, which it is not; it is calculated to frustrate and defeat justice in cases of this character. In a number of suits that came under my observation for the enforcement of the milk law, juries invariably disregarded the most plausible and satisfactory evidence of the adulteration of milk, and preferred to exonerate the defendant, under the plea that his conviction might result in the destruction of his private business. As a matter of fact, the right of trial by jury in all cases has been repeatedly denied in the Supreme Court of this State in cases where the statute authorizing certain summary proceedings did not authorize a trial by jury. In the case of *Shivers v. William K. Newton*, the State Dairy Commissioner of New Jersey in 1883, which was a suit brought under the provisions of the milk law of 1882, the Supreme Court said: "The law has so frequently been stated to the effect that the enforcement of regulations of the kind included within the statute (for the recovery of penalties for the adulteration of milk) by summary proceedings before a magistrate alone was not within the constitutional guaranty of trial by jury that further remark would be profitless." In my judgment the most effective method of dealing with those persons who engage in the adulteration of milk would be to eliminate from the statute the jury feature. This could be done without exciting the attention and consequent opposition of milk dealers who are interested in preserving this part of the milk law, by the consolidation of the food and milk laws, retaining the same method for the enforcement of the consolidation act as is now prescribed for the enforcement of the food law in the P. L. of 1881, page 283, and the several supplements thereto. From an examination of the statutes relating to the sale of ice, it appears that under the act of 1895 the board of health of any cities of the first class has power to enact an ordinance and impose penalties prohibiting the sale of impure ice or the sale of ice without a permit from the health board. The highly important provisions of this act should be extended by a statutory amendment, so that it would not only apply to cities of the first class but to all cities, boroughs or other municipalities. It is true that under the act of 1885 (P. L., page 104), the sale of impure ice or of ice without a permit from a health board in cities, boroughs or townships is made a misdemeanor, but a prosecution under this act would involve proceedings before a grand jury and a petit jury, and would not, in my

judgment, result in any conviction, for the reason that the average petit jury would not be much concerned in a matter so insignificant, from their standpoint, as a sale of ice without a permit from a health board. A statute authorizing health boards in all municipalities of the State to prohibit the sale of impure ice under appropriate penalties would speedily and thoroughly stop the traffic in contaminated ice. The power of the board of health to prosecute a suit in the Court of Chancery of this State for an injunction to abate a nuisance hazardous to the public health is, as has already been stated, conferred by the twenty-eighth section of the act of 1887. This section has been given judicial consideration in the Court of Chancery in the case of the Board of Health of the Township of North Brunswick *vs.* Samuel Lederer. The case is reported in 7th Dickinson, page 675. This case was brought by the board of health to restrain the business of fat-rendering, which had been conducted in such a manner as to make it hazardous to public health. In this case the business of the defendant had been carried on for twenty-eight years at the same place, and subsequent to the establishment of the business the neighborhood became settled by persons who built houses and engaged in business thereabouts. The defendant attempted to justify the operation of his business by claiming, first, that inasmuch as he had established his business before the neighborhood was used for residential purposes, persons who moved to that vicinity did so with a full knowledge of the existence of the nuisance complained of and were on that ground precluded from making objection. Secondly, that the persons affected by the odors emitted from his establishment were in feeble condition of health by nature or of abnormal physical characteristics, which cast them beyond all laws of a general nature or which are enacted for the public welfare. Neither of these remarkable and somewhat ingenious propositions met with the approval of the court, and a permanent injunction was issued restraining the defendant from continuing his business in the manner complained of. The authority conferred by the twenty-eighth section of the act of 1887 upon local boards of health to maintain actions in the Court of Chancery to enjoin nuisances, is confined to nuisances arising and maintained within the territorial limits of the complaining board, and for nuisances arising and maintained outside such territorial limits, the remedy is by the action of the State Board of Health under the act of 1894, P. L., page 495. This question arose in the case of the Board of Health of the Borough of Vailsburgh against the Township of East Orange, reported in 8th Dickinson, page 498. The facts presented by the board of health of Vailsburgh showed that the township of East Orange maintained on land owned by it and within its territorial limits, a nuisance which injuriously affected the residents of the borough of Vailsburgh. The defendant insisted that by the act of 1887, each local board of health was limited in its jurisdiction and right to prosecute actions to abate nuisances existing and having their origin within the territory of the complaining board of health. This interpretation of the law was held by the Court of Chancery to be correct. From an examination of the decisions of the courts of the various States touching the health laws and ordinances, it will be found that these laws are given a liberal construction. The courts have stated that powers granted for so important an object as the preservation of the public health should receive a liberal construction for the advancement of the

ends for which they were bestowed. *Gregory vs. New York*, 40 N. Y. State, page 273. In my judgement there should be a change effected in regard to the method required by the act of 1887 in the enactment of ordinances by health boards. The 12th section of the act of 1887 provides that each ordinance shall have three readings, and that at least one week shall intervene between the second and third readings; and further, that a notice stating the title of said ordinance and the date when it passed its second reading shall be published at least one week prior to its final passage, in a newspaper, &c. The 17th section of the act of 1887 provides that the health ordinance shall take effect in thirty days after the date of the first publication, and shall be published either two weeks in a newspaper, once a week, or by posting for the same length of time. There seems to be no good reason for the length of time consumed in the passage of health ordinances. In the adoption of most municipal ordinances, which certainly do not require as much speed in giving them effect as do health ordinances, but two weeks are required to put them into operation from the date of the introductory reading; whereas here we find that before a health ordinance becomes operative forty days or more must elapse. This unnecessary consumption of time should be corrected, as should also the requirement in the twelfth section for the publication of the title of the ordinance, a week between the second and third readings. This requirement serves no useful purpose, and easily leads to confusion. There are no other ordinances authorized to be passed in New Jersey that require such a formality. In fact a case came under my observation where an entire code of ordinances was annulled through an inadvertent oversight regarding the effect of this twelfth section, thus causing much expense in the republication of the code and depriving a thickly-settled community of a health code for about forty days. I suggest that this section be amended so that an ordinance can be introduced and have two readings, one on the night of its introduction, and the second and final reading after a lapse of five days, to be followed by its publication in full in a newspaper one or two insertions. The twenty-third section of the act of 1887 provides that "the said court, justice of the peace, police justice, or recorder, is further empowered to cause such defendant who may refuse or neglect to pay the amount of the judgment rendered against him and all costs and charges incident thereto, unless an appeal is granted, to be committed to the county jail," etc. It was decided, in the case of *Worden vs. The Board of Health of Vineland*, reported in Vol. 18 of the N. J. Law Journal, that this section did not authorize an appeal to the court of common pleas. This decision is very important, for the reason that it prevents an appeal being taken against the board of health for a re-trial of the case on the merits, and confines the offender to prosecuting a writ of certiorari to the Supreme Court, which writ merely removes the proceedings on such technical grounds as the ingenuity of the defendant's counsel can suggest. I have not undertaken in this brief discussion of the law relating to health boards in New Jersey to enumerate the many other features which may be found in the act of 1887 and the several supplements thereto for the protection of the public health. These additional points are well understood and are in practical working operation by the health boards throughout the State. In my judgement the act of 1887 and its supplements are so admirably adapted to the preservation of the public health that there are but few changes required, and

some of these as the result of my investigation I have endeavored to set forth in this paper. I cannot close this subject without congratulating the people of this State upon their admirable system of health laws and the untiring zeal and energy which have characterized their enactment and enforcement.

THE DISPOSAL OF SEWAGE.

BY JAMES H. FUERTES, C. E., NEW YORK CITY.

Sewage, in a broad sense of the word, is water after it has been used for domestic or industrial purposes. Naturally it is polluted with small amounts of waste matter, organic and inorganic, according to the uses it has served. Some kinds of pollution are harmless, so far as they may affect public health, and some, on the other hand, may be such that great precautions must be taken in disposing of this waste-water to prevent the propagation of infectious diseases. Local conditions will dictate whether the method of disposal must be such as to offer security against infection, or whether it will be satisfactory to provide a method that will merely prevent a nuisance. Questions of cost often greatly influence the solution of special problems. Many methods of disposal are sufficiently flexible to be suited for nuisance prevention, and also, by making the treatment more thorough, at increased expense, to yield an effluent of great purity. At the present time there are known but four general methods of disposing of sewage. These are: by dilution, by sedimentation, by the addition of chemicals, and by bacterial processes. With all these methods, it is necessary or advisable to pass the sewage through screens to remove as much as possible of the coarser floating and suspended particles. These screens may be of metal, or of coke-breeze, sand or other indestructible materials, according to the necessities of the case. We have just passed through a period in the history of sewage disposal matters during which it was thought that the "fin de siècle" of sewage disposal was its application to tillable fields, and the subsequent conversion of its organic matter into living plants. This was thought to be the most economical, most satisfactory, and most desirable method when it could be applied. It is now known, however, that, excepting under certain peculiar conditions, this method is far from satisfactory. It is also well known that the various chemical methods of treatment have their limitations, and there have been so many papers published on these different processes that it seems hardly necessary to refer to them further to present-day sanitarians, because probably nothing new will be forthcoming as to their efficiency or applicability. The various electrical processes, so far as they have been developed to date, may be classed as chemical, because the action of the electrolysis is to decompose certain easily separable compounds in the sewage and to form precipitating re-agents which accomplish their work in the same manner as chemicals. There are to-day only two methods of sewage disposal on which much scientific study is being bestowed: the dilution process and the bacterial process. The

former in order to determine how much sewage may be turned into a stream or body of water without causing it to become offensive, and the latter because certain recent developments have pointed out the possibility of increasing the efficiency and reducing the cost of sewage disposal. The dilution process can be employed only where the sewage may be discharged into a large body of water in such a manner that it may be carried away or dispersed and lost. This may be either a sea or lake, in which the direction and velocity of the currents may be utilized, or it may be a running stream. On general principles, sewage should not be discharged into a body of water intended to be used for domestic consumption, unless the water is properly filtered before use. Although there is a certain amount of purification continually taking place in large bodies of water, either running or standing, the amount of such purification is so insignificant, even in considerable periods of time, and the evidence that such purification may not extend to the disease-producing bacteria is so well understood, that water once polluted with sewage must always be looked upon with suspicion, no matter how great the dilution. For this reason, the dilution process must be looked upon as of value only when it is desired to dispose of the sewage without creating a nuisance. This nuisance may be caused by the foul appearance of the water, or by the evolution of offensive gases and odors, or by the addition to the water of certain substances which would render it unfit for use in certain industries. Chemical analyses will readily determine whether or not the amount of pollution is injurious to industrial interests, but the determination from the standpoint of offensiveness is more difficult. It must be measured by personal judgment, and therefore is relative only. The measure of permissible pollution, first adopted by Rudolph Hering nine years ago, in relation to the Chicago drainage canal, is taken to be the flow of the stream in cubic feet per second per one thousand persons contributing sewage. Mr. F. P. Stearns, for the Massachusetts State Board of Health, made some studies in 1890 of the self-purification of streams and determined that the average sewage of several American cities contained tolerably constant or representative proportions of certain compounds that were characteristic of sewage. These were the free ammonia, albumenoid ammonia, dissolved solids and chlorine. The average amounts of these compounds per one thousand persons were determined in the sewage of several cities, and analyses of several polluted streams at points where inoffensive, and where offensive, gave standards by which to judge of the quantity of sewage a stream could receive when its flow was known. The limits thus established were that the water would be undoubtedly offensive when the stream-flow was less than two and a half cubic feet per second per one thousand persons, and undoubtedly inoffensive when it was more than seven cubic feet per second per one thousand persons. Between these limits there would be some doubt, and careful judgment, based on a knowledge of the stream, its velocity, the configuration of the shores, the rugosity of the bottom and other factors, would have to be exercised to determine the proper dilution. Swift-flowing streams, with falls or rapids, and waters of low temperature, can dilute more sewage than others. The existing condition of the river as to sewage pollution must also be considered. The writer recently had occasion to investigate the discharge of sewage into one of the large rivers in this country at a point where there was a question as to whether or not a nuisance would result

from it. The analyses of the river water showed that the free and albumenoid ammonia were not very much above the normal for the river—not enough to account for the amount of pollution that was known to exist from points up stream, but the dissolved oxygen was exceedingly low, showing that the water had contained considerable polluting matter, but that it had been oxidized. This fact, with the high chlorine, nitrates and nitrites, showed that the pollution of this stream was such in extent that additional sewage would not be oxidized, but would undergo putrefactive changes, and in a stagnant reach below the town would undoubtedly produce a nuisance. Had the river been such that it flowed rapidly and continuously past and away from the town, the discharge of the town sewage into it would have been unobjectionable. The estimate per 1,000 people must of course be taken at periods of minimum flow; at other seasons the dilution would then be greater. The essential conditions, therefore, to satisfactory disposal by dilution are that the flow of water should be sufficiently great to thoroughly disperse the sewage through its mass and dilute it with water containing a sufficient amount of dissolved oxygen to prevent putrefaction and hasten the oxidation of the organic matter. In the bacterial method of purification the organic matter in the sewage is changed into inorganic compounds by the action of bacteria. The bacteria which do this work in the presence of oxygen are called aerobic, and produce oxidation; those which do not need oxygen are called anaerobic, and produce putrefaction. Until recently it had been supposed that the aerobies were the active bacteria in sewage purification, but it is now known that anaerobies also may serve a very useful purpose. The organic matter in sewage is partly dissolved in the water and partly held in suspension in fine or coarse particles. It has long been known that the aerobies are able to oxidize the dissolved organic matter, but act only slowly on the particles held in suspension; therefore all processes heretofore have been preceded by some method of screening or precipitation to remove as much as possible of the suspended matter. This latter treatment resulted in the precipitation of a very large quantity of sludge, the disposal of which entailed considerable expense. When it was discovered that the bacteria possessed the power of breaking up the organic matter and destroying it, scientists set to work to construct apparatus to give the bacteria favorable conditions for doing their work. It was found that they thrived best in sand, gravel, or other porous indestructible material through which the sewage was passed in intermittent doses. This method provided a thorough aeration of the sand-bed after each dose of sewage, and a plentiful food-supply for the bacteria, and it was consequently found that through filters made on these principles sewage could be passed indefinitely without clogging them up or making a nuisance, so long as the doses of sewage were not too large or too frequently applied; that after a short time the bacterial growth would become properly balanced to the doses of sewage, and the purification would be very great. The purification consisted of the action of certain bacteria on the nitrogenous compounds in the sewage, resulting in the formation of nitrous and nitric acids, and these acids then attacked the other compounds forming nitrates, the evidence of complete change, and nitrites, the evidence of changes taking place. Thus the organic matter would be changed finally into mineral matter and pass out in the effluent in a harmless form. The bacteria in the sewage, not finding in the filter

proper conditions for their growth, die and are destroyed the same as the other organic matter, being themselves oxidized. This action is the work of the aerobies. It was stated above that the solid matter in the sewage had to be removed before applying the sewage to the filter, but this is necessary only because the aerobic bacteria act slowly on such matter, and hence, if it was not removed, the filters would have to be very much larger in order to allow a longer time for the destruction of the solids. Its removal mechanically is therefore desirable from economical motives. Where power has to be supplied at the sewage-disposal works an economical method of removing this matter is to strain the sewage rapidly through thin beds of fine coke-breeze, which, when foul, may be burned, and thus overcome the sludge disposal nuisance which attends all chemical processes. This has been pointed to as an economical measure, under certain conditions, by the Massachusetts State Board of Health, and has been practiced in several places in England for several years. When properly done the effluent from the coke strainers may approach in purity that from a carefully conducted chemical precipitation plant. There is another method of getting rid of these solids, and that is their liquefaction by the anaerobic bacteria. These work best in the dark and without the presence of oxygen. There are now before the public two or three methods of encouraging these anaerobies. One is the septic tank, so named by Mr. Donald Cameron City Engineer of Exeter, England, who first applied it to the treatment of large quantities of sewage. This is merely a big underground air-tight tank, large enough to hold about a day's flow of sewage. Sewage enters at one end and leaves at the other, and, so far as possible, all air is excluded from the tank. The action taking place in the tank is the development of large numbers of anaerobic bacteria in the sewage, which liquefy the solid particles, evolving putrefactive gases and forming a scum which crusts over the surface of the sewage. The effluent from the tank is generally clear but not colorless, and there is very little precipitation of sludge. After leaving the tank the effluent is passed through filters to give the aerobies a chance to attack the dissolved organic matter. Whether the septic process favors or retards the aerobic bacteria in their work is not yet known for a certainty. The Local Government Board recently sanctioned the construction of such a plant on a large scale, but in their recommendations they, in effect, classed the septic treatment as about the equivalent of a chemical process. Another method of encouraging the growth of the anaerobies was devised by Mr. W. J. Dibdin, late chemist to the London Co. Council, and is called the Sutton process, from having been introduced there first. This consists of a set of tanks, or beds, containing coarse gravel or burned ballast in a layer about three to three and a half feet thick. The sewage is admitted into the tank from below until the surface of the sewage is about six inches below the top of the filling. It remains at rest in the tank about two hours, during which time the anaerobies attack the solids and liquefy them. The treated sewage is then drawn out of the tanks and passed through filters. The tank, after emptying, is allowed to rest two hours, during which time the aerobies are supposed to attack the dissolved matter in the liquids retained by capillarity and surface adhesion, and then it is refilled again. The Sutton tank holds about 13,500 gallons (Imp.) and up to the first of April, 1898, had passed a total of over 16,000,000 gallons of sewage, and, it is stated, the material remains inoffensive. These processes are yet in the ex-

perimental stage, in so far as the experience had with them does not extend over a sufficiently long time to enable us to draw conclusions as to their reliability under trying conditions of climate, or as to the expense of such methods of treatment for installation or operation. So far their use has been limited to English cities, where the quantity of sewage per inhabitant is much less than in American cities. No doubt the Exeter and Sutton processes may yet be developed into practical form and become valuable improvements over present methods for certain conditions. Whether one of these methods, and which one, will prevail in the future depends largely, as Mr. Rudolph Hering says in the *Engineering Magazine* of August, 1898, "on the cost of obtaining satisfactory results, which may be ascertained from the experience now being gained."

PUBLIC WATER SUPPLIES AND THE PREVENTION OF THE POLLUTION OF THE SAME.

BY JAMES H. FUERTES, C. E., NEW YORK CITY.

There are two general methods of protecting water supplies derived from surface-gathering grounds. These are, first, to have absolute control over every source of pollution, by owning the entire watershed; and second, to protect the water by the powers conferred by special legislation for the purpose. Most engineers hold that the ownership of the watershed gives greater powers for protection than can be obtained by the enforcement of special laws. While neither endorsing nor disputing this statement, the speaker has not been able to find any more positive or negative evidence for one proposition than for the other. He believes that in the case of a small watershed, ownership is unquestionably better; but in large ones, such as that of New York or Boston, it is questionable whether the benefits resulting from such ownership would warrant the great expense that would be involved. We have few standards by which to measure the degree of protection attained. Probably the most generally accepted indication of effective protection is a low typhoid fever death rate in the city using the water for a domestic supply. Compared by this standard, Manchester and Liverpool, owning their watersheds, do not seem to be more effectively protected than New York or Boston. It may be of interest to state, in this connection, that some extensive studies into the relationship between polluted waters and typhoid fever made by the writer three years ago, indicated that the normal typhoid fever death rates per 100,000 people per year, for cities using waters of different classes were found to be about as follows: Spring water, 6; properly filtered water, 12; ground water, 18; protected impounded supplies, 25; waters of large normal rivers, 28; waters of large lakes, 39; waters of upland streams, 44; polluted supplies, 70-300. Probably no method of protection would give a surface water as pure as the water from springs, or as pure as water that has been properly filtered. The actual protective measures are naturally divided into two classes: those which must

be used when the works are being built, and those which must be enforced after the works are placed in operation. When a supply of surface water is to be furnished, the first thing to be done is to acquire the land upon which the reservoir will be situated. In large works this will require the acquisition of many farms, and perhaps villages and towns, and the destruction of many industries. The land taken should include everything lower than high-water line of the proposed reservoir, with an allowance of two or three feet for exigencies; in addition a strip 200 or 300 feet wide should be secured all around the water, to give perfect control over the shores. The same policy should be followed, if possible, in regard to the principal feeders of the reservoirs. This property is secured usually by appraisal by commissioners, and in many cases it results in a direct benefit to the inhabitants of the territory taken. Mr. Fteley, Chief Eng. Aqueduct Comm., tells me that not infrequently he has known, in the Croton watershed, farmers who have had their places heavily mortgaged, to have had sufficient damages awarded them to enable them to move their buildings to other sites, pay off their mortgages and have money in the bank. However, the very poor people, whose all may be taken from them suddenly, are frequently sufferers. After the site has been acquired, the fences and buildings must be removed to other sites, or burned, and the vegetation cut down and burned or removed. The necessity of removing the top soil and small vegetation has in late years been given much prominence. Some of the older Boston reservoirs were not so treated, and the great deterioration of the water due to the slowly decomposing organic matter was a source of great anxiety. This trouble has been remedied at great expense by drawing down the water, pulling out the stumps, removing the soil, in some cases to great depths, and paving the slopes. Late investigations have shown that the removal of from 6" to 12" of the top soil will accomplish all that can be desired, and the covering of the mucky places with a foot of gravel serves as well as excavating the entire amount. In addition to the treatment of the reservoir site, it will be necessary to drain or cut off the swampy areas on the watershed by ditches or banks. Sometimes a few ditches satisfy the conditions, and sometimes it will be necessary to convey the water feeding the swamp in direct channels to a near-by water-course, and isolate the swamp by embankments. While all these operations are going on, and while the dams and accessory works are being built, tight portable earth-closets for the use of the workmen must be provided, and every precaution must be taken to insist upon their proper use and care, under a penalty of a severe character for neglect to do so. There are several cases on record where great epidemics have resulted from the neglect of this simple precaution. During the operation of the works the principal protective measures will be to prevent the discharge into the reservoir or feeders of the drainage from streets, roads, garbage-piles, fertilized fields, houses, hotels, towns and cemeteries. The State Boards of Health generally enact laws to prevent the discharge of sewage from cities into the water-supply sources of other cities, and therefore, upon proper complaint, such nuisances may be abated. Boston, as is well-known, encourages the towns and cities within the shed of her water supply, to take their sewage outside the limits, if possible, or put in satisfactory plants for purification of the same, paying fifty per cent. of the cost of the work, the towns paying the other fifty per cent. The greatest difficulty is generally in

enforcing the law, as this can only be done by proper legal processes, entailing often considerable delays. Small villages and groups of houses find it frequently advantageous to use a dry-removal system of disposing of fecal matter, sending the pail contents out to farmers for use as a fertilizer. This is done quite extensively at Hemlock lake, one of the sources of the Rochester supply. The London supply is protected to a certain extent by the regulations of the Conservancy Board, which requires all the towns to purify their sewage before discharging it into the Thames and Lea. But this is not depended upon entirely, because all the various water companies are required to filter the water before supplying it to consumers. The regulations of the New York State Board of Health with regard to the Croton watershed prevent the location of privy-vaults or cesspools, the burial of persons, animals, pail contents, garbage or refuse, or the discharge upon the surface or in underground pipes of the sewage of towns, groups of houses or hotels, nearer a reservoir than 250 feet, or nearer a feeder than 130 feet. The same regulations prevent the location of pail-closets, or the discharge of the sewage of isolated houses on the surface or underground, nearer a reservoir than 50 feet or nearer a feeder than 30 feet; neither is it permitted to maintain garbage-piles, pig-styes or stables nearer a reservoir than 100 feet or nearer a feeder than 50 feet. The writer knows of no place in the United States where the drainage of the country roads is purified before allowing it to run into the feeders or reservoirs. There is a natural source of pollution existing at all surface-gathering grounds, which has not as yet received the attention it deserves. This is the pollution that is dependent upon and is in many watersheds almost proportional to the annual rainfall. The writer called attention to this in 1896, showing that in New York, Boston, Cleveland, Detroit, Columbus, Louisville, Paterson, Pittsburg, San Francisco and Toledo, the annual typhoid fever death rates fluctuated for a number of years with the annual rainfall; that this fluctuation must have been caused by the washing of infected matter into the reservoirs or streams, and that the infection itself was probably communicated to the decomposing organic matter on the tributary watershed by flies, insects and birds that feed on carrion. The report of the Board of Inquiry to the War Department that the typhoid fever in the United States Army camps during the late war was due to the common fly is, at least, confirmatory of the possibility of the correctness of these deductions. There is a certain degree of protection afforded by natural conditions. Large deep reservoirs, in themselves, offer a considerable protection, particularly if the reservoir sites have been cleared of vegetation and top-soil, and if the feeding streams are slightly turbid. Under these conditions the polluting matter washed into the reservoirs is greatly dispersed, the heavier particles, and often as much as 80% to 90% of the microscopic vegetable and animal organisms settle to the bottom, and eventually the water is left nearly free from color and objectionable qualities. The absence of decomposing organic matter in the bottom of the reservoir deprives the water of the nitrogenous compounds necessary to support the microscopic organisms, and hence they will not multiply rapidly. Light is necessary for the growth of certain organisms, and hence in deep reservoirs such will perish. Janowski, however, demonstrated that typhoid fever germs developed colonies in the dark in three days, in diffused day-light

in five days, and that in strong sunlight they were all killed in six hours. Long pipe-lines also afford a certain amount of protection against the growth of some forms of microscopic life. Mr. G. C. Whipple found that in the passage of surface-waters through pipe-lines in Boston there was a considerable reduction in the number of organisms, due to sedimentation, disintegration, decomposition and consumption by other organisms; that there was also a similar decrease in the number of bacteria except during periods of the year when decomposition was going on in the pipes, and that by their decay the growths tended to produce bad odors and tastes. These rank growths are not found in pipes carrying filtered water or ground-water free from microscopic forms, as such waters do not furnish the necessary food-supply. Surface-waters are frequently greatly improved in quality by storage in large, deep reservoirs. The degree of protection afforded the consumer by the use of ice cut from a pond or reservoir may be stated, roughly, to be about the same as would be afforded by the thorough sedimentation of the water in large reservoirs. In other words, clear ice will generally contain about ten per cent. of the number of organisms in the raw water. This could not be considered satisfactory if the ice were known to be cut from a sewage-polluted pond. Professor Sedgewick called attention, in a lecture before the New England Water Works Association, December, 1896, to some sources of pollution that should be guarded against, to which little heed is generally given. He referred to parties of picnickers, campers and hunters who go out to these beautiful bodies of water bent on pleasure and the enjoyment of nature, and who, in their ignorance of general sanitary laws, or from indifference, or perhaps necessity, due to the lack of proper conveniences, infect the brooks or lakes, either directly or indirectly, by defiling the banks. Such methods of pollution, and those produced by surface washings, are very difficult to control, and their amount, in the annual total, has a small though noticeable effect on the death rate of the cities using the water. It is probable that no method of protection will render a water derived from a surface-gathering ground as pure as that derived from a deep spring in the mountains or as that which has been properly filtered. Careful studies have shown that cities in which the typhoid fever death rates are over 20 per 100,000 per year can, by furnishing pure water to the people, have these cut down to an average of 12. Other studies have shown that cutting the yearly death rate per 100,000 down by from 6 to 10, will annually save the community more than the operating expenses, interest and sinking-fund charges on a filter plant. These are facts, supported by the statistics of many cities which have changed from polluted to filtered water supplies. They speak for themselves, and I can find no more fitting way of closing this paper than by commending them to your thoughtful consideration.

The meeting of the Association for 1899 will be held in Atlantic City, December 8th and 9th. The following program has been prepared :

FIRST SESSION.

Friday Afternoon, at four o'clock.

1. Report of Committee of Arrangements, Henry S. Scull, Atlantic City.
2. Address of Welcome, Hon. Joseph Thompson, Atlantic City.

3. Report of the Committee to represent the N. J. Sanitary Association at the National Pure Food and Drug Congress, Henry B. Francis, Esq., Camden.
4. Toxins and Anti-Toxins, E. C. Baldwin, M. D., Princeton.
5. Miscellaneous Business.
6. Treasurer's Report.

SECOND SESSION.

Friday Evening, at eight o'clock.

7. Prayer, Rev. William Aikman, Atlantic City.
8. President's Address: "How shall Boards of Health proceed to prevent the Spread of Communicable Diseases," Daniel Strock, M. D., Camden.
9. Dust, Smoke and Gas in modern cities, Prof. W. L. Sedgwick, Institute of Technology, Boston.
10. Sanitary supervision of the Milk Supply, illustrated by stereopticon views, M. O. Leighton, Esq., Health Officer, Montclair.

THIRD SESSION.

Saturday Morning, at nine o'clock.

11. Bacteriological Treatment of Sewage, James Owen, C. E., Montclair.
12. Discussion of the above paper, M. N. Baker, C. E., Montclair; Walter Reynolds, M. D., Atlantic City.
13. What action shall be taken by Boards of Health to prevent the spread of Tuberculosis, Richard P. Francis, M. D., Montclair.
14. Report of Health Officers. Report of Chairman of Executive Council.
15. Miscellaneous Business. Election of Officers. Unfinished Business. Adjournment.

Laws, Ordinances and Circulars.

Since the publication of the last annual report of this Board three new circulars have been issued, as follows: Circular 94, on "Communicable Diseases of Animals"; Circular 95, on the "Prevention of Small-pox," and Circular 96, containing the Public Health Laws of New Jersey.

LAWS.

Following is a list of titles of the bills introduced during the Legislative session of 1899, the chapter number being added in cases where the bill became a law.

ASSEMBLY BILLS RELATING TO PUBLIC HEALTH INTRODUCED IN 1899.

No. 29. Authorizes Vailsburg, Irvington, South and West Orange, Milburn and the western section of Newark to jointly construct and maintain outlet or trunk sewers.

No. 31. Amends the act authorizing cities to construct sewers and drains.

No. 44. Provides for the removal of snow and ice from sidewalks of certain incorporated municipalities of this State.

No. 57. Attempts to prevent the occurrence of premature burial.

No. 89. Authorizes South Orange to purchase lands and erect water-works thereon.

No. 90. Amends the act relative to the creation of local boards of health.

No. 101. Incorporates the borough of New Providence.

No. 106. Sets off a part of Woodbridge and Raritan townships, Middlesex county, into Clark township, Union county.

No. 107. Creates the township of Voorhees, in Camden county, from a portion of Waterford township.

No. 113. Provides that in cities having a local board of health the governing body thereof may provide for a meat inspector, who shall be appointed by the mayor for a term not exceeding five years, salary not over \$1,000 per year.

No. 114. Authorizes boards of health and their inspectors and the factory inspector and his deputies to enforce the act fixing ten hours per day and sixty hours per week as a day's or week's work.

No. 154. Annexes the town of Stockton to the city of Camden after the expiration of twenty days from the approval of this act.

No. 170. Prohibits the adulteration of molasses or the using of any ingredients to cheapen or lower its quality, unless the package is marked "mixed" or "compound." Penalty, \$100, or sixty days in jail.

No. 176. Requires that all oleomargarine or unnatural butter shall be of a bright pink color. The coloring to be from a fruit or vegetable not injurious. Under penalty of \$100.

No. 186. Prevents deception in the sale of oleomargarine or any imitation of dairy products.

No. 188. To annex the towns of Harrison, Kearney and the borough of East Newark, county of Hudson, to the county of Essex.

SENATE BILLS RELATING TO PUBLIC HEALTH INTRODUCED IN 1899.

No. 9. Incorporating the township of Summit, Union county, as a city.

No. 15. Establishes the township of Long Beach, Ocean county, and fixes the boundaries thereof.

No. 17. Incorporates the borough of Florham Park, in Chatham township, Morris county.

No. 18. Incorporating the borough of Palisades Park, in the county of Bergen, and defining the boundaries.

No. 19. Authorizing local boards of health in towns, boroughs and villages to license persons engaged in the business of plumbing.

No. 43. Making it unlawful for any person to expose for sale any goods or wares used as food, drink or medicine, or other valuable thing, and represent the same as the product of any manufacturer known by him not to be the manufacturer, under penalty of \$100 fine, to be paid to the person or corporation bringing the suit.

No. 49. Makes it unlawful to place any sewage, domestic or factory refuse or polluting matter of any kind whatever in the waters of any river, brook, &c., or tributary thereof, above the point from which any municipality obtains its water supply; also to place such polluting matter on the banks of any stream so described. A fine of \$100 is imposed for every violation, but cities having an outlet in any stream at present are exempted. The State Board of Health is to have general supervision, while local boards will prefer charges in the courts.

No. 56. Authorizes common council to provide in the general tax levy for the expense of re-laying sewers or drains.

No. 60. Authorizes the diking and reclamation of the Hackensack meadows and assesses the cost on property benefited.

No. 61. Authorizing towns, boroughs, &c., controlling water-works to supply water to adjoining municipalities.

No. 62. Amending the sewerage act of 1890 by prohibiting discharge into fresh water so as to contaminate any water-supply.

No. 63. Authorizes one municipality to contract with an adjoining one for a water-supply for a term not exceeding fifteen years.

No. 81. Relative to sewer assessments in townships and villages.

No. 82. Providing for the removal of snow and ice, etc., from sidewalks in towns, villages, etc.

No. 84. Annexes to the borough of North Spring Lake a part of the township of Wall, in Monmouth county.

No. 91. Incorporates the township of Summit, Union county, as a borough.

No. 92. Incorporates the borough of Mt. Ephraim, Camden county, out of the township of Centre.

No. 95. Re-creates the borough of Cape May Point, Cape May county.

No. 176. An act to set off territory from Madison borough, Morris county, and annex it to Chatham township, same county.

No. 121. Changes name of Long Branch police, sanitary and improvement commission to the Long Branch commission.

No. 125. Amends the act incorporating and regulating rural cemetery associations. Makes imperative instead of optional a provision of the act of 1895.

No. 129. Incorporates and fixes the boundaries of Bernardsville, Somerset county.

No. 152. An act to prevent the pollution of the waters of this state by the establishment of a State sewerage commission.

No. 213. Providing a charter for East Orange so as to permit it to incorporate as a city.

CHAPTER 41.

An Act to secure the purity of the public supplies of potable waters in this state.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey*:

1. No sewage, drainage, domestic or factory refuse, excremental or other polluting matter of any kind whatsoever, which, either by itself

or in connection with other matter, will corrupt or impair, or tend to corrupt or impair, the quality of the water of any river, brook, stream or any tributary or branch thereof, or of any lake, pond, well, spring or other reservoir from which is taken, or may be taken, any public supply of water for domestic use in any city, town, borough, township or other municipality of this state, or which will render, or tend to render, such water injurious to health, shall be placed in, or discharged into, the waters, or placed or deposited upon the ice, of any such river, brook, stream or any tributary or branch thereof, or of any lake, pond, well, spring or other reservoir above the point from which any city, town, borough, township, or other municipality shall or may obtain its supply of water for domestic use, nor shall any such sewage, drainage, domestic or factory refuse, excremental or other polluting matter be placed or suffered to remain upon the banks of any such river, brook, stream or of any tributary or branch thereof, or of any lake, pond, well, spring or other reservoir above the point from which any city, town, borough, township or other municipality shall or may obtain its supply of water for domestic use as aforesaid; and any person or persons, or private or public corporation, which shall offend against any of the provisions of this section shall be liable to a penalty of one hundred dollars for each offense; and each week's continuance, after notice by the state or local board of health to abate or remove the same, shall constitute a separate offense; *provided, however*, that this section shall not be held to apply to any city, town, borough, township or other municipality of this state which, at the date of the passage of this act, has a public sewer or system of sewers, drain or system of drains, legally constructed under municipal or township authority, discharging its drainage or sewage into any such river, brook, stream, lake, pond, well, spring or other reservoir; *and provided further*, that nothing in this section contained shall be construed to repeal, modify or otherwise affect any law or statute now conferring upon any local board of health the power or authority to institute any proceedings in any court of this state for the recovery of any penalty for, or obtaining any injunction against, the pollution of any of the waters of this state.

2. Any penalty incurred under any of the provisions of the first section of this act may be recovered, with costs, in a summary proceeding, either in the name of the board of health of the state of New Jersey, or in the name of the local board of health of the township, city, borough, town or other local municipal government within whose jurisdiction the penalty may have been incurred; it shall be the duty of any health inspector, or member of any local board of health, who

shall know or be informed of any violation of any of the provisions of the first section of this act whereby any penalty may have been incurred, to make, and any other person having such knowledge may make, under oath or affirmation, a complaint against the person or persons or private or public corporation incurring such penalty, setting forth the facts of such violation, which complaint shall be filed in the office of the clerk of the district court, or with any justice of the peace of the county within which the offense may have been committed, or with any police justice or recorder of the township, city or other municipality within which any local board bringing suit shall have jurisdiction; and the district court, justice of the peace, police justice or recorder with whom any complaint shall be filed as aforesaid, setting forth facts sufficient to show that the penalty prescribed by the first section of this act has been incurred, is hereby authorized and required to issue process either in the nature of a summons or warrant, which process, when in the nature of a warrant, shall be returnable forthwith, and when in the nature of a summons shall be returnable in not less than five nor more than fifteen days; on the return of such process, or at any time to which the trial shall have been adjourned, the said court, justice of the peace, police justice or recorder shall proceed to hear the testimony of witnesses and the proofs in the case, and to determine and give judgment in the matter without the filing of any pleadings, and, if judgment shall be given in favor of the plaintiff, execution shall forthwith issue against the goods and chattels of the defendant for the amount of the penalty, with costs; and all judgments so rendered shall have the same force and effect as other judgments in civil actions before civil courts and officers, and may be docketed in like manner in the office of the clerk of the court of common pleas; the officers to serve and execute any process or execution issued as aforesaid shall be the constables of the counties, which service and execution, in the case of any execution issued out of the district court, shall be made in the same manner and under the same liabilities as other executions issued out of said court are served and executed; the officers to serve and execute any process or execution issued by a justice of the peace, police justice or recorder shall be the constables of the county, which service and execution shall be made in the same manner and under the same liabilities as prescribed in cases of the service and execution of processes and executions by the act entitled "An act constituting courts for the trial of small causes," and the supplements thereto; all moneys recovered in any such proceeding shall be paid to the plaintiff therein and applied by such plaintiff to any purpose for which it may be legally authorized to expend money.

3. The state board of health shall have the general supervision, with reference to their purity, of all rivers, brooks, streams, lakes, ponds, wells, springs or other reservoirs in this state, the waters of which are, or may be used as, the source or sources of public water supplies for domestic use, together with the waters feeding the same, and shall have the authority, from time to time, as they deem necessary or proper, to examine the same and to inquire what, if any, pollutions exist, and their causes; and the said state board of health, in carrying out the provisions of this section, may, from time to time, as they deem it necessary or proper, address inquiries in printed or written form to any local board of health, municipal or township authority, corporation, or person or persons, which inquiries it shall be the duty of the persons or parties addressed to answer within such time as the said state board of health may in such inquiries prescribe.

4. If any person or persons, corporation or corporations, city, town, borough, township or other municipality of this state, or any municipal or township authority, shall violate any of the provisions of the first section of this act, it shall be lawful for the said state board of health, instead of proceeding in a summary way to recover the penalty prescribed in said section, to file a bill in the court of chancery, in the name of the state, on the relation of such board, for an injunction to prohibit the further violation of the said section, and every such action shall proceed in the court of chancery according to the rules and practice of bills filed in the name of the attorney-general on the relation of individuals, and cases of emergency shall have precedence over other litigation pending at the time in the court of chancery, and may be heard on final hearing within such time and on such notice as the chancellor shall direct.

5. All acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

6. This act shall take effect immediately.

Approved March 17, 1899.

ORDINANCES.

From time to time suggestions have been made in circulars, now out of print, and in the annual reports of this board, indicating some of the approved forms of ordinances for the use of township boards of health which are authorized by the laws. These suggestions have sometimes appeared under the title, "Model Ordinances." Following is a revised copy of ordinances recently adopted by two township boards:

The Local Board of Health of the township of ———, in the county of ———, by virtue of the provisions of the act of the Legislature of New Jersey, entitled "An act to establish in this State Boards of Health and a Bureau of Vital Statistics, and to define their respective powers and duties," approved March 31, 1887, and of other acts, ordains:

Section 1. That whatever is dangerous to human health, or whatever renders the ground, the water, the air or food a hazard or an injury to human health is hereby declared to be a nuisance, and any person or persons creating or maintaining, or aiding in the creation or maintenance, of any such nuisance, shall be liable to a penalty of twenty-five dollars.

Section 2. That any decaying animal or vegetable substance or substances, or other offensive matter in the form of rubbish, garbage or offal, in or upon any lot, street or highway, or in or upon any public or private place, is hereby declared to be a nuisance, and any person or persons who shall cause any such nuisance, or who shall aid therein, shall be liable to a penalty of twenty-five dollars.

Section 3. That the pollution of any stream, well, spring or reservoir of water used for drinking purposes is hereby prohibited, and any person or persons who shall cause such pollution, or who shall aid therein, shall be liable to a penalty of one hundred dollars.

Section 4. That the placing of fouled liquids on the surface of the ground in such a manner as to become the source from which offensive odors shall emanate, or in such manner as to pollute the ground, air or water, to the risk or detriment of the health or persons living or passing in the vicinity thereof, or in such manner as to endanger the purity of the water of any well, stream, pond or lake, is hereby declared to be a nuisance, and any person or persons who shall cause or maintain, or who shall aid in causing or maintaining, any such nuisance, shall be liable to a penalty of twenty-five dollars.

Section 5. That the storage of animal refuse or decayable or putrescible matter in liquid or solid form in any vault, cesspool or other receptacle in such manner that the same shall, by reason of offensive odors emanating therefrom, become a source of discomfort to persons living or passing in the vicinity thereof, is hereby declared to be a nuisance, and any person or persons causing or maintaining any such nuisance, or aiding therein, shall be liable to a penalty of twenty-five dollars.

Section 6. That the discharge of any foul or offensive liquids or gases into or upon any low-lying lands, or the keeping or forming of such sunken places or excavations upon any lot or land and the accumulation thereon of foul water or offensive animal or vegetable matter, is hereby declared to be a nuisance; and any person or persons who shall cause or maintain any such nuisance, or who shall aid in causing or maintaining the same, shall be liable to a penalty of twenty-five dollars.

Section 7. That the keeping of any tenement house, or other house or building, or any part thereof, in a state of uncleanness, or the crowding of persons in any tenement or other house or building in such manner as to endanger the health of the persons dwelling therein, is hereby declared to be a nuisance; and any person or persons through whose act or neglect such state of uncleanness shall be caused, and any person or persons by whom such crowding shall be caused, shall be liable to a penalty of twenty-five dollars.

Section 8. That the keeping of any jail, prison, almshouse or other public building, or any part thereof, in a state of uncleanness, or the crowding of prisoners or inmates therein in such manner as to endanger the health of such prisoners or inmates, is hereby declared to be a public nuisance; and any person or persons, officer or officers, through whose act or neglect such state of uncleanness shall be caused, and any person or persons, officer or officers, by whom such crowding shall be caused, shall be liable to a penalty of twenty-five dollars, *provided, however*, that this section shall not apply to any person or officer having the care of prisoners or inmates in any jail, prison, almshouse or other public building, where such building is of insufficient dimensions for the proper care of such prisoners or inmates, and such person or officer has no authority or power under the law to limit the number of prisoners or inmates that shall be committed to such building or to enlarge such building.

Section 9. That the keeping of any dwelling-house or building in which there is or has been any dangerous or communicable disease without cleansing and disinfection, is hereby prohibited. Every such dwelling or building shall be cleansed and disinfected by or at the expense of the owner, tenant or other person responsible for its condition, and said cleansing and disinfection shall be made and performed in such manner, and with such materials, and within such stated time, and under such supervision, as this board may direct. Any person or persons offending against this section shall be liable to a penalty of twenty-five dollars.

Section 10. That the keeping of any pen or enclosure for goats, swine or other animals, or of any slaughter-house, tannery or factory, in such manner that offensive odors shall emanate therefrom to the detriment or discomfort of persons living or passing in the vicinity thereof or to common discomfort, is hereby declared to be a nuisance; and any person or persons who shall keep any such pen, enclosure, slaughter-house, tannery or factory in such manner as aforesaid, shall be liable to a penalty of twenty-five dollars.

Section 11. That the sale of any meat or vegetable food or drink that is unwholesome or unfit for food is hereby prohibited; any person or persons making any such sale as aforesaid shall be liable to a penalty of one hundred dollars.

Section 12. That any physician, midwife, nurse, clergyman, magistrate or other person who shall officiate at any death, birth or marriage, and who shall neglect to make return thereof to the proper officer, according to law, shall for each and every failure to make such return or report be liable to a penalty of fifty dollars.

Section 13. That any owner or occupier of any premises within this township shall cleanse every cesspool or privy upon such premises and remove the contents therefrom upon notice in writing to that effect from this board, and every such occupier or owner who shall neglect or refuse to cleanse any such cesspool or privy for two days after such notice shall forfeit and pay a penalty for every such offense.

Section 14. Whenever this board shall have satisfactory evidence that any well, the water of which is used for domestic purposes, has become polluted and rendered unsafe for potable use, notice to discontinue the use of said polluted water shall be sent to the owner or party in charge of said well, and, at the discretion of this board, the owner or the party in charge of said well may

be ordered in writing, to close, fill up or withdraw from the ground the said well. If the said order is not complied with within the time therein specified, this section shall be deemed violated and this board may proceed to cause the said well to be closed, filled up or withdrawn from the ground. Every well which is used for domestic purposes shall be at least forty (40) feet distant from every privy vault, cesspool, manure vault and horse or cow stable.

Any person or persons offending against any of the provisions of this section shall forfeit and pay a penalty of fifty dollars.

Section 15. No person shall sell or deliver or have in possession for sale any milk which has been watered or adulterated, or which contains any unhealthful ingredient, constituent or substance, or which has been transported or stored in an unclean manner, or which is produced from cows which are kept or stabled under unhealthful conditions, or which are diseased.

Any person or persons or corporation who shall violate any of the provisions of this section shall forfeit and pay a penalty of fifty dollars.

Section 16. No principal, teacher, or superintendent of any school, and no parent or guardian of any child attending any school, shall permit any child sick with any disease mentioned in Section 9, or with any other communicable disease, or any child residing in any house in which such disease shall exist, to attend any school until this board shall have given its permit therefor.

Any person or persons offending against any of the provisions of this section shall forfeit and pay a fine of twenty dollars.

Section 17. Whenever it shall be deemed necessary by this board to establish the true character of any disease which they may believe to be communicable, a medical examination of the person or persons affected by such disease may be ordered, and such examination shall be permitted by all attendants and persons.

Any person or persons offending against any of the provisions of this section shall forfeit and pay a penalty of fifty dollars.

Section 18. In case of infectious or contagious or communicable disease in this — the persons affected thereby shall, at the discretion of this board, be isolated, or they may be removed to such locality as this board may order and direct; and all buildings, clothing, property and premises and vehicles which may become infected by the presence of persons affected by contagious, infectious or communicable disease, shall be disinfected at the expense of the tenant, occupant or owner thereof, and said disinfection or fumigation shall be made and performed in such manner and with such materials and within such stated time and under such supervision as this board may direct. And this board may establish such separation and isolation or quarantine of the sick from other persons not necessary as attendants, and also provide and effect such special care, disinfection and cleansing of property and premises as shall, in the judgment of the board, be needed in order to prevent the spreading of such diseases to other persons.

Any person or persons offending against any of the provisions of this section shall forfeit and pay a penalty of fifty dollars.

Section 19. Whenever quarantine or isolation and separation of persons or property is ordered by this board, notice of said order shall be given to the persons affected thereby. Said notice shall be in writing and it may be served personally, left with some person at the infected house, or it may be posted

upon the building or premises occupied by the infected persons or property. The requirements of said quarantine notices shall be obeyed by all persons, and no such notice or any other sign indicating the presence of communicable disease upon any premises shall be removed except by consent of this board.

Any person or persons offending against any of the provisions of this section shall forfeit and pay a penalty of one hundred dollars.

Section 20. No person or article liable to propagate a communicable disease shall be brought within or removed from the limits of the township without the written permit and under the direction of the board of health thereof; and whenever it shall come to the knowledge of any person that such person or article has been brought within such limits, he shall immediately give notice thereof to the said board. No person shall, within this township, without a permit from the board of health thereof, carry or remove from one building to any other, any person sick of any communicable disease, nor shall any person by any exposure of any individual sick of any communicable disease, or of the body of such person, or by any negligent act connected therewith, or in respect to the care or custody thereof, or by a needless exposure of himself, cause or contribute to or promote the spread of communicable disease. Any owner, lessee or any tenant of any dwelling in which there shall occur a case of communicable disease, shall immediately notify the board of health of the same, and until instructions are received from the said board, shall not permit any clothing or other property that may have been exposed to infection to be removed from the house. Nor shall any occupant of such a house change his residence elsewhere without the consent of the said board during the prevalence of any public danger from said disease.

Any person or persons offending against any of the provisions of this section shall forfeit and pay a penalty of fifty dollars.

The act approved March 31, 1887, provides:

16. That in the making of ordinances any local board of health may adopt and ordain the same in the form of a code, or each ordinance may be separate and apart in itself, and in all cases said board shall cause such code, ordinance or ordinances to be published for at least two weeks, once in each week, in one or more newspapers printed and circulating in the city, township, borough, town, or other local municipal government in which such code, ordinance or ordinances shall take effect; and in case no newspaper shall be printed in such township, or in such city, borough, town or other local municipal government, then the said code or ordinances shall be posted in five public places therein and published for the said period of time in some newspaper published in the county and circulating in such township, or in such city, borough, town or other local municipal government.

17. That such boards of health may amend or repeal any part or section of such code or ordinances as they may see fit, such amendments to be passed and amended as aforesaid, and every code, ordinance, amendment or repealer shall take effect in thirty days after the date of the first publication.

18. That any such board of health may prescribe a penalty for the violation of any of their ordinances or sections of any code they make and ordain as aforesaid, not to exceed one hundred dollars and not less than ten dollars; and every district court in any city, and every justice of the peace in any county,

and any police justice or recorder in any city, is hereby empowered, on oath or affirmation made according to the law that any person or persons has or may have violated any section of the code, or any of the ordinances of any such board as aforesaid, to issue process at the suit of any such board as aforesaid, either in the nature of a summons or warrant, against the person or persons so charged, which process shall, when in the nature of a warrant, be returnable forthwith, and when in the nature of a summons shall be returnable in not less than one nor more than ten entire days; such process shall state what section of the code or ordinance of any such board is alleged to have been violated by the defendant or defendants; and on the return of such process, or at any time to which the trial shall have been adjourned, the said court, justice of the peace, police justice or recorder shall proceed to hear the testimony and to determine and give judgment in the matter, without the filing of any pleadings, and a copy of the ordinance or section of the code alleged to have been violated, certified to under the hand of the clerk or president of the board, and under the seal of such board, if it have a seal, shall be taken as full and legal proof of the existence of such ordinance or code, and that all requirements of law in relation to the ordaining, publishing and making of the same, so as to make the same legal and binding, have been complied with, unless the contrary be shown; and the said court, justice of the peace, police justice or recorder shall, if judgment be rendered for the plaintiff, forthwith issue execution against the goods and chattels and persons of the defendant or defendants, and said court, justice of the peace, police justice or recorder is further empowered to cause such defendant who may refuse or neglect to pay the amount of the judgment rendered against him, and all costs and charges incident thereto, unless an appeal is granted, to be committed to the county jail for any period not exceeding ninety days; and said court, justice of the peace, police justice or recorder is further empowered in case any such defendant shall have been twice convicted, within the space of six months, of the violation of the same ordinance, and due proof of the same is made, in addition to the payment of the appropriate penalty, to cause said defendant to be imprisoned in the county jail or county workhouse, with or without hard labor, for any number of days not exceeding one for each dollar of the penalty.

The act approved February 22d, 1888, provides :

3. That the conviction in prosecutions by any local board of health to recover penalties for the violation of the ordinances of said board, shall be in the following or similar form :

STATE OF NEW JERSEY, } ss.
County of _____

Be it remembered, that on this _____ day of _____ A. D.
at _____ in said county, _____ defendant, was, by the second district court of the city of N. (or by E. F., a police justice, or as the case is), convicted of violating section _____ of the sanitary code of the board of health of the city of N. (or of an ordinance entitled "An ordinance," &c.), in a summary proceeding, at the suit of the said the board of health of the city of N., plaintiff, upon a complaint made by _____; and further, that the witnesses in said proceeding who testified for the plaintiff were (name them),

and the witnesses who testified for the defendant were (name them) ; wherefore the said court (or police justice, or as the case is) doth hereby give judgment that the plaintiff recover of the defendant dollars penalty and dollars and cents costs of this proceeding.

The said conviction shall be signed by the judge of the district court, police justice or other magistrate, before whom the conviction is had ; in case of the infliction of a penalty, the amount of which is increased by the fact that it is for a second or additional violation, the conviction shall state that it appeared that the defendant had been guilty of a previous violation of the same section of said code or ordinance ; the costs in prosecutions under the act to which this is a supplement, shall be the same as costs before justices of the peace, police justices or recorders, or in district courts in other civil actions.

Following is a suggestion for a form of ordinance in accordance with the provisions of the act approved May 12th, 1896 :

An Ordinance to compel connection of buildings with the public sewers, and to prevent pollution of the ground.

BE IT ORDAINED *by the Board of Health of the borough of* ——— :

1. Every sink, water-closet, bath-tub, wash-tub and every other drainage fixture in every dwelling-house and other building in the borough of ———, which said house or building is located near the line of any street, avenue or public place in which a public sewer is situated, shall discharge into said public sewer, and no house or kitchen slops, waste liquids or filthy fluids shall be deposited upon the ground or be allowed to flow thereon on any premises situated along the line of any public sewer anywhere in this borough.

2. Every dwelling-house and every other building situated along the line of a public sewer shall be connected therewith by and at the expense of the owner or owners of said house or building, or by the board of trustees or other board or corporate body having custody and control of such house or building, within thirty days after a written or printed notice requiring that such house or building shall be connected with said sewer shall have been served upon the owner, owners, or board or corporate body having custody or control of said house or building, and in case said owner, owners, board or corporate body shall reside out of the state or cannot be found, the posting of said written or printed notice upon said house or building shall be considered sufficient service.

3. The connection of any house or building with a public sewer shall be performed in accordance with a plan or drawing and written description thereof signed by the owner of the said house or building, or by some authorized representative of the board or corporate body having control of said house or building, and said plan or drawing shall also be signed by the plumber or other person who may conduct or perform the work, and the said sewer connection shall be made with pipe of such material, quality and size as may be approved by the board of health of the borough of ———, and said connection shall be water-tight, and shall be constructed subject to the approval of the board of health of the said borough of ———.

4. Any person or persons who shall violate any of the provisions of this ordinance, or who shall fail to comply with the requirement of any notice pro-

vided for in section 2 of this ordinance, shall be punished by a fine of \$25, and by an additional fine of \$10 for each and every day which shall elapse after the said thirty days, and during which said notice shall not be complied with.

The following circulars are now in print and ready for distribution :

- No. 7.—Protection to Bathers.
- " 42.—Kerosene Oil.
- " 59.—Adulteration of Foods and Drugs.
- " 60.—Laws relating to Public Health, 1893.
- " 66.—Marriage, Birth and Death Returns.
- " 72.—Vital Statistics.
- " 79.—Laws Concerning Marriage.
- " 83.—Tuberculosis.
- " 86.—Bacteriological Diagnosis No. 1.
- " 87.—Dangerous Communicable Diseases.
- " 89.—Bulletins Nos. 3 and 4.—(Reprint.)
- " 90.—Ice.
- " 91.—Maritime Quarantine.
- " 93.—Bacteriological Diagnosis No. 2.
- " 94.—Contagious Diseases of Animals.
- " 95.—Small-pox.
- " 96.—Public Health Laws, 1899.

Circular 94. June, 1899.

Communicable Diseases of Animals.

INTRODUCTION.

The act of the Legislature (1877) creating the Board of Health of the State of New Jersey, made it one of the duties of this board "to make inquiries and reports in reference to diseases affecting animals and the methods of prevention." At the first meeting (May, 1877), an inquiry was authorized concerning any epizootics which had occurred in the State during the preceding five years, as a preparation for further investigations (Annual Report, 1877, p. 17). In 1879, an act was passed by the Legislature giving authority to the Governor to call to his aid a special corps of assistants for the purpose of preventing the spread of contagious pleuro-pneumonia, but the law was found to be unsatisfactory in its operation, and it was repealed by the next Legislature, and a new act was passed placing the entire control of all contagious diseases of animals under the care of this board.

In 1886, the law was amended and re-enacted. The first report under this act is to be found in the report of the Board of Agriculture for 1879-80, and annual reports appear in each of the subsequent agricultural reports. This law is general in its application, and (section 12) special provision is made to meet emergencies caused by the unusual prevalence of any contagious disease of animals, the Governor, Secretary of State and Comptroller being authorized to increase the sum appropriated if necessary.

The first action taken by the State Board of Health under the act of 1880 related to contagious pleuro-pneumonia, and, availing itself of the information and experience gained by those who served under the act of 1879, it took charge of one hundred and ten herds then in quarantine, and was speedily able to release over one hundred of them.

In dealing with outbreaks of communicable diseases among animals it has been found desirable (1) to supply printed information which will enable owners to detect the first appearance of any contagious disease, and to show the advantage of separating the infected animals from the remainder of the herd; (2) to acquaint owners with methods of disinfection of buildings and premises; (3) to inform owners concerning the safe disposal of infected carcasses, and in regard to measures to be adopted to prevent the transmission of the disease by attendants; (4) to draw attention to the risk of irresponsible introduction of cattle from infected districts; (5) to point out the advantages of early slaughter of animals incurably affected by any communicable disease; (6) to guard against unsanitary conditions on premises where cattle are kept, and which render the animals less able to resist disease; (7) to show the utility of preventive inoculation in herds where certain communicable diseases have appeared.

For the information of farmers and others the board proceeded to issue a series of circulars, which, in addition to the reports published in the annual report of the Board of Agriculture, sought to present the best and most recent views in relation to the prevention and early diagnoses of the dangerous communicable diseases of animals, and by this means to place it within the power of every owner of an infected animal to promptly and safely dispose of the case without endangering other stock and without causing expense to the State.

The following circular has been prepared for the board of health of the State of New Jersey by Leonard Pearson, M.D., B. S. V., for the purpose of presenting the most recent views in regard to the cause and prevention of the communicable diseases of domestic animals, and it is designed to replace Circular 50, which was published in 1892.

CONTENTS.

No. 1. Anthrax.	No. 13. Dysentery of Sucklings.
No. 2. Glanders.	No. 14. Contagious Pleuro-pneumonia.
No. 3. Rabies.	No. 15. Sheep Scab.
No. 4. Tuberculosis.	No. 16. Texas Fever.
No. 5. Actinomycosis.	No. 17. Infectious Abortion.
No. 6. Rinderpest.	No. 18. Contagious Pneumonia of Horses.
No. 7. Influenza.	No. 19. Cerebro-spinal Meningitis.
No. 8. Blackleg.	No. 20. Infectious Garget.
No. 9. Foot and Mouth Disease.	No. 21. Tapeworm Disease.
No. 10. Hog Cholera.	No. 22. Trichinosis.
No. 11. Swine Plague.	No. 23. Cornstalk Disease.
No. 12. Colt Distemper.	No. 24. Disinfection of Stables.
No. 25. Laws of New Jersey Relating to Diseases of Animals.	

ANTHRAX.

History.—Anthrax has, no doubt, existed for many centuries, although it is only about fifty years since its true character was discovered. Countless numbers of animals, chiefly cattle and sheep, in all parts of the world, have been victims of its ravages.

Distribution in the United States.—An outbreak may occur in any part of the United States.

Susceptibility of Species.—All the ordinary domestic animals, except fowls, may be subjects of natural infection, though it is most apt to occur in sheep and cattle. Man may take the disease by accidental infection from handling sick animals or their products, as hides, hair or flesh.

Cause —Anthrax is produced by the action within the body of the animal of a germ called the bacillus anthracis. This germ is one twenty-thousandth of an inch thick by one four-thousandth to one three-thousandth of an inch in length; its ends are sharply cut across or even slightly concave. Several bacilli may be arranged end to end so as to form a long chain. They stain well with any ordinary aniline dye and by Gram's method. The bacillus of anthrax grows luxuriantly on all the ordinary culture media, at a temperature of from 20° C. to 37° C., and at the latter temperature shows a profuse growth within twenty-four hours. The colonies can easily be recognized by their peculiar wreathed appearance when examined with the low-power objective. The germs are of rather low resisting power, being killed in a few days by drying and in a few minutes by ordinary disinfecting solutions or by boiling. They are killed by the gastric juice and by putrefaction. In the presence of oxygen the germ assumes the spore form. It is this that makes anthrax such a difficult disease to

eradicate, for the spores are the most resistant to destructive influences of all living organism. They will live in the soil and on objects where they have been deposited for several years; to kill them requires five minutes' boiling, the application of any heat at 140° C. for several hours, or several minutes' immersion in ordinary antiseptic solutions. The extreme cold of winter will kill the bacilli themselves, but the spores are not affected by it.

The germs may gain entrance to the body in three ways: by inhalation, by ingestion with food, by inoculation through the skin. In animals they usually enter through the alimentary tract with the vegetation from infected fields or water contaminated with the products of animals dead of anthrax. In man the infection occurs either by inhalation, when it is known as "woolsorters' disease," or by inoculation through the skin, when it is known as "malignant pustule."

Symptoms.—Those in cattle only will be described. It occurs in the peracute, the acute and the sub-acute form, producing death in from a few minutes to a week. The acute form, producing death in six to forty-eight hours, is the most common. A high fever, 105° to 107°, suddenly sets in; pulse, 80 to 120 per minute, small and weak; mucous membranes congested or cyanotic; feeding and rumination cease; depression and weakness; there may be mental excitement with violent movements; muscular tremors; weakness of hind quarters; bellowing; constipation; tympany; diarrhoea; sometimes bloody urine; frequently bloody discharge from the nostrils, mouth, anus and vagina; death frequently preceded by convulsions; swellings may appear on different parts of the body.

Diagnosis.—This is made from the symptoms, autopsy, or bacteriological examination. This disease can rarely be diagnosed with certainty except by microscopic examination of the blood, liver and spleen for the bacilli. This examination should be made soon after death, as the processes of putrefaction cause the death of the germs. Inoculation of guinea-pigs or rabbits must sometimes be resorted to.

Alterations.—The skin is sometimes necrotic in areas; subcutaneous tissue infiltrated with serous, gelatinous or bloody fluid; lymphatic glands enlarged and congested; serous membranes ecchymotic; spleen, two to five times normal size, pulp, soft and dark, red in color; liver congested and sometimes enlarged; intestines hyperæmic, contents often bloody and the mucous membrane thickened; lungs hyperæmic and infiltrated with gelatinous or sanguineous material; the blood is thin, almost black, and does not coagulate; blood flows from the natural openings. In peracute cases all the above lesions may be absent, but the germs are invariably present in the carcass.

Prognosis.—Very unfavorable; death occurs in 70 per cent. to 100 per cent. of cases. Spontaneous recovery occurs rarely.

Treatment.—It is not advisable to attempt curative treatment except in cases of carbuncles on the external surface of the body, which may be opened by deep incisions and treated with disinfectants or by cauterization. Preventive treatment is very efficacious. It consists in sanitation and in protective inoculation. The carcass should be burned. This may be accomplished quite readily with one-half cord of wood or from six to eight old railroad ties and some kerosene. The carcass may be drawn on top of the pile by means of a long rope (which should also be burned) and a skid. If burning is not practicable, deep burial may be resorted to. The grave should be at least six feet deep and of such length and breadth as to receive the body without difficulty. The grave should be distant from any water-course. Eight to ten inches of lime should be put into the grave, the cadaver then put in, eight or ten inches of lime put on top, and, lastly, the ground filled in. Precautions against disintherment by dogs should be observed. The blood that has escaped from the carcass should be scraped up and destroyed. The burning or burial should be done as near the place of death as practicable, as the germs may be scattered in transportation. No autopsies should be made except by State authorities or by a competent veterinarian, for the one who makes the post mortem examination is in danger of contracting the disease, and, since the blood contains the bacilli, every place where it drops is a source of infection. Stables and objects with which the animal or cadaver comes in contact should be disinfected. Draining infected ground and keeping animals off of suspected pastures should be regarded as necessary measures. Pastures once infected remain so for a number of years. This is because of the great vitality of the spore-form of the germ. A generous coat of lime may reduce the infectiousness of a field, but if losses occur on the same ground year after year it is best to plant it in forest trees and keep the animals away from it entirely. When an animal is found sick of anthrax on a pasture, the healthy ones should be removed and the sick one confined to a small improvised pen, so that it will not distribute the germs. If the first case develops in the stable, it should be removed to a place where its carcass can be destroyed in case it dies, and the place where it stood in the stable be disinfected. There is not much danger that anthrax will spread from one animal to another in a herd unless there be bloody discharges. Then the danger is very great. If several animals of a herd are afflicted it is more likely that the infection came from a common source than that

one animal contracted it from another. The faeces may contain the germs if they are blood-stained or if there is ulceration of the bowels, and in such case would be infective.

Protective Inoculation is the most effective preventive of anthrax. In 1882, Pasteur, as a result of his observation that one attack of the disease protected against a second, devised a method for putting animals through a mild non-fatal form of the disease and in this way immunizing them against the action of the virulent form of the disorder. Pasteur's immunizing fluid is prepared in two degrees of strength. The first, or weaker immunizing fluid, is produced by cultivating the bacillus at a temperature of 42° to 43° C. in oxygen for twenty-four days. The second or stronger immunizing fluid is prepared by growing the germs under the above conditions for twelve days. The weaker immunizing fluid is used for the first inoculation and is followed in ten to fourteen days by the stronger immunizing fluid. Chanveau has prepared another form of immunizing fluid, which immunizes by one injection. Experience shows that the immunity thus produced is only temporary, lasting on an average about one year. The immunizing fluid may produce enough disturbance in the animal to cause death, hence it is not advisable to inoculate unless the disease has already appeared in the herd or on a farm and the loss has amounted to two per cent.

Cattle are quite readily immunized, sheep less so, and horses with difficulty. Sometimes the mortality among sheep as a result of protective inoculation is considerable, but cattle rarely suffer death from it. Statistics collected in France covering the work during the years 1882-1893 show a reduction in mortality from natural infection in cattle of from 5 per cent. to 0.34 per cent.; in sheep, from 10 per cent. to 0.94 per cent. This reduced death rate is attributed to protective inoculation. Other statistics are less favorable, but as this covers a vast number of animals it may be taken as a safe guide.

Anthrax in Man is usually produced by accidental inoculation in the act of handling animals sick of this disease or their products, such as hides, wools, etc. Extreme caution should be exercised. No animal dying of a disease that might prove to be anthrax should be opened by the owner for removal of hide or for post-mortem examination. The carcass should be handled with gloved hands and the gloves afterwards burned. Anthrax is not so fatal in man as in animals and takes a different form, but it produces a long and painful, if not fatal, illness.

GLANDERS.

Other Name.—Farcy.

History.—Glanders has been recognized as a disease of horses since ancient times. It has long been regarded as a contagious disease, but the cause of its contagiousness was unknown until the bacillus of glanders was discovered by Löffler and Schutz in 1882. It may exist in any part of the United States, but by good sanitation the number of cases has been greatly reduced within recent years. It is, perhaps, most prevalent in New England.

Susceptibility of Species.—It is confined almost exclusively to horses, asses and mules. Dogs and cats are susceptible. Cattle are immune. Man contracts glanders quite readily when exposed to infection from an animal suffering from the disease.

Cause of Generation.—As proven by Löffler and Schutz in 1882, glanders is produced only by a germ known as the bacillus mallei. This germ is rod-shaped, straight or slightly curved, ends rounded, showing alternately stained and unstained portions. Although there is a dispute as to its ability to form spores it is more probable that it does not. The germs are present in the usual secretions and at the site of the lesions. They stain with the basic aniline dyes, but rather slowly, being more readily stained if a mordant such as carbolic acid is added. The bacillus mallei does not stain by Gram's method, being decolonized by the iodine solution. The germs may be found by staining some of the secretion from the nasal mucous membrane, or material cut or scraped from the ulcer or nodule.

The glanders germ grows well on nearly all the ordinary culture media, but its typical growth is seen on potato at a temperature of 35°–37° C. At the end of three days' incubation on potatoes it has the appearance of honey, being transparent and of a yellow tint; by the eighth day it has a brownish color and has become opaque. By its cultural peculiarities and morphology it can readily be differentiated from all other micro-organisms. The bacillus mallei has considerable powers of resistance to natural influences. It will live several weeks in material undergoing putrefaction, and will live in stables and about objects with which the diseased animal comes in contact for three or four months, and these places and objects must be considered dangerous for occupancy or contact by susceptible animals for this period of time after the glanderous animal has been removed, unless disinfection has been applied. These germs do not well withstand the action of disinfectants. A 5 per cent. solution of carbolic acid, or a 0.1 per cent. solution of corrosive sublimate is effective if well applied.

Glanders is a contagious disease. If one animal becomes infected it constitutes a source from which other susceptible animals may contract the disease. The nasal secretion and the exudates from the ulcers which occur on the body in the skin-form of the disease (farcy) contain the glanders bacillus. This material bearing the germ may be deposited upon the trough, manger, bridle, harness, buckets, watering-trough, feed, clothing of attendants, etc. Hence, the infective material may be conveyed from a sick to a healthy animal through direct contact or through the medium of any such object as those mentioned. The germs may enter the body by inhalation, by inoculation through a skin wound, or through the digestive tract. The former is the most common method. The germs having considerable vitality survive long enough to be dried and mixed with the dust and are carried with it into the respiratory tract. Being introduced in this way they lodge on the mucous membrane of the nose or are even carried into the lungs themselves, where, by their action, the alterations are produced. In order that infection through the skin may occur, it is necessary that there be an abrasion through which the germs may enter, as they cannot pass through the unbroken skin.

Symptoms.—The disease assumes two types, the chronic and the acute. The acute form is less common, occurring in only about ten per cent. of cases. Chronic glanders is an insidious disease, being very slow in its development and lasting sometimes for several years. The symptoms are: Nasal discharge of a dirty white color, chiefly from only one nostril, this latter becoming greenish-yellow in color and thin and sticky, adhering to the hair and skin; bleeding from the nose; formation of nodules or ulcers on the nasal mucous membrane, the ulcers being red and angry looking, having a ragged, raised edge, and often heal leaving a puckered scar; mucous membrane gray color; lymphatic glands under jaw knotty, hard and adherent to the skin; loss of flesh; easily fatigued; swelling of limbs. Glanders of the skin, commonly known as farcy, is characterized by small nodules and ulcers on the skin, usually about the limbs, breast and shoulders, though they may appear on any part of the body. The lymphatic vessels are swollen and hard. In the acute form there is a high fever, difficult breathing, swelling and suppuration of the lymphatic glands, loss of appetite, difficult swallowing, diarrhoea, rapid emaciation, and death in from three days to two weeks.

Diagnosis.—This is often difficult. It is made by observing the symptoms and by exclusion of other diseases which closely resemble it, but the means which is most reliable in obscure cases is the mallein test. Mallein is a product of the growth on artificial media of the

bacillus mallei, and is analogous to tuberculin. The dose is injected under the skin of the suspected animal, and, if the animal has glanders, a rise of temperature accompanied by a large, hot, painful swelling at the point of inoculation will be brought on. Mallein is of great value as a diagnostic means, but is not quite so free from erroneous results as is tuberculin. It should not be employed by any one but a competent veterinarian. Physical symptoms should always receive careful consideration. A bacteriological examination of the nasal discharge should be made when this is possible.

Prognosis.—Recovery rarely occurs. It appears that some cases recover at high altitudes among horses kept out doors, but this is not to be expected in the Eastern States.

Alterations.—Nodules appear on the mucous membrane of the nose, principally on the nasal septum and the turbinated bones. These nodules are in size from a pin-head to that of a pea. They are round or oval, gray or grayish-red and surrounded by a red zone. Later these nodules ulcerate, leaving a raw surface which has a raised, irregular, indurated edge. Several ulcers may run together and form a large one. This ulceration sometimes extends to the subjacent cartilage or bone, and even perforates it. They may heal, and then a rough, drawn scar will be presented. These nodules, ulcers and cicatrices may occur throughout the respiratory tract. Glanderos infiltration may occur in the lungs, resulting in the formation of tumors of quite large size. In farcy the nodules and ulcers will be seen on the skin. The spleen, liver, kidneys, brain, muscles and heart may contain the nodules. The bones also may be involved. In acute glanders the blood may contain glanders bacilli.

Treatment—Curative treatment is not to be recommended. Many drugs have been used, but without success. It is thought by some that mallein has curative powers. Prevention by enforcement of sanitary measures is the only way in which to deal with glanders. Animals suffering from the disease should be destroyed and carefully buried; the premises should be disinfected; suspicious cases should be isolated until a diagnosis can be made; horses, mules and asses should not be purchased without examination covering this disease. However, it is usually impossible to guard against cases which are so mild as not to arouse suspicion. These are the ones from which most is to be feared.

Glanders in Man—The human species is not very strongly predisposed to glanders, but it has occurred in a number of cases among those who handle horses. In man it is extremely fatal. When it is purely local it sometimes yields to surgical treatment. Infection

takes place through an abraded skin surface, by way of a hair follicle, or through the mucous membrane of the nose, mouth, or eye. In acute cases death occurs in two or three weeks, while in the chronic form it may be delayed several months. Extreme caution should be used in handling glandered animals.

RABIES.

Other Name—Hydrophobia.

History.—Rabies is a very old disease. It was described by Aristotle and other writers before the Christian era. It was thought, until recently, that it could be induced by mental and physical excitement of various kinds, but it is now well known that it is an infectious disease.

Distribution in the United States.—Rabies has at various times appeared in almost all parts of the United States. Numerous enzoötics as well as isolated cases of the disease have been reported throughout the Middle and Eastern States.

Species Susceptible.—Dogs, cats, horses, cattle, sheep, goats and pigs are the domestic animals chiefly affected. Man develops the disease quite readily when he has been exposed to infection, and a large number of cases among the human species have been observed. It appears, however, that man is not quite as susceptible as the lower animals. Certain wild animals, as wolves, foxes and deer, acquire the disease and are a source of great danger in countries where they exist. Of farm animals, dogs are by far the most often affected by rabies.

Cause and Generation.—Although the most exhaustive efforts have been made to learn the cause of rabies, yet it has never been determined. However, quite recently a European observer claims to have isolated a germ productive of rabies, but as such claims have been made before and disproven, this one must be amply confirmed before full credence will be given it. Nevertheless, it is well known that the saliva, the brain and the spinal cord and various other tissues of a rabid animal contain a virus which, if introduced into the tissues of a healthy animal, will produce the disease. Yet we do not know just what form this virus assumes. This virulent substance has a considerable degree of vitality. It is not destroyed by extreme cold, as was shown by Jobert, who kept a rabbit's spinal cord at 10° to 20° C. for a year without reducing its virulence; it retains its potency after a month's putrefaction of the tissues containing it; and yields its infectiousness only after a half to one hour exposure to most of the common disinfectants except creolin, a 1 per

cent. solution of which, it has been shown by the investigations of DeBlasi and Russo-Travoli, will destroy it in three minutes. Boiling or steaming renders it inert in thirty minutes. Slight acidulation with acetic acid, or alkalinization with soda is said to destroy it instantly.

Rabies is an infectious disease which may be quite readily transmitted from an animal suffering from it to another animal, or may be introduced through inoculation with any material containing the virus. The usual way in which the disease is acquired is from the bite of a rabid animal, generally a dog, and much less frequently a cat. Where wolves and foxes abound they are frequent offenders. It is essential to the generation of rabies that the virus should pass through the skin or mucous membrane. If a rabid dog bites another animal or a man, the infective material passes into the wound with the saliva and infection may occur, though it has been found that a considerable percentage of bites by rabid animals does not terminate in rabies. Also, if some of the saliva or tissue of a hydrophobic animal be brought into contact with an abraded skin or mucous surface there is danger that the disease may be engendered. Symptoms of rabies do not follow immediately upon the introduction of the contagium. Owing to the slow absorption of the virus a period of a few days to several months, with average of three to six weeks, elapses before the first manifestation of the disease. It is not thought that there is any danger from ingesting the milk or flesh of a rabid animal.

Symptoms.—Rabies takes two forms, the dumb and the furious. The clinical aspect differs according to type. It also differs in the various species, but the cardinal symptoms are quite similar, and the difference dependent upon species need not be detailed here. The symptoms as they appear in the dog follow: The furious form has three stages, viz., the melancholy, the maniacal, and the paralytic. The first stage lasts twelve to forty-eight hours, and is characterized by sullenness, irritability, nervousness, obstinacy, increased friendliness for his master, licking and gnawing, fickle appetite, swallowing of foreign bodies, slight difficulty in swallowing, difficult breathing, fever, constipation. The second stage lasts three or four days. The dogs become violent by turns, and, if not securely confined, will break out and run away from home. On these journeys dogs act strangely, aimlessly venturing into places where they would not ordinarily go. They often move very rapidly and return home in a sorry condition. They exhibit, during these excited periods, a tendency to bite lifeless objects, other animals, persons, or even them-

selves. By this indiscriminate biting their teeth are broken and the mouth lacerated and bleeding; the owner's commands are not obeyed; the animal is unable to bark normally, but gives vent to a peculiar, indescribable howl, which is almost sure to attract the attention even of one who has never before heard it. The appetite is lost and there is constipation. Emaciation is rapid.

In the third, or paralytic stage, the prominent features are the dropping of the lower jaw; lolling of tongue; tenacious saliva hanging from the mouth; inability to swallow; drooping of eyelids; collapsed and unkempt appearance. Death comes soon after the conversion into the paralytic stage.

Dumb rabies is distinguished from the furious form by the predominance of the paralytic stage owing to the brevity or complete absence of the first two stages. There is no essential difference, except in degree, between the two types, for the same kind of virus may produce now one and now the other form. Pasteur was of the opinion that the furious form occurred when the virus acted principally upon the brain, and the dumb form when it was concentrated in the spinal cord.

Diagnosis.—This is determined by the symptoms and by inoculation of rabbits under the dura mater with a portion of the medulla oblongata of the animal dead of the suspected disease. Diagnosis is often difficult, and other diseases may be mistaken for rabies and vice versa. In most cases it is best, if any serious matter is involved, to make diagnostic inoculations. In this case about three weeks is required to reach a diagnosis.

Prognosis.—In rabies recovery seldom occurs after symptoms are seen. It may be regarded as absolutely fatal after symptoms have appeared. During the incubative period it may be prevented.

Alterations.—There are only slight microscopic changes in the tissues of subjects dead of rabies. In many cases no lesion can be observed. In the rabid form the lacerations of the mouth due to biting are noticed. Foreign bodies, as sticks, stones, leather, hay, etc., are found in the stomach; there is inflammation of the throat, stomach and intestines; sometimes the brain and spinal cord are hyperæmic and cedematous.

Treatment.—Curative measures are useless, for the disease cannot be successfully combatted after the symptoms appear. Efforts at prevention are highly commendable and very efficacious. Animals should be closely confined as soon as suspicions of the existence of rabies in them is aroused. If several dogs become affected in a community, all dogs should be either tied or muzzled until the period of

incubation has passed. In this way the disease is given a chance to manifest itself in any dog that may have been bitten. This confinement of dogs should last ninety days. This will give ample time for development of the disease, and as a result of this precaution the animal affected will be unable to do harm. If all dogs be permitted to run at large they can do much injury before they are known to be ill. Cauterization of wounds may be practiced in animals, but they should also be kept confined, so that they can do no harm in case the disease develops. Protective inoculation is efficacious in animals, but it is seldom used on account of the trouble and expense involved. Also frequently the first intimation we have of the presence of the infection is due to the symptoms of the disease, and then it is too late.

Rabies in Man—Human beings are quite frequently bitten by rabid dogs or cats. Only 30 per cent. to 40 per cent. of these develop rabies, according to rather unreliable statistics gathered before protective inoculation came into use. The fact that not all bitten become infected is probably accounted for by the fact that the clothing prevents the entrance of the saliva and that the blood flowing from the wound washes out the saliva before infection occurs; also, many animals inflicting a bite thought to be rabid are really not so. If a person is bitten by a rabid animal or one suspected strongly by competent authorities of being rabid, he should very soon thereafter submit to protective inoculation. But as soon as the bite has been inflicted he should have the wound treated by a physician. The material used for this preventive purpose consists in rabic virus of different degrees of attenuation, made by drying spinal cords of rabbits dead of rabies for different lengths of time. Repeated injections of such cords rubbed up with buillon are made under the skin of the abdomen, beginning with the weakest and ending with the strongest which has been only slightly weakened. The treatment extends over a period of two weeks. This method of prevention is very successful. During the years 1886 to 1895, out of 17,337 cases treated the death-rate was only 0.48 per cent., while previous to that the fatalities were 16 per cent.

TUBERCULOSIS.

Other Names.—Consumption; Phthisis.

History.—Tuberculosis is one of the oldest diseases of domestic animals. It has long been recognized, and centuries ago legislation relating to it was enacted. In 1865 Villemin first showed, by inoculation experiments, that it is an infectious disease, and in 1882 Koch

discovered the infective agent, the tubercle bacillus. This disease probably affects more animals than any other.

Distribution in the United States.—Tuberculosis is known to exist in all parts of the United States, but it is much more prevalent in the States near the Atlantic seaboard, due chiefly to the fact that this is the oldest part of the country and the cattle are here more closely housed, thus predisposing to infection. In the Middle, Western, the Rocky Mountain, and the Pacific Coast States the disease is not so prevalent, owing to the outdoor life of the animals and the recent development of the territory, thus affording less opportunity for the establishment of the disease.

Susceptibility of Species.—All species of domesticated animals are susceptible to the disease. Cattle are by far the most often infected; pigs frequently suffer; horses, dogs, cats, sheep and fowls less often. Man is also much predisposed to the malady.

Cause and Generation.—The sole cause of tuberculosis is the tubercle bacillus discovered by Koch in 1882. This germ is a small, rod-shaped organism, which is slightly bent and shows irregular staining. It is said by Theobald Smith, who has made an extensive study of a large series of cultures, to vary much in shape and size, some being broader at one end than the other, some spindle-shaped, others so short as to resemble oval cocci. The tubercle bacillus is not generally thought to form spores. This organism stains with difficulty and requires a special process. It is necessary to use a mordant such as carbolic acid or aniline oil in combination with the stain, and to either heat the germ in the stain or allow it to be immersed in the staining solution for a day. When once stained they give up the stain with reluctance. This is a valuable property, for it permits the decolonization of all other material on the cover-glass, while the bacillus, being the only thing retaining the stain, stands out very clearly in the field. Thus the tubercle bacillus can be differentiated from all but three micro-organisms by its staining reaction alone. And as these three can in most cases be excluded, the bacillus tuberculosis becomes quite easy of recognition. It exists in sputum and in the tissues which are the seat of the lesions of the disease. By staining and observing under the microscope film preparations of these materials the presence or absence of the tubercle bacillus can be determined in a few moments.

The tubercle bacillus being an almost exclusively parasite organism it is rather difficult to grow it on artificial culture media. The medium commonly used is bouillon or agar containing glycerine, or blood serum. Sander has shown that it grows well on potato, and he

prefers potato to glycerine-agar for growing the bacillus in pure culture from tissues. It is necessary to keep it at an incubator temperature of about 37.5°C . It ceases to grow at above 42°C . or below 28°C . When once a pure culture is obtained from tissues containing the germ, and it has become accustomed to a saprophytic existence, it grows luxuriantly on such media as glycerine-bouillon and glycerine-agar.

The germs of tuberculosis have great vitality. They live in stables and other places where tuberculous material has been deposited for several months; they resist putrefaction from three to four weeks. The gastric juice requires six hours to kill them. • The extremes of weather temperature will not kill them except when subjected to repeated freezing and thawing. They withstand a dry heat of 100°C . for an hour, but boiling kills them at once. They are readily destroyed by a 1-1000 solution of corrosive sublimate, or a 5 per cent. solution of carbolic acid. It is also important to observe that direct sunlight will devitalize the germ in a few hours.

The entrance of the tubercle bacillus into the body is gained in five ways—by inhalation, by ingestion with food, by inoculation through a wound, by infection through the genital passages, and by infection of the fœtus in utero. The last three modes are rare; the first two, very frequent. The precise manner in which the natural transmission of tuberculosis from one animal to another is accomplished is not definitely known, and is being made the subject of extensive experimentation. However, there are several possible ways that may be sufficient to explain infection. A cow suffering from tuberculosis of the lungs, in many cases coughs up sputum which contains tubercle bacilli. This sputum falls upon the floor, trough, water, food, etc. It may then be accidentally ingested by a healthy animal and cause a primary tuberculosis of the digestive organs. It may become dry, be disseminated in the dust, and inhaled by a healthy animal, thus producing tubercular lesions in the respiratory tract. Calves sucking cows whose milk contains the germs, may in this way acquire the disease. Pigs, horses and other animals, fed on the milk of tuberculous cattle, become tuberculous. Other secretions, as the fæces and urine, may contain the bacilli and on this account be media by which contagion is spread. When a primary lesion is once established within the body the disease is very likely to spread to other parts of the body, so that finally generalized tuberculosis may be set up.

Symptoms.—Tuberculosis often runs a very chronic course, lasting for years and being almost or quite without physical symptoms. At other times it is rather rapid, becoming generalized and producing

death in a few months or weeks. Its usual course is from one to several years' duration. The symptoms vary much with the seat of the disease and the species, also with the care and feeding. The general symptoms of bovine tuberculosis will be described. In advanced pulmonary tuberculosis there is a short, dry cough excited by walking or drinking; respiration accelerated and difficult; appetite decreased; emaciation; lessened flow of milk; may be tympanites, roughness of coat, sunken eyes, weakness, cachexia. On auscultation the râles may be sibilant, or moist if there is bronchial secretion, or there may be bronchial respiration due to cavity formation or distention of the bronchi; on percussion if large masses of lung tissue are involved, dull sounds are produced; fever occurs at intervals. The disease is manifested in much the same manner when it affects the digestive tract, except that there may be attacks of colic and alternating periods of diarrhœa and constipation; the appetite is also more irregular. If there is tuberculosis of the genital organs of the cow she will come in heat more frequently, will not conceive so readily or in some instances will become sterile. It is very apt to produce abortion. When the brain is tuberculous the animal shows mental excitement, convulsions, unconsciousness and paralysis. If the superficial lymphatic glands become tuberculous they can be felt under the skin as large, knotty, indurated masses. Tuberculosis of the udder occurs in about 3 per cent. of cases. The lymphatic glands of the udder may then be found enlarged and indurated, the quarter or quarters of the udder affected are regularly enlarged and firmer than normal in consistency, the milk becomes watery and flaky, and is then very likely to contain tubercle bacilli. In generalized tuberculosis, *i. e.*, when the disease involves many organs and tissues in different parts of the body, the symptoms manifested are numerous and very complicated.

Diagnosis.—The symptoms always play an important part in diagnosis, but since the advent of tuberculin they are of much less importance than formerly. Many cases of tuberculosis, where the disease is localized, do not present any physical signs, and tuberculin is the sole means for ante mortem diagnosis. Diagnosis may sometimes be accomplished by finding the bacilli on staining some of the material coughed up and examining it with the microscope, or by treating the milk in the same manner, though neither of these methods is much practiced in cattle and other animals, on account of the cost and difficulty. In man, microscopic examination of the sputum is the most common mode of diagnosing pulmonary tuberculosis. The inoculation of guinea-pigs with milk or sputum is also a means of diagnosis, but is seldom used for that purpose.

Post-mortem diagnosis may be quite easily made by microscopic examination of invaded tissues or by their inoculation into guinea-pigs. The most certain and only practical method of diagnosis ante mortem is by the application of the tuberculin test. Tuberculin is a product of the growth of the tubercle bacillus and was first prepared by Koch, the discoverer of the tubercle bacillus. It is prepared by growing the germs on glycerine-bouillon for a couple of months, then sterilizing them by heat, filtering and evaporating on a water-bath to one-tenth volume. This product is crude tuberculin. For use a dose of about 0.25 C. C. is taken and prepared for injection by dilution with 1 per cent. solution carbolic acid to the volume of one drachm. This material is absolutely germ-free, hence, cannot produce tuberculosis, as some unacquainted with it suppose. To apply the tuberculin test, several temperature observations are made on the cattle during the day at intervals of three hours. At 9 P. M., the dose of one drachm of tuberculin solution is injected with a sterile syringe through a disinfected spot on the skin into the subcutis. The most convenient place has been found to be just behind the upper part of the shoulder blade on the left side. Beginning nine hours after injection, the temperature is observed every two or three hours until eighteen hours after the injection. If any animal shows a rise of temperature of 2° or more above the highest temperature preceding the injection, but which cannot be accounted for in any other way, she is to be considered tuberculous. This increase in temperature should be uniform in its rise and in its subsidence, thus producing a somewhat uniform temperature curve. There are many minor modifying circumstances which cannot be entered into here, but as this is intended only to give a general idea of the procedure, and not to teach how it is to be done, they will not be taken up. The performance of the test must be entrusted only to the competent veterinarian. The tuberculin test is so efficient that it cannot be too highly commended. It is an invaluable and essential factor in the suppression of tuberculosis and ought to be more widely and more methodically used.

Prognosis.—The prognosis is always unfavorable. A few cases, when localized, are cured spontaneously under favorable conditions of life, as has been determined by finding calcified and encapsulated lesions at autopsy.

Alterations.—These vary greatly with the organs affected and the species. The characteristic is the tubercle, or nodule. This may be so small as to be seen only with difficulty, or it may be as large as a pea, a condition known as miliary tuberculosis; or the nodules may

reach the size of a man's fist or larger, a condition called tubercular infiltration. These nodules are seen on the surface of the serous membranes and scattered throughout the different organs. They are usually found in different stages of caseous necrosis, sometimes being a mass of soft, yellow, cheesy matter. A large portion of the lung may be broken down into a caseous detritus, thus forming large cavities. In some cases calcareous infiltration occurs with the production of hard, gritty bodies. The lymphatic glands, especially of the pharynx, bronchi, mediastinum and mesentery are enlarged, hard and caseous, or may be filled with soft pus-like material. These glands may show nodules which stand out above the surface and give it a roughened aspect. The lymphatic glands are often enormously increased in volume. Tubercles in size from that of a millet-seed to an egg may be found on the meninges of the brain and spinal cord and in their substance. In short, no tissue of the body is exempt from invasion by the tubercle bacillus. It is useless with present knowledge to waste time in remedial treatment in animals.

Preventive Measures are the only ones to be recommended. Sick animals should be isolated or slaughtered at once; stable disinfected; milk of suspicious or diseased animals boiled, or heated to 185° F. for five minutes before it is used for feeding; good sanitary stables should be provided, and as much open-air exercise as possible; good feeding; avoidance of exposure to inclement weather; admission to the farm and to the State of only such cattle as have been proven by the tuberculin test free from tuberculosis.

Tuberculosis in Man.—This is by far the most destructive to human life of all diseases. The mass of evidence shows that tuberculosis may be transmitted from animals to man, especially by using milk and meat of tuberculous cattle. Hence, the most thorough system of milk and meat inspection should be demanded by the people, in order that they may be safeguarded against infection from these sources.

ACTINOMYCOSIS.

Other Name.—Lumpy jaw.

Distribution in the United States.—Actinomycosis has been reported from all parts of the United States. Cases of it can be found at all times in the Middle States.

Susceptibility of Species.—It affects oxen, horses and swine among the domestic animals; man is also subject to it.

Cause and Generation.—Actinomycosis is produced by a vegetable organism of a somewhat higher order of life than the bacteria, and

known as the *actinomyces bovis* or ray-fungus. The colonies, as they grow in the tissues, can be seen with the naked eye. These bodies are white, yellow, greenish, or almost black. The fungus can be seen by squeezing these little bodies between two glass slides, and viewing them with the low power of a microscope. By this means they are seen to be of a radiate structure, with spores or cocci in the center and filaments branching out like spokes of a wheel. The *actinomyces* can be cultivated artificially on various media at room or incubator temperature. On agar the growth has a dirty, transparent look, and is very tough, it being difficult to remove with the needle enough to make a film preparation. On staining such a growth it is seen to arrange itself in the form of long filament which are branched. It stains with any aniline dye.

It is thought that infection of the animal usually occurs through an abrasion of the mucous membrane of the mouth or other part of the digestive tract. It may also occur through the skin or by means of the inhaled air. The fungus occurs in nature principally upon the awns of barley. These awns may penetrate between the teeth and the germs and in this way introduce the fungus into the tissues of the animal. The disease is not contagious. Several animals in each of a number of herds may be infected in the same way from the same source, thus producing the disease in an *enzootic* form, though it is usually sporadic. The disease may spread from the seat of the primary lesion to other parts of the body and become general.

Symptoms.—In actinomycosis of the jaw-bones the tumor produced is very evident; this tumor in later stages is honey-combed and discharges pus; when the tongue is involved it is stiff and moved with difficulty, and prehension of food is interfered with. When the larynx and pharynx are the seat of the disease, breathing and swallowing are difficult and painful. In actinomycosis of the lungs respiratory symptoms assert themselves; the lymphatic glands about the head and neck may be enlarged, rough in contour, and indurated. These are the common symptoms, but nearly all the organs and tissues are subject to the disease, each giving rise to peculiar symptoms.

Diagnosis.—Diagnosis is made from the location of the lesion and from the symptoms and by microscopic examination of the pus which is discharged from the tumors, or of a portion of the tumor cut out with the knife.

Prognosis.—The disease always runs a chronic course. Spontaneous recovery may very rarely occur. The prognosis is rather favorable if the disease is not too far advanced.

Alterations.—In the jaw-bones we find tumors which may reach a very large size. These tumors extend into the bone, are tunneled in various directions, and discharge pus. The tongue is enlarged and hard and contains numerous small, hard nodules, which are cheesy or dry and gritty. The larynx and pharynx may show a similar condition and the lymphatic glands about the head and neck are found to be nodular, and indurated nodules are also found in the lungs and by a process of extension may pass through the pleura, ribs and muscle and appear on the outside of the body. The brain, spleen, liver, muscles, serous membranes, and organs of generation may present the lesions, but such instances are very rare.

Treatment.—The external manifestations of the disease are treated surgically by incisions, so as to lay open the tumor, and by the injection of tincture of iodine or Lugol's solution, and the administration of potassium iodide internally for two weeks in doses of about two drachms daily, dissolved in a half-pint of pure water. In case the lesions cannot be reached for surgical treatment the internal remedy alone must be relied upon. This treatment is specific and will result in a cure unless the disease is widespread and the animal is in a cachectic state. Even then, if the animal is a valuable one, careful treatment is advisable, as it may result successfully.

Actinomycosis in Man.—Human beings contract the disease in the same way that do animals. The lesions are chiefly in the tongue and jaw-bones. Other organs may be invaded by the disease.

The flesh of an animal with local actinomycosis may be used as food, provided the diseased portion is removed. In case of general actinomycosis the carcass should be condemned.

RINDERPEST.

Other Name.—Cattle Plague.

History.—Rinderpest had its origin in ancient times. It has existed and still exists in many parts of the Old World, but has never appeared anywhere in America or Australia. Extensive epizootics of rinderpest have occurred in various countries, and millions of cattle have been destroyed by it. The most recent outbreak has been reported from South Africa during the last two years.

Species Susceptible.—It occurs only in ruminants, which comprise only cattle, sheep and goats among our domestic animals. Penning and Plünig aver that it also occurs in swine.

Cause and Generation.—Strenuous efforts have been made by most competent bacteriologists and pathologists to discover the

specific cause of rinderpest, but without success, so the exact cause of the disease is not known. Various observers have laid claim to the discovery of a bacterial agency, but their claims have not met with general acceptance. It is well known, however, that all the secretions and excretions of the body contain the infective virus, and that the disease is through these media spread to other animals. These infectious materials remain virulent for four or five months under natural conditions, and are not affected by changes of weather within reasonable limits. Drying, momentary boiling, extreme cold weather and disinfectants destroy it easily. This virus may be carried in the air for short distances, also by any article upon which it may lodge.

It is generally thought that natural infection takes place through the respiratory tract by the animal's breathing in the virus with the inspired air. Rinderpest is a highly contagious disease. Sick animals are constantly discharging the virus from their bodies, and the animals coming in contact with them are almost certain to become infected from these discharges. If an animal recovers, it has immunity against a second attack.

Symptoms.—The incubation period is about one week, with two to nine days as the minimum and maximum limits. The course of the disease in fatal cases is four to seven days. As the disease affects principally the alimentary tract, the symptoms of digestive disorder are most prominent. There is high fever, rapid, weak pulse, total loss of appetite, cessation of rumination, thirst, at first constipation, with mucous-covered feces, later diarrhoea, with thin, bloody, foul-smelling stools, accompanied by prolapse of the rectum, sero-mucous discharges from the eyes, nose, mouth and vagina, muscular tremors, mucous membranes bright red, later ulcerated, emaciation, sometimes dyspnoea, mental excitement in some cases, occasionally red spots and postules on the soft skin. In the last stages of fatal cases the animal is very weak, lies down, shivers, has purulent or bloody discharges from the natural openings, temperature falls, and the animal dies either quietly or in convulsions.

Alterations.—At autopsy the red spots and ulcers on the skin and mucous membranes are seen. Mucous membranes of stomach and intestines are highly inflamed and of variegated color, and at some places may have small brownish flaky deposits, which, when removed, show areas of erosion. The intestinal lymphatic glands are enlarged, liver light-colored and soft, gall bladder filled with thin bile, kidneys soft and light-colored, heart shows hemorrhagic spots, lungs hyperæmic, blood dark in color and does not clot readily.

Diagnosis.—Diagnosis is often difficult, and would be especially so in this country, since it has never appeared here. The symptoms and autopsy must be carefully considered and other diseases excluded with great discretion. Rinderpest is an extremely fatal disease. Fatalities are from 50 to 95 per cent. in cattle, less in sheep. The disease is always more virulent at the beginning of an outbreak.

Treatment.—Curative treatment should not be attempted. For preventive purposes sick animals should be at once destroyed and the carcass safely disposed of and disinfection accomplished. For more than a century a form of protective inoculation has been practiced by injecting into healthy animals some nasal secretion from a sick one, but it is to be discouraged.

During the year 1897, Koch and Edington, operating in South Africa, practiced preventive inoculation by injecting bile of an animal dead of rinderpest. Danysz, Bordet, and Theiler used, with better results, defibrinated blood of cattle recovered from the disease to produce a temporary immunity, during which they inoculated them with virulent material, and in this way produced a mild form of the disease which itself conferred immunity for a longer period.

INFLUENZA OF HORSES.

Other Name.—Pink eye.

History.—This disease has been known since the fourth century of the Christian era. It has been known under a variety of names and has been regarded as several distinct diseases, but recent investigations have shown that these various manifestations are really one and the same disease. Its ravages in Europe and the United States have been very great.

Species Susceptible.—Horses, mules and asses.

Distribution in the United States.—It was known to exist in this country as early as 1766. However, the first severe outbreak was in 1870 to 1871, when it spread over the entire northern half of the United States from the Atlantic to the Pacific ocean, causing immense financial loss and great inconvenience. It now exists as a sporadic disease in all the large cities and at times assumes an enzootic form.

Cause and Generation.—The specific cause of influenza of horses has not been discovered. It is well known to be very contagious. The infectious principle is contained in the secretions and excretions and in the expired air. It may be carried considerable distances, even from farm to farm, in the air. The virus lives but a short time outside of the body, but an animal may be a source of infection long

after it has recovered from the disease. One attack confers subsequent immunity. Influenza may afflict horses of any age, but is found mostly in those three to five years old. The contagium may be transmitted by direct contact through the medium of objects which have been exposed to a sick animal, or through the air. An epizootic last only one or two years, after which it continues only in isolated cases.

Symptoms.—The period of incubation is from a few days to a week, and the disease lasts from one to two weeks after symptoms appear. Partial or complete loss of appetite; weakness and disinclination to move; sudden, very high temperature, 106° to 108° ; pulse, 40 to 50; eyelids swollen, painful and hot; eyes sensitive to light and discharging; the mucous membrane of a brownish-red color and sometimes everted; the conjunctiva, cornea and iris violently inflamed; extravasation of blood into the anterior chamber of the eye. These lesions in the eye may lead to blindness. The mucous membrane of the nose and mouth is of a chocolate color, and there is a purulent discharge from the nose; there is abdominal pain; constipation, with mucous-covered feces at the beginning, changing later to diarrhoea; respiration accelerated; considerable cough. Later the beast's action is more rapid and weak, there is much stupor, staggering gait, muscular tremors, emaciation, swellings appear on the lower part of the limbs and about chest, belly and sheath. The swellings are soft, doughy and painful, being due to passive oedema. Within a few days the temperature suddenly falls to the normal, the appetite improves, swellings disappear, the animal becomes more lively and recovery occurs. In a few cases serious complications such as pneumonia, heart failure, gastro-enteritis, purpura hemorrhagica or founder occur, leading to death or a prolonged severe illness.

Alterations.—The alimentary tract shows the chief lesions in the form of swelling of the mucous coat, congestion and punctuated hemorrhages. There is an inflamed condition of the eyes, nasal mucous membrane and throat; the liver, spleen, kidneys, muscles and heart exhibit cloudy swelling; the serous cavities contain a yellow serous exudate; the blood is dark and not perfectly clotted.

Diagnosis.—Made chiefly by the high temperature, swelling of lower part of hind legs, inflammatory condition of the eye, and the saffron or chocolate color of the mucous membranes.

Prognosis.—Prognosis is very favorable. The fatalities vary from 0.5 to 10 per cent. More cases die at the beginning of an outbreak than later on. In 1872, out of 30,000 horses afflicted in Philadelphia, about 7 per cent. succumbed to the disease.

Treatment.—As in strangles, medical treatment may usually be dispensed with when the case is mild. Healthy animals should be separated from the sick and stables disinfected. The same care should be exercised with regard to carrying contagion as in case of other infectious diseases.

Relation to Man.—There is a contagious disease of human beings known as influenza or la grippe, which clinically is very much like influenza of horses, but there is no evidence to show that they are produced by the same cause or that man can be infected from animals or vice versa. The bacillus of human influenza was discovered by Canon, Pfeiffer and Kitasato, in 1892, while the specific cause of equine influenza has not been found.

BLACKLEG.

Other Names.—Symptomatic anthrax, black quarter, quarter-ill, rauschbrand.

History.—This is an old disease. It occurs in all parts of the world and has occasioned much loss. It may occur anywhere in the United States, but has caused greatest losses in the Middle and Western States. Cattle, goats and sheep may contract the disease. Other animals and man are fortunately not affected by it.

Cause and Generation.—Blackleg is caused by a germ which was first described in 1879, but was not isolated until some years later. This germ is rod-shaped, slender, and in the hanging-drop shows rapid movement. It will grow only in the absence of oxygen, and liquefies gelatine very rapidly. It forms spores at one end, thus giving the bacillus a club-shaped appearance when it is in the stage of spore formation. It stains readily with any aniline dye. It grows on various culture media at a temperature of 37.5°C., but only when oxygen is completely excluded. This makes it rather difficult of cultivation and requires special apparatus. In its growth it forms gas abundantly and gives off a rancid odor, which two features assist in distinguishing it. Cultures on gelatine are characteristic, showing a dendritic arrangement. Cultures may be obtained from a bit of the flesh taken from the local swelling produced by the disease. Spores form in the body of a dead animal in one or two days after death; also in old cultures of the bacillus.

The germs are very resistant to natural influences on account of the great vitality of the spores. In this respect it resembles anthrax. They reside in the soil and on plants, as grass, growing in fields. When in the dry stable they live for several years. They are not

destroyed by putrefaction, and will live for six months in the putrefying remains of a dead animal. Two minutes' boiling will kill the germs themselves, but dry spores require much longer boiling to kill them. The strongest disinfectants must be used and be thoroughly applied to be of any use.

Blackleg is not a contagious disease, but a number of animals may be infected by exposure to the same source of infection. Blackleg occurs chiefly on low and swampy ground or in infected stables, where the germs survive for several years. It occurs chiefly during the warm season. It affects chiefly cattle between the ages of three months and four years. It rarely attacks those younger or older than these ages. One attack fortunately protects an animal against a second attack. Infection takes place by the germ, which is lodged on the grass, or in the ground, entering through a wound into the skin, or mucous membrane of the mouth, while the animal is grazing.

Symptoms.—The period of incubation is from one to five days. When symptoms once appear, the course of the disease is very rapid, producing death in one to three days in nearly all cases. Sudden high fever sets in, breathing is difficult, stiffness and lameness affect one or more limbs, depression occurs, there is loss of appetite, cessation of rumination, groaning, colic, swelling on the upper part of the thighs, back, breast, shoulders, sides of neck. These swellings crackle where they are pressed upon and give a tympanitic sound when percussed, as they contain gas. This symptom is the one most characteristic of blackleg. No wound may be discoverable, as the germs may enter through a very small opening.

Alterations.—The feature most noticeable on the exterior is the swelling. If one of these swellings is cut into with a knife the interior will be seen to be very dark colored, filled with thin blood and gas bubbles. The tissues are easily cut and give forth a foul odor. Various viscera are inflamed. It is worthy of especial remark that in blackleg the spleen is normal, as is also the blood, except that after the animal has been dead for several hours it contains bacilli. The muscles at the tumor site also contain the germs.

Diagnosis.—Diagnosis is made by observation of the symptoms, especially the emphysematous swellings on the external body surface. The post-mortem diagnosis is made by examination of the tissues and blood for the germs. Also, the normal condition of the blood and spleen are valuable guides to differential diagnosis.

Treatment.—Only a few cases recover, and it is inadvisable to attempt curative treatment. Cattle and other susceptible animals should be kept away from pastures and sheds known to be infected

by the germs of blackleg. Dead animals should not be skinned and should be burned, or at least buried in a very deep grave and well enveloped in lime before the dirt is filled in. Disinfection should be practiced, but is difficult on account of the great vitality of the spores. As in anthrax, the best preventive is protective inoculation. This is very successful. It reduces the mortality very greatly.

The immunizing fluid is prepared by heating portions of the muscle containing the germs to a high temperature for a considerable time, so as to attenuate their strength. This immunizing fluid is then mixed with sterile water and injected under the skin of the healthy animal. This confers immunity, making it safe to permit the animal to graze on an infected pasture.

FOOT AND MOUTH DISEASE.

Other Name.—Aphthæ epizooticæ.

History.—Foot and mouth disease has been well known for more than a century. It has been reported from all European countries, but has never appeared in America. Millions of animals have suffered from it. Cattle, sheep, pigs and goats are the principal sufferers, but dogs, cats, horses and birds may be attacked. Human beings may also become infected.

Cause and Generation.—The infectious agent has never been isolated. It is known, however, that it is contained in the natural secretions and excretions and in the discharges from the vesicles and ulcers of the disease. It is also found in the expired air and may be carried in the atmosphere from place to place. The virus is quickly destroyed by drying, boiling and by disinfectants, but will live for several weeks in manure and in damp places. It can be carried from one animal to another in an indefinite number of ways. It is transmitted to man by handling diseased animals. Young animals may contract it by drinking the milk which contains the infective matter. It is readily transmissible from one species to another. It is extremely contagious and spreads with amazing rapidity, causing enormous financial losses.

Symptoms.—The symptoms being in a general way the same in all animals, those in cattle will be described. It runs its course in a herd in about four to eight weeks. There are, as the name indicates, two chief seats of the disease, viz., the mouth and the feet. The period of incubation is from one to five days. The lesions first appear about the mouth. There is first a moderate fever which subsides when the eruption appears. Rumination ceases, appetite is impaired, mouth

is kept closed. In two or three days yellowish-white vesicles appear on the mucous membrane of the lips, cheeks, tongue and gums. These are at first quite small, but increase in size and become confluent and very prominent. They contain a thin, yellowish, cloudy fluid. These vesicles soon burst and leave ulcerated spots which finally heal. The animal is unable to eat, saliva in great quantities runs from the mouth, and there is considerable loss of weight and decrease in milk secretion. The vesicles appear about the pastern and the hoofs, usually after they have appeared about the mouth, but sometimes before. They are very much the same character. One or all of the feet may be involved, and the animal is lame and sore and lies down a great deal. These mild forms of the disease pass off in one or two weeks, but sometimes the disease takes a malignant form. Either in the early stages of the attack or after the ulcers have healed the animal may suddenly die of paralysis, supposed to be due to toxins generated by the infectious principle. The vesicles and erosions may extend to the various internal organs and to the skin on all parts of the body and give rise to grave manifestations. Abortion often occurs. Sometimes the horns and hoofs are lost by a process of supuration. Death may result from pyemia.

The heart, lungs, stomach and intestines frequently show marked inflammatory changes in the form of congestion, hemorrhagic spots and œdema.

It is diagnosed principally by its symptoms and history, but there are other diseases, as aphthons, stomatitis and ptialism, which may be mistaken for it.

The fatalities are usually 1 per cent. to 3 per cent. In young animals they may be as high as 50 per cent. to 80 per cent. In malignant outbreaks it may reach 50 per cent. in adult animals. In horses, cats, dogs and swine it occurs much less frequently and is not so fatal. The same animal may suffer from repeated attacks.

Treatment.—Curative efforts should be directed toward providing good food, disinfection, cleanliness and local treatment with antiseptics. As a means of prevention afflicted animals should be isolated, stables disinfected and milk boiled before being used as food.

Foot and Mouth Disease in Man.—Foot and mouth disease is transmitted from animals to man by contact and by using milk or milk products of diseased animals. Numerous cases are reported and fatal results sometimes ensue. It can be avoided by boiling the milk before using and by refraining from contact with diseased animals or objects which are infected.

HOG CHOLERA.

History.—Hog cholera has existed in Great Britain and Continental Europe for a long time. It did not exist in America prior to 1833, when it was probably introduced by an importation of foreign hogs. Hog cholera has been reported from every part of the United States. No part of the country and no breed of swine is exempt from it. The losses are greatest in the States of the Mississippi Valley. Hogs are the only domestic animals that suffer from this disease. Man is not susceptible to it.

Cause and Generation.—Hog cholera is now well known to have for its cause a germ called the bacillus of hog cholera. This bacillus appears in the form of ovals or short rods with rounded ends. They often occur in pairs and are actively motile. They stain easily with watery solutions of the ordinary aniline dyes, but are decolorized by Gram's method. With short immersion in the stain the central portion remains unstained, suggesting spore formation, but after a half-hour's staining the entire bacillus is uniformly stained.

It grows well on ordinary culture media at incubator temperature. If a portion of the spleen of an animal dead of the disease be rubbed on the surface of an agar slant, and the tube kept at a temperature of 37° to 38° C. for twenty-four hours, circular, grayish-white, convex colonies are developed. They grow best in oxygen, but will develop in its absence. The hog cholera bacillus will live outside of the animal body, in pens, on the ground and in ponds where it has been deposited, for as much as six months. It is not killed by exposure to the ordinary changes of weather. Momentary boiling or immersion in the ordinary disinfectant solutions will kill it. Air-slaked lime is a good practical germicide for this germ. It is not capable of spore formation.

Infection usually takes place by way of the digestive tract. It is thought that it may take place through the respiratory tract, but it is probable that this seldom occurs. The disease is extremely contagious. An animal suffering from it is very apt to infect other hogs associating with it. The germs escape from the sick hog principally with the feces, which contain them in great numbers. In this way the buildings, fields, railroad cars, etc., with which the diseased hog comes in contact, become lodging-places for the germs. Thus ample opportunity is afforded for their ingestion by healthy hogs and the consequent infection of these animals.

Symptoms.—This disease is usually rather acute, lasting from a day or two to several weeks. There is depression, weakness, staggering

gait, lameness of hind quarters, impaired appetite, emaciation, disposition to lie down, constipation, followed by diarrhœa, swelling of ears and eyelids, discharge of mucous or muco-purulent material from eyes and nose, purple spots on skin of ears, eyelids, inside of legs, breast, belly, and sides; temperature normal or as high as 105° to 106°. Convulsions may occur.

Alterations.—In acute cases the most marked or, indeed, the only changes, are violent congestions and punctate hemorrhages of the various organs and beneath the serous membranes. In the chronic type the viscera are found in a state of hyperæmia, with spots of hemorrhage under the serous membranes; the submucosa of the stomach and intestines has areas of violent congestion, covered by a sort of diphtheritic membrane; the liver is enlarged and soft; the spleen may be increased in size, dark-colored and easily torn; frequently it is little, if any, affected. The most characteristic lesion is found in the intestinal tract in the form of ulcers involving the mucous and the submucous coat, and in some instances even to the muscular coat, rendering it soft and easily torn. These ulcers are found principally in the lower end of the ileum, about the ileo-cæcal valve, and in the large intestine. These ulcers are elevated, project into the lumen of the intestine, are hard, and are yellow in the center with a dark border, or the yellow and dark portions are in the form of concentric rings. The ulcers are from one-sixteenth inch to one inch in diameter. They may heal and leave a scar. The lymphatic glands are congested, often very violently, rendering this a prominent feature. Hemorrhagic spots may be found on the meninges.

Diagnosis.—This can easily be made from the history of the outbreak and from the symptoms. If the disease is seen to be a contagious one, the only affection with which it might be likely to be confounded in the United States is swine plague, but as this disease shows evidence of respiratory, rather than of digestive disturbance, it may be excluded except where the two diseases occur at the same time, as is frequently the case. Autopsy and bacteriological examination of the tissues for the bacillus, which is widely distributed throughout the body, will clear up the diagnosis.

Prevention.—Every effort at prevention will be amply rewarded if these efforts are so combined as to be methodical and comprehensive. If not, they are not successful. Healthy hogs should be separated from sick ones; disinfection should be employed; animals dying should be removed to a safe place away from a water-course by means of a sled, after first wrapping them in a cloth wrung out of an antiseptic solution, and be well buried; the sick and the healthy

animals should be attended by separate persons. No person or animal should needlessly approach near to the sick hogs for fear of carrying the contagion. The man who attends sick hogs should wear rubber boots while doing so, and he should wash his boots and his hands in a disinfecting solution before going away from where the sick hogs are. If the disease does not exist on a farm, every effort should be directed toward preventing its introduction by any medium through which the contagium might be carried. The germs may be conveyed from an infected to a non-infected farm on a person's shoes or clothing, on horses' or dogs' feet, on wheels of vehicles, &c. It is essential that communication with a portion of a farm where the disease exists should be avoided.

Relation to Public Health.—Although cholera of swine does not occur in man, subjects of the disease should be condemned by meat inspectors.

SWINE PLAGUE.

This is a disease of swine which has existed for a number of years in Europe and the United States. Until within the last ten years there has been much confusion as to the names and characters attributed to it. The United States Bureau of Animal Industry recognizes a classification of certain well-defined manifestations under the name of Swine Plague which renders the study of the subject much simpler. Swine are the only domestic animals susceptible, and man is not subject to the disease.

Cause and Generation.—The cause of swine plague has been determined by Theobald Smith to be a short, thick bacillus which grows on certain media in presence of oxygen at incubator temperature, and is non-motile. These germs stain with aniline dyes, but not uniformly, there being in the middle of the germ a bi-concave unstained portion, giving the germ the appearance of cocci in pairs. They are found in various internal organs of swine-plague cases. They do not form spores. Swine-plague bacteria have but slight vitality, in this important respect differing from hog-cholera germs. They die after being deposited in the soil in one or two weeks. Pens do not retain the infection for more than one month at most. Boiling and disinfectants kill the germs instantly.

Natural infection oftenest occurs through the lungs, less frequently by way of the alimentary tract. Swine plague is a very contagious disease, but as the germs which produce it are so short-lived, it is not nearly so dangerous as hog cholera. Exposure of healthy swine to

sick ones, or to places or objects where sick hogs have been, is very apt to result in infection.

Symptoms.—The symptoms of swine plague are about the same as those given for hog cholera, but with the exceptions that the intestinal disorder is less marked and the cough is frequent and painful, and respiration is rapid and difficult owing to the violent disturbance in the lungs.

Alterations.—Lungs violently inflamed, in some portions hepatized and of a deep red color. In other portions of the lungs the congestion is less marked. Throughout the lungs masses of necrotic tissue up to two inches in diameter are found. These necrotic foci are recognized by grayish color and cheesy consistency. The pleura and peritoneum are inflamed and have a filmious exudate upon their surface; spleen enlarged, soft and dark-colored; intestines inflamed.

Diagnosis.—This must usually be made by bacteriological examination. However, a contagious disease among swine in the United States is almost always either hog cholera or swine plague, and the symptoms and autopsy may enable a differentiation between the two diseases to be made. It must be borne in mind that hog cholera and swine plague may exist in the same herd and even in the same animal simultaneously.

Treatment.—No medical treatment can be recommended. In this disease and in hog cholera the wisest plan, in most instances, would be to kill the hogs as soon as they become sick and properly dispose of their bodies. Separation, disinfection, non-communication and careful disposal of dead animals should be made use of here as in hog cholera. See the directions for preventing hog cholera.

COLT DISTEMPER.

Other Names.—Strangles; febra pyogenica.

History.—Strangles has been known as an infectious disease for more than a hundred years. It may occur anywhere in this country. At times severe epizootics appear in the Atlantic Coast and Mississippi Valley States. It affects only the equine race; *i. e.*, horses, asses and mules. Human beings are unaffected by it.

Cause and Generation.—Strangles is produced by a micrococcus which has been identified by several German bacteriologists within the last few years. These cocci may sometimes take the form of short, slender rods. They stain with the usual dyes and grow on bouillon or blood serum. It is claimed by Schütz that the germs of colt distemper form spores, and that they may multiply outside of

the animal body under favorable conditions. Strangles is a very contagious disease. It is transmitted, both by direct contact and through the air. It afflicts young horses, from two to five years old, chiefly, but may occur in very young foals, or in very old horses. One attack confers immunity in most cases, which lasts several years, and often throughout life. The fact that old horses suffer is probably due principally to their having escaped infection in early life. Bad stable sanitation and exposure are predisposing causes. The chief portal of entrance for the germ into the body is through the respiratory mucous membrane. It is possible for infection to take place through the intestinal tract, but this probably rarely occurs. A horse suffering from strangles discharges the germs with the nasal secretion. They in this way lodge at various places, and are taken up by healthy animals. Thus, if the disease once starts in a stable, it will run through it, affecting all the horses except those rendered immune by a previous attack.

The period elapsing between the infection and appearance of the first symptoms is four to seven days. The course of the disease is rapid, being, in most cases, ten days to two weeks. Weakness and depression are accompanied by temperature of 103° to 106° , pulse is increased to 50 or 60 per minute, nasal mucus membrane is reddened, thin, serous discharges from nose occur, and in a few days they become thick and purulent, with a grayish or greenish-yellow color and very abundant; swelling of the submaxillary lymph glands occurs and they become large, hot, painful and finally suppurate and break open, discharging thick, creamy pus. The horse loses appetite, is disinclined to move, coat becomes rough, there is emaciation and swelling of limbs. Sometimes there are eruptions and pustules upon the skin about the neck, shoulders and breast. In severe cases complications may arise and the disease assume a very grave form. The inflammatory process may extend to various tissues of the body. A severe laryngitis and pharyngitis, accompanied by a severe cough, abscess formation in the superficial lymphatic glands causing them to break and discharge through the skin, pneumonia, abscess in the various internal organs leading to pyæmia or septicæmia are the usual complications.

Prognosis.—This is favorable. It varies with the age and condition of the horse. Typical cases always recover. The mortality averages about 3 per cent. However, severe financial loss is incurred in an epizootic of the disease on account of the inability of the animal to work for a period of several weeks, loss of condition, cost of medical attendance, &c.

Prophylaxis.—As a preventive, healthy animals should be isolated and all communication cut off between them and the diseased ones.

DYSENTERY OF SUCKLINGS.

This is an infectious disease of quite young domestic animals that produces a mortality of from 50 to 95 per cent. of those affected. It is said by Jensen to be due to a virulent type of the common colon bacillus. It seems to be capable of transmission from one animal to another. The germs are found in the feces of animals that have the disease, and they are carried to the healthy ones by the stable attendants or from the dung-stained udder and teats of the mother.

Symptoms.—It occurs within one, two or three days after birth. The young animal refuses to suck, is restless, has diarrhœa, with thin stools and griping pains; the feces afterward become white and mucilaginous, smell bad, and are frequently mixed with blood. Finally the animal is not able to rise, saliva runs from the mouth, bowels move frequently and involuntarily, there are convulsions, and death in a day or two. If any survive they recover normal condition very slowly. If a diarrhœa proves fatal in one to three days, occurs during the first days of life, and spreads among several animals, it is probably this form of dysentery.

Prophylaxis is most effective. Remove the sick animals, disinfect, wash the udder of cows before they suckle their young, observe strict cleanliness. Pregnant animals should be removed from infected stables to a clean shed at least six weeks before parturition in order that the calf may be from the beginning at a place free from infectious matter.

CONTAGIOUS PLEURO-PNEUMONIA.

This disease first appeared in 1693. It was first seen in the United States in 1842, and after causing much loss, it was finally subjugated by rigid police measures. The last case found in the United States was in 1892. However, it may be re-imported at any time, so a constant vigil must be kept. In point of destructiveness it stands next in order to rinderpest. It is known to be highly contagious. The specific contagium has been isolated by Nocaïd. It is a very minute germ. The infective substance is capable of living in stables for as long as a year. One attack protects against another for several years, or throughout life. The disease is confined exclusively to bovines. Contagious pleuro-pneumonia is conveyed through the air, in the

feed, by attendants and dogs, as well as by the cattle themselves. Infected cattle may transmit the disease before symptoms appear, *i. e.*, during the incubative period, also for two or three months or more after apparent recovery. This makes it an especially dangerous and insidious malady.

Symptoms.—The period of incubation is four to six weeks on an average, but it may be four months or only a few days. The course of the disease is acute, lasting one to four weeks, or chronic, having several months' duration. In the chronic form the development is slow. There is cough, which is short, dry and painful, and, later, frequent and very annoying; appetite and rumination impaired; tenderness to pressure over intercostal spaces; mild fever. This stage is followed by one of high fever, pleurisy and pneumonia of a violent type. The animal has great difficulty in breathing; it stands with the forelegs spread apart; cough dull and very painful; chest sensitive to pressure; purulent discharge from nostrils, which has a fetid odor and may be mixed with blood; great emaciation; constipation or diarrhœa; swelling of dependent parts of body; final inability to stand, intense dyspnœa and death by suffocation.

The outlook for recovery is very unfavorable. Of all animals affected, 50 per cent. to 70 per cent. die. Relapses often occur after recovery has apparently been accomplished.

Medicinal treatment is of no use, and is not permitted by our police regulations on account of the extreme danger of the disease. The disease was eradicated from the United States only after the most rigid measures were enforced. Infected districts were quarantined, and all infected animals, together with all healthy animals that were exposed to infection, were slaughtered. This is an heroic procedure, but is the only efficient one. Every place occupied by diseased animals should be thoroughly disinfected in the most effectual manner, and should be left unoccupied by other cattle for a few weeks. The United States quarantine regulations require ninety days' detention at the port of entry of all cattle imported from Europe on account of this disease. We are thus pretty well safeguarded against its reintroduction.

SHEEP SCAB.

Other Names.—Mange; Itch.

This is one of the oldest and most prevalent diseases of sheep. It occurs in all parts of the United States and has caused immense losses in wool, flesh and lives, and has interfered with the export trade.

Scab is a highly contagious disease, caused by a species of mite. This parasite is visible to the naked eye and varies, according to sex, from one eightieth to one-sixtieth of an inch wide, and from a fortieth to a fiftieth of an inch long. If crusts are removed from the sheep, and put upon a black surface in the sunlight, the mites may be seen crawling about. The disease is transmitted by direct contact or through the medium of objects and persons. It is carried a great distance by shipment of diseased sheep. All the large stock-yards are infected, and unless all sheep leaving them are effectually dipped these yards become centers for the distribution of the disease.

The bites of the mites produce itching, followed by vesicles which are rubbed open and discharge serum, and scabs are formed. These areas increase in size by confluence and by movements of the mites until finally large areas are involved. The wool is loosened at its roots and by constant rubbing, scratching and biting is pulled out, giving the animal a rough appearance, and large areas may be rendered bare by this process. This continues until weakness, loss of appetite, anemia, emaciation and death ensue in 10 per cent. to 80 per cent. of cases.

Treatment.—The only means of curing to be recommended is dipping. The various dips sold on the market, the formulæ for which are not given, should be avoided. There are many good scab dips, but as each one has special features to recommend it, and, as a great many conditions must be taken into account in the selection and application of the dip which cannot be considered in a practical way in the limits prescribed for this circular, the reader is referred to Bulletin No. 21, of the Bureau of Animal Industry, U. S. Department of Agriculture, which contains an exhaustive treatise on the subject.

All places occupied by the sheep and the fences and posts with which they came into contact should be disinfected and whitewashed with lime. No sheep should be introduced into a herd until they are known to be free from scab.

If a scab from a sheep suffering from the disease is bound upon the human skin a local redness and itching is produced, but there is no more manifestation of the disease. It is of course well known that a related itch-mite produces scabies or itch in man.

SOUTHERN CATTLE FEVER.

Other Names.—Texas fever, tick fever.

History.—Southern cattle fever is peculiar to North America. Diseases resembling it are known in Africa and Australia, but the identity of these has not been proven. It is stationary in the southern

part of the United States, but may be conveyed to northern cattle by cattle brought from southern cattle fever territory during certain seasons. Cattle are the only susceptible animals. The carrier of the disease germ is a cattle tick known as the *boophilus bovis*. These ticks fasten themselves upon the soft parts of the skin of cattle and burrow their heads into it. In some way they introduce into the animal's blood a micro-organism known as the *pyrosoma bigeminum*. This parasite lodges in the red blood corpuscles and causes their disintegration. These facts were discovered by Dr. Theobald Smith in 1889. The ticks lay eggs which hatch under ordinary warm weather conditions in about two or three weeks. These young ticks, being located upon the grass in the fields, are taken up by the cattle in grazing and crawl up the limbs until they reach the soft skin inside the thighs, on the belly, breast, axillæ, etc. Here they burrow their heads into the skin and grow rapidly. In about two weeks or more the animal first begins to be sick. After the ticks reach full size and are ready to lay eggs they loosen their hold and fall to the ground. They then lay eggs and the same cycle is repeated. On account of the slight resistance which the ticks have to cold weather the disease will develop in northern cattle only during the warm season. Also, on account of this, tick-bearing cattle cannot infect others late in the fall or in winter.

Symptoms.—High fever; separation from herd; back arched; gait unsteady; may be great excitement and wild movements; constipation; bloody urine; loss of appetite; ticks on body; anemia and yellow color of mucous membranes; feces bile-stained; weakness and recumbent position in latter part of disease.

The spleen is enlarged, soft and easily torn; liver yellow from bile; thin and watery blood; peritoneum and serous coat of intestines may be hemorrhagic in spots; bladder contains bloody urine; the tissues of the body are usually stained yellow with bile pigments.

The discovery of ticks, the symptoms, and the post-mortem appearances usually make diagnosis easy.

Recovery seldom occurs in northern cattle. Young cattle in the south frequently get well. The disease runs a fatal course in from three to four days to two weeks. If recovery takes place it is slow, as the disease is essentially a profound anemia, and the normal condition of the blood is but slowly restored. Relapses may occur.

Preventive treatment is the only kind of any value. The U. S. Quarantine Regulations are an effectual barrier against the invasion of the North if enforced. They fix the northern border of the territory in which the disease is stationary as the quarantine line and forbid that

any cattle shall be brought north of this line between January 1st and November 15th of each year, except for slaughter, and then under restrictions. This is a very crooked line, in the neighborhood of 37° north latitude, and is defined yearly by the Secretary of Agriculture. Northern cattle taken south of this line are apt to contract the disease because the pastures are permanently infested with ticks. Recent experiments tend to show that dipping cattle in mixtures containing mineral oil and sulphur to remove the ticks if carefully done will make their shipment north at any season comparatively safe. Experimentation within the past two years has shown considerable success in protective inoculation with serum from cattle that have recovered from the disease, and it has also been shown that cattle may be put through a mild course of the disease by natural infection with a few of the ticks, and that in this way they may be protected against more severe attacks of the disease.

INFECTIOUS ABORTION.

History.—This is a very old disease and prevails wherever domestic animals are kept. It is especially prevalent in the old dairy districts in the eastern part of the United States. All domestic animals suffer from it. Bang and Stribolt, of Denmark, in 1897 succeeded in proving the cause of infectious or contagious abortion to be a germ which they then first cultivated. It is a small, non-motile bacillus which stains easily. It grows on a special medium prepared by Stribolt, and has a peculiar reaction in its growth toward oxygen, growing best either when the atmosphere contains a little less than the normal amount of oxygen or when it is almost pure oxygen. It is found in the flaky exudate between the foetal membranes and the mucous lining of the uterus. It will live within the uterus for a long time. The abortion bacillus is killed by careful disinfection. A long time may intervene between the infection and the consequent abortion. The secretions from the uterus of a cow that has aborted are infectious, and the bacilli may enter from these sources into the genital organs of pregnant animals. A male indiscriminately serving females whose organs of generation contain the germs of abortion, as well as those not so infected, may carry the contagium from infected to non-infected females, as has been observed in a number of instances.

The abortion may occur at almost any period of pregnancy, but usually about the 5th or 7th month. The symptoms may be those which precede ordinary normal parturition, or none may be apparent. Usually no inconvenience is occasioned to the aborting animal.

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She may abort in the field, the foetus remain undiscovered, and the owner be ignorant of the fact that an abortion has occurred, or even that the animal was pregnant. When it appears in a stable it generally effects a large percentage of the females and remains for several years. A female usually does not abort more than three or four times, after that being sterile or apparently immune to the action of the germ.

Prevention.—Pregnant females should be removed to clean quarters and be attended by one who does not visit the infected stable. Careful disinfection should be employed, plenty of lime and whitewash being used. If abortion occurs the foetus and afterbirth should be burned, and the genital organs of the female disinfected by repeated injections of mild antiseptics. The male used for the healthy females should be one that has not served a female that is the subject of the infection, or if used on an aborting herd the sheath and penis should be disinfected before and after each service. There is much resemblance between this disease and contagious venereal diseases.

An antiseptic for use on cows and bulls that has given much satisfaction is a warm solution of creolin of the strength of two per cent.

CONTAGIOUS PNEUMONIA OF HORSES.

Other Names.—Contagious pleuro-pneumonia ; œdematous pneumonia.

This is an extremely contagious disease of horses, and is caused by a small round micro-organism, a micro coccus. The contagium can be transmitted by direct contact through various objects, or through the air. One attack confers immunity to a second for several years or for life. A horse put into a stall where a horse with this disease has been is likely to take it, unless he has already become immune. Young horses are predisposed. It is more prevalent in winter than in summer. Horses shipped from the Western States are frequent sufferers.

Symptoms.—The disease shows itself in from two days to a week after infection occurs. It lasts from one week to several weeks. It may appear suddenly or gradually. Sudden high temperature; pulse 60 to 90 per minute; respiration rapid; depression; muscular weakness; mucous membranes congested and yellowish; appetite lost; cough; rusty yellow discharge from the nose; great difficulty in breathing, with nostrils dilated; animal stands with forelegs spread

apart. The violent symptoms last only a week or ten days. Grave complications may arise.

With good care and treatment the prognosis is favorable. Deaths average from about 4 per cent. to 15 per cent. It incapacitates the horse for work at least a month, often more, and often leaves behind a chronic unsoundness in the form of "broken-wind," roaring, tendonitis, etc.

Preventive Treatment is extremely important and should be carried out as advised for other contagious diseases. As in contagious pleuro-pneumonia of cattle the convalescents should be looked after, as a horse which has seemingly recovered may spread the infection for a long time. On account of the long period of incubation new western horses may, with advantage, be quarantined six weeks.

CEREBRO-SPINAL MENINGITIS.

Other Names.—Choking distemper; putrid sore throat.

This disease has not been shown to be infectious or contagious, but it occurs in isolated cases or enzoötically in cities and towns or along streams or mountain ridges. It has been attributed to certain poisons in the atmosphere, or to the ingestion of mouldy food, or food in which some peculiar fermentation has taken place. It affects only the equine species, and all ages and both sexes are subject to it. It causes weakness; uncertain gait; partial or total inability to swallow; twitching of muscles; impaired sight; finally paralysis; inability to stand; delirium, which may be shown by violent struggling; unconsciousness and death within a few hours or in the course of several days. In milder cases there is weakness, difficulty in chewing and swallowing; pulse slower; temperature normal; gait staggering. Later these symptoms are more marked; the breathing may become difficult; mental excitement appears; rigidity of muscles, coma, and death in six to ten days. There is generally found at autopsy, congestion (usually slight) of the brain and cord, with serous infiltration of the meninges.

Prognosis.—This disease is usually fatal. One attack instead of producing immunity rather predisposes to a second attack.

INFECTIOUS GARGET.

Other Names.—Infectious mastitis, inflammation of the udder.

This disease is produced by a micrococcus discovered by Kitt, a German veterinarian. It spreads from one cow to another chiefly by

the milker's hands, also by contact of the udder with infected manure or other objects. It is readily spread through a herd and results in much trouble and financial loss. If it does not result fatally, it impairs the functions of the mammary glands so as to lessen the value of the cow. It prevails in the eastern part of the United States among the dairy cattle, and causes swelling, redness, pain and heat in the udder, swelling at first soft but later firm, milk secretion diminished, animal shows uneasiness, lymphatic glands of udder swell and are painful to pressure, bodily temperature becomes elevated, one quarter only may be invaded, diminished appetite, abscess formation may occur.

It may go on to pyæmia and death. In many cases the udder is so affected that it does not recover its former usefulness. One or more quarters may be destroyed. Prevent its spread by isolation and disinfection.

Diagnosis.—It is difficult to distinguish this affection from other forms of mastitis which are non-contagious. The spread from one animal to another will determine this point.

TAPEWORM DISEASE.

Tapeworms are of various kinds, and infest, in one form or another, cattle, sheep, hogs, dogs and man.

Tapeworms are found in cattle and sheep at all ages and at all seasons, but young animals suffer more than old ones. They most frequently occur in animals at pasture. Tapeworms may exist in animals with little or no bad results. On the other hand the animals may lose flesh, become weak and unsteady in gait, have increased thirst and appetite and nervous manifestations. The worms absorb nourishment from the alimentary tract of the host and, also, when in great numbers, cause stoppage of the bowels, irritation and accompanying symptoms.

Diagnosis.—This is made from the symptoms and by finding the segments of the worm or its eggs in the feces; also, post-mortem, by discovering the tapeworm in the intestinal tract.

Prevention.—Feed pure food and water; isolate infected animals; burn or treat with lime the feces and disinfect the stables or pens; do not allow the animals to graze where the grass is very short.

The various tapeworms in their larval stage are found imbedded in the muscles and other tissues of animals. It is the appearance of these larvæ that gives rise to the conditions known as measles of pork and measles of beef. The larva is here surrounded by a bladder-like

pouch or cyst, and this condition is known as the cysticercus or bladder-worm. This mass in time becomes infiltrated with lime salts, giving rise to small irregular white spots in the flesh. If the animal is killed before the calcification of the cysticerci, and its flesh is eaten uncooked or not sufficiently cooked to kill the embryo, it will develop in the intestinal tract of the person who eats it as an adult tapeworm. It is in this manner that human beings become infested with tapeworms.

The only way to guard against such infection, which is certainly very likely to occur, is to demand a careful official inspection of the flesh of animals slaughtered for food. Cooking sufficient to kill the larvæ which might be present should always be done, as in this way the meat may be rendered innocuous.

TRICHINOSIS.

This is a disease of swine and man, caused by a minute worm called the trichina spiralis. It occurs in hogs in some parts of the United States, but owing to the practice of thorough cooking of pork it is not so frequent in man here as in some European countries. The worm is so small as to require microscopic examination for its detection. It is said that 100,000 may be found in one cubic inch of flesh. The embryonal form of the worm migrates to the various muscles of the pig and there lies coiled up between the muscle fibres surrounded by a small sac. This in time becomes infiltrated with calcareous material. If a portion of this flesh in a raw state is ingested by man, the cyst wall is destroyed by the gastric juice, the parasite then reaches maturity rapidly, lays eggs which hatch in a few days, and a new generation is produced. These young worms pass through the intestinal wall and lodge in the various muscles and tissues throughout the body, giving rise to a disease known as trichinosis. This disease is manifested by peculiar painful symptoms, is very grave and likely to prove fatal. If the patient can withstand the migration of the trichinæ, he may survive and recover. The preventive is, of course, careful inspection of all swine slaughtered, in order to preclude the possibility of trichinous pork being put upon the market. This inspection is already carried out on a large scale by the United States government, but it should be extended to all cities and towns. As a secondary precaution, no pork should be eaten unless it has been thoroughly cooked throughout, so as to kill any parasites which may exist in it.

CORNSTALK DISEASE.

It is known that under certain conditions of mouldiness and fermentation cornstalks become very poisonous, and, if eaten, produce a fatal disease. This disease has been very destructive in many of the Western States, and it occasionally occurs in the eastern part of the United States. The cause has not yet been fully disclosed, and various theories as to its causation are advanced by different observers. It is not thought to be contagious. Formerly it was believed to affect cattle only, but it has recently been observed in horses.

It is usually confined to young animals, one to four years of age, and runs a very rapid course, death frequently ensuing in from three to twenty-four or thirty-six hours after first symptoms appear. The sick animal lies down most of the time, or stands with back arched, showing abdominal pain; struggling; frothing at mouth; groaning; membrana nictitans drawn over eye; head thrown back; constipation; in some cases oozing of blood from rectum and vagina; head pressed against the manger; appetite lost.

The lesions are not marked nor are they characteristic. The spleen is slightly enlarged and congested, and the parietal and visceral peritoneum may show hemorrhagic spots, liver purple in color and in some cases soft and easily torn, the stomach and intestines show violently inflamed areas on the mucous coat; the colon contains hard, dry feces, which may have mucous or blood adherent to them; the blood may be thin and dark colored. A bacteriological examination may be necessary to differentiate this disease from anthrax.

The prognosis is very unfavorable. Only a few animals recover.

DISINFECTION OF STABLES.

1. Permit the entrance of a plentiful amount of light. Disease-producing germs are destroyed by the direct rays of the sun within a short time. They are destroyed by less intense light more slowly, but will live for long periods in dark places; so that one of the cheapest and best disinfectants is sunlight.

2. Cleanse the stable thoroughly. Disinfectants do not destroy germs that they do not come in contact with, and in order to permit the disinfectants used to come in contact with all the surfaces that may harbor disease-producing germs, it is necessary that these surfaces should be uncovered by the removal of the dirt that has accumulated over them.

The cleansing of the stable includes (a) removal of manure; (b) removal of piles of fodder; (c) sweeping the ceiling, walls and floor; (d) the removal of rotten woodwork and loose boards, especially of the floor; (e) the removal of dried accumulations about mangers, floors and drains; (f) scrubbing the mangers, feed-boxes, stalls and partitions, which should be done with hot water and strong soap, lye or washing-soda.

3. After the stable has been treated as above recommended it is ready for the application of chemical disinfectants. These are substances that poison disease-producing germs. Some of them are far more efficient than others, and one of the most active is bichloride of mercury or corrosive sublimate. This substance is poisonous to man and must be used with great care. Before it is applied it must be dissolved in water, in the proportion of one part to one-thousand. One ounce of corrosive sublimate dissolved in eight gallons of water makes a solution of the right strength. In making the solution, the corrosive sublimate should be dissolved in one gallon of hot water and then mixed with enough cold water to make eight gallons. This liquid can be applied with a brush, sprinkling-pot or spray-pump, and must be carried into every crevice or recess into which dust can enter.

Another disinfectant that is useful, but less efficient than the above, is chloride of lime, of which one pound should be dissolved in three gallons of water and applied in the same way. Carbolic acid mixed with water in the proportion of one to twenty parts, or one pint to two and one-half gallons of water is also efficient, and, should be applied in the same manner as bichloride of mercury solution.

Sulphate of iron, commonly known as copperas, makes an excellent disinfectant for floors, gutters, drains, etc. It should be applied as a saturated solution. As much sulphate of iron should be dissolved in the water as possible, and this solution should be applied very freely with a sprinkling-can to the places that are to be disinfected with it. It is also of great utility in disinfecting mangers, feed-boxes, etc., on account of its non-poisonous properties.

4. Although whitewash is not an active disinfectant, in the usual meaning of this term, it is an excellent purifier, and should in all cases be used in stables after they have been thoroughly cleansed and disinfected with other agents. If chloride of lime is added to whitewash in the proportion of one pound to three gallons, the value of this application is greatly increased. It is advisable to whitewash cow-stables frequently, at least once in six months, and better once every three months. Hot whitewash for this purpose is better than cold.

5. Allow the stable to remain empty, if possible, for several weeks. Of course this cannot be done in all cases, but where it is possible it is well to allow the stable to remain empty for a time, because this allows a greater opportunity for the death of disease-producing germs that may have escaped the disinfectant applications.

There are some badly constructed stables that it is almost impossible to disinfect, because cisterns, wells, cesspools, root-cellars, spaces in the walls, floors, etc., cannot be reached properly. In these cases it is necessary to vacate the premises for a long period, or, if they have but little value, burn them down. Where the floor of the stable is made of earth it is well to dig it out to a depth of about six inches and refill the excavation with fresh earth.

The litter, old woodwork, etc., removed from infected stables should be burned.

Circular 95. June, 1899.

Prevention of the Spread of Small-Pox.

Small-pox has prevailed as a widespread epidemic in a number of the States during the past year, and New Jersey, because of its being constantly traversed by travelers from all portions of the country, is especially exposed to the infection of this disease. Public attention has repeatedly been called by the State board of health to the vaccinal status of the inhabitants, and it has been shown that the number of unvaccinated children has increased from year to year, and that at present nearly 23 per cent. of those within school age are unprotected against small-pox.

An extensive outbreak of small-pox can be prevented with absolute certainty if vaccination of all susceptible persons is secured, and the question now arises, Shall general vaccination be done before a great calamity compels resort to this preventive measure, or must there first be startling losses of life to arouse parents, guardians, school boards, the public, and in too many instances the health authorities also, to a realizing sense of their duty to institute precautions against the spread of this pestilential disease?

Detection of the First Case.—Small-pox has been so frequently mistaken for chicken-pox, that the utmost care is necessary on the part of physicians to prevent falling into this error, and rigid isolation of the patient should be practiced in first cases of this and other affec-

tions which simulate smallpox, until a diagnosis can be conclusively reached.

In smallpox the shortest incubation period, the period between exposure to infection and the first appearance of symptoms of illness, is seven days; average, twelve days; longest, twenty days. The infective period begins with the onset of the initial symptoms (chill, backache, headache, vomiting and high temperature) and continues until all scabs have disappeared. The greatest infectivity is during the vesicular and pustular stages of the eruption.

Before the appearance of the rash, the liability to impart infection is not great, and therefore isolation of a case very shortly after the appearance of the eruption, when associated with measures for vaccination, re-vaccination and disinfection, is generally effective in preventing further spread of the disease.

In chickenpox the shortest incubation period is thirteen days; average, fourteen days; greatest, nineteen days. The introductory fever in chickenpox is usually less intense than in smallpox, and the eruption generally begins on the trunk, often appearing on the second day, and rarely becomes prominent on the face.

In measles the period of incubation is variable, the least being four days; average, eight to ten days; greatest, fourteen days. The fever does not abate upon the appearance of the eruption, but is generally increased. Coryza is a very prominent symptom of measles.

Vaccination has rarely caused undesirable results except in cases when uncleanly methods have been employed in collecting or inserting the lymph, and as at present conducted the operation is free from all objection.

The protection afforded by successful vaccination is probably quite as effective as that produced by a previous attack of smallpox, but there is much uncertainty concerning the duration of this immunity. The operation of vaccination should be conducted with aseptic precautions, and none but glycerinated lymph from a trustworthy producer should be employed. After the arm has been bared the clothing should be securely held away from the site of the proposed abrasion, and the surface should be made clean by thorough washing with warm borax water. After drying with absorbent cotton the skin is scarified in one or more places by the use of a needle which has been rendered sterile by passing it through the flame of an alcohol lamp. One drop of the glycerinated vaccine is then applied and rubbed in with the needle. The clothing should not be allowed to touch the wound until it is dry, and an improvised shield, made by using a large paper bottle-cap, held in place by two strips of adhesive

plaster, extending not more than half way around the arm, affords desirable protection for the first six hours.

The following measures are recommended for adoption by local boards of health for preventing the spread of smallpox:

1. Offer free vaccination and re-vaccination to all persons who cannot or will not pay for this service.

2. Advise parents to cause every child to be vaccinated before reaching the age of one year.

3. Advise that re-vaccination should be practiced as often as once every five years, and, if a case of smallpox appears in the neighborhood, all persons in the vicinity should be at once vaccinated or re-vaccinated.

4. Urge boards of education to enforce the provisions of section 22 of chapter 68 of the laws of 1887, which authorize exclusion from the public schools of all pupils who have not been vaccinated.

5. Call the attention of boards of education to section 23 of said chapter 68, laws of 1887, which authorizes said boards to secure the vaccination of pupils.

6. In factories, the superintendent should be advised to direct all employes to be vaccinated.

7. Provide a suitable isolation hospital and arrange for medical care, nursing and hospital supplies. It should be remembered that domestic quarantine is unreliable, and that no method for the isolation of infected persons is so effectual as that which attends hospital treatment.

8. Require physicians and parents to notify the local health officer of every case of chickenpox. Authority for this requirement is contained in sub-section 3, section 12, of chapter 68, laws of 1887.

9. Prosecute vigorously every person who violates section 1 of chapter 260 of laws of 1895, which requires that the local board of health shall be immediately notified of every case of smallpox.

10. When recovery occurs the patient should not be discharged until desquamation has entirely ceased, nor until the redness at the bottom of the pocks has disappeared. The surface of the body should then be bathed in a solution of bichloride of mercury (1 to 1,000), and afterward washed with water. Clean clothing should then be provided.

11. In case of death the body should be at once enveloped in sheets saturated with the solution of bichloride of mercury (1 to 1,000), and be placed in an hermetically sealed metallic casket. The burial should take place without delay, and should be strictly private.

Disinfection.—Immediately after the removal of a patient from an apartment or building the infected rooms and all of their contents should be treated by the free application of a solution of bichloride of mercury (1 to 1,000). Garments, sheets, blankets, etc., should be immersed in the solution in wooden tubs, and all other articles, including mattresses, pillows and carpet, should be saturated with the solution. The side-walls and wood-work should be wetted with the solution by the use of a garden-pump and hose, with a spray-producing nuzzle.

After twenty-four hours the clothing, blankets, sheets, pillow-cases towels, etc., should be boiled for at least two hours. Articles of little value should be burned in the sick-room. When practicable, remove all remaining articles which can be transported to a sterilizing chamber, and expose them to steam at a temperature of 240° for thirty minutes. In localities where no sterilizing plant is provided, the mattresses, pillows, carpet, books and all other articles which cannot be boiled should be destroyed by fire.

The State Board of Health should be at once notified by the local health officer, by wire (State House, Trenton), on the appearance of smallpox, and co-operation will be undertaken, when necessary, to prevent the spread of the disease.

REPORT
OF THE
BUREAU OF VITAL STATISTICS
OF THE
STATE OF NEW JERSEY
FOR THE
STATISTICAL YEAR ENDING JUNE 30,
1899.

(369)

Report on Vital Statistics.

At a meeting of the Board of Health of the State of New Jersey, held October 10th, 1898, it was, by resolution, determined to adopt the Bertillon classification of deaths in the year 1901, and, therefore, the statistical tables to be published in the next (1900) Annual Report of this bureau will be the last of the series which was begun with the establishment of this department (1878). Heretofore the statistical year has terminated June 30th, but with the beginning of the new century it is proposed to present the tables of marriages, births and deaths for the calendar year.

Population of New Jersey by Counties for the Census Years
1880, 1885, 1890, 1895.

	1880.	1885.	1890.	1895.
Atlantic,	18,704	22,356	28,936	34,750
Bergen,	36,786	39,880	47,220	65,251
Burlington,	55,403	57,558	58,528	59,117
Camden,	62,942	76,685	87,687	100,104
Cape May,	9,765	10,744	11,268	12,855
Cumberland,	37,687	41,982	45,438	49,815
Essex,	189,929	213,764	256,098	312,000
Gloucester,	25,886	27,603	28,649	31,191
Hudson,	137,944	240,342	275,126	328,080
Hunterdon,	38,570	37,420	35,355	35,334
Mercer,	58,061	66,785	79,978	85,538
Middlesex,	62,286	56,180	61,754	70,058
Monmouth,	55,538	62,324	69,128	75,543
Morris,	50,861	50,675	54,101	59,536
Ocean,	14,455	15,586	15,974	18,739
Passaic,	68,860	83,374	105,046	133,227
Salem,	24,579	25,373	25,151	26,084
Somerset,	27,162	27,425	28,311	30,447
Sussex,	23,539	22,401	22,259	22,586
Union,	55,571	61,839	72,467	85,404
Warren,	36,589	37,737	36,553	37,283

Population of the Cities of New Jersey Having 5,000 Inhabitants
or Over for the Census Years 1880, 1885, 1890 and 1895.

	1880.	1885.	1890.	1895.
Atlantic County—				
Atlantic City,	5,477	7,942	13,055	18,329
Bergen County—				
Hackensack,				7,282
Burlington County—				
*Bordentown,	5,334	5,857	5,090	5,176
Burlington,	7,237	7,690	7,264	7,844
Camden County—				
Camden City,	41,659	52,884	58,313	63,467
Gloucester City,	5,347	5,966	6,564	6,225
Cumberland County—				
Bridgeton,	8,722	10,065	11,424	13,292
Millville,	7,660	8,824	10,002	10,466
Essex County—				
Newark,	136,508	152,988	181,830	215,806
Orange,	13,207	16,231	18,844	22,792
Hudson County—				
Bayonne,	9,372	13,080	19,033	19,856
Harrison,	6,898	6,806	8,338	9,672
Hoboken,	30,999	37,721	43,648	54,083
Jersey City,	120,722	153,513	163,003	182,713
Town of Union,	5,849	8,398	10,643	13,336
Mercer County—				
Chambersburg,	5,437	8,542		
Trenton,	29,910	34,386	57,458	62,518
Middlesex County—				
New Brunswick,	17,166	18,258	18,603	19,910
Perth Amboy,			9,512	13,030
Monmouth County—				
Long Branch,		5,140	7,231	7,333
Morris County—				
Morristown,	6,837	8,760	8,156	10,290
Passaic County—				
Passaic City,	6,532		13,028	17,894
Paterson,	51,031	8,326	78,347	97,344
Salem County—				
Salem City,	5,056	5,516	5,516	6,337
Union County—				
Elizabeth,	28,229	32,119	37,764	43,834
Plainfield,	8,125	8,913	11,267	13,629
Rahway,	6,455	6,861	7,105	7,945
Warren County—				
Phillipsburg,	7,181	8,058	8,644	9,081

* Includes the township.

Table Showing Number of Deaths from Each of the Classified Diseases for Twenty one Years, 1879-1899.

DISEASES.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.
Remittent fever, &c.....	258	298	431	379	290	280	209	243	217	264	203	196	180	198	148	162	144	119	132	83	96
Enteric or typhoid fever.....	344	373	574	584	564	640	642	543	532	630	724	782	695	628	506	455	565	577	478	460	486
Small-pox.....	.....	15	254	367	54	7	2	4	5	5	3	.....	.....	38	43	11	23	2	.....	.....	.....
Scarlet fever.....	637	573	499	1306	853	547	646	222	255	574	533	209	288	1008	*445	272	264	183	203	201	187
Measles.....	77	87	70	206	131	189	135	88	236	74	118	174	250	197	73	257	95	290	156	195	96
Whooping cough.....	277	130	119	253	189	116	181	274	181	161	278	871	299	163	237	328	272	276	321	165	282
Diphtheria and croup.....	1100	873	1125	1472	1146	1027	1496	1303	1637	2036	1574	1575	1737	1776	*1677	1294	1464	1758	1383	950	777
Erysipelas.....	137	109	124	94	90	80	74	79	96	128	114	81	86	94	74	97	74	69	68	58	89
Diarrhoeal diseases of children.....	1849	2166	2305	2792	2656	2462	2845	2664	2694	3508	3377	3527	3191	4043	3981	3894	3746	3807	3450	2958	3568
Consumption. M.....	2788	2714	2989	1696	1627	1557	1673	1651	1910	1723	1772	1903	1849	1851	*1790	1831	1860	1786	1765	1772	1956
Consumption. F.....	.....	.....	.....	1779	1594	1658	1647	1554	1743	1635	1677	1766	1607	1724	1639	1602	1682	1572	1472	1453	1623
Acute lung diseases.....	2160	1988	2208	2752	2766	2174	2666	2300	2557	2922	2862	3804	4101	5187	4574	4183	4697	4146	4039	3414	4322
Brain and nervous diseases of children.....	1647	1638	1612	1999	1683	1698	1791	1774	1886	1971	1923	2032	2029	2242	2072	2082	1925	2018	1809	1642	1954
Diseases of heart and circulation.....	972	982	1213	1181	1235	1324	1503	1506	1530	1691	1786	1945	1960	2183	2179	2112	2265	2412	2475	2236	2731
Renal and cystic diseases.....	558	516	608	765	759	892	939	926	873	1020	1056	1149	1200	1444	1441	1447	1623	1584	1762	1694	1926
Adult brain and spinal diseases.....	1314	1347	1502	1521	1562	1664	1895	1932	1966	2095	1991	2308	2333	2457	2611	2413	2626	2610	2582	2700	2842
Digestive and intestinal diseases.....	1041	1005	1090	740	923	1075	1140	1213	1242	1476	1450	1621	1573	1625	1765	1565	1589	1622	1572	1484	1566
Cancer.....	378	425	451	403	461	484	498	546	574	612	579	640	642	688	723	731	770	811	857	852	946
Acute rheumatism.....	76	64	89	51	33	63	36	68	132	143	117	106	76	100	102	91	83	69	69	55	73
Puerperal.....	194	244	303	244	198	221	268	267	273	271	254	250	296	282	282	293	294	283	278	264	267
Violent deaths.....	.....	.....	.....	793	907	.....	857	997	1051	1320	1077	1335	1365	1427	1538	1500	1469	1426	1686	1451	1724
Total deaths per year.....	15797	15512	17539	25910	23310	21716	23807	22734	24331	27173	26543	28530	28840	32685	30596	30004	30634	30767	29222	27337	30999

* NOTE.—Total deaths as given include deaths under one month, which are not classified. If all diseases are added, a discrepancy will be found which is due to the fact that deaths under one month are not included under classified diseases.

Table Showing Death-rate for 1,000 Population in the Cities of New Jersey Having Over 5,000 Population, for Twenty-one Years, 1879-1899.

NAMES OF CITIES.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.
*Atlantic City.....			24.48	31.76	26.29	32.50	23.54	21.03	27.20	29.34	26.93	20.01	20.46	20.19	16.47	18.38	19.20	18.78	20.45	16.89	19.08
Hackensack.....																					
Bordentown.....	16.82	16.89	16.31	16.88	16.87	19.68	16.88	15.98	13.33	16.56	15.02	18.43	20.79	20.72	20.71	13.50	15.52	11.84	14.49	11.43	14.94
Burlington.....	21.10	15.61	18.37	22.94	18.51	18.93	24.45	21.46	17.30	21.46	20.13	18.30	20.44	24.34	18.83	25.47	18.87	19.28	18.30	14.28	16.87
Camden.....	19.88	19.27	22.90	24.55	20.01	22.37	18.30	19.27	20.40	22.79	18.73	23.15	23.68	25.37	22.06	23.35	22.07	19.97	20.71	17.82	19.35
Gloucester.....	14.10	15.70	20.19	18.32	21.88	21.69	16.42	16.59	22.96	23.13	21.82	18.89	21.85	23.38	24.77	20.73	23.78	23.13	25.61	18.31	19.50
Bridgeton.....	16.72	17.75	19.72	23.85	15.48	18.69	17.78	11.92	16.19	17.69	14.81	17.70	19.50	16.55	17.62	16.38	16.85	14.41	15.02	13.10	13.74
Millville.....	20.22	22.71	22.71	17.75	18.27	18.51	16.89	15.75	16.55	21.65	13.43	19.48	16.51	16.62	15.23	13.79	17.01	15.34	9.67	12.88	13.38
Montclair.....																		13.90	10.83	11.76	13.00
Newark.....	25.26	18.71	21.12	28.	25.49	24.70	24.28	23.94	24.40	27.02	25.59	27.26	23.69	29.17	24.67	23.68	21.52	20.79	19.60	16.65	19.40
Orange.....	19.85	16.35	18.02	25.41	21.80	22.03	19.70	19.96	21.14	24.49	22.85	24.50	20.29	23.31	20.38	19.37	18.69	19.89	16.50	19.08	18.19
Bayonne.....	25.73	15.04	16.43	26.89	20.91	22.19	18.58	23.78	23.16	26.38	24.24	20.37	20.37	21.11	19.74	19.71	22.51	20.52	21.80	25.00	25.59
Harrison.....		23.41	20.00	24.61	22.18	22.03	23.36	26.01	26.74	28.50	25.65	27.67	31.70	28.37	26.50	22.17	25.12	25.46	18.61	23.77	19.18
Hoboken.....	27.01	23.71	25.32	31.42	25.90	24.19	22.35	24.52	24.28	28.15	25.57	25.62	25.41	26.97	23.97	24.63	22.98	22.59	21.94	18.06	19.91
Jersey City.....	35.04	20.93	23.61	30.12	25.74	25.15	22.42	23.02	24.01	25.93	22.66	23.96	26.50	27.78	26.67	25.32	24.61	23.61	19.66	19.16	19.78
Town of Union.....		20.04	18.80	36.93	35.73	23.42	25.84	22.03	22.74	24.77	19.74	22.42	26.05	20.80	20.31	18.97	17.62	15.86	14.70	13.58	11.63
Trenton.....	25.08	20.66	18.89	20.53	20.79	21.13	17.48	15.12	17.80	19.51	14.94	17.35	15.51	19.75	16.16	14.14	18.01	18.60	16.44	15.45	17.71
New Brunswick.....	19.50	15.66	18.81	22.78	26.79	23.18	18.40	19.06	19.17	19.28	20.18	17.71	17.51	24.60	16.31	17.96	17.38	20.03	19.33	14.73	16.04
Perth Amboy.....								19.17	23.77	27.41	24.76	17.41	23.05	22.61	19.71	18.47	18.96	17.84	17.11	14.93	16.16
South Amboy.....																			17.81	13.14	12.55
Long Branch.....								12.84	14.00	20.01	12.41	14.66	12.16	12.40	10.58	9.88	14.18	12.61	14.11	18.13	17.51
Dover.....																			19.13	15.73	14.84
Morristown.....	16.40	18.71	15.94	17.70	28.96	20.77	14.61	13.70	13.58	18.95	24.32	19.91	16.55	20.80	18.55	19.04	18.66	18.85	16.16	17.38	19.18
Passaic.....		21.73	19.44	22.82	20.82	23.58	16.64	21.02	22.82	24.38	24.86	16.81	23.77	22.27	21.64	20.07	21.57	22.26	24.29	19.84	23.64
Paterson.....	25.61	23.07	22.75	29.61	27.72	28.38	20.29	17.88	23.33	27.17	25.02	21.57	22.96	22.61	21.00	20.31	18.25	19.22	18.71	15.89	19.65
Salem.....		15.02	14.65	19.58	33.14	15.42	19.22	22.30	16.13	18.55	18.18	17.60	16.86	19.58	17.42	20.49	16.09	16.77	16.65	18.80	18.30
Elizabeth.....	18.20	15.58	19.97	21.88	24.30	20.93	21.70	18.90	22.92	22.28	20.18	19.80	19.41	21.19	20.22	18.95	18.23	18.06	17.16	15.50	17.25
Plainfield.....	18.01	12.06	16.00	18.58	19.81	16.35	15.82	17.17	17.17	22.31	16.97	16.89	16.87	17.04	19.21	17.33	17.39	18.37	15.91	14.16	15.72
Rahway.....	24.31	17.97	16.11	28.35	20.29	17.19	15.60	14.58	16.91	20.41	19.20	19.32	17.61	23.05	23.87	18.76	18.12	17.13	16.06	14.30	16.07
Phillipsburg.....	14.08	17.54	15.87	23.53	20.46	18.10	18.37	14.49	19.24	13.28	16.98	14.98	15.75	14.77	14.29	13.50	20.71	14.73	16.75	18.40	13.68
Totals.....		19.41	19.14	26.71	24.30	23.69	21.25	20.63	22.24	24.76	22.04	23.13	22.37	24.81	22.38	20.96	20.87	20.87	18.81	17.05	18.74

* The death-rate in seaside resorts is calculated on the basis of the resident population, whereas the real population is often several times larger, and on account of this floating population and the large number of invalids included in it, the death-rate is not a criterion of health conditions.

Deaths from all Causes and Certain Specified Diseases, in the State of New Jersey, for the Twenty-one Years Ending June 30th, 1899.

	DEATHS AT ALL AGES.										DEATHS FROM THE MORE COMMON CAUSES.																				
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un-defined.	Estimated population.	Death-rate per 1,000.	Remittent fever, etc.	Enteric or Typhoid Fever	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
1879.....	4682	3467	1905	6930	4337	349	20410	1020584	18.07	268	234	....	627	77	277	1100	137	1849	2788	+	+	2160	1647	972	558	1314	1041	378	76	194	+
1880.....	4666	3441	1816	6725	3881	138	18967	1130892	16.77	333	373	15	573	87	130	873	109	2169	2714	+	+	1988	1638	982	516	1347	1005	425	61	241	+
1881.....	4629	2938	2016	6515	4487	175	20810	1131117	18.39	431	574	254	499	70	119	1128	124	2255	2989	+	+	2008	1642	1213	608	1502	1080	451	89	303	+
1882.....	5924	4578	2886	7337	4953	213	25910	1131117	23.90	379	884	367	1306	206	253	1472	94	2792	1696	1779	2752	1999	1181	765	1621	740	402	52	244	793	
1883.....	5378	3412	2338	7080	4527	+	25310	1131117	20.50	290	654	64	859	181	189	1146	90	3656	1527	1594	2756	1683	1235	759	1562	923	461	33	198	907	
1884.....	*1495	5123	2848	1995	7007	4583	+	21716	1131117	19.20	230	940	7	547	189	116	1027	80	2462	1557	1658	2174	1598	1324	892	1664	1075	484	62	241	+
1885.....	*1606	5711	3408	2210	7106	5142	+	23807	1278033	18.63	309	642	2	646	135	181	1496	74	2845	1673	1647	2566	1791	1503	939	1895	1140	498	36	268	857
1886.....	1691	5414	3123	2073	7109	4868	+	22784	1278033	17.80	243	545	4	222	88	274	1308	79	2664	1651	1564	2300	1774	1806	926	1932	1313	546	68	257	997
1887.....	1714	5849	3396	2130	7624	5167	+	24331	1278033	19.04	217	522	5	255	296	181	1527	96	2694	1910	1748	2557	1886	1530	873	1966	1242	574	132	263	1051
1888.....	1770	6534	3974	2205	8162	5747	+	27178	1278033	17.01	264	620	5	574	74	161	2036	128	3508	1723	1635	2922	1971	1691	1020	2095	1476	612	142	271	1320
1889.....	1952	6842	3512	2396	8068	5586	140	26543	1397647	18.99	303	724	3	533	118	279	1574	114	3377	1772	1677	2862	1923	1786	1056	1991	1450	579	117	254	1077
1890.....	2050	7115	3622	2430	9309	6051	+	25330	1441017	19.80	195	782	....	209	174	371	1675	81	3527	1903	1766	3804	2032	1945	1149	2308	1521	640	106	250	1255
1891.....	2075	6935	3750	2308	9132	6388	126	28840	1478784	19.50	180	695	....	288	250	299	1737	85	3191	1849	1507	4101	2029	1960	1200	2333	1573	642	76	296	1865
1892.....	2226	7973	4396	3097	9356	7190	173	32635	1511653	21.62	196	628	28	1068	197	163	1776	94	4443	1851	1724	5187	2242	2183	1444	2457	1625	688	100	282	1427
1893.....	2178	7574	3733	2670	9832	6664	133	30596	1538799	19.88	148	506	43	445	73	237	1677	74	3981	1790	1639	3974	2072	2179	1441	2611	1753	723	102	283	1638
1894.....	2213	5639	3625	2320	9497	6549	116	30004	1578373	19.09	162	485	11	272	257	328	1294	97	3893	1831	1602	4183	2068	2112	1447	2413	1565	731	91	293	1500
1895.....	2212	5429	3645	2370	10005	6874	99	30634	1672942	18.31	144	568	23	264	95	272	1464	74	3746	1860	1692	4596	1925	2288	1523	2626	1589	770	82	294	1469
1896.....	2116	5444	4199	2555	9618	6784	81	30767	1718543	17.90	119	577	2	13	390	275	1758	69	3807	1785	1572	4146	2018	2413	1584	2610	1622	811	59	283	1426
1897.....	2110	4975	3529	2207	9847	7064	90	29822	1764144	16.90	132	478	....	205	155	321	1382	68	3450	1765	1472	4039	1809	2479	1751	2682	1572	857	69	278	1635
1898.....	2082	4417	2865	2022	9181	6682	87	27337	1810008	15.11	82	450	....	201	195	155	930	58	2958	1772	1454	3414	1642	2236	1694	2700	1484	852	55	264	1451
1899.....	2136	6058	3163	2676	10404	8042	120	30599	1855872	16.70	96	486	....	187	96	282	777	88	3568	1966	1628	4322	1954	2731	1925	2842	1556	946	73	267	1724
Totals.....	120991	78177	48504	164224	11866	2039	554855	29655856	392.21	4480	12067	843	9895	3354	4862	29062	1914	65432	40363	29432	68811	39358	37478	24170	44271	28245	13070	1684	5506	21822	

* All added under one year. † Not classified for the year.

Deaths from all Causes and Certain Specified Diseases, in Cities of the State of New Jersey of Over 5,000 Inhabitants, for the Twenty-one Years Ending June 30th, 1899.

DEATHS AT ALL AGES.										DEATHS FROM THE MORE COMMON CAUSES.																											
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Remittent fever, etc.	Enteric of typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhical diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and Intes- tinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.						
1879.....	2668	2088	1172	3480	1754	146	11206	486541	.....	170	173	.....	302	52	172	619	63	1145	1588	.....	1180	1068	492	295	598	400	196	27	120	.....	.....	.....					
1880.....	2921	1965	1189	3543	1706	57	11331	589626	19.41	159	210	10	441	70	79	591	48	1450	1646	.....	1200	1168	521	295	598	491	223	28	136	.....	.....	.....					
1881.....	2984	2057	1227	4128	2049	68	12508	590740	21.17	196	310	193	340	49	63	789	64	1388	1845	.....	1393	1146	664	336	729	520	241	49	174	.....	.....	.....					
1882.....	3817	3186	1803	4490	2148	83	15527	576950	26.71	207	527	292	821	156	142	1036	50	1814	1041	1061	1741	1364	598	437	686	379	220	25	126	457	.....	.....	.....				
1883.....	3520	2335	1498	4295	2202	.....	14023	576950	24.30	140	314	43	657	87	132	801	67	1739	969	942	1651	1152	652	430	768	564	252	21	124	527	.....	.....	.....				
1884.....	3497	2029	1281	4516	2206	.....	13612	576950	23.59	121	431	4	869	152	72	725	37	1712	1009	987	1416	1110	746	558	806	609	288	28	131	.....	.....	.....					
1885.....	3785	2361	1386	4650	2339	.....	14616	589977	21.25	110	396	.....	480	87	102	1061	44	1820	1691	989	1618	1240	840	524	921	623	280	17	176	511	.....	.....	.....				
1886.....	3760	2262	1346	4682	2354	.....	14467	701428	20.63	132	352	1	165	69	173	985	53	1775	1101	950	1554	1287	838	553	991	693	327	37	149	623	.....	.....	.....				
1887.....	4124	2450	1364	5123	2456	.....	16597	701428	22.24	125	349	3	120	192	107	1154	48	1938	1294	1067	1600	1380	882	557	954	683	326	72	172	646	.....	.....	.....				
1888.....	4614	2841	1662	5426	2748	.....	17364	701428	24.76	176	399	4	383	50	105	1425	74	2444	1144	992	1947	1440	954	643	1094	843	343	78	162	820	.....	.....	.....				
1889.....	4906	2672	1642	5500	2715	64	17499	793540	22.04	127	512	.....	413	104	183	1214	77	2413	1189	1069	1968	1459	993	657	1052	840	324	62	181	687	.....	.....	.....				
1890.....	5192	2771	1674	6376	2940	46	18989	820984	23.13	135	589	.....	168	184	250	1248	49	2486	1299	1107	2680	1515	1099	716	1214	910	374	67	163	790	.....	.....	.....				
1891.....	4831	2872	1741	6315	3199	63	19022	841479	22.37	114	487	.....	222	138	198	1259	57	2161	1272	1042	2328	1539	1141	758	1205	967	391	34	184	898	.....	.....	.....				
1892.....	5775	3371	2071	6744	3589	68	21618	870985	24.51	122	467	33	774	156	101	1233	68	2300	1243	1088	3417	1709	1275	922	1317	998	434	62	187	908	.....	.....	.....				
1893.....	5350	2734	1740	6853	3414	48	20119	898945	22.38	81	349	23	316	51	147	1104	52	2732	1232	1047	2802	1566	1315	940	1439	1100	413	54	195	983	.....	.....	.....				
1894.....	5559	4069	2705	7587	3276	58	19724	924006	20.96	97	323	7	224	193	203	973	64	2729	1228	989	2961	1599	1207	965	1309	920	445	56	188	918	.....	.....	.....				
1895.....	5549	3870	2660	7599	3227	47	20026	959484	20.87	90	410	20	186	68	194	1070	42	2610	1239	1021	3096	1432	1274	1003	1415	1094	457	46	193	989	.....	.....	.....				
1896.....	4432	3923	3181	7705	3437	32	20339	998581	20.37	69	422	2	135	270	189	1344	46	2691	1229	999	2904	1485	1427	1042	1355	1025	500	32	188	910	.....	.....	.....				
1897.....	4473	3609	2685	7496	3711	34	19616	1042802	18.81	62	279	.....	145	126	233	1017	42	2397	1274	970	2651	1312	1503	1190	1353	969	534	40	185	1179	.....	.....	.....				
1898.....	4484	3165	2141	7383	3534	42	18273	1071834	17.06	36	295		150	145	105	657	38	2129	1250	969	2409	1221	1373	1137	1485	947	531	34	185	994	689						
1899.....	4491	3626	2343	7412	4306	53	20634	1100866	18.74	58	356		137	76	216	574	61	2503	1404	1080	2919	1430	1663	1312	1526	1004	571	48	193	1149	795						
Totals.....	8938	6377	3660	11699	5967	909	356312	16509634	485.59	2238	7934	640	6958	2470	3166	38979	1133	44988	26587	18438	45835	28604	21457	15370	22964	16489	7683	913	3516	13939	1484	.....	.....				

Number of Births, Marriages and Deaths,

By Counties, Cities, Boroughs and Townships, and Totals for the
State, for the Year Ending June 30th, 1899.

ATLANTIC COUNTY.

	M.	B.	D.
Absecon,	8	13	13
Atlantic City,	220	362	429
Buena Vista,	6	40	15
Brigantine Borough,	0	0	0
Egg Harbor City,	19	45	36
Egg Harbor Township,	6	26	36
Galloway,	5	52	39
Hamilton,	5	39	34
Hammonton,	31	83	66
Linwood Borough,	3	6	4
Mullica,	3	20	13
Pleasantville Borough,	15	35	33
Somers Point Borough,	0	3	5
South Atlantic City,	0	0	2
Weymouth,	1	15	8
	*5		
	327	739	733

* Marriage certificates received from County Clerks in which the places where the marriages were performed are not stated.

BERGEN COUNTY.

	M.	B.	D.
Allendale Borough,	5	10	5
Bergen,	1	9	1
Bergenfield Borough,	1	12	2
Bogota Borough,	1	1	3
Carlstadt Borough,	18	60	43
Cliffside Park Borough,	0	18	12
Cresskill Borough,	0	12	4
Deiford Borough,	1	11	4
Dumont Borough,	5	6	2
East Rutherford Borough,	13	41	36
Englewood City,	40	87	104
Englewood Cliffs Borough,	2	0	3
Fairview Borough,	2	12	18
Franklin,	4	42	38
Garfield Borough,	11	48	39
Glen Rock Borough,	0	6	6
Hackensack City,	54	171	124
Harrington,	25	53	48
Hasbrouck Heights Borough,	3	11	10
Hillsdale,	5	9	11
Hohokus,	14	41	35
Leonia Borough,	4	16	8
Little Ferry Borough,	2	50	17
Lodi Borough,	10	43	33
Lodi Township,	4	11	5
Maywood Borough,	4	11	9
Midland,	4	20	49
Midland Park Borough,	7	18	13
Montvale,	0	6	8
North Arlington Borough,	0	2	3
Old Tappan Borough,	1	0	3
Orvil,	11	26	15
Overpeck,	5	14	18
Palisade,	2	21	9
Park Ridge Borough,	4	15	18
Ridgefield Borough,	5	9	6
Ridgefield Township,	21	73	50
Ridgewood,	20	51	40
Riverside Borough,	4	8	13
Rutherford Borough,	21	32	57
Saddle River Borough,	5	5	8
Saddle River Township,	6	26	30
Teaneck,	1	2	6
Tenafly Borough,	3	30	23
Undercliff Borough,	1	11	17
Union,	4	16	25
Upper Saddle River Borough,	1	3	3
Wallington Borough,	1	34	20
Washington,	1	13	10
Westwood Borough,	8	11	7
Woodcliff Borough,	0	3	7
Wood Ridge Borough,	2	14	14
	367	1,254	1,092

BURLINGTON COUNTY.

	M.	B.	D.
Bass River,	3	11	12
Beverly,	29	18	76
Bordentown,	40	67	91
Burlington City,	63	100	161
Chester,	43	72	67
Chesterfield,	5	12	19
Cinnaminson,	3	12	5
Delran,	2	14	22
Eastampton,	0	9	3
Evesham,	2	28	28
Fieldsboro,	4	0	8
Florence,	16	41	34
Lumberton,	4	13	22
Mansfield,	1	19	27
Medford,	22	35	29
Mount Laurel,	4	30	12
New Hanover,	11	14	25
Northampton,	55	69	96
Palmyra,	15	26	37
Pemberton Borough,	15	9	8
Pemberton Township,	7	3	39
Riverside,	8	57	26
Riverton Borough,	8	12	25
Shamong,	3	3	9
Southampton,	7	5	20
Springfield,	2	11	11
Washington,	5	12	7
Westampton,	2	8	6
Willingboro,	4	3	4
Woodland,	0	7	6
	383	720	935

CAMDEN COUNTY.

	M.	B.	D.
Camden City,	871	1,018	1,308
Centre,	3	26	36
Chesilhurst Borough,	0	4	3
Collingswood Borough,	3	19	25
Delaware,	2	15	13
Gloucester City,	65	89	124
Gloucester,	29	64	106
Haddon Township,	4	16	27
Haddonfield Borough,	28	15	28
Merchantville Borough,	14	17	44
Pensauken,	7	26	23
Stockton,	38	86	90
Voorhees,	4	4	4
Waterford,	19	50	36
Winslow,	10	29	28
	*7		
	1,104	1,478	1,895

*Marriage certificates received from County Clerks in which the places where the marriages were performed are not stated.

CAPE MAY COUNTY.

	M.	B.	D.
Anglesea Borough,	0	6	5
Avalon Borough,	0	0	0
Cape May City,	21	35	38
Cape May Point Borough,	0	0	3
Dennis,	13	43	28
Holly Beach Borough,	4	10	8
Lower,	5	26	16
Middle,	19	39	52
Ocean City Borough,	7	34	19
Upper,	10	19	23
Sea Isle City Borough,	1	13	5
West Cape May Borough,	2	16	4
Wildwood Borough,	0	0	1
	*1		
	83	241	202

CUMBERLAND COUNTY.

	M.	B.	D.
Bridgeton City,	105	256	203
Commercial,	12	26	12
Deerfield,	6	56	30
Downe,	10	14	7
Fairfield,	17	25	18
Greenwich,	15	26	22
Hopewell,	5	22	27
Landis,	8	36	71
Lawrence,	7	25	27
Maurice River,	16	41	14
Millville City,	85	225	145
Vineland Borough,	59	90	81
Stow Creek,	8	14	13
	353	856	670

ESSEX COUNTY.

	M.	B.	D.
Belleville,	24	57	98
Bloomfield,	53	171	145
Caldwell Borough,	8	35	22
Caldwell Township,	7	5	14
Clinton,	23	83	93
East Orange,	119	173	220
Franklin,	11	31	29
Glen Ridge Borough,	9	25	19
Livingston,	8	16	19
Milburn,	9	56	43
Montclair City,	46	262	185
Newark City,	1,812	4,334	4,714
North Caldwell Borough,	0	3	1
Orange City,	139	556	472
South Orange,	33	84	66
Vailsburg Borough,	13	35	35
Verona,	5	14	11
West Orange,	21	98	102
	*5		
	2,345	6,033	6,288

* Marriage certificates received from County Clerks in which the places where the marriages were performed are not stated.

GLOUCESTER COUNTY.

	M.	B.	D.
Clayton Borough,	15	43	34
Deptford,	5	25	20
East Greenwich,	6	21	23
Elk,	2	27	7
Franklin,	6	26	37
Glassboro,	33	80	36
Greenwich,	13	25	35
Harrison,	4	21	10
Logan,	5	23	20
Mantua,	23	26	28
Monroe,	9	16	41
South Harrison,	8	6	8
Washington,	2	21	21
Wenonah Borough,	2	2	13
West Deptford,	8	20	16
Woodbury,	40	83	46
Woolwich,	18	32	31
	*3		
	202	497	426

HUDSON COUNTY.

	M.	B.	D.
Bayonne City,	201	731	525
East Newark Borough,	1	10	44
Guttenberg,	22	94	74
Harrison,	81	125	206
Hoboken,	607	1,400	1,243
Jersey City,	1,540	3,386	3,926
Kearny,	29	124	202
North Bergen,	27	151	328
Town of Union,	161	289	179
Weehawken,	8	64	76
West Hoboken,	172	491	357
West New York Borough,	32	103	87
	*5		
	2,886	6,968	7,247

*Marriage certificates received from County Clerks in which the places where the marriages were performed are not stated.

HUNTERDON COUNTY.

	M.	B.	D.
Alexandria,	0	8	16
Bethlehem,	6	19	25
Clinton Borough,	6	13	12
Clinton Township,	11	25	29
Delaware,	17	16	20
East Amwell,	4	14	23
Franklin,	12	15	14
Frenchtown Borough,	7	13	17
High Bridge,	5	25	15
Holland,	7	10	21
Junction Borough,	8	10	15
Kingwood,	6	24	14
Lambertville,	41	61	71
Lebanon,	24	30	28
Raritan,	19	64	45
Readington,	23	28	39
Stockton Borough,	7	9	8
Tewksbury,	27	18	19
Union,	7	12	9
West Amwell,	5	6	10
	242	420	450

MERCER COUNTY.

	M.	B.	D.
East Windsor,	2	5	13
Ewing,	4	16	127
Hamilton,	20	27	45
Hightstown Borough,	27	9	25
Hopewell Borough,	23	30	25
Hopewell Township,	6	23	27
Lawrence,	8	15	25
Pennington Borough,	11	6	13
Princeton Borough,	36	67	57
Princeton Township,	1	12	4
Trenton City,	530	679	1,179
Washington,	7	6	7
West Windsor,	4	14	18
	*4		
	683	909	1,565

MIDDLESEX COUNTY.

	M.	B.	D.
Cranbury,	9	24	24
Dunellen Borough,	2	9	14
East Brunswick,	11	31	39
Helmetta Borough,	1	1	0
Madison,	5	20	12
Milltown Borough,	1	11	4
Monroe,	8	24	20
New Brunswick City,	134	294	336
North Brunswick,	2	6	10
Perth Amboy City,	120	328	256
Piscataway,	10	34	53
Raritan,	17	61	72
Sayreville,	28	97	38
South Amboy City,	41	144	83
South Brunswick,	8	25	34
South River Borough,	18	68	49
Woodbridge,	23	139	97
	438	1,316	1,141

* Marriage certificates received from County Clerks in which the places where the marriages were performed are not stated.

MONMOUTH COUNTY.

	M.	B.	D.
Allentown Borough,	6	5	7
Atlantic,	5	4	17
Atlantic Highlands Borough,	2	0	0
Asbury Park,	60	39	53
Avon Borough,	1	4	3
Belmar Borough,	7	21	19
Bradley Beach Borough,	0	2	0
Eatontown,	12	26	38
Englishtown Borough,	2	4	3
Freehold,	50	59	85
Holmdel,	8	5	15
Howell,	29	45	43
Long Branch City,	71	68	130
Manalapan,	11	12	30
Manasquan Borough,	21	26	14
Marlboro,	9	22	18
Matawan,	16	55	52
Middletown,	38	90	85
Millstone,	5	8	17
Neptune,	2	1	1
Neptune City Borough,	40	108	122
Neptune Township,	0	0	0
North Spring Lake Borough,	5	31	18
Ocean,	31	84	78
Raritan,	59	40	55
Red Bank Borough,	0	0	0
Sea Bright Borough,	0	0	0
Shrewsbury,	27	77	85
Spring Lake Borough,	0	0	3
Upper Freehold,	12	37	30
Wall,	19	38	44
	*1		
	544	911	1,065

MORRIS COUNTY.

	M.	B.	D.
Boonton City,	27	32	48
Boonton Township,	3	2	5
Chatham Borough,	12	37	16
Chatham Township,	2	4	12
Chester,	9	30	20
Dover City,	59	96	72
Hanover,	14	60	165
Jefferson,	4	5	18
Madison Borough,	16	25	21
Mendham,	9	28	9
Montville,	4	15	18
Morristown,	76	194	230
Morris,	0	6	7
Mt. Arlington Borough,	2	6	5
Mt. Olive,	10	23	13
Netcong Borough,	0	1	5
Passaic,	19	10	34
Pequannock,	14	22	25
Port Oram Borough,	15	35	43
Randolph,	5	21	23
Rockaway Borough,	21	34	23
Rockaway Township,	12	46	54
Roxbury,	28	57	33
Washington,	15	35	35
	376	824	934

* Marriage certificate received from County Clerk in which the place where the marriage was performed is not stated.

OCEAN COUNTY.

	M.	B.	D.
Bay Head Borough,	0	0	2
Berkley,	0	8	9
Brick,	7	42	20
Dover,	22	58	36
Eagleswood,	8	6	14
Island Heights Borough,	5	0	4
Jackson,	10	12	20
Lacey,	4	3	9
Lakewood,	18	58	53
Lavallette Borough,	0	0	0
Little Egg Harbor,	10	57	24
Manchester,	3	1	10
Ocean,	2	1	6
Plumsted,	6	7	17
Point Pleasant Borough,	14	26	18
Stafford,	7	25	23
Union,	11	11	15
	*1		
	128	315	280

PASSAIC COUNTY.

	M.	B.	D.
Acquackanonk,	11	34	53
Hawthorne Borough,	6	20	13
Little Falls,	7	73	46
Manchester,	17	64	56
Passaic City,	402	736	515
Paterson,	914	1,935	2,221
Pompton,	16	20	21
Pompton Lakes Borough,	11	3	11
Totowa Borough,	0	1	3
Wayne,	12	18	19
West Milford,	11	15	27
	*1		
	1,408	2,919	2,975

SALEM COUNTY.

	M.	B.	D.
Alloway,	9	20	23
Elmer Borough,	8	31	24
Elsinboro,	0	6	3
Lower Alloways Creek,	8	17	16
Lower Penns Neck,	4	19	16
Mannington,	3	11	48
Oldmans,	11	20	16
Penns Grove Borough,	25	33	32
Pilesgrove,	5	17	20
Pittsgrove,	4	20	13
Quinton,	10	15	17
Salem City,	54	62	128
Upper Penns Neck,	0	11	13
Upper Pittsgrove,	14	19	22
Woodstown Borough,	15	13	12
	270	314	403

* Marriage certificate received from County Clerk in which the place where the marriage was performed is not stated.

MARRIAGES, BIRTHS AND DEATHS.

385

SOMERSET COUNTY.

	M.	B.	D.
Bedminster,	15	29	33
Bernards,	15	21	44
Bound Brook Borough,	18	56	32
Branchburg,	2	9	12
Bridgewater,	45	118	124
Franklin,	8	61	60
Hillsborough,	6	28	38
Millstone Borough,	0	1	6
Montgomery,	8	8	17
North Plainfield Borough,	22	99	71
North Plainfield Township,	0	5	0
Raritan Borough,	14	28	39
Warren,	1	13	15
	154	476	491

SUSSEX COUNTY.

	M.	B.	D.
Andover,	10	12	14
Branchville Borough,	8	9	3
Byram,	12	11	14
Deckertown Borough,	24	9	8
Frankford,	1	17	19
Green,	5	8	5
Hampton,	8	16	2
Hardyston,	17	3	25
Lafayette,	7	6	5
Montague,	2	5	8
Newton,	41	50	36
Sandyston,	2	6	18
Sparta,	13	18	28
Stillwater,	13	18	13
Vernon,	16	8	22
Walpack,	3	4	2
Wantage,	7	17	18
	189	217	240

UNION COUNTY.

	M.	B.	D.
Clark,	1	0	4
Cranford,	17	53	36
Elizabeth,	323	884	840
Fanwood Borough,	3	3	3
Fanwood Township,	7	18	11
Linden Borough,	2	1	7
Linden Township,	0	2	5
Mountainside Borough,	0	0	5
New Providence Borough,	7	10	14
New Providence Township,	0	9	0
Plainfield,	88	288	244
Rahway,	74	22	142
Roselle Borough,	0	1	1
Springfield,	6	17	15
Summit,	31	108	53
Union,	9	26	52
Westfield,	19	77	42
	587	1,519	1,474

WARREN COUNTY.

	M.	B.	D.
Allamuchy,	0	3	5
Belvidere,	7	19	34
Blairstown,	8	14	24
Franklin,	13	19	13
Frelinghuysen,	3	5	10
Greenwich,	8	17	14
Hackettstown,	15	38	35
Hardwick,	1	6	6
Harmony,	3	14	14
Hope,	2	3	9
Independence,	8	8	10
Knowlton,	10	17	27
Lopatcong,	3	39	15
Mansfield,	15	5	24
Oxford,	16	42	37
Pahaquarry,	1	5	3
Phillipsburg,	109	141	129
Pohatcong,	7	16	14
Washington Borough,	35	62	50
Washington Township,	2	15	20
	*1		
	267	488	493

SUMMARY.

	M.	B.	D.
Atlantic,	327	739	733
Bergen,	367	1,254	1,092
Burlington,	383	720	935
Camden,	1,104	1,478	1,895
Cape May,	83	241	202
Cumberland,	353	856	670
Essex,	2,345	6,038	6,288
Gloucester,	202	497	426
Hudson,	2,886	6,968	7,247
Hunterdon,	242	420	450
Mercer,	683	909	1,565
Middlesex,	438	1,316	1,141
Monmouth,	544	911	1,065
Morris,	376	824	934
Ocean,	128	315	280
Passaic,	1,408	2,019	2,975
Salem,	270	314	403
Somerset,	154	476	491
Sussex,	189	217	240
Union,	587	1,519	1,474
Warren,	267	488	493
	13,336	29,419	30,999

* Marriage certificate received from County Clerk in which the place where the marriage was performed is not stated.

SUPPLEMENTARY BIRTHS.

REGISTERED 1898-99.

June, 1878.		1891-92.		Middlesex County,	9
Newark,	1	Newark,	1	New Brunswick,	3
1878-79.		Jersey City,	1	Morris County,	2
Jersey City,	2	Paterson,	1	Ocean County,	1
1881-82.				Passaic County,	2
Newark,	1	1892-93.		Paterson,	17
Hudson County,	2	Cape May County,	1	Somerset County,	2
1882-83.		Newark,	1	Sussex County,	2
Jersey City,	4	Hoboken,	2	Warren County,	1
Paterson,	1	Jersey City,	4	Phillipsburg,	20
1883-84.		Paterson,	1		
Newark,	1	1893-94.		1897-98.	
Orange,	1	Atlantic County,	1	Atlantic County,	10
Jersey City,	4	Bergen County,	1	Atlantic City,	4
1884-85.		Newark,	3	Bergen County,	73
Hoboken,	1	Jersey City,	3	Hackensack,	34
Jersey City,	1	Middlesex,	1	Burlington County,	94
1885-86.		Paterson,	8	Burlington City,	14
Camden City,	1			Camden County,	38
Newark,	1	1894-95.		Camden City,	19
Jersey City,	1	Essex County,	1	Gloucester City,	9
Paterson,	1	Newark,	2	Cape May County,	13
1886-87.		Orange,	1	Cumberland County,	42
Hoboken,	1	Hudson,	2	Essex County,	81
Jersey City,	3	Jersey City,	6	Montclair,	4
1887-88.		Paterson,	10	Newark,	179
Hoboken,	1	Phillipsburg,	1	Orange,	3
Jersey City,	2			Gloucester County,	53
1888-89.		Atlantic County,	1	Hudson County,	82
Camden City,	1	Camden City,	1	Bayonne,	63
Newark,	1	Newark,	3	Harrison,	35
Bayonne,	1	Jersey City,	6	Hoboken,	3
1889-90.		Paterson,	10	Jersey City,	397
Newark,	1	Phillipsburg,	1	Town of Union,	12
Hoboken,	1			Hunterdon County,	45
Paterson,	2	1895-96.		Mercer County,	20
Salem County,	1	Atlantic County,	1	Trenton,	37
Morris County,	1	Camden City,	1	Middlesex County,	36
Plainfield,	1	Newark,	3	New Brunswick,	21
1890-91.		Jersey City,	1	Perth Amboy,	9
Newark,	1	Town of Union,	4	South Amboy,	8
Jersey City,	1	Paterson,	6	Monmouth County,	101
Hunterdon County,	1	Salem County,	2	Long Branch,	22
Warren County,	1	Union County,	3	Morris County,	47
		Warren County,	3	Morristown,	20
		Phillipsburg,	4	Ocean County,	13
		1896-97.		Passaic County,	34
		Bergen County,	8	Passaic City,	2
		Burlington County,	16	Paterson,	68
		Camden City,	1	Salem County,	33
		Cumberland County,	1	Salem City,	18
		Essex County,	2	Somerset County,	40
		Newark,	34	Sussex County,	41
		Hudson,	1	Union County,	34
		Bayonne,	4	Elizabeth,	4
		Jersey City,	95	Plainfield,	5
		Town of Union,	1	Warren County,	26
		Hunterdon County,	1	Phillipsburg,	20
		Trenton,	6	Total,	2,319

SUPPLEMENTARY MARRIAGES.

REGISTERED 1898-99.

1879-80.		1893-94.			
Newark,	1	Essex County,	2	Essex County,	15
		Middlesex County,	1	Newark,	119
1880-81.		Long Branch,	1	Orange,	19
Hoboken,	1	Plainfield,	1	Gloucester County,	3
				Hudson County,	6
1883-84.				Bayonne,	2
Bergen County,	1	1895-96.		Hoboken,	3
		Essex County,	11	Jersey City,	58
1885-86.		Newark,	1	Town of Union,	5
Bergen County,	4	Jersey City,	1	Hunterdon,	4
Plainfield,	1	Mercer County,	1	Mercer County,	5
		Trenton,	1	Trenton,	17
1886-87.				Middlesex County,	6
Plainfield,	1	1896-97.		New Brunswick,	9
		Camden City,	1	Perth Amboy,	4
1888-89.		Essex County,	12	South Amboy,	1
New Brunswick,	1	Newark,	1	Monmouth County,	33
Newark,	1	Jersey City,	10	Morris County,	9
		Trenton,	1	Morristown,	1
1889-90.		Morris County,	1	Ocean County,	1
Newark,	3	Passaic County,	1	Passaic County,	9
		Salem County,	1	Passaic City,	11
1890-91.		Plainfield,	1	Paterson,	56
Plainfield,	1	Phillipsburg,	1	Salem County,	5
				Somerset County,	2
1892-93.		1897-98.		Sussex County,	18
Essex County,	2	Bergen County,	4	Union County,	7
Paterson,	1	Hackensack,	3	Elizabeth,	1
		Burlington County,	5	Plainfield,	8
		Burlington City,	1	Rahway,	3
		Cape May County,	4	Warren County,	9
		Cumberland County,	7	Phillipsburg,	11
		Millville,	4		
				Total,	566

SUPPLEMENTARY DEATHS AND TRANSITS.

REGISTERED 1898-99.

	Deaths.	Transits		Deaths.	Transits.
1888-89.			1897-98.		
Gloucester County,	1	..	Atlantic County,	5	..
1891-92.			Atlantic City,	1	..
Long Branch,	1	..	Bergen County,	18	1
1893-94			Hackensack,	4	..
Bergen County,	1	..	Burlington County,	32	..
Monmouth County,	1	..	Camden County,	10	..
1894-95.			Cape May County,	4	..
Newark,	1	..	Cumberland County,	29	..
Monmouth County,	1	5	Essex County,	15	..
Morris County,	1	..	Newark,	59	..
1895-96.			Gloucester,	16	1
Newark,	1	..	Hudson County,	4	..
Gloucester County,	1	..	Harrison,	1	..
Warren County,	2	..	Hoboken,	3	..
1896-97.			Jersey City,	13	..
Bergen County,	1	1	Town of Union,	1	..
Camden City,	1	..	Hunterdon County,	29	1
Cumberland County,	5	..	Mercer County,	7	..
Gloucester County,	4	..	Trenton,	16	..
Hunterdon County,	4	..	Middlesex County,	21	..
Mercer County,	3	1	Perth Amboy,	3	..
Perth Amboy,	2	..	Monmouth,	112	4
Morris County,	16	..	Long Branch,	3	2
Passaic County,	1	..	Morris County,	33	..
Sussex County,	3	..	Dover City,	2	..
			Morristown,	1	1
			Ocean County,	7	..
			Passaic County,	13	1
			Paterson,	1	..
			Salem County,	14	..
			Salem City,	4	..
			Somerset County,	12	..
			Sussex County,	33	2
			Union County,	4	..
			Rahway,	2	..
			Warren County,	12	..
			Phillipsburg,	6	..
				598	22

Number of Duplicate Certificates of Marriage Licenses Received
from County Clerks, during the Year Ending
June 30th, 1899.

	Copies of Licenses.	Duplicate Certificates
Atlantic,	7	7
Bergen,	1	2
Burlington,	0	0
Camden,	7	8
Cape May,	1	1
Cumberland,	0	0
Essex,	13	12
Gloucester,	2	3
Hudson,	17	17
Hunterdon,	0	0
Mercer,	9	9
Middlesex,	0	0
Monmouth,	1	1
Morris,	0	0
Ocean,	1	1
Passaic,	1	1
Salem,	0	1
Somerset,	0	0
Sussex,	0	0
Union,	0	0
Warren,	0	1
	60	64

Statement of Returns of Marriages, Births and Deaths received
too late for Tabulation in the Annual Report for
Year Ending June 30th, 1899.

MUNICIPALITY.	M.	B.	D.	MUNICIPALITY.	M.	B.	D.
Atlantic County.				Greenwich Township,	..	..	1
Atlantic City,	4	3	..	Landis Township,	..	1	..
Galloway Township,	..	3	..	Millville City,	..	6	..
Hamilton,	..	..	1	Vineland Borough,	..	1	1
Hammonon,	..	8	1	Essex County.			
Weymouth,	1	1	2	Bloomfield Township,	..	4	..
Bergen County.				Caldwell Township,	..	1	..
Carlstadt Borough,	..	4	..	Clinton Township,	..	2	4
Cliffside Park Borough,	..	..	1	East Orange,	..	36	2
Cresskill Borough,	1	..	..	Montclair,	..	2	8
Dumont Borough,	3	11	4	Newark,	329	1291	29
East Rutherford Borough,	1	3	..	Orange City,	..	4	12
Engelwood,	2	4	..	South Orange Township,	..	2	4
Franklin Township,	..	6	2	Vailsburg Borough,	..	1	1
Garfield Borough,	..	1	..	Verona,	..	1	..
Harrington Township,	..	3	..	West Orange Township,	..	3	..
Leonia Borough,	1	..	..	Gloucester County.			
Lodi Borough,	..	4	..	Clayton Borough,	..	7	..
Ridgewood Township,	..	5	1	Deptford Township,	..	8	1
Saddle River Township,	..	1	..	East Greenwich Township,	..	..	1
Undercliff Borough,	..	1	..	Elk Township,	..	..	1
Upper Saddle River Borough,	..	1	..	Glassboro Township,	..	2	..
Union Township,	..	1	2	Greenwich Township,	..	3	1
Burlington County.				Harrison Township,	..	..	1
Beverly City,	1	12	3	Mantua Township,	..	2	..
Burlington City,	1	..	..	South Harrison Township,	..	..	1
Chester Township,	1	6	1	Washington Township,	..	1	..
Cinnaminson Township,	..	7	2	Wenonah Borough,	..	1	2
Delran Township,	1	2	..	West Deptford Township,	2	13	3
Evesham Township,	..	..	1	Woodbury,	1	1	..
Mt. Laurel Township,	..	3	3	Woolwich,	..	1	2
Northampton Township,	3	9	5	Hudson County.			
Palmyra Township,	..	4	..	Bayonne,	16	108	..
Riverside Township,	1	3	..	Hoboken,	8	60	..
Riverton Borough,	..	2	..	Harrison,	2	15	..
Shamong Township,	1	..	..	Hoboken,	44	84	..
Southampton Township,	..	1	..	Jersey City,	85	307	11
Springfield Township,	..	1	3	Town of Union,	14	32	1
Washington Township,	..	1	..	Hunterdon County.			
Watford Township,	..	3	..	Alexander Township,	..	..	1
Camden County.				Bethlehem Township,	..	1	2
Camden City,	109	55	8	East Amwell Township,	..	1	..
Centre Township,	..	7	..	Holland Township,	..	4	..
Delaware Township,	..	5	1	Kingwood Township,	..	2	..
Gloucester City,	1	13	..	Lebanon Township,	..	..	4
Gloucester Township,	..	..	5	Lambertville,	..	5	..
Haddon Borough,	1	9	1	Lambertville,	..	5	5
Haddon Township,	..	12	..	Raritan Township,	5	16	3
Merchantville Borough,	..	3	..	Readington Township,	..	1	3
Pensauken Township,	..	4	..	Tewksbury Township,	..	8	3
Waterford Township,	1	..	..	Mercer County.			
Cape May County.				Ewing Township,	..	4	..
Dennis Township,	4	12	3	East Windsor Township,	..	1	1
Middle Township,	1	2	..	Hamilton Township,	..	..	1
Ocean City Borough,	2	1	1	Hopewell Township,	..	2	..
Upper Township,	..	2	..	Princeton Borough,	7	4	6
West Cape May Borough,	..	2	..	Princeton Township,	..	1	1
Cumberland County.				Trenton,	16	41	..
Bridgeton City,	5	1	1	Middlesex County.			
Deerfield Township,	..	1	..	East Brunswick Township,	..	1	..
Downe Township,	2	4	2	New Brunswick City,	13	3	1
				Perth Amboy,	5	8	..

Statement of Returns of Marriages, Births and Deaths received
too late for Tabulation in the Annual Report for Year
Ending June 30th, 1899.—Continued.

MUNICIPALITY.	M.	B.	D.	MUNICIPALITY.	M.	B.	D.
Middlesex County—Con.				Manchester Township,	10	..	..
Piscataway,	4	1	..	Passaic City,	1	11	..
Raritan Township,	3	10	7	Paterson,	11	56	..
Sayreville Township,	..	2	..	West Milford Township,	..	..	1
South Amboy City,	1	3	..	Salem County.			
South Brunswick,	..	..	1	Lower Alloways Creek,	3	..	..
Monmouth County.				Lower Penns Neck,	..	2	..
Atlantic Township,	..	..	2	Mannington,	..	6	..
East Brunswick Township,	..	1	..	Pennsgrove Borough,	1	2	..
Freehold,	6	1	..	Quinton Township,	..	2	1
Holmdel Township,	..	1	..	Salem City,	4	5	..
Howell Township,	..	2	..	Somerset County.			
Long Branch City,	2	1	..	Bedminster Township,	2	1	..
Manalapan Township,	..	2	..	Bernards Township,	2	4	6
Marlboro Township,	..	2	..	Bound Brook Borough,	..	10	1
Middletown Township,	2	4	..	Bridgewater Township,	1	7	2
Millstone Township,	2	1	..	Franklin Township,	..	1	..
North Spring Lake Borough,	1	1	..	Hillsboro Township,	1	1	2
Ocean Township,	..	2	..	Millstone Borough,	..	1	..
Raritan Township,	2	3	..	North Plainfield Borough,	1	..	1
Red Bank Borough,	9	..	..	Raritan Borough,	2	7	..
Shrewsbury Township,	1	6	..	Warren Township,	..	1	..
South Brunswick Borough,	..	3	..	Sussex County.			
Morris County.				Andover Township,	..	2	..
Boonton City,	1	..	..	Frankford,	1	1	..
Chatham Borough,	1	..	..	Hardyston Township,	1	..	5
Chester Township,	..	1	..	Sparta Township,	5	..	..
Hanover Township,	1	..	4	Stillwater,	..	2	..
Mendham Township,	..	3	..	Vernon,	..	1	..
Montville Township,	2	..	..	Union County.			
Morristown,	2	2	..	Clark Township,	1	..	2
Morris Township,	1	..	..	Elizabeth,	1	60	..
Mt. Olive Township,	3	..	..	Plainfield,	17	14	1
Netcong Borough,	1	2	..	Roselle Borough,	11	8	19
Passaic Township,	1	..	1	Summit Township,	..	18	..
Port Oram Borough,	4	..	..	Warren County.			
Rockaway Township,	1	..	..	Greenwich Township,	2	..	1
Roxbury Township,	1	4	..	Hackettstown,	..	..	1
Washington Township,	4	1	..	Hope Township,	..	..	1
Ocean County.				Lopatcong Township,	1	3	1
Berkeley Township,	..	4	..	Oxford Township,	..	1	..
Brick Township,	..	1	..	Phillipsburg,	3	16	18
Eagleswood Township,	1	..	..	Pohatcong,	..	10	5
Lacey Township,	4	..	..	Totals,	781	2702	300
Ocean Township,	1	..	1				
Union Township,	..	1	..				
Passaic County.							
Acquackanonk Township,	..	10	2				
Hawthorne Borough,	..	8	..				

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30'h, 1899.

COUNTIES. Statistical Divisions.	DEATHS AT ALL AGES.								DEATHS FROM THE MORE COMMON CAUSES.																												
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Death-rate per 1,000 without cities of over 5,000.	Deaths under 5, in each 100, or comparison of these with total deaths.	Number of deaths from chief preventable diseases.	Comparative number of deaths in each 100 from chief preventable diseases.	Malaria fever.	Enteric or Typhoid Fever.	Small- pox.	Scarlet Fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intesti- nal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.		
Atlantic	42	127	63	38	243	217	3	733	39478	18.57	4.31	31.65	202	27.56	2	2	...	...	...	...	10	28	95	37	32	86	38	76	74	61	20	1	6	33	36		
Bergen	72	178	124	64	328	323	9	1092	80191	13.62	13.10	34.25	313	28.66	4	8	...	...	...	...	4	28	95	61	46	151	64	106	55	127	61	49	4	57	44		
Burlington ..	61	102	54	47	270	381	10	935	61003	15.32	14.73	24.23	225	24.06	2	16	...	...	...	...	9	8	88	43	56	128	35	112	68	114	43	41	3	34	69		
Camden	122	336	201	173	565	492	6	1895	110036	17.22	12.83	34.78	591	31.19	4	60	...	...	5	1	15	83	3	218	99	103	249	140	173	130	164	80	56	4	10	100	67
Cape May	10	21	14	9	58	89	1	202	14123	14.30	11.62	22.28	440	31.78	...	...	...	...	...	...	...	...	19	10	13	17	9	28	18	30	14	6	1	1	14	16	
Cumberland ..	42	87	43	69	177	248	4	670	53325	12.66	12.59	25.67	180	26.87	1	14	...	...	...	...	1	9	8	1	64	42	50	85	39	78	54	36	85	6	6	17	33
Essex	403	1022	691	416	2266	1482	8	6288	356000	17.66	14.30	33.65	2055	32.88	17	99	...	...	34	2	62	184	20	789	506	342	847	387	561	435	536	310	188	14	55	292	205
Gloucester ..	24	69	31	28	109	170	2	426	33323	12.83	12.82	27.46	106	24.58	1	12	...	...	1	...	3	7	...	40	23	19	61	33	86	24	53	80	20	...	3	21	...
Hudson	521	1362	907	467	2765	1239	6	7247	370440	19.56	18.57	38.37	2301	31.75	23	80	...	...	76	32	76	189	19	917	546	393	1113	563	517	406	467	347	181	10	60	487	274
Hunterdon ..	27	36	18	23	112	232	2	450	33334	12.74	12.74	18.00	87	19.33	3	2	...	...	3	...	1	6	2	27	26	17	53	11	59	29	72	33	23	...	7	23	27
Mercer	118	211	131	90	543	447	25	1565	89936	17.39	16.43	29.39	425	27.16	4	35	...	...	2	5	7	17	14	147	118	76	200	83	142	83	204	78	55	2	22	82	71
Middlesex ..	87	215	103	83	333	307	13	1141	76698	14.88	13.99	35.50	342	29.97	4	15	...	...	5	...	8	31	3	164	53	69	156	62	97	62	106	61	29	2	5	91	51
Monmouth ..	69	170	79	62	303	339	13	1055	80675	13.20	12.76	29.86	270	25.35	6	15	...	...	4	2	10	5	...	134	42	52	114	49	117	79	118	83	32	3	8	54	69
Morris	62	102	62	58	322	323	4	934	63981	14.62	13.48	24.20	227	24.30	5	6	...	...	6	2	10	12	1	73	63	49	141	40	76	52	172	35	32	...	11	52	35
Ocean	19	43	15	14	87	99	3	280	19531	14.34	14.34	27.50	83	29.64	1	8	...	...	...	...	1	2	...	31	13	27	41	19	18	12	80	11	9	1	1	14	22
Passaic	235	534	378	252	985	546	5	2975	155771	19.10	11.61	39.90	932	31.33	4	71	...	...	18	43	36	108	11	843	165	134	468	240	236	138	179	124	72	10	33	162	136
Salem	23	59	40	27	111	148	...	408	26828	15.02	13.96	30.27	117	29.03	1	7	...	...	...	...	1	22	1	42	16	25	43	17	45	24	41	24	12	1	5	19	33
Somerset	32	65	34	27	129	203	1	491	32155	15.27	15.27	26.68	116	29.63	4	9	...	...	...	...	1	7	1	49	22	23	67	21	64	30	48	31	24	2	3	28	40
Sussex	10	20	11	17	73	108	1	240	23606	10.62	10.61	17.08	52	21.67	...	3	...	...	...	2	3	1	17	13	13	38	8	32	13	38	23	10	2	3	16	6	
Union	107	242	131	89	493	406	6	1474	96762	15.39	10.77	32.56	398	27.00	9	12	...	...	10	2	9	42	8	158	83	70	204	84	126	118	145	52	50	5	14	97	74
Warren	30	47	30	83	131	218	4	498	37867	13.02	12.80	21.70	98	19.88	1	5	...	...	2	...	7	9	...	30	15	29	71	22	50	30	69	41	15	3	4	26	24
Totals	2135	5058	3163	2076	10404	8042	120	80999	1858872	16.70	13.73	33.42	9164	29.56	96	486	...	...	187	96	283	777	88	3568	1956	1628	4322	1954	2731	1925	2842	1556	946	73	267	1724	1359

NOTE.—Under the heading "Number of deaths from chief preventable diseases," the first ten diseases are classified, including consumption (male and female). Of those dying under one year 2135 died under one month, of which 1491 died in the large cities. Of the 10357 that died under five years, 7460 died in the large cities. Total death-rate for consumption for the State as compared with total deaths, 11.56, the deaths being in the cities 2484; 1100 outside. Rates for short periods, or which deal with small numbers, do not eliminate or balance errors which practically disappear in large aggregates. The number of deaths before twenty, in proportion to the remainder, is much more informative concerning local causes affecting health than total deaths. The death-rate for the present year is based upon the increased population from the National census of 1890 to the State census of 1895, and is therefore liable to slight errors, as this method of calculation can never be accurate for all places, as in any given period of five or ten years a city may show greater percentage of increase than in any previous period of equal duration.

Return of Deaths from all Causes and Certain Specified Diseases, in Cities of Over 5,000 Inhabitants of the State of New Jersey, for the Year Ending June 30th, 1899.

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CITIES HAVING OVER 5,000 POPULATION.	DEATHS AT ALL AGES.								DEATHS FROM THE MORE COMMON CAUSES.																											
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Deaths under 5, in each 100, or comparison of these with total deaths.	Number of deaths from chief preventable diseases.	Comparative number of deaths in each 100 from chief preventable diseases.	Malarial fever.	Enteric or typhoid fever.	Shall-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrical diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of Heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths		
																																			Statistical Divisions.	
Atlantic County—																																				
Atlantic City.....	26	79	33	24	164	102	1	429	22345	19.03	32.17	114	26.57	2	5	.....	1	5	7	2	55	23	14	47	27	44	50	40	30	14	.....	4	17	16		
Bergen County—																																				
Englewood.....	7	20	8	3	35	31	..	104	5919	17.57	33.65	21	20.19	1	.....	.....	1	1	.....	15	1	2	20	6	12	6	14	5	4	3	.....	4	2			
Hackensack.....	6	23	11	5	46	32	1	124	8298	14.94	32.26	42	33.87	1	.....	.....	1	1	4	.....	17	13	6	15	6	14	6	11	8	7	.....	2	5			
Burlington County—																																				
Bordentown.....	4	9	4	5	29	40	..	91	5244	17.35	18.57	23	25.27	..	3	.....	.....	1	.....	2	3	7	9	2	10	4	19	5	2	1	.....	5	7			
Burlington.....	10	11	14	6	44	73	3	161	9546	16.87	21.86	39	21.22	1	4	.....	5	.....	.....	9	10	10	13	8	18	14	25	9	5	.....	2	7	11			
Camden County—																																				
Camden.....	85	234	160	131	388	307	3	1308	67587	19.35	36.62	428	32.72	3	49	.....	4	.....	10	66	3	156	60	77	184	97	117	94	59	58	12	1	4	70	39	
Gloucester City.....	9	23	14	12	36	29	1	124	6359	19.50	37.10	38	30.65	1	1	.....	.....	2	6	.....	18	7	3	13	11	7	7	8	7	5	1	2	10	6		
Cumberland County—																																				
Bridgeton.....	14	32	7	19	64	70	1	203	14774	13.74	24.14	70	34.48	1	6	.....	.....	1	2	4	.....	18	19	19	20	8	24	22	15	11	9	.....	1	8		
Millville.....	10	32	11	15	32	45	..	145	10834	13.38	35.55	45	31.03	.....	.....	.....	.....	5	1	.....	17	10	12	21	7	16	8	12	9	5	.....	2	4	6		
Essex County—																																				
Montclair.....	9	23	22	9	64	58	..	185	14229	13.00	29.19	51	27.57	1	3	.....	2	.....	3	4	1	18	12	7	29	11	18	18	16	6	4	.....	3	14	7	
Newark.....	202	792	528	309	1735	1639	5	4714	242986	19.40	34.41	1572	31.35	12	85	.....	25	2	45	126	13	619	353	262	613	297	393	337	413	234	135	7	42	224	158	
Orange.....	31	97	64	24	181	82	..	472	25948	18.19	38.56	163	35.59	1	1	.....	.....	2	8	15	.....	70	49	22	74	29	37	35	24	17	18	3	4	15	17	
Hudson County—																																				
Bayonne.....	53	116	85	30	174	65	2	525	20512	25.59	48.38	158	30.10	2	12	.....	6	.....	9	8	.....	90	18	13	81	45	36	27	25	27	14	.....	5	35	19	
Harrison.....	17	43	24	15	73	33	1	206	10742	19.18	40.78	59	28.64	3	2	.....	1	.....	.....	4	.....	24	15	10	26	23	14	6	18	16	4	.....	.....	15	13	
Hoboken.....	89	232	129	89	518	194	1	1243	62431	19.91	35.48	384	30.88	1	13	.....	19	2	3	46	6	144	96	54	192	89	97	67	82	67	27	.....	10	108	40	
Jersey City.....	290	688	553	229	1540	645	1	3926	198481	19.78	38.49	1263	32.17	14	39	.....	45	18	59	102	9	460	284	253	588	305	253	226	252	184	89	9	33	258	146	
Town of Union.....	16	34	17	15	62	35	..	179	15388	11.63	37.43	63	35.20	.....	1	.....	1	.....	2	7	.....	20	21	11	30	12	10	16	4	14	2	.....	1	6	5	
Mercer County—																																				
Trenton.....	100	176	107	74	419	285	18	1179	66566	17.71	32.49	329	27.91	1	33	.....	2	4	6	12	11	117	90	53	164	74	101	69	102	65	44	1	19	64	47	
Middlesex County—																																				
New Brunswick.....	13	54	23	24	124	97	1	336	20954	16.04	26.79	98	27.68	.....	5	.....	3	.....	.....	6	.....	42	15	22	52	16	27	17	43	21	10	2	1	26	15	
Perth Amboy.....	35	67	40	21	65	28	..	256	15842	16.16	55.47	95	37.11	.....	4	.....	.....	8	13	2	63	8	7	30	20	11	17	10	7	8	.....	3	14	6		
South Amboy.....	4	17	12	5	24	21	..	83	6563	12.65	39.76	27	32.53	1	1	.....	.....	.....	.....	3	.....	14	4	4	15	4	8	2	5	3	1	.....	1	6	7	
Monmouth County—																																				
Long Branch.....	10	22	9	7	54	25	3	130	7426	17.51	31.54	30	23.06	.....	4	.....	1	.....	.....	16	3	5	9	7	8	9	20	9	6	1	3	13	5			
Morris County—																																				
Dover.....	6	13	4	4	26	19	..	72	5631	14.34	31.94	23	31.94	1	1	.....	4	.....	1	.....	6	7	3	10	4	4	5	2	2	6	.....	3	3	2		
Morristown.....	17	27	19	11	88	68	..	230	11994	19.18	27.48	58	25.32	.....	1	.....	1	.....	1	.....	17	12	19	42	12	20	16	30	11	5	.....	3	6	10		

Return of Deaths from all Causes and Certain Specified Diseases, in Cities of Over 5,000 Inhabitants of the State of New Jersey, for the Year Ending June 30th, 1899.—Continued.

CITIES HAVING OVER 5,000 POPULATION.	DEATHS AT ALL AGES.								Estimated population.	Death-rate per 1,000.	Deaths under 5, in each 100, or comparison of these with total deaths.	Number of deaths from chief preventable diseases.	Comparative number of deaths in each 100 from chief preventable diseases.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.	
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.																											
Passaic County—																																			
Passaic	63	140	69	45	141	56	2	515	21786	23.64	52.62	172	33.40	11	..	6	1	3	10	2	93	20	28	76	51	28	16	22	19	10	3	5	32	21	
Paterson	169	374	279	182	783	432	2	2311	112540	19.55	37.15	693	31.34	59	..	10	36	29	56	4	225	135	102	343	171	184	113	144	97	55	7	26	102	107	
Salem County—																																			
Salem City	8	18	11	7	35	49	..	129	6893	18.30	28.91	39	30.47	1	1	..	..	1	..	8	..	11	4	13	15	8	13	10	14	5	3	..	3	3	7
Union County—																																			
Elizabeth	70	155	85	57	290	179	4	840	48690	17.25	36.90	238	28.33	3	5	..	9	1	7	27	2	95	57	32	124	53	64	72	66	30	28	2	7	50	36
Plainfield	10	47	16	11	86	80	..	244	15517	16.72	27.46	64	26.23	3	3	..	..	1	..	3	..	34	6	16	30	14	30	13	31	14	7	1	3	14	13
Rahway	8	16	11	9	47	51	..	142	8528	16.67	24.65	35	24.65	3	2	..	..	1	..	3	1	8	7	10	21	8	9	15	15	4	6	1	4	11	5
Warren County—																																			
Philipsburg	10	16	10	6	39	46	2	129	9429	13.68	27.91	30	23.26	1	..	..	..	..	1	2	..	13	6	7	13	4	8	9	17	10	6	..	3	16	9
Totals	1491	3626	2343	1403	7412	4306	53	20634	1100865	18.74	36.15	64.24	31.33	58	855	..	137	76	216	574	61	2503	1404	1080	29.9	1430	1665	1312	1596	1004	571	42	198	1149	795

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.*

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REPORT OF VITAL STATISTICS.

ATLANTIC COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																					
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un- defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Abeacon.....	2	3	1	4	6	13	13	18	19.03	2	5	1	5	7	2	55	23	14	47	27	44	50	40	30	14	4	17	1			
Atlantic City.....	1	1	1	1	6	5	16	22,546	19.08	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Buena Vista Township.....	1	1	1	1	6	5	16	16	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Brigantine Borough.....	3	5	3	2	6	17	36	36	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Egg Harbor City.....	1	7	1	2	9	16	36	36	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Egg Harbor Township.....	3	9	1	3	7	16	39	39	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Galloway Township.....	1	4	6	1	13	10	34	34	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Hamilton Township.....	4	10	13	3	14	20	66	66	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Hammononton Township.....	1	1	1	1	1	3	4	4	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Linwood Borough.....	1	1	1	1	1	3	13	13	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mullica Township.....	3	8	4	1	9	8	33	33	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Pleasantville Borough.....	1	1	1	1	1	1	3	3	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Somers Point Borough.....	1	1	1	1	1	1	3	3	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
South Atlantic City Borough.....	1	1	1	1	1	1	3	3	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Weymouth Township.....	1	1	1	1	1	1	3	3	19.03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Totals.....	42	127	63	35	243	27	3	733	39.478	18	57	2	9	3	8	13	3	95	37	82	86	38	75	70	74	51	20	1	6	33	35

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

BERGEN COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																						
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un- defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Meas- es.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and inte- stinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.	
Allendale Borough.....	1	...	1	...	...	3	...	5	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	1	...
Bergen	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bergenfield Borough.....	...	...	...	...	1	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Bogota Borough	...	...	1	...	...	2	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carlstadt Borough	5	14	7	3	5	8	1	43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cliffside Park Borough.....	1	4	2	...	5	...	...	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Creenskill Borough.....	...	...	1	1	...	1	...	4	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	1	...	...	...	...	1	...
Delford Borough.....	1	1	...	...	...	1	...	4	...	...	...	...	...	...	...	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...
Dumont Borough.....	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
East Rutherford Borough.....	3	8	4	5	10	6	...	36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Englewood	7	20	8	3	35	31	...	104	6,919	17.57	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Englewood Cliffs.....	...	...	...	...	...	1	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fairview Borough.....	3	1	2	...	5	7	...	18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Franklin	3	5	6	2	11	11	...	38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Garfield Borough.....	3	5	11	2	16	2	...	39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Glen Rock Borough.....	...	1	...	...	...	3	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hackensack.....	6	23	11	5	46	32	1	124	8,298	14.94	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Harrington.....	8	5	3	2	15	20	...	48	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hasbrouck Heights.....	...	1	1	...	4	4	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hillsdale.....	1	1	1	1	2	5	...	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hoboken.....	2	6	2	2	8	15	...	35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leonia Borough.....	1	1	...	...	...	1	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Little Ferry Borough.....	3	4	5	...	4	1	...	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lodi Borough.....	...	8	9	4	2	10	...	33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lodi Township.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Maywood Township	...	1	...	...	4	4	...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Midland.....	3	4	3	4	9	25	1	49	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.—Continued.*

BERGEN COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																					
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un- defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Midland Park Borough	1	...	1	2	6	3	...	13	...	...	...	...	...	...	...	...	...	...	...	1	1	1	4	1	...	1	...	1	...	...	1
Montvale	...	...	...	...	...	8	...	8	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3	...	2	...	1	...	...	...	1
North Arlington Borough	...	...	...	...	2	1	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Old Tappan Borough	...	...	...	1	1	1	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Orvil	...	5	1	1	1	7	...	15	...	...	...	...	...	...	...	...	...	...	...	...	3	2	1	...	3	...	...	...	...	...	2
Overpeck	2	1	2	2	5	6	...	18	...	...	...	...	...	...	1	...	...	...	...	1	5	1	...	1	3	...	1	...	...	...	4
Palisade	...	1	1	...	3	4	...	9	...	...	...	...	...	...	1	...	...	...	...	...	1	...	1	1	3	1	...	...	...	...	1
Park Ridge Borough	1	5	2	1	7	2	...	18	...	...	...	...	...	...	2	...	...	...	...	...	1	4	12	1	3	1	...	1	...	...	1
Ridgefield	4	6	4	3	15	18	...	50	...	...	...	...	...	...	1	1	...	6	7	3	8	...	8	2	3	1	3	...	...	...	3
Ridgefield Borough	...	1	1	...	1	3	...	6	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	2	...	...	...	...	...	1
Ridgewood	...	6	4	3	18	9	...	40	...	...	...	2	...	...	...	...	1	...	...	2	2	3	8	4	4	1	5	...	...	...	1
Riverside Borough	1	1	...	...	5	6	...	13	...	...	...	1	...	...	...	...	...	...	...	1	1	2	1	...	1	...	2	...	...	...	1
Rutherford Borough	4	5	9	5	20	14	...	57	...	1	...	2	...	...	1	...	...	...	5	1	3	10	2	8	4	5	3	3	...	...	4
Saddle River Borough	...	...	1	1	1	5	...	8	...	...	...	...	...	...	...	...	...	...	...	2	1	1	3	1	1	...	...	...	...	...	1
Saddle River Township	2	6	4	1	11	6	...	30	...	...	...	1	...	...	...	...	...	...	4	1	3	4	4	...	3	4	1	1	...	...	1
Teaneck Township	...	1	...	...	2	3	...	6	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...	2	...	...	...	...	...	1
Tenafly Borough	2	2	2	4	9	4	...	23	...	...	...	...	...	...	...	...	1	...	...	1	1	1	3	4	...	3	4	1	1	...	1
Undercliff Borough	2	3	2	1	5	4	...	17	...	...	...	...	...	...	...	...	...	...	2	1	1	3	...	2	...	2	1	1	...	...	2
Union	3	8	5	1	6	2	...	25	...	...	...	...	...	...	1	1	...	...	6	2	1	4	2	1	...	1	1	...	...	...	2
Upper Saddle River	...	...	...	...	...	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...
Wallington Borough	2	6	4	1	5	1	...	20	...	1	...	...	...	...	...	...	1	...	...	5	1	...	2	1	1	1	1	2	...	...	...
Washington	...	1	2	2	2	3	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	...	1	1	1	...	...	1
Westwood Borough	1	1	...	...	2	3	...	7	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	1	1	...	...	...	1
Woodcliff Borough	...	...	1	3	3	...	...	7	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	4	...	...	...	...	...	1
Wood Ridge Borough	1	3	1	...	5	4	...	14	...	...	...	1	...	...	...	...	...	...	2	2	1	1	1	1	2	...	...	...	...	2	...
Totals	23	56	42	24	121	97	...	353	80191	13.62	4	8	...	18	6	10	25	2	133	61	46	151	64	106	55	127	51	43	4	5	57

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

BURLINGTON COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																							
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un-defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrheal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.		
Bass River.....	1	1	...	1	4	5	...	12	...	...	...	1	...	...	...	...	...	1	1	1	...	...	1	2	1	1	...	...	...	2	7		
Beverly.....	5	9	4	6	29	22	1	76	...	...	...	3	...	...	1	...	...	...	9	3	7	10	4	8	4	19	5	...	...	...	5	7	
Bordentown.....	4	9	4	5	29	40	...	91	5244	17.35	...	...	...	...	...	...	1	1	1	...	...	...	...	10	4	4	19	5	...	...	...	5	7
Burlington City.....	10	11	14	6	44	73	3	161	9546	16.87	1	4	...	...	5	...	...	...	9	10	10	13	8	15	14	25	9	5	...	...	...	7	11
Chester.....	6	10	4	1	18	28	...	67	...	...	...	...	...	...	1	...	...	...	5	3	3	11	8	7	7	5	5	...	...	...	...	7	
Chesterfield.....	...	1	1	2	7	8	...	19	...	...	...	...	...	...	...	...	...	...	2	2	...	3	...	1	...	...	5	5	...	...	...	1	...
Cinnaminson.....	1	...	1	...	1	2	...	5	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Delran.....	...	4	2	...	6	10	...	22	...	...	...	1	...	...	...	...	...	...	8	1	3	4	1	1	2	1	...	...	...	...	...	4	...
Eastampton.....	...	1	...	...	...	2	...	3	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Evesham.....	2	4	6	2	5	9	...	28	...	...	...	1	...	...	...	...	...	...	5	...	2	3	2	6	...	3	...	...	...	...	...	1	2
Fieldsboro.....	1	1	1	...	1	4	...	8	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Florence.....	1	7	3	3	5	15	...	34	...	...	...	...	...	...	...	1	1	...	4	1	1	2	3	2	6	...	...	...	...	...	...	4	1
Lumberton.....	1	3	1	1	9	7	...	22	...	...	...	...	...	2	...	...	...	...	2	2	2	3	...	3	1	1	2	1	1	...	...	1	...
Mansfield.....	3	2	2	2	7	11	...	27	...	...	1	...	...	...	...	...	1	...	1	1	2	7	...	2	1	5	1	...	...	...	...	2	...
Medford.....	4	2	2	1	3	16	1	29	...	...	...	...	...	...	...	...	...	...	3	...	...	5	...	7	3	4	1	...	...	...	...	...	...
Mount Laurel.....	1	1	1	...	1	8	...	12	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	1	2	1	...	...	...	...	...	...	...
New Hanover.....	...	2	...	3	6	13	1	25	...	...	...	...	...	...	...	...	...	...	...	...	3	...	6	1	4	2	2	...	...	...	...	...	...
Northampton.....	3	10	4	4	24	40	1	96	...	...	...	2	...	1	...	...	...	...	8	6	4	16	2	19	10	7	4	6	1	...	...	1	7
Palmyra.....	4	6	6	1	12	8	...	37	...	...	...	...	...	...	...	...	...	...	6	2	...	3	5	5	1	5	1	3	...	...	...	1	1
Pemberton Borough.....	...	3	...	...	...	3	...	8	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	...	...	1	1	...	...	...	...	...	...
Pemberton Township.....	4	4	1	3	13	11	3	39	...	...	...	1	...	...	...	...	1	...	3	1	3	5	...	3	2	8	1	1	...	...	...	3	3
Riverside.....	5	5	3	1	6	6	...	26	...	...	...	...	...	...	...	...	...	...	5	1	2	4	2	...	...	1	3	1	...	...	...	...	2
Riverton Borough.....	1	1	1	...	14	6	...	25	...	...	...	...	...	...	...	...	...	...	1	4	3	5	1	...	...	2	1	...	...	...	...	1	1
Shamong.....	...	1	1	2	2	3	...	9	...	...	...	...	...	...	...	...	...	...	2	...	...	2	1	2	...	2	...	...	...	...	...	...	...

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.—Continued.

BURLINGTON COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.								Estimated population.	DEATHS FROM THE MORE COMMON CAUSES.																					
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.		Death-rate per 1,000.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and inter- nal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Southampton.....	2	1		3	14			20											2		1	5									
Springfield.....			1					11			1										1	6									
Washington.....	1			4	6			7													2			1							
Westampton.....	2					3		6												1		2									
Willingboro.....	1	1			1	2		4											1		1										1
Woodland.....	1	1	1			2		5												1	1			1		1					
Totals.....	61	102	64	47	270	381	10	935	61005	15.83	2	16	3	6	4	4	3	88	43	56	128	35	112	68	114	43	41	8	6	34	65

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

CAMDEN COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.									DEATHS FROM THE MORE COMMON CAUSES.																							
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total including un- defined.	Estimated population.	Death-rate per 1,000.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.		
Camden City	85	234	160	131	388	307	3	1808	67,587	19.35	3	49	....	4	....	10	66	3	156	60	77	184	97	117	94	99	58	32	1	4	70	39	
Centre	4	4	4	3	9	12	....	36	....	....	....	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Cheshurst	1	....	....	....	1	1	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Collingswood Borough	2	3	....	2	7	11	....	25	....	....	....	2	....	....	....	....	....	....	....	3	....	4	1	5	2	2	1	....	....	1	2	....	
Delaware	3	3	....	4	6	....	....	13	....	....	....	....	....	....	....	....	....	....	....	1	6	1	6	1	5	2	2	....	....	....	....	....	
Gloucester City	9	23	14	12	36	29	1	124	6,359	19.50	1	1				2	6		18	7	3	13	11	7	7	3	8	7	5	1	2	10	6
Gloucester Township	3	11	1	5	36	50		106				2		1			6		5	12	6	5	3	15	5	20	2	8	3			4	7
Haddon Township	3	4	1	2	7	9	1	27											1	3	1	1	1	3	2	4	4			1	1	3	2
Haddonfield Borough	1	5	1	2	7	11	....	28	....	....	....	....	....	....	1	....	2	....	2	1	....	5	2	3	2	4	3	....	....	....	....	....	
Merchantville	2	4	5	1	17	15		44				2							4	1	7	7	2	2	2	5	3	1				1	5
Pensauken	12	3	3	....	11	4	....	25	....	....	....	....	....	....	....	....	....	....	3	2	3	1	1	3	....	....	....	....	....	....	....	....	
Stockton	7	27	8	10	20	18		90								1	2		19	3	2	10	12	10	3	5	3					4	3
Voorhees	2	2			1	1		4														1	1										1
Waterford	2	8	3	3	10	10	....	36	....	....	....	2	....	....	....	1	....	....	5	1	1	3	3	2	2	2	5	....	....	....	....	....	
Winslow	1	5	1	1	11	8	1	28	....	....	....	....	....	....	....	1	....	....	2	3	1	4	2	3	4	5	....	....	....	....	....	....	
Totals	122	335	201	173	565	492	6	1895	110,036	17.22	4	60	....	5	1	15	83	3	218	99	103	249	140	172	130	161	90	56	4	10	100	67	

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.*

CAPE MAY COUNTY, Statistical Division.	DEATHS AT ALL AGES.							DEATHS FROM THE MORE COMMON CAUSES.																							
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Anglesea Borough.....	1	1	1	1	3	1	1	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Avalon.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cape May City.....	2	3	3	.....	12	18	.....	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	2	1	3	2	7	5	6	4	.....	.....	.....	.....
Cape May Point Borough.....	.....	.....	.....	.....	1	2	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dennis.....	5	2	3	2	9	7	.....	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	2	1	4	1	2	1	3	1	.....	.....	.....	.....
Holly Beach Borough.....	.....	.....	.....	1	2	5	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lower.....	.....	4	3	.....	3	6	.....	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Middle.....	2	6	3	4	12	25	.....	52	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	.....	2	1	.....	1	4	2	.....	.....	.....	.....
Ocean City Borough.....	.....	.....	1	1	6	11	.....	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	4	4	1	4	13	1	5	1	.....	.....	.....	.....
Upper.....	.....	3	.....	1	7	12	.....	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sea Isle City Borough.....	1	1	1	.....	1	1	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Cape May Borough.....	.....	1	.....	.....	1	2	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wildwood Borough.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	10	21	14	9	58	59	1	202	14,123	14.30	.....	.....	.....	.....	.....	2	.....	.....	19	10	13	17	9	29	13	30	14	6	1	14	16

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

CUMBERLAND COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.									DEATHS FROM THE MORE COMMON CAUSES.																						
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intesti- nal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.	
Bridgeton.....	14	28	7	19	64	70	1	203	14,774	13.74	1	6	.....	.....	1	2	4	.....	18	19	19	20	8	24	23	15	11	9	1	1	8	
Commercial.....	.....	2	.....	.....	.....	5	.....	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Deerfield.....	3		2	5	8	11	1	30											2	1	2	4	3	3	3	3	3	3	3	1	1	1
Downe.....	.....	1	.....	1	1	4	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Fairfield.....	2	.....	2	3	7	4	.....	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Greenwich.....	2	.....	3	.....	8	9	.....	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	3	3	3	3	3	3	3	3	3	.....	.....	.....	
Hopewell.....	1	2	3	5	5	11	.....	27	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Landis.....	6	4	5	5	19	32		71				4							3	3	3	1	15	4	7	1	6	1	4	1	1	2
Lawrence.....		1	2	4	6	14	1	27											2		2	2	2	2		4	5	5	2	2		4
Maurice River.....	.....	5	.....	1	5	2	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Milville.....	10	32	11	15	32	45	.....	145	10,834	13.38	.....	.....	.....	.....	.....	5	1	.....	17	10	12	21	7	16	8	12	9	2	8	.....	.....	
Vineland Borough.....	4	11	6	11	18	30	1	81				3				1	1		4	2	7	15	7	11	4	13	1	1	1	2	4	6
Swow Creek.....	.....	1	1	.....	1	10	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Totals.....	42	87	43	89	177	248	4	670	53,325	12.56	1	14			1	9	8	1	54	42	60	85	39	73	54	66	35	29	6	6	17	38

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.*

ESSEX COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.								DEATHS FROM THE MORE COMMON CAUSES.																							
	Under one month.	Under one year.	One to Five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough, Diphtheria and croup.	Erysipelas.	Diarrhœal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and inte- stinal diseases.	Cancer.	Acute rheumatism. Puerperal.	Violent deaths.			
Belleville.....	5	15	9	17	34	17	1	98	.....	.....	1	1	.....	.....	.....	.....	.....	15	13	8	8	6	13	8	7	5	1	.....	.....	.....		
Bloomfield.....	10	27	13	8	37	50	.....	145	.....	.....	1	1	.....	.....	.....	.....	.....	17	17	1	1	1	15	5	12	7	7	.....	.....	.....		
Caldwell Borough.....	1	2	2	2	7	8	.....	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1	2	2	1	4	2	.....	1	1	.....	.....	.....		
Caldwell Township.....	.....	.....	.....	.....	4	10	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	6	1	1	.....	.....	.....	.....	.....		
Clinton Township.....	7	7	10	13	24	32	.....	93	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	4	4	16	6	10	8	6	6	4	1	1	4	3	
East Orange.....	14	21	21	17	64	83	.....	220	.....	.....	1	4	.....	.....	.....	1	11	13	11	9	33	12	24	18	27	17	6	1	1	8	8	
Franklin.....	1	3	1	3	10	11	.....	29	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	1	5	1	5	2	2	4	1	1	.....	.....	.....	
Glen Ridge Borough.....	1	2	.....	.....	8	8	.....	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....	2	1	7	2	.....	.....	.....	.....	.....	
Livingston.....	1	3	.....	.....	.....	8	.....	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	4	3	1	1	1	1	1	1	.....	.....	.....	
Millburn.....	3	4	6	3	14	13	.....	43	.....	.....	1	1	.....	.....	.....	.....	5	1	3	2	2	7	2	5	4	5	1	1	.....	.....	.....	
Montclair.....	9	23	22	9	64	58	.....	185	14,239	13.00	1	3	.....	.....	.....	3	4	1	18	12	7	29	11	18	18	16	6	4	.....	14	7	
Newark.....	302	792	528	809	1738	1039	6	4714	242,986	19.40	12	85		26	2	45	126	13	619	383	262	613	297	393	324	413	231	135	7	42	234	159
North Caldwell Borough.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Orange.....	31	97	54	24	184	82		472	25,948	18.19	1	1		2		8	15		70	49	22	74	29	37	35	24	17	18	3	4	15	17
South Orange.....	4	7	6	4	16	29		66			1	1		1			1	1	5	3	6	7	5	9	5	7	5	1	1	1	1	1
Vailsburgh Borough.....	5	5	6	.....	15	4	.....	35	.....	.....	.....	1	.....	.....	.....	1	.....	6	3	3	5	1	2	1	2	.....	2	.....	2	1	.....	
Verona.....	.....	1	2	1	3	4	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
West Orange.....	9	13	11	6	37	25	1	102								1	9		8	12	7	14	2	15	6	5	3	5		1	4	1
Totals.....	403	1022	691	416	2266	1482	8	6288	353,000	17.66	17	99		34	2	62	184	20	789	506	342	847	387	561	435	536	310	188	14	55	292	205

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

GLOUCESTER COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																				
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un- defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoical diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and inter- stinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Clayton Borough.....	3	7	2	4	14	3	1	34	.....	.....	4	.....	.....	.....	.....	1	.....	5	3	2	3	2	3	.....	2	2	1	.....	.....	.....
Deptford.....	1	3	.....	2	4	10	.....	20	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1	1	1	4	2	1	.....	5	.....
East Greenwich.....	.....	2	.....	.....	5	14	.....	23	.....	.....	.....	.....	.....	.....	.....	1	.....	2	2	.....	4	.....	2	1	4	.....	1	.....	1	4
Elk.....	.....	1	1	1	12	2	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	2	1	1	1	.....	.....	.....	.....	.....	.....
Franklin.....	4	2	1	2	21	2	.....	37	.....	.....	.....	.....	.....	1	.....	.....	.....	4	.....	2	2	3	2	5	5	.....	1	.....	1	.....
Glassboro.....	.....	8	2	3	12	11	.....	36	.....	.....	1	.....	.....	.....	1	.....	4	1	2	1	3	5	2	4	4	2	.....	5	1	.....
Greenwich.....	1	6	3	1	8	16	.....	35	.....	.....	3	.....	.....	.....	.....	.....	3	.....	4	.....	5	4	2	.....	5	.....	2	.....	1	5
Harrison.....	2	3	1	.....	2	2	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....	.....	1	1	.....	.....	.....	.....	.....
Logan.....	1	3	.....	.....	6	10	.....	20	.....	.....	1	.....	.....	.....	.....	.....	1	.....	1	5	.....	3	1	2	7	.....	.....	.....	.....	.....
Mantua.....	2	4	1	5	4	12	.....	28	.....	.....	2	.....	1	.....	1	.....	1	.....	1	5	2	1	1	5	1	2	.....	1	1	.....
Monroe.....	2	8	6	2	10	12	1	41	.....	.....	.....	.....	.....	.....	1	1	.....	2	1	3	1	3	4	4	5	1	4	.....	2	2
South Harrison.....	.....	2	.....	.....	2	4	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	2	.....	1	1	.....	.....	.....	.....	.....	.....
Washington.....	2	4	.....	1	5	9	.....	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	5	2	3	.....	2	1	3	.....	1	.....
Wenonah Borough.....	.....	1	.....	2	5	5	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	4	1	1	.....	4	.....	.....	.....	.....	1
West Deptford.....	.....	5	2	.....	1	8	.....	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	1	4	3	1	2	.....	1	.....	.....	.....	1
Woodbury.....	5	7	3	2	15	14	.....	46	.....	.....	1	.....	.....	1	.....	.....	6	5	3	2	.....	2	3	5	6	2	1	1	3	.....
Woolwich.....	1	3	2	1	7	17	.....	31	.....	.....	.....	.....	.....	.....	2	.....	1	3	1	7	.....	2	3	3	3	2	.....	.....	.....	2
Totals.....	24	69	24	28	109	170	2	496	33,228	12.82	1	12	.....	1	2	7	.....	40	23	19	61	23	76	24	52	30	20	2	21	27

MORTALITY TABLES.

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

HUDSON COUNTY. Statistical Divisions	DEATHS AT ALL AGES.									DEATHS FROM THE MORE COMMON CAUSES.																							
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un-defined.	Estimated population.	Death-rate per 1,000.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.		
Bayonne.....	53	116	85	30	174	65	2	525	20,512	25.59	2	12	....	6	....	9	8	....	90	18	13	81	45	36	27	35	27	14	....	35	19		
East Newark.....	4	6	7	4	16	7		44				1							4	2	2	5	4	5	2	3	1	1	1		3	3	
Guttenburg.....	3	19	13	7	21	11		74											17	4	5	17	6	4	4	2	3	1	1	1		2	3
Harrison.....	17	48	24	15	73	33	1	206	10,742	19.18	3	2	....	1	....	....	4	....	24	16	10	26	23	14	6	13	16	4	....	16	13		
Hoboken.....	80	232	129	89	518	194	1	1243	62,431	19.91	1	13	....	19	2	3	46	6	144	96	54	192	89	97	67	62	67	27	10	108	40		
Jersey City.....	290	685	538	229	1640	645	1	3926	195,981	19.78	14	39		45	18	59	102	9	460	284	233	598	305	283	226	252	184	89	9	33	258	146	
Kearny.....	7	32	14	21	73	55	....	202	....	....	1	3	....	1	....	1	8	....	15	19	7	22	20	15	12	13	7	9	3	22	17		
North Bergen.....	12	52	21	23	130	89	1	328	....	....	....	4	....	1	1	2	1	2	43	27	20	63	19	13	25	48	10	12	....	13	12		
Town of Union.....	16	34	17	15	62	35	....	179	15,388	11.63	....	1	....	1	....	2	7	....	20	21	11	30	12	10	16	4	14	2	1	6	5		
Union.....																																	
Weehawken.....	5	19	9	4	25	14	....	76	....	....	1	1	....	1	....	....	....	....	11	6	6	6	7	6	1	3	2	2	....	11	7		
West Hoboken.....	25	88	43	18	108	75		357			1	4		1		1		5	1	67	15	29	64	80	29	15	19	11	15		6	10	9
West New York.....	9	23	12	2	25	16		87										1	1	22		3	19	3	6	7	2	4	5		1	4	
Totals.....	521	1352	907	457	2765	1239	6	7247	370,410	19.56	23	80		76	23	76	189	19	917	506	393	1113	563	517	406	467	347	181	10	60	487	274	

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

HUNTERDON COUNTY, Statistical Divisions.	DEATHS AT ALL AGES.								DEATHS FROM THE MORE COMMON CAUSES.																								
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total including un- defined.	Estimated population.	Death-rate per 1,000.	Malarial fever.	Eritic or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrheal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Furuncul.	Violent deaths.		
Alexandria.....	12	1	...	1	2	10	...	16	...	...	...	...	...	...	...	...	...	...	2	...	...	...	4	...	...	...	1	...	...	...	...	...	
Bethlehem.....	...	...	2	3	6	14	...	25	...	...	...	...	...	...	...	...	...	...	...	3	...	...	2	2	5	4	6	1	1	...	...	...	
Clinton Borough.....	...	...	...	1	5	6	...	12	...	...	...	...	...	...	...	...	...	...	...	...	3	...	2	2	4	2	2	2	1	1	...	...	
Clinton Township.....	1	4	...	...	8	16	...	29	...	...	...	...	...	...	...	...	...	...	...	1	1	3	7	4	1	4	7	1	3	...	...	2	
Delaware.....	3	...	1	1	5	9	...	20	...	...	...	...	...	...	...	...	...	...	1	2	1	2	1	3	4	1	4	1	1	...	...	1	
East Amwell.....	1	2	1	...	9	10	...	23	...	...	...	...	...	...	...	...	...	...	1	2	1	2	...	3	4	1	7	1	1	...	...	2	
Franklin.....	...	...	...	...	4	10	...	14	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	4	1	2	1	1	...	...	1	
Frenchtown.....	...	...	1	1	2	13	...	17	...	...	1	1	...	...	...	...	...	...	...	2	1	2	...	3	4	3	4	2	1	...	...	2	
High Bridge Borough.....	3	1	1	1	3	6	...	15	...	...	...	...	...	...	...	...	...	...	1	2	1	2	...	2	1	2	2	1	...	...	...	2	
Holland.....	...	2	3	1	3	12	...	21	...	...	...	...	...	...	3	...	...	...	1	2	1	3	2	1	2	1	1	...	...	...	3	2	
Junction Borough.....	...	1	...	4	4	6	...	15	...	...	...	...	...	...	...	...	...	...	...	2	...	...	2	1	1	...	1	3	...	...	...	2	
Kingwood.....	...	...	...	...	5	8	...	14	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	2	1	3	1	2	...	...	...	2	
Lambertville.....	7	9	4	3	18	30	...	71	...	...	1	1	...	...	...	...	...	...	4	5	3	9	2	5	2	12	5	5	1	...	...	4	
Lebanon.....	1	5	1	2	7	12	...	28	...	...	...	...	...	...	...	...	...	...	8	3	3	3	1	7	1	7	1	2	1	...	...	2	
Raritan.....	5	2	1	1	16	20	...	46	...	...	...	...	...	...	...	...	...	...	4	3	5	5	3	5	5	5	5	1	2	1	...	...	3
Readington.....	...	4	1	2	8	23	1	39	...	...	1	...	...	...	...	...	...	...	1	2	1	1	6	...	5	3	9	5	1	1	...	...	4
Stockton Borough.....	2	1	1	...	1	3	...	8	...	...	...	...	...	...	...	...	...	...	...	2	...	...	3	1	1	...	...	...	...	...	...	...	
Tewksbury.....	1	2	...	2	2	12	...	19	...	...	...	...	...	...	...	...	...	...	1	2	1	...	2	1	3	1	5	2	1	1	...	...	
Union.....	...	...	...	...	2	7	...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3	...	2	1	1	...	...	...	
West Amwell.....	1	1	1	...	2	5	...	10	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	2	1	2	1	1	...	...	...	1	
Totals.....	27	36	18	23	112	232	2	450	35334	12.74	3	2	...	3	...	1	6	2	27	26	17	53	11	59	29	72	33	22	7	23	...	...	

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.*

MERCER COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																					
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un-defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Meas. s.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
East Windsor.....	2	1	1	3	6	...	13	127	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ewing.....	1	11	4	4	50	61	3	127	...	...	...	...	...	1	2	3	5	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hamilton.....	1	11	4	4	9	16	...	45	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hightstown Borough.....	1	3	...	1	9	10	1	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hopewell Borough.....	3	...	3	1	11	7	...	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hopewell Township.....	4	2	2	1	4	14	...	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Lawrence.....	2	6	2	1	6	8	...	25	...	1	...	...	...	1	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	
Pennington Borough.....	...	1	...	...	8	...	...	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Princeton Borough.....	4	3	7	3	20	18	2	67	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Princeton Township.....	2	...	...	1	1	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Trenton.....	100	176	107	74	419	285	18	1159	68,568	17.71	1	33	...	2	4	6	12	11	117	90	53	164	74	101	69	102	65	44	119	64	47
Washington.....	1	1	1	...	8	1	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
West Windsor.....	...	...	1	...	8	9	...	18	...	1	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	
Totals.....	118	211	131	90	543	447	25	1565	89,926	17.39	4	35	...	2	5	7	17	14	147	118	76	200	83	142	83	204	78	65	222	82	71

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.*

MIDDLESEX COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																						
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un- defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.	
Cranbury.....	3	12	1	4	12	2	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	12	1	3	2	1	1	1	.....	.....	.....	1	2	
Dunellen Borough.....	1	1	1	.....	.....	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
East Brunswick.....	1	3		12	13	20	39										1	3	2	6	3	8	3	6	2						2	2
Helmetta Borough.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Madison.....	1	2	1	.....	1	7	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	1	2	.....	2	1	1	.....	.....	.....	1	1	
Milbtown.....	.....	.....	1	1	.....	2	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Monroe.....	3	1	.....	3	3	10	20	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	2	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	
New Brunswick.....	13	54	23	24	124	97	336	20,954	16.04	.....	5	.....	3	.....	.....	6	.....	42	15	22	52	16	27	17	43	21	10	2	1	26	15	
North Brunswick.....	.....	.....	.....	.....	.....	2	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	
Perth Amboy.....	35	67	40	21	65	28	256	15,842	16.16	.....	4	.....	.....	.....	8	13	2	53	8	7	30	20	11	17	10	7	8	3	14	6		
Piscataway.....	2	7	2	4	14	23	53	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	5	2	1	6	3	4	3	7	2	.....	.....	.....	13	2	
Raritan.....	6	12	4	4	14	32	72	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	10	4	1	15	3	10	2	6	3	2	.....	.....	5	3	
Sayreville.....	2	14	5	5	9	3	38	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	12	.....	2	8	2	2	2	.....	1	.....	.....	.....	4	.....	
South Amboy.....	4	17	12	5	24	21	83	6,563	12.65	1	1	.....	.....	.....	.....	2	.....	14	4	4	15	4	8	2	5	3	1	.....	1	6	7	
South Amboy Township.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
South Brunswick.....		1	1	1	14	17	34				1							2	3	3	1		5	2	5	1	1				5	5
South River Borough.....	6	9	2	2	20	10	49				1							6	3	3	5	2	2	1	4	2	1				5	3
Woodbridge.....	10	24	11	8	23	21	97	.....	.....	.....	.....	.....	.....	.....	.....	3	1	17	2	6	15	5	7	6	6	5	1	.....	.....	9	3	
Totals.....	87	215	103	83	333	307	1,141	78,698	14.88	4	15	.....	5	.....	8	31	3	164	53	69	156	62	97	62	106	51	29	2	5	91	51	

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.*

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REPORT OF VITAL STATISTICS.

MONMOUTH COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																					
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un- defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Allentown Borough.....	4	10	2	4	3	4	53	7	.....	.....	.....	.....	.....	.....	.....	.....	2	1	1	1	6	4	2	1	8	.....	.....	.....	.....	.....	
Asbury Park.....	2	1	2	.....	7	5	17	.....	.....	1	.....	.....	.....	.....	1	.....	.....	2	1	1	2	.....	2	2	1	1	2	.....	.....	.....	.....
Atlantic.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Atlantic Highlands Borough.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Avon Borough.....	.....	.....	.....	.....	.....	1	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belmar Borough.....	2	4	2	.....	2	4	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	1	1	2	1	3	1	1	1	2	.....	.....	.....	1	.....
Bradley Beach Borough.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eatontown.....	1	10	2	1	9	13	38	.....	.....	.....	2	.....	.....	.....	.....	.....	5	1	1	3	4	3	3	4	3	1	.....	.....	.....	4	3
Englishtown Borough.....	.....	.....	1	.....	1	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Freehold.....	5	10	4	4	23	38	1	85	.....	.....	1	.....	.....	.....	2	1	.....	5	4	7	12	2	11	5	14	8	.....	.....	.....	.....	.....
Holmdel.....	1	5	.....	.....	3	6	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	.....	3	1	.....	1	3	.....	.....	.....	.....	.....	.....	.....
Howell.....	3	3	3	4	5	24	1	43	.....	.....	1	.....	.....	.....	.....	.....	2	2	2	10	1	2	2	7	1	1	.....	.....	.....	.....	.....
Long Branch.....	10	22	9	7	54	25	3	130	7,425	17.51	.....	4	.....	1	.....	.....	16	3	5	9	7	8	9	20	9	6	1	2	13	5	.....
Manalapan.....	3	2	3	.....	2	8	12	30	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	3	3	3	3	4	2	.....	.....	.....	.....	6	.....
Manasquan Borough.....	2	.....	1	3	5	3	14	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	3	1	.....	1	1	1	.....	2	.....	.....	.....	.....	1	.....
Marlboro.....	2	.....	.....	1	5	10	18	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Matawan.....	1	3	6	4	14	24	62	.....	.....	1	.....	.....	.....	.....	.....	.....	1	4	5	8	2	4	8	9	5	4	.....	.....	.....	.....	.....
Middletown.....	5	11	6	3	28	30	85	.....	.....	.....	2	.....	.....	.....	2	1	.....	8	3	5	7	5	9	9	8	8	.....	.....	.....	.....	.....
Millstone.....	.....	3	.....	.....	4	10	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	7	.....	1	2	2	2	.....	.....	.....	.....	.....
Neptune City Borough.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Neptune Township.....	13	26	9	11	32	31	123	.....	.....	1	.....	.....	2	.....	2	.....	.....	22	4	3	10	6	15	7	11	4	5	.....	1	3	13
North Spring Lake Borough.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ocean.....	1	2	.....	1	7	7	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	2	1	5	4	1	3	.....	.....	.....	.....	.....	.....
Raritan.....	1	11	1	6	17	33	4	78	.....	.....	.....	.....	.....	.....	.....	.....	8	6	6	12	5	13	7	6	4	2	.....	1	3	5	.....

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.—Continued.

MONMOUTH COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.								DEATHS FROM THE MORE COMMON CAUSES.																							
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.	
Red Bank.....	2	10	4	2	17	19	1	55	.....	.....	.....	2	.....	.....	2	1	.....	.....	2	1	2	4	1	9	1	5	5	3	1	1	7	
Sea Bright Borough.....	3	29	15	4	14	20	.....	85	.....	.....	3	1	.....	.....	.....	1	.....	.....	30	1	3	6	4	4	5	8	4	2	1	5	4	
Shrewsbury.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Spring Lake Borough.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Upper Freehold.....	2	2	4		8	13	1	30											5		3		1		8	2						
Wall.....	6	6	3	5	14	10	.....	44	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	7	1	1	4	12	6	4	.....	3	.....	.....	.....	.....	
Totals.....	69	170	79	62	303	369	13	1,065	80,675	13.20	6	15		4	2	10	5		134	42	52	114	49	117	79	118	83	32	3	8	54	69

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.*

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REPORT OF VITAL STATISTICS.

MORRIS COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.								Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																				
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un-defined.			Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic disease.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Boonton City.....	4	4	4	.....	13	21	2	48	.....	1	.....	.....	.....	.....	1	.....	5	3	4	7	1	5	4	6	.....	1	.....	.....	2	3	
Boonton Township.....	1	2	.....	1	1	3	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	3	1	1	1	1	.....	.....	.....	.....	1	3	
Chatham Borough.....	1	2	.....	2	5	5	1	16	.....	1	.....	.....	.....	.....	.....	.....	1	1	.....	3	1	1	1	1	.....	.....	.....	.....	.....	.....	
Chatham Township.....	1	2	.....	1	3	5	.....	12	.....	.....	.....	.....	.....	.....	1	.....	1	.....	1	2	.....	.....	.....	.....	3	.....	1	.....	.....	.....	
Chester.....	2	6	2	1	5	3	.....	20	.....	1	.....	.....	.....	.....	2	.....	2	.....	.....	4	2	3	1	.....	.....	.....	.....	.....	.....	.....	
Dover City.....	6	13	4	4	25	19	.....	72	6021 14.34	1	1	.....	.....	.....	4	1	.....	6	7	3	10	4	4	4	5	1	6	3	.....	.....	
Hanover.....	1	5	7	7	61	80	.....	165	.....	.....	1	.....	.....	.....	2	.....	5	12	5	14	6	10	4	84	3	4	.....	2	7	4	
Jefferson.....	1	3	1	2	6	5	.....	18	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Madison.....	5	3	.....	.....	5	8	.....	21	.....	.....	.....	.....	.....	.....	1	.....	1	.....	2	3	2	.....	.....	.....	3	2	1	1	1	1	
Mendham.....	1	1	.....	.....	3	5	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	2	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	
Montville.....	1	1	2	.....	5	9	.....	18	.....	1	.....	.....	.....	.....	1	.....	1	.....	1	5	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Morristown.....	17	27	19	11	88	68		230	11994 19.18		1		1	1		1		17	13	19	42	12	20	16	50	11	5		3	6	10
Morris Township.....	.....	2	1	1	2	1	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	.....	1	1	.....	.....	.....	.....	
Mount Arlington.....				3		2		5											1	1	1		1								
Mount Olive.....	2	2			2	6		13										1	1	1	2		4		1	1					
Netcong.....	1	1	.....	.....	3	1	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....	.....	
Passaic.....	1	4	4	3	14	8		34										3	6	1	3	3	3	2	1	1					
Pequannock.....	2	3	3	2	6	9		23			1					1		4	2		2	3	1	1	3	3					
Port Oram.....	6	5	1	4	15	12		43										1	6	2	3	6	1	4	4	4					
Randolph.....	1	3	3	1	4	11		23										3	2	1	4	1									
Rockaway Borough.....	1	1		1	6	13	1	23											2	2	1		3	4							
Rockaway Township.....	6	9	3	8	16	12		54										10	1		13		3	2	6	6					
Roxbury.....	1	4	2	4	17	5		33			1							1	3	1	6		2	2	2	1					
Washington.....	3	1	6	2	11	12		35				4	1	1				1		2	3	1	4	5	5						
Totals.....	62	102	62	58	323	323	4	934	63884 14.62	5	6	.....	6	2	10	12	1	73	63	49	141	40	75	52	172	35	32	11	53	35	

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

OCEAN COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.									DEATHS FROM THE MORE COMMON CAUSES.																						
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un-defined.	Estimated population.	Death rate per 1,000.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrheal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.	
Bay Head Borough.....	1	1						2																								
Berkeley.....	1	3	1	1	3	4		20			1									3		1	1	1	1	1	1	1	1	1	1	
Brick.....																																
Dover.....	4	5	2	2	12	11		36			3								5		1	1	1	1	1	1	1	1	1	1	3	
Eagleswood.....		3	2		3	5	1	14								1																
Island Heights Borough.....				1	2	1		4																								
Jackson.....		1	1	1	6	10	1	20											1	2	1	4	1	2	2	5	1				1	
Lacey.....					4	5		9												1	1		3	2	2	2	3	2	2	1		1
Lakewood.....	5	9	2	1	21	15		53											6	4	7	8	2	4	2	2	3	2	2	5	3	
Lavallette Borough.....																																
Little Egg Harbor Borough.....	3	6	3	1	5	7		24											2			2	1	1	1	1	2				2	
Manchester.....	1	2			3	4		10											2	1	2		1	1	1	1	1				2	
Ocean.....				1	3	2		6												2			1	1							1	
Plumstead.....		2	1	2	7	5		17			1	1							3	2	2	2	1	2	1	1	1				2	
Point Pleasant Borough.....	2	5		1	4	6		18											4	1	1	1	1	2	2	1	1				1	
Stafford.....	3	5		2	5	7	1	23			1								1	1	6	3	1			3				1	2	
Union.....	1	2		1	1	10		15											2	2	2	2	2	1		5	1				1	
Totals.....	19	43	15	14	87	99	3	250	19,531	14.34	1	8				1	2		31	13	27	41	19	18	12	30	11	9	1	1	14	22

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State
of New Jersey, for the Year Ending June 30th, 1899.*

PASSAIC COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							DEATHS FROM THE MORE COMMON CAUSES.																							
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Marital fever.	Etiotic or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Diseases of Heart and nervous diseases of children.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Pneumonia.	Violent deaths	
Aquackanonk.....	5	8	6	3	13	18	53	53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bloomfield.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Little Falls.....	7	7	5	4	12	11	46	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manchester.....	4	19	8	7	7	12	56	56	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Passaic City.....	62	140	69	45	141	66	515	515	21,766	23.64	11	.....	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paterson.....	160	374	279	182	783	422	2,211	2,211	112,540	19.65	2	59	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pompton.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pompton Lakes Borough.....	2	1	5	1	7	5	21	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tobacco.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wayne.....	3	2	3	4	6	12	27	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Milford.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	255	554	378	252	985	546	5	2,975	155,771	19.10	4	71	18	42	86	108	11	343	165	134	458	240	236	179	124	72	10	37	162	196	

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

SALEM COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.										DEATHS FROM THE MORE COMMON CAUSES.																					
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Remittent fever, etc.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Fueral.	Violent deaths.		
Alloway.....	4	3	3	6	3	9	23	24	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	.....	2	1	1	2	1	1	3	2	1	1	1	1	
Barnegat.....	4	4	1	6	6	3	3	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1	1	1	1	1	1	1	1	1	1	1	
Lower Alloways Creek.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Lower Penns Neck.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Mannington.....	3	1	11	4	13	9	48	16	.....	.....	.....	.....	.....	.....	.....	.....	1	4	1	7	3	3	6	4	4	1	5	4	1	1	1	1
Oldmans.....	1	2	3	7	5	6	16	32	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	3	2	5	2	3	2	.....	.....	.....	.....	.....
Pennsgrove.....	3	3	1	4	12	1	20	16	.....	.....	.....	.....	.....	.....	.....	.....	32	.....	.....	3	1	6	2	1	5	2	3	.....	.....	.....	.....	.....
Pilesgrove.....	1	5	1	4	9	.....	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	3	1	1	4	1	1	5	.....	.....	.....	.....	.....
Pittsgrove.....	1	2	.....	1	9	.....	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	3	4	4	1	1	1	.....	.....	.....	.....
Quinton.....	1	4	2	.....	7	.....	.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	3	1	1	2	1	.....	.....	.....	.....	.....
Salem City.....	8	18	11	35	49	.....	.....	128	6,993	18.30	1	1	.....	.....	.....	1	8	11	4	13	15	8	13	10	14	6	3	3	3	3	1	
Upper Penns Neck.....	1	1	3	4	4	.....	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	4	1	3	1	1	2	.....	.....	.....	.....	.....
Upper Penns Neck Borough.....	1	6	4	2	4	.....	.....	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	1	1	1	3	1	1	1	.....	.....	.....	.....	.....
Westtown Borough.....	1	1	1	2	8	.....	.....	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	1	1	1	3	1	1	1	.....	.....	.....	.....	.....
Totals.....	23	59	40	27	111	143	.....	403	26,838	15.12	1	7	.....	2	1	24	1	42	16	25	42	17	45	24	41	24	12	1	5	19	33	

*Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of
New Jersey, for the Year Ending June 30th, 1899.*

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SOMERSET COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.									DEATHS FROM THE MORE COMMON CAUSES.																						
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un- defined.	Estimated population.	Death-rate per 1,000.	Malarial fever.	Enteric or Typhoid Fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism. Puerperal.	Violent deaths.		
Bedminster.....	6	1	2	8	16	...	...	33	...	...	3	1	...	...	...	...	...	...	2	...	3	3	6	1	4	3	3	...	...	...	1	2
Bernards.....	7	3	1	12	19	...	...	44	...	...	...	3	...	...	...	...	...	...	6	4	3	3	3	3	4	3	3	...	...	...	1	3
Bound Brook Borough.....	7	3	...	1	11	...	...	32	...	...	...	...	...	...	...	...	1	...	2	1	3	3	3	4	3	3	...	...	...	1	3	
Branchburg.....	...	...	...	1	3	8	...	12	...	...	...	...	...	...	...	...	...	...	1	...	...	1	1	4	...	3	3	...	...	...	1	...
Bridgewater.....	10	16	6	8	36	49	...	124	...	...	...	...	...	...	...	1	2	...	10	4	5	17	3	10	11	13	3	...	...	...	11	12
Franklin.....	1	9	4	3	16	26	1	60	...	...	...	...	...	...	...	...	...	...	9	...	3	5	1	10	3	3	3	...	...	...	4	6
Hillsborough.....	2	1	5	...	7	23	...	38	...	...	1	...	...	...	...	...	...	...	2	3	1	7	1	4	...	4	2	3	...	1	3	4
Millstone Borough.....	1	...	1	...	4	...	...	6	...	...	...	...	...	...	...	...	...	...	1	1	2	2	1	1	1	1	...	...	...	...	...	
Montgomery.....	...	...	1	2	8	6	...	17	...	...	1	...	...	...	...	...	...	...	...	1	2	2	...	4	1	3	1	...	...	...	...	2
North Plainfield Borough.....	6	6	4	6	19	30	...	71	...	...	2	...	...	...	...	...	1	1	7	6	2	13	2	5	3	9	5	4	...	1	4	
North Plainfield Township.....	6	12	6	2	5	8	...	39	...	...	1	...	...	...	...	...	...	...	9	1	...	2	6	2	4	...	1	2	...	...	1	3
Raritan Borough.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Warren.....	1	2	...	2	4	6	...	15	...	...	...	...	...	...	...	...	2	...	1	1	2	3	...	...	...	2	...	1	...	...	2	
Totals.....	32	65	34	27	129	213	1	491	32,155	15.27	4	9	...	...	...	1	7	1	49	22	23	67	21	54	30	43	31	24	2	23	40	

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

SUSSEX COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																					
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un- defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet Fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrhoeal diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intesti- nal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Andover.....	3	3	1	4	8	1	14	14	10.62	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	
Branchville Borough.....	3	3	2	1	1	6	14	14	10.62	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	
Byram.....	1	1	1	1	1	5	8	8	10.62	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Deckertown Borough.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Frankford.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Green.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Hampton.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Hardyston.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Lafayette.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Montague.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Newton.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Sandyston.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Sparta.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Stillwater.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Vernon.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Walpack.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Wantage.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Totals.....	10	20	11	17	73	108	1	240	22,606	10.62	3	3	3	3	2	3	1	17	13	13	38	8	32	13	28	28	10	2	3	16	6

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

UNION COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.							Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																						
	Under one month.	Under one year.	One to Five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.			Total, including un- defined.	Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipela.	Ductorial diseases of children.	Consumption, M.	Consumption, F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intes- tinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.	
Clark.....	2	5	4	3	13	3	.....	4	86	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Cranford.....	70	156	85	67	290	179	4	840	48,690	17.25	8	5	.....	.....	1	7	27	2	95	57	32	124	63	64	72	66	30	22	.....	.....	1	
Elizabeth.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Fanwood Borough.....	.....	1	2	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Fanwood Township.....	.....	1	.....	.....	2	8	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Linden Borough.....	1	2	1	.....	.....	3	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Linden Township.....	.....	2	1	.....	1	1	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Mountain Side Borough.....	.....	.....	.....	.....	1	4	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
New Providence.....	1	.....	1	2	4	6	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Plainfield.....	10	47	10	11	86	80	.....	244	15,517	15.72	2	8	.....	.....	1	1	2	34	6	16	30	14	30	13	31	14	7	1	3	14	13	
Rahway.....	8	16	11	9	47	51	.....	142	8,523	16.67	3	2	.....	.....	1	.....	3	8	7	10	21	8	9	15	15	4	6	1	4	11	5	
Roselle Borough.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Springfield.....	2	2	.....	1	2	8	.....	15	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Summit.....	5	5	1	1	20	20	.....	53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Union.....	2	3	8	3	17	18	1	52	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Westfield.....	6	3	6	2	9	16	.....	42	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Totals.....	107	242	131	89	493	406	6	1,474	95,762	15.39	9	12		10	2	9	42	3	158	83	70	204	84	126	118	145	52	50	5	14	97	74

Return of Deaths from all Causes and Certain Specified Diseases, in the Statistical Divisions of the State of New Jersey, for the Year Ending June 30th, 1899.

WARREN COUNTY. Statistical Divisions.	DEATHS AT ALL AGES.								Estimated population.	Death-rate per 1,000.	DEATHS FROM THE MORE COMMON CAUSES.																				
	Under one month.	Under one year.	One to five.	Five to twenty.	Twenty to sixty.	Over sixty.	Undefined.	Total, including un-defined.			Malarial fever.	Enteric or typhoid fever.	Small-pox.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria and croup.	Erysipelas.	Diarrheal diseases of children.	Consumption. M.	Consumption. F.	Acute lung diseases.	Brain and nervous diseases of children.	Diseases of heart and circulation.	Renal and cystic diseases.	Adult brain and spinal diseases.	Digestive and intestinal diseases.	Cancer.	Acute rheumatism.	Puerperal.	Violent deaths.
Allamuchy.....	1	1	1	2	.....	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belvidere.....	.....	2	1	1	10	20	.....	34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Blairstown.....	1	1	1	1	6	14	.....	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Franklin.....	.....	.....	1	1	2	8	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Frelinghuysen.....	.....	.....	.....	.....	4	8	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greenwich.....	.....	.....	3	1	4	8	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hackettstown.....	2	6	3	1	8	16	.....	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hardwick.....	.....	1	.....	.....	1	4	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Harmony.....	2	1	.....	.....	1	10	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hope.....	1	1	.....	.....	3	4	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Independence.....	.....	1	2	.....	2	6	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Knowlton.....	.....	2	1	1	8	15	.....	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lopatcong.....	1	.....	1	4	4	4	1	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manfield.....	.....	1	1	2	8	12	.....	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oxford.....	1	4	3	2	9	18	.....	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pahaquarry.....	1	.....	.....	.....	1	1	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Phillipsburg.....	10	16	10	6	39	46	2	129	9,439	18.68	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pohatcong.....	2	3	.....	.....	4	5	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington Borough.....	6	3	2	7	16	15	1	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington Township.....	2	4	.....	4	2	8	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	30	47	30	33	131	218	4	498	27,867	18.03	1	6		3		7	9		30	15	29	71	23	50	30	69	41	15	3	4	36

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