

FORTY-THIRD  
ANNUAL REPORT

OF THE

Department of Health

OF THE

STATE OF NEW JERSEY

1920



TRENTON, N. J.  
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1921

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**Department of Health of the State of New Jersey.**

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JACOB C. PRICE, M.D., DIRECTOR.

The offices of the Department are in the State House, Trenton.

TRENTON, N. J., June 30, 1920.

*To His Excellency Edward I. Edwards, Governor of New Jersey:*

SIR—In accordance with chapter 288 of the laws of 1915, I have the honor to transmit herewith the Forty-third Annual Report of the Department of Health of the State of New Jersey.

Very respectfully,

J. C. PRICE,  
*Director.*

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## Report of the Director.

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Only a brief survey of the activities of the Department of Health is outlined here. A more comprehensive and detailed statement of the work is recorded in the reports of the chiefs of the various bureaus. Such space is allotted to each as corresponds in a general way with the volume of work accomplished rather than the importance as exemplified for health protection.

The field of public health work is so diversified and the demands so great, embracing, as it does, a multitude of technical problems and requiring greater efficiency and a more perfect organization, that decades will pass before the dreams of the enthusiast will be realized. So many complex problems frequently confront us that the outlook for success at times seems discouraging, but above and beyond this vista of gloom and doubt we can see the science of sanitation and hygiene forging to the front. Public interest is manifest even in the rural communities, hope is inspired and the goal of success in public health work brightens with each passing year.

Where there is cordial co-operation of the medical profession, the public and the health officer, epidemics should be checked in their incipiency, communicable diseases rendered diminutive and insanitary spots eradicated. It is much easier to smother a spark



than to extinguish a conflagration. While local health administration throughout the State is far from satisfactory, many of these local boards, particularly in rural communities, have no legal organization, no oath of office administered, and, consequently, no lawful standing. Under such conditions it is difficult for any community to make reasonable advances in public health work. As constituted at present these boards are composed of men actively engaged in other pursuits, serving their municipality without pay. Efficiency, therefore, can scarcely be expected. Whole time health officers are to be found only in the larger municipalities. Until other methods are employed in creating local health boards the demands of the public will not be realized.

The division of the State into sanitary districts of sufficient area to employ a full-time man, trained in the science of sanitation and hygiene, preferably a physician, to confer with and instruct local boards, discuss health conditions at public gatherings, trace sources of infection, prevent the spread of communicable diseases through early diagnosis would be a big step forward. Until such a procedure is established the hope of the sanitarian will not be fulfilled. The public is slow to grasp the importance of health work, at times resenting any intrusion that forces them to abandon old-time traditions or that in any way interferes with what is known as "personal liberty or vested rights." It is gratifying to know that distrust, indifference and antagonism are fast disappearing, and under the influence of public health instruction the fallacies as to the spreading of communicable disease are rapidly vanishing.

As the result of losses sustained by war and the pandemics that have devastated the country there was never a time in our history when the need of conserving our human resources was so great. Statistics verify the statement that more than 25 per cent. of the men drafted were rejected due to defects that should have been corrected during early childhood. An authority on child hygiene is responsible for the astounding statement that 75 per cent. of the school children in the United States are handicapped by reason of some physical or mental defect. A large percentage

have diseased teeth, a lesser number are afflicted with diseased tonsils, imperfect vision, malnutrition, tuberculosis, defective hearing, adenoids and diseased glands. Such a showing does little credit to our intelligence; it is rather an indictment of our civilization. The place to commence in the matter of health conservation is with the children of our State. It is not only an economic problem, it is more than that, it is a public responsibility, a moral obligation. The State educates all, but mental efficiency depends on physical preparedness and should precede school books. "As the twig is bent so is the tree inclined." Start the child with a proper physical education and we need have no anxiety as to the health of the adult. No more glowing exemplification resulting from physical exertion can be found than in the developed muscles of the blacksmith's arm or the glass-blower's lungs. These men of brunt and brawn, happy in their daily toils, bringing refreshing and physiological sleep, although begrimed with dirt and sweat, are cleaner from the viewpoint of health than the social snob who never perspired as the result of his own activities.

A number of outbreaks of typhoid fever prevailed during the year. None of these, however, assumed extensive proportions as the source of infection was early discovered and eliminated. Investigations made proved clearly that the infection was due to typhoid carriers engaged in the preparation of food products.

During the fiscal year just closed, investigations determined the fact that within twenty municipalities of New Jersey there was a prevalence of smallpox, although in so mild a form as to render diagnosis difficult. The epidemiologists of this Department, after careful inspection, determined the eruption pathognomonic and the vesicles unmistakably those of smallpox. Within the last decade outbreaks of this disease have been restricted and of so mild a type that parents have become negligent and boards of education guilty of dereliction. They are legally empowered to exclude from school any scholar or teacher who has not been successfully vaccinated. In a thriving town in northern New Jersey, embracing an intelligent citizenry with a public school of more than 400 scholars, an examination made

by the medical inspector disclosed the fact that less than 100 pupils had been successfully vaccinated.

The establishing of the Bureau of Venereal Disease Control and the enlarging of the Bureau of Child Hygiene largely increased the work of the bacteriological laboratory. A vast number of samples of milk and water were analyzed, physicians' specimens of suspected communicable diseases grow with each passing month, although the greatest volume of increase is found in Wasserman specimens submitted by physicians. In consequence of this demand the laboratory is already overtaxed, owing to an inadequate floor space. A number of other lines of work should be included to meet the public demands, but until more room is secured important investigations must remain neglected. The more important of these is the experimental work relating to the purification of trade wastes, systematic examination of specimens collected by nurses of the Bureau of Child Hygiene from new-born infants, experimental work relating to the protection of shellfish grown in polluted waters and the preparation and distribution of vaccine. It is impossible to proceed with these investigations until greater laboratory space is provided.

Frequent violations of the pure food laws of the State require constant vigil on the part of the Bureau of Food and Drugs. A statute was enacted to punish transgressors and for the protection of the public to prevent unscrupulous vendors from disposing of their wares unfit for human consumption and a positive menace to public health. Behind these purveyors of impure and adulterated nostrums, noxious concoctions, misbranded and worthless mixtures may be found at times those using their official positions to nullify a protecting statute designed to safeguard the public from impostors. This has been the experience of many departments of health for decades. Where promoters of these dangerous and insanitary products are in league with business interests to baffle the efforts of health workers progress is arrested and the greatest asset of the nation is set at naught.

New Jersey has approximately 10,000 dairies supplying milk for public consumption. Frequent inspections of these dairies are

required, diseased animals must be removed, stables and surroundings made sanitary, milk analyzed to verify its purity and meet the State requirements and to insure a safe and unadulterated article. This Bureau has general supervision over all slaughter houses, creameries, pasteurizing plants, canneries, cold-storage warehouses and egg-breaking establishments. This work is time consuming, but it is the determination of the Department of Health that only such food products shall reach the public as are found in perfect preservation and safe for human consumption.

The charts and tables in reference to births and deaths which follow are for the calendar year ending December 31, 1919.

During the year 1919 the Bureau of Vital Statistics of the State Department of Health received 39,979 certificates of death; 70,935 certificates of birth; 29,281 certificates of marriage, and 3,047 certificates of still-birth, making a total of 143,242.

*Population.*—The total estimated mid-year population of New Jersey for 1919 was 3,146,547.

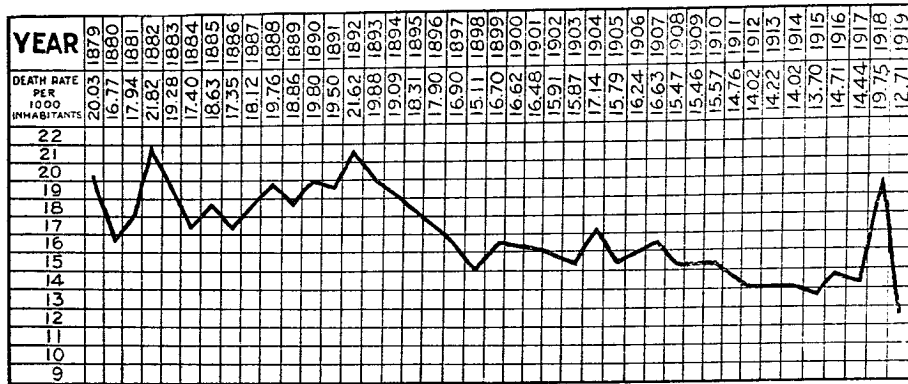
*Deaths.*—The death-rate for 1919 was 12.71, which is the lowest death-rate since 1879, when the records were started.

*Births.*—The birth-rate for 1919 was 22.54, which is two points lower than for the previous year.

*Comparative Death-Rate of White and Colored Inhabitants.*—The death-rate among the whites for the year 1919 was 12.41, and the death-rate among the colored inhabitants for the same year was 20.92.

*Marriages.*—The number of marriages recorded for 1919 was 29,281, a decided increase over the previous year. The marriage-rate was 18.61, as compared with 15.58 for 1918.

CHART SHOWING TOTAL DEATHS PER 1,000 POPULATION FOR 41 YEARS.



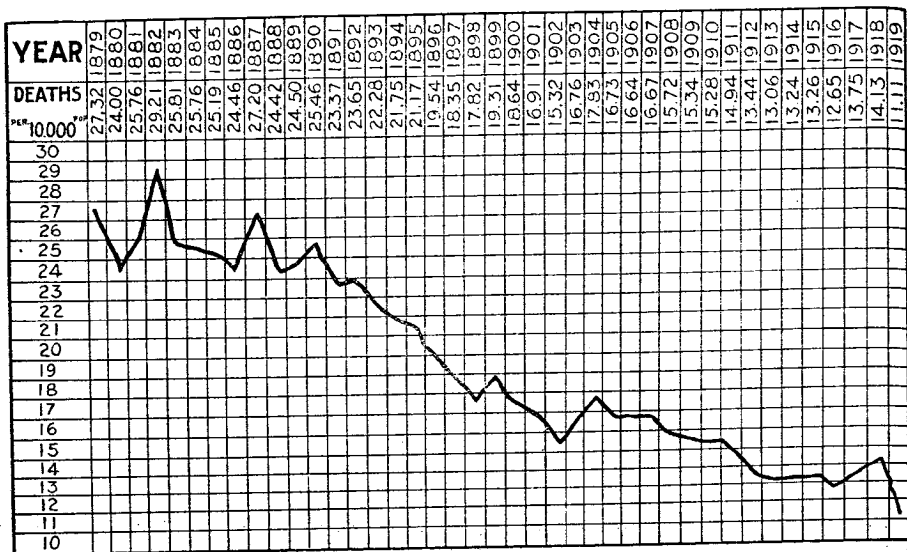
NUMBER OF LIVING BIRTHS AND DEATHS UNDER ONE YEAR OF AGE IN NEW JERSEY AND PERCENTAGE OF BIRTHS LIVING ONE YEAR TO TOTAL BIRTHS.

YEAR.	Births reported.	Deaths under 1 year of age.	Percentage of living births to total births.
1906, .....	42,677	7,773	81.70
1907, .....	44,651	7,732	82.68
1908, .....	47,405	7,823	83.50
1909, .....	47,508	7,658	83.88
1910, .....	53,942	8,352	84.52
1911, .....	58,133	7,642	86.85
1912, .....	60,073	7,457	87.59
1913, .....	61,432	7,542	87.72
1914, .....	65,403	7,431	88.64
1915, .....	66,476	7,077	89.35
1916, .....	70,211	7,348	89.53
1917, .....	75,309	7,582	89.93
1918, .....	74,549	8,372	88.77
1919, .....	70,935	6,111	91.38

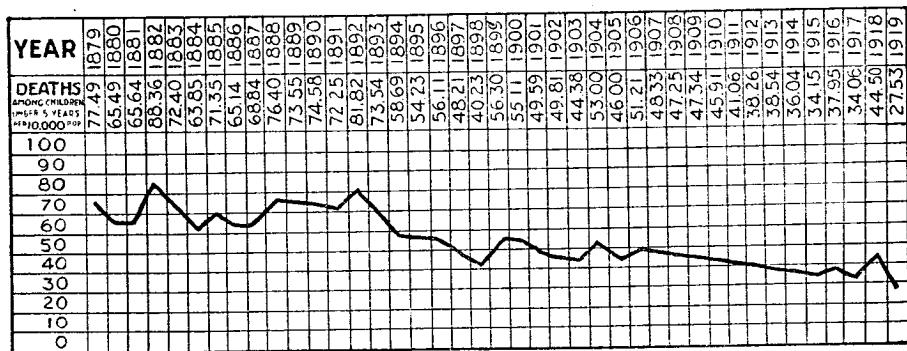
AVERAGE ANNUAL DEATH-RATES, PER 10,000 POPULATION, FROM ALL CAUSES AND FROM TUBERCULOSIS OF LUNGS FOR 41 YEARS, COMPARED WITH RATE FOR 1919.

COUNTIES.	Average annual death-rate from all causes per 10,000 for 41 years.	Average annual death-rate from tuberculosis of lungs per 10,000 for 41 years.	Death-rate from all causes for year ending Dec. 31, 1919.	Death-rate from tuberculosis of lungs for year ending Dec. 31, 1919.
Atlantic County, .....	160.0	14.47	121.7	9.93
Bergen County, .....	106.6	11.86	108.1	7.54
Burlington County, .....	157.3	16.05	162.1	10.49
Camden County, .....	180.9	19.67	149.0	12.12
Cape May County, .....	134.0	11.82	99.8	4.26
Cumberland County, .....	98.8	17.44	143.8	8.84
Essex County, .....	173.7	21.96	122.6	12.34
Gloucester County, .....	146.5	15.63	146.0	11.30
Hudson County, .....	188.4	21.79	121.2	11.90
Hunterdon County, .....	151.1	14.68	157.2	7.34
Mercer County, .....	171.5	20.59	131.4	14.62
Middlesex County, .....	162.2	15.01	138.5	11.79
Monmouth County, .....	153.5	14.65	139.6	9.01
Morris County, .....	119.4	17.21	123.8	9.33
Ocean County, .....	141.4	17.07	119.8	10.10
Passaic County, .....	165.6	17.65	115.3	9.21
Salem County, .....	149.7	16.89	169.6	11.63
Somerset County, .....	142.8	13.44	127.0	8.13
Sussex County, .....	130.6	12.69	145.3	7.86
Union County, .....	138.6	14.66	136.3	13.80
Warren County, .....	145.2	13.04	125.7	6.01
The State, .....	165.4	18.35	127.1	11.11

DEATHS FROM TUBERCULOSIS OF LUNGS PER 10,000 POPULATION FOR 41 YEARS.

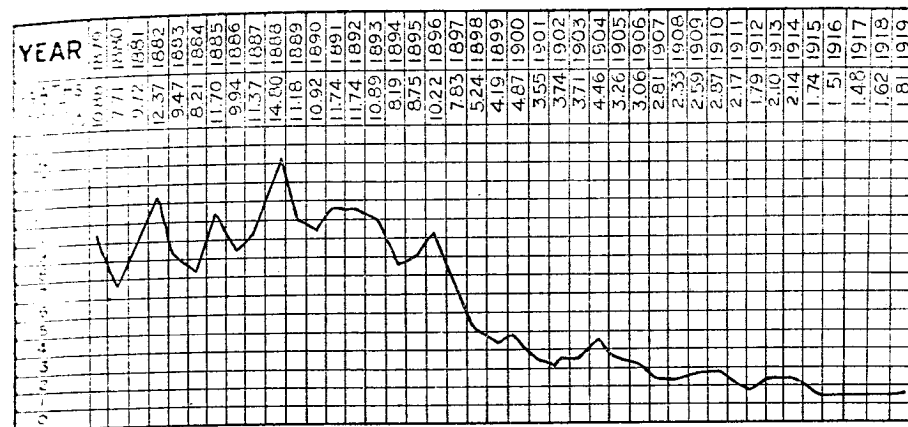


DEATHS UNDER FIVE YEARS OF AGE PER 10,000 POPULATION FOR 41 YEARS.



*Diphtheria.*—The death-rate from diphtheria for the year 1919 was 1.81, a very slight increase over the past four years. Deaths in New Jersey from diphtheria, by age periods, for the year ending December 31, 1919, were: Under 1 year, 27; 1 year, 80; 2 years, 75; 3 years, 72; 4 years, 68; 5 to 9 years, 190; 10 to 19 years, 37; 20 to 29 years, 7; 30 to 39 years, 8; 40 to 49 years, 1; 50 to 59 years, 0; 60 to 69 years, 3. Total, 568.

DEATHS FROM DIPHTHERIA PER 10,000 POPULATION FOR 41 YEARS



*Typhoid Fever.*—The number of deaths from typhoid fever in New Jersey for 1919 was 91. Of these 51 were males and 40 females, and 6 of the total were among the colored race.

It is gratifying to note that the death-rate from typhoid, which is 0.29 for the year, is the lowest in the history of the State. The deaths from typhoid fever, by age periods, for the year were: Two years, 2; 5 to 9 years, 7; 10 to 19 years, 23; 20 to 29 years, 27; 30 to 39 years, 13; 40 to 49 years, 8; 50 to 59 years, 6; 60 to 69 years, 4; 70 to 79 years, 1. Total, 91.

The deaths from typhoid fever by counties in New Jersey were as follows: Atlantic, 4; Bergen, 3; Burlington, 7; Camden, 9; Cumberland, 3; Essex, 13; Gloucester, 2; Hudson, 11; Mercer, 10; Middlesex, 1; Monmouth, 14; Morris, 3; Ocean, 1; Passaic, 5; Union, 3; Warren, 2.

COMPARATIVE DEATH-RATES FROM TYPHOID FEVER, PER 10,000 INHABITANTS, IN THE REGISTRATION AREA OF U. S. AND IN N. J. FOR 10 YEARS.

	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	Averages for ten years.
Registration area of United States, . . .	2.20	2.35	2.10	1.65	1.79	1.54	1.24	1.33	1.34	1.25	1.68
New Jersey, . . . . .	1.28	1.55	1.29	1.22	1.00	0.78	0.65	0.66	0.64	0.52	0.96

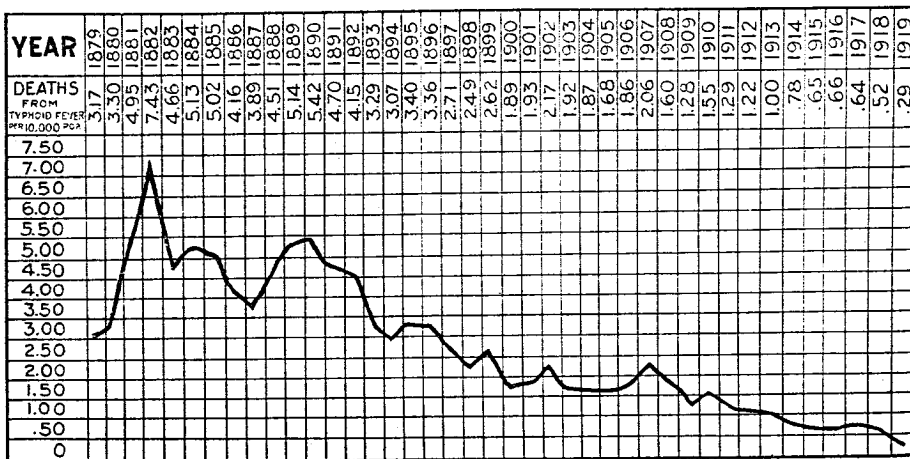
DEATHS FROM TYPHOID FEVER, BY COUNTIES, PER 10,000 POPULATION, FOR 10 YEARS.

COUNTIES.	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	Averages for ten years.
Atlantic County, .....	1.53	2.15	1.96	1.14	1.47	0.59	1.59	0.77	0.43	0.42	1.21
Bergen County, .....	1.16	0.69	0.72	1.00	0.36	0.41	0.63	0.72	0.27	0.16	0.61
Burlington County, .....	3.31	1.33	3.36	1.59	1.28	1.13	1.11	1.65	1.50	0.94	1.72
Camden County, .....	1.97	1.23	1.46	1.85	1.20	0.86	1.53	1.08	0.88	0.52	1.26
Cape May County, .....	1.52	0.49	0.48	1.42	0.92	0.43	1.26	0.41	0.79	.....	0.77
Cumberland County, .....	1.99	1.43	1.06	0.55	1.39	1.04	1.04	1.03	1.88	0.51	1.23
Essex County, .....	1.21	1.03	0.81	0.66	0.55	0.35	0.43	0.37	0.30	0.20	0.59
Gloucester County, .....	1.61	3.43	2.60	1.25	1.01	1.49	1.47	0.73	0.95	0.47	1.50
Hudson County, .....	0.93	0.97	0.72	0.83	0.76	0.63	0.55	0.36	0.30	0.16	0.62
Hunterdon County, .....	1.49	0.30	1.78	2.37	0.30	0.60	0.30	0.91	0.61	.....	0.87
Mercer County, .....	4.14	3.89	3.26	1.56	1.45	0.85	0.48	0.61	0.46	0.65	1.77
Middlesex County, .....	0.96	1.19	1.73	0.96	1.00	0.83	0.51	0.93	0.70	0.07	0.90
Monmouth County, .....	2.22	2.91	2.87	1.82	1.50	1.68	1.46	1.35	1.71	1.31	1.86
Morris County, .....	1.34	0.92	0.78	0.23	1.12	0.38	0.37	0.61	0.48	0.36	0.66
Ocean County, .....	3.28	1.40	1.40	2.22	0.46	0.90	0.90	0.45	.....	0.44	1.16
Passaic County, .....	1.16	0.76	0.65	0.63	0.52	0.57	1.39	0.83	0.34	0.18	0.61
Salem County, .....	1.48	2.58	1.10	1.06	0.36	1.08	1.43	1.06	1.06	.....	1.12
Somerset County, .....	1.80	3.32	0.25	.....	0.24	0.24	0.47	1.86	0.69	.....	0.89
Sussex County, .....	1.87	0.73	0.36	.....	0.36	0.35	0.35	0.69	.....	.....	0.47
Union County, .....	1.71	0.83	1.61	1.36	0.38	0.62	0.42	0.47	0.52	0.17	0.81
Warren County, .....	2.78	0.69	0.68	0.59	0.66	1.09	.....	.....	0.42	0.41	0.76
The State, .....	1.55	1.29	1.22	1.00	0.78	0.65	0.66	0.64	0.52	0.29	0.88

DEATHS FROM TYPHOID FEVER IN URBAN AND RURAL DISTRICTS FOR 1919.

1919.	Aggregate population.	Deaths from typhoid fever.	Deaths from typhoid fever per 10,000 population.
State, .....	3,146,547	91	0.29
Cities of 5,000 population and above, .....	2,166,398	58	0.27
Remainder of State, .....	980,149	33	0.34

DEATHS FROM TYPHOID FEVER PER 10,000 POPULATION FOR 41 YEARS.

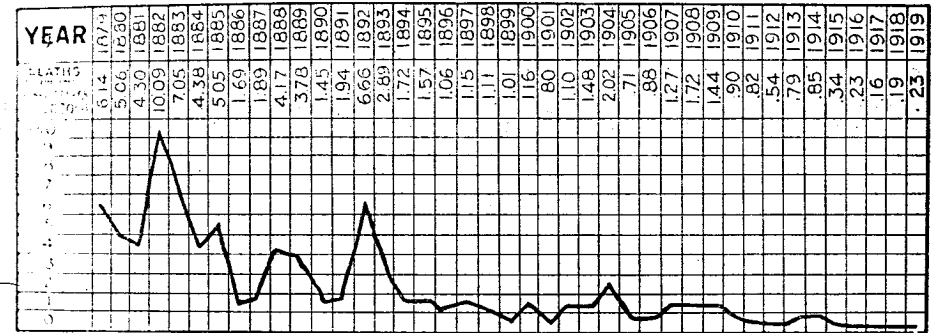


*Whooping Cough.*—The number of deaths from whooping cough in New Jersey for the year 1919 was 91, a decided decrease from the previous year.

The deaths in the State from this disease, with ages, were: Under 1 year, 48; 1 year, 23; 2 years, 8; 3 years, 6; 4 years, 2; 5 to 9 years, 4.

*Scarlet Fever.*—The total number of deaths from scarlet fever for the year 1919 was 71, a slight increase over the previous year. The deaths from this disease, by age periods, was as follows: Under 1 year, 4; 1 year, 7; 2 years, 8; 3 years, 6; 4 years, 12; 5 to 9 years, 19; 10 to 19 years, 6; 20 to 29 years, 5; 30 to 39 years, 3; 50 to 59 years, 1. Total, 71.

DEATHS FROM SCARLET FEVER PER 10,000 POPULATION FOR 41 YEARS.



*Measles.*—The number of deaths from measles for the year 1919 was 58, a decided decrease from the previous year. The deaths from this disease, with the age of deceased, for the year were: Under 1 year, 14; 1 year, 20; 2 years, 9; 3 years, 5; 4 years, 3; 5 to 9 years, 3; 10 to 19 years, 1; 20 to 29 years, 1; 40 to 49 years, 1; 70 to 79 years, 1. Total, 58.

*Malarial Fever.*—The number of deaths from malarial fever for the year 1919 was 2, the lowest in the history of the Department. The deaths in New Jersey from malarial fever for 41 years are as follows:

1879,.....	268	1890,.....	195	1900,.....	84	1910,.....	25
1880,.....	293	1891,.....	180	1901,.....	50	1911,.....	25
1881,.....	431	1892,.....	198	1902,.....	36	1912,.....	29
1882,.....	379	1893,.....	148	1903,.....	40	1913,.....	11
1883,.....	290	1894,.....	162	1904,.....	47	1914,.....	10
1884,.....	230	1895,.....	144	1905,.....	21	1915,.....	17
1885,.....	209	1896,.....	119	1906,.....	33	1916,.....	10
1886,.....	243	1897,.....	132	1907,.....	29	1917,.....	5
1887,.....	217	1898,.....	82	1908,.....	30	1918,.....	13
1888,.....	264	1899,.....	96	1909,.....	25	1919,.....	2
1889,.....	203						

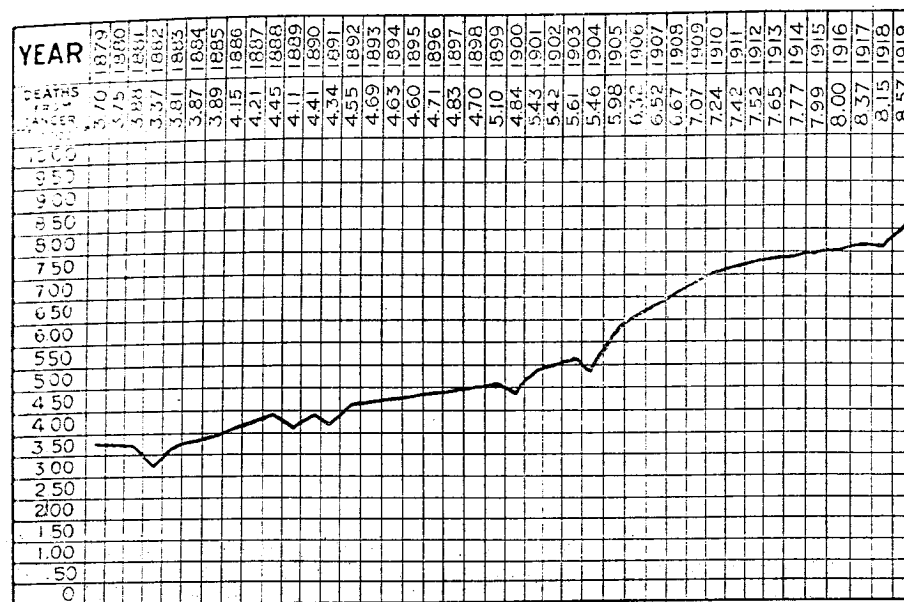
*Smallpox.*—No deaths from smallpox were reported in New Jersey for the calendar year 1919, and continued precautions to prevent this disease should be urged by all local boards of health by recommending vaccination.

*Cancer.*—The total number of deaths from cancer for 1919 was 2,697, a slight increase over the previous year. A glance at the chart showing deaths from cancer for the past 41 years will show that the death-rate from this disease has more than doubled during the period mentioned, and is gradually increasing.

DEATHS FROM CANCER AND OTHER MALIGNANT TUMORS IN NEW JERSEY BY ORGAN AFFECTED, 1919.

CANCER AND OTHER MALIGNANT TUMORS.	AGE PERIODS.											Total.						
	Under 1 year.	1 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.		50 to 54.	55 to 59.	60 to 69.	70 to 79.	80 to 89.	90 and over.
Buccal Cavity, .....	1	1	1	1	1	2	1	2	11	5	15	26	19	5	...	90		
Stomach, liver, .....	1	1	1	1	3	8	12	27	57	88	124	152	335	187	50	1	1044	
Peritonæum, intestines, rectum, .....	1	1	1	1	3	6	18	14	18	48	54	96	93	19	1	373		
Female genital organs, .....	1	1	1	1	2	6	16	26	33	56	59	61	85	56	10	1	414	
Breast, .....	1	1	1	1	1	7	10	23	29	30	41	38	72	38	18	2	288	
Skin, .....	1	1	1	1	1	1	1	1	2	2	3	4	21	24	11	3	73	
Other organs or organs not specified, .....	1	7	2	3	4	3	7	15	19	36	40	57	114	72	32	3	415	
<b>Total, .....</b>	<b>1</b>	<b>9</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>10</b>	<b>23</b>	<b>50</b>	<b>98</b>	<b>161</b>	<b>241</b>	<b>320</b>	<b>381</b>	<b>749</b>	<b>489</b>	<b>145</b>	<b>10</b>	<b>2697</b>

CHART SHOWING DEATHS FROM CANCER PER 10,000 POPULATION FOR 41 YEARS.



*Suicide.*—The total number of deaths from suicide for the year 1919 was 377, an increase over the previous year.

DEATHS BY SUICIDE IN NEW JERSEY, 1919.

MODE OF DEATH.	AGE PERIODS.											Total.			
	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 69.		70 to 79.	80 to 89.	90 and over.
Poison, .....	1	6	6	3	7	2	6	5	5	5	2	...	...	...	43
Asphyxia, .....	1	2	8	11	11	6	9	11	16	14	6	...	...	...	89
Strangulation, .....	1	4	3	4	9	10	5	10	10	8	4	...	...	...	70
Drowning, .....	1	1	2	2	1	2	3	2	2	2	1	...	...	...	19
Firearms, .....	2	7	12	9	14	10	12	13	11	13	4	...	...	...	108
Cutting instruments, .....	1	2	1	2	4	2	4	3	3	2	...	...	...	...	22
Precipitation from height, .....	2	...	3	2	1	1	...	...	...	2	...	...	...	...	11
Crushing, .....	...	...	...	...	...	1	1	...	...	...	...	...	...	...	3
Others, .....	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
<b>Total, .....</b>	<b>1</b>	<b>7</b>	<b>21</b>	<b>27</b>	<b>32</b>	<b>46</b>	<b>35</b>	<b>37</b>	<b>47</b>	<b>47</b>	<b>43</b>	<b>15</b>	<b>9</b>	<b>...</b>	<b>377</b>

*Bright's Disease.*—For the year ending December 31, 1919, there were 3,227 deaths from Bright's disease, and the figures for the past few years show that there is a steady decrease in this disease.

J. C. PRICE,  
*Director.*

## Report of Division of General Administration.

CHARLES J. MERRELL, CHIEF.

The total number of employees of the Department listed in the Division of General Administration June 30, 1920, is 137, classified in the various Bureaus and Divisions as follows:

*Division of General Administration.*—Chief, 5 clerks and stenographers, 1 office boy.

*Bureau of Engineering.*—Chief, 3 clerks and stenographers, 4 assistant engineers, 1 chemist, 1 inspector.

*Bureau of Food and Drugs.*—Chief, 9 inspectors, 1 clerk and stenographer.

*Bureau of Local Health Administration.*—Chief, 2 assistant epidemiologists, 1 district health officer, 1 field nurse, 8 clerks and stenographers.

*Laboratory of Hygiene.*—Chief, 3 bacteriologists, 3 chemists, 4 laboratory technicians, 1 laboratory assistant, 1 motorboat captain, 4 clerks and stenographers.

*Bureau of Child Hygiene.*—Consultant, 4 supervisors, 4 assistant supervisors, 10 district supervisors, 38 teachers of child hygiene, 1 manager of exhibits, 7 clerks and stenographers.

There is also one special ice cream inspector and a chief of the Bureau of Medical Supervision, who serves as editor of the Monthly Bulletin.

In addition to the above the following are employed in the Bureau of Venereal Disease Control: Chief, assistant chief, Medical assistant, educational director, industrial representative, field agent, 6 clerks, typists and stenographers.

These employees are not regularly listed in the Division of General Administration as their salaries are paid from federal appropriations.

In accordance with the regulations of the Civil Service Commission, requiring the appointment of a rating officer in each State Department, the Chief of the Division of General Adminis-

tration was named as rating officer last November and beginning January 1, 1920, a new system of rating employees, promulgated by the Civil Service Commission was promulgated in the Department, the employees of the Department being rated according to this system under the supervision of the rating officer. A system of rating designed by the Civil Service Commission had already been in force in the Department for several years past and the Department was commended by the Chief Examiner and Secretary of the Commission on the fact that the reports heretofore filed by the Department were among the best which reached the Commission. Favorable comment was also made on the time card used by the Department and a copy of the same was requested in order that it might be shown by the Commission to other Departments as a model.

On July 1, 1919, Dr. J. C. Price was re-elected Director of Health and Mr. R. B. FitzRandolph Assistant Director for terms of four years.

In October, 1919, Dr. A. J. Casselman was appointed Chief of the Bureau of Venereal Disease Control in place of Captain J. Holmes Smith, who was recalled by the Government.

In accordance with the provisions of Chapter 99 of the Laws of 1920, the new Vital Statistics law requiring the appointment of a State Registrar, Mr. David S. South, Chief of the Bureau of Vital Statistics, was, on April 20, 1920, also appointed as State Registrar.

Harry P. Croft was, on January 1, 1920, appointed as Chief of the Bureau of Engineering and W. W. Scofield, Jr., on the same date, was appointed Chief of the Bureau of Food and Drugs, Mr. Croft having previously served as Acting Chief and Mr. Scofield as Inspector in charge of the Bureau.

The Legislature of 1920 appropriated the sum of \$358,906.22 for the uses of the Department for the fiscal year beginning July 1, 1920, \$150,000 of this sum being granted for Child Hygiene Work in the State. Appropriations have been granted to the Department for the preceding five years as follows: 1915, \$132,625.00; 1916, \$133,000.00; 1917, \$145,000.00; 1918, \$175,240.00; 1919, \$319,676.22.

Routine work of the division relative to the library, the central filing office, the central stock of supplies, the petty cash fund, and the reporting of all meetings, hearings, etc., conducted by the Department and Director has been carried on as usual.

In addition to regular licenses issued yearly by the Department for creameries, ice cream factories, cold storage warehouses, egg-breaking establishments and slaughter houses in the State, numbering approximately 1,000 a year, three special permits have been granted in accordance with the provisions of Chapter 233 of the Laws of 1916, which act provides that no person, firm or corporation shall build, construct or erect any public mausoleum, vault, crypt or structure intended to hold or contain the bodies of the dead, which shall be wholly or partially above the surface of the ground, without the consent and approval of the Department. In accordance with the provisions of said act, permission has been granted during the year to parties mentioned for the construction of mausoleums at the following-named places: New York and New Jersey Crematory Company, Weehawken, N. J.; Sanitary Mausoleum Company of Reading, Pa., for construction of Greenwood Abbey Mausoleum, Greenwood Cemetery, Trenton, N. J., and also for mausoleum in Hightstown Cemetery, Hightstown, N. J.; mausoleum in Monmouth Mausoleum Cemetery, Eatontown Township, Monmouth County, N. J.

The tenth annual conference of State and local health officials was held on February 27, 1920. The conference was well attended and interesting papers were presented on the Production and Regulation of Safe Milk, Proposed Legislation and Regulation Relating to Certified Milk, the use of Biological Products in Health Work, the Present Status of Venereal Disease Work in New Jersey, Lessons in Physical Efficiency from the Draft Examinations, and on the subject of Industrial Hygiene. Several of these papers have already been printed in the Public Health News. The conference was followed by the annual meeting of the New Jersey Health Officers' Association on February 28th.

In accordance with the provisions of Chapter 160 of the Laws of 1915, a permit was granted on May 18, 1920, to Professor



E. F. Northrup, Assistant Professor of Physics of Princeton University, to conduct experiments on rabbits for the purpose of learning whether the high frequency current used in the electric furnace, known as the "Ajax-Northrup High Frequency Induction Furnace," is dangerous to human health, this experiment to be conducted by Professor Northrup at 636-640 East State St., Trenton, N. J.

This is the second permit issued by the Department in accordance with the provisions of said law, permission having been granted to the Rockefeller Institute several years ago to conduct experiments on animals in accordance with the provisions of the act at Princeton, N. J.

In March, 1920, a new Board of Examiners of Health Officers and Inspectors for the coming year was appointed. Harry P. Croft, Chief of the Bureau of Engineering; William H. MacDonald, Assistant Epidemiologist in the Bureau of Local Health Administration, and Dr. A. C. Benedict, of South Orange, representing the Health Officer's Association of New Jersey, were named as members of the Board. During the past year four examinations have been conducted, sixty-four applicants have been examined and licenses have been issued as follows: Health officers, 6; sanitary inspectors, first class, 21; plumbing inspectors, 4; meat inspectors, 1; milk and dairy inspectors, 2.

In accordance with the provisions of Chapter 23 of the Laws of 1918, examinations for sewage and water plant operators are now regularly conducted and licenses have been issued during the year as follows: Sewage plant operators, 7; water plant operators, none.

Following is the total number of licenses issued by the Department since the passage of the original act in 1903, requiring the holding of said examinations and the issuing of licenses to applicants desiring appointment by local boards of health: Health officers, 204; sanitary inspectors of the first class, 311; sanitary inspectors of the second class, 11; sanitary inspectors of the third class, 20; meat inspectors, 6; milk and dairy inspectors, 4; food and drug inspectors, 15; plumbing inspectors, 189; sewage plant operators, 6; water plant operators, 2.

In accordance with an opinion rendered by the Attorney-General, examinations have heretofore been conducted for persons desiring appointment by local boards of health as plumbing inspectors and licenses have been granted, but during the last session of the Legislature a law was passed (Chapter 73, Laws of 1920), specifically providing for the examining and licensing of applicants for positions as plumbing inspectors.

## Report of the Bureau of Medical Supervision.

BY A. CLARK HUNT, M.D., CHIEF.

The duties of this Bureau are somewhat circumscribed, as the principal supervision over infectious diseases is placed in charge of the Bureau of Local Health Administration, which, if called upon, deals with epidemics occurring in various localities of the State, and renders assistance in this way to the local boards of health, which are not thoroughly equipped with men trained in the investigation of the causes of outbreaks of communicable diseases. The work of the Bureau, therefore, consists chiefly in keeping in touch with medical men of the State through various societies, and with this end in view a number of meetings of local and State societies have been attended, and an effort made to give to medical men such information as is necessary in regard to the new health laws which have been adopted in the State. The field for this class of work, however, is limited, as medical men are readily reached by circulars containing most of the information in regard to the changes in laws, and the relation of medical men to the enforcement of these laws. During the past year an effort was made by the State Department of Health to secure sufficient funds to renew the campaign which several years ago was begun against the spread of tuberculosis. Unfortunately the Appropriation Committee of the Legislature failed to grant the money which was required, and the Department was therefore left without any definite program for the Control of the disease. One of the greatest services the State Department of Health renders in the fight against tuberculosis is the compiling of complete records of all deaths from this disease and data as to age, nationalities, etc. This data should be available to the public as near the close of each year as possible, not only of the whole State, but by counties and districts. A complete record of

reported cases should necessarily be checked against the deaths for the purpose of ascertaining whether adequate reports are being made. Investigations in large cities indicate that the number of cases of tuberculosis which is reported is very much below the number estimated as existing. This deduction is based on the relation which should exist between deaths from the disease and reported cases. In our State there is undoubtedly a failure on the part of physicians to make complete reports of all cases coming under their supervision. One of the causes of this failure to report lies in the fact that frequently persons suffering from tuberculosis go from one physician to another and the physicians, knowing they have been attended by other practitioners, assume that the case has been reported. An effort has been made by the Department to secure more prompt and complete records in these cases. It would appear that legal action against local practitioners for the recovery of penalties for failure to make proper reports may have the desired effect. The time has come for the revision of the rules and regulations regarding cases of tuberculosis. It is understood that the Attorney-General has suggested a simpler method of compelling negligent cases to take hospital treatment, and this suggestion might be incorporated in the new rules and regulations and distributed throughout the State. A careful study of the deaths and reported cases will undoubtedly in time lead to a determination of local causes of infection, and local authorities may then be notified to adopt preventive measures. As sanitarians are more and more impressed with the knowledge that tuberculosis is the result of the lowered resistance and vitality of the individual which lends to the rapid development and activity of the diseases, efforts made to improve the general health of a community will have a tendency to reduce the number of cases. Another point that is of special importance is that the State needs increased clinic and hospital facilities. Some counties have not complied with the 1912 law providing county hospitals or sending their tuberculous patients elsewhere. A proper survey should again be made of the various counties for the purpose of securing the enforcement of the law above referred to. The medical directors of counties in which there are tuberculosis sanatoria should be of great assistance in

directing the State as to the needs of any given county. Annual reports from these directors would be of great value to the State Department, and the practical information given would tend to strengthen the directors of the sanatoria in their work. This co-operation need not in any case interfere with the authority of local boards of health. The plan which has been adopted by the Bureau of Local Health Administration of combining several counties in the State under the supervision of a representative of the State Department of Health when applied to all parts of the State bids fair to secure a closer supervision over cases of tuberculosis. It is to be regretted that on account of lack of appropriation the State Department of Health is no longer able to carry on educational work with lantern slides and motion picture films for the purpose of informing the public as to the methods of prevention of this disease.

Another great need in the campaign against tuberculosis is the establishing of clinics in the various parts of the State. Physicians should be informed as to up-to-date methods of diagnosis. It would be well if the State Department of Health could arrange to have skilled diagnosticians from such counties as Union and Hudson, or physicians in charge of the various tuberculosis sanatoria attend the meetings of the county medical societies of the State for the purpose of demonstrating clinical methods to practitioners. The United States Public Health Service has a film on the diagnosis of tuberculosis, which might be secured and exhibited before the county medical societies. More work along the lines suggested may be taken up without the expenditure of any large amount of money, and we believe that the time is ripe for laying the foundation for the renewal of the campaign against this disease which is responsible for such a large proportion of deaths in our State.

For a number of years it was the practice of the State Department of Health to make an annual inspection of the various State institutions and make a report upon sanitary conditions. After the reorganization of the Department several years ago this yearly inspection was discontinued. At the present time there is no doubt the Department of Institutions and Agencies

would welcome the co-operation of the State Department of Health in a general sanitary survey of the State institutions, and during the coming year it would seem that some such plan of co-operation should be adopted.

The Chief of the Bureau of Medical Supervision was selected in December, 1918, as Editor of the *Public Health News*. Since that time the *Public Health News* has been issued regularly each month, with the exception of the months of July and August of 1919, when two numbers were combined. The objective of the "News" is to inform the public as to what is being done by the State Department of Health along the various lines of sanitation, and also to impart information in regard to the methods of prevention of disease. With this object in view the various chiefs in the Department have contributed from time to time leading articles for the issues. Two bureaus, namely, the Bureau for the Control of Venereal Diseases and that of Child Hygiene, have been given a large amount of space. We believe that education of the public through circulars and journals on these two subjects will result in the reduction of venereal diseases on the one hand, and the conservation of child life on the other. During the last year, owing to the increased cost of printing and paper, an effort was made to reduce the circulation, and each reader was asked to send a request that the "News" be forwarded each month. Although this reduced the circulation from 10,000 to 8,500, the circulation at the present time is rapidly approaching the original figure. During the coming year an effort will be made to add somewhat to the variety of material which is presented.

### Report of the Bureau of Local Health Administration.

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D. C. BOWEN, CHIEF.  
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In presenting the following report of the Bureau of Local Health Administration for the fiscal year ending June 30, 1920, I desire to call special attention to the beginning that has been made toward putting into operation a plan that had been under consideration for some years previously, which provided for dividing the State into a number of health districts and placing each district under the supervision of a full-time district health officer in the employ of the State Department of Health.

Health District No. 1 was established in the southern part of the State in October, 1919. We have, therefore, had nine months in which to observe results, and while sufficient time has not yet elapsed to show just how far the work done by the District Health Officer will improve sanitary conditions through stimulating the work of local boards of health, it has been shown beyond any question of doubt that a State health officer, confining his activities to a limited territory, can accomplish a very much larger volume of work in a given length of time, and can follow up his work more effectually until results have been secured than he can when sent from the main office in Trenton to widely separated localities in the State. It is likewise less expensive in both time and money to confine the activities of one man to a given territory. Furthermore, a district health officer can make a closer study of sanitary conditions existing in his district, which enables him to understand better the needs of the locality and to more intelligently co-operate with local health officials in the enforcement of the law and regulations of the State Sanitary Code.

Health District No. 1 includes the counties of Salem, Gloucester and Camden, exclusive of the City of Camden, and covers an area of approximately nine hundred square miles, in which there are about one hundred and fifty thousand inhabitants.

There are sixty incorporated municipalities and townships in this district, none of them having a population of over 15,000, and only one in which a full-time health officer is employed. They are shown in the following table according to their political division and population:

TABLE SHOWING POLITICAL DIVISIONS OF HEALTH DISTRICT NO. 1.

Cities—From 5,000 to 10,000 population, .....	2	
From 10,000 to 15,000 population, .....	1	
	—	3
Boroughs—Under 1,000 population, .....	7	
From 1,000 to 2,000 population, .....	5	
From 2,000 to 3,000 population, .....	4	
From 3,000 to 4,000 population, .....	3	
From 4,000 to 5,000 population, .....	1	
From 5,000 to 10,000 population, .....	3	
	—	23
Townships—Under 1,000 population, .....	2	
From 1,000 to 2,000 population, .....	17	
From 2,000 to 3,000 population, .....	9	
From 3,000 to 4,000 population, .....	2	
From 4,000 to 5,000 population, .....	2	
From 5,000 to 10,000 population, .....	2	
	—	34
Total local health districts, .....		60

The office of the District Health Officer for District No. 1 is located in Woodbury. It is open daily except Sundays, during business hours, with a stenographer in attendance to represent the Health Officer during his absence. I shall not attempt to give in this report a detailed statement of the work that has been accomplished through this office further than is necessary to show its character and to illustrate how it has been possible, through the District Health Officer, for the State Department of Health to co-operate with the sixty local boards of health in the district more fully than heretofore.

During the nine months that have elapsed since a District Health Officer was assigned to this district he has held more than

three hundred conferences with various public officials and private citizens in the district, attended the regular meetings of a number of local boards of health, and represented the Department at eleven meetings of county medical societies and other associations. Addresses were given on health topics at public gatherings on fifteen occasions; weekly summaries showing the number of cases of communicable diseases reported in the district were furnished to the press, and two special articles on contagious diseases prepared for publication in local newspapers. Private physicians were assisted in establishing a diagnosis in cases of eruptive fever on thirteen occasions; personal supervision was exercised over contagious diseases that occurred on a number of dairy premises, and specimens were collected for bacteriological examinations from all scholars in one public school in which diphtheria had been unusually prevalent among the scholars for a considerable length of time.

Through the efforts of the District Health Officer the "Gloucester County Association of Boards of Health" was organized. This may lead to the establishment of similar organizations in the two other counties in the district, or in expanding the present association to include them. Organizations of this character can be extremely useful in promoting interest in local health matters and are most valuable in bringing about co-operation and united action during widespread epidemics.

An exhibit, largely composed of photographs showing sanitary conditions in the county, was prepared and used in connection with the Gloucester County Health Week Campaign that was conducted by local civic organizations co-operating with the New Jersey Anti-Tuberculosis League.

As an illustration of a class of work which the District Health Officer has been doing, from which immediate results were obtained, the investigation of outbreaks of communicable diseases in rural districts serves as a good example. In these investigations a number of local health officials, as well as practicing physicians, were found who had been making no attempt to carry out the requirements of the regulations of the State Sanitary Code which relate to isolation and quarantine. In fact, both

physicians and executive officers of local boards of health were encountered who had no knowledge of the existence of a State Sanitary Code, and still a large number were encountered who knew in a general way that such a code had been adopted, but were entirely unfamiliar with its contents. In some districts it was found that patients convalescing from diphtheria were being released on clinical symptoms alone within from five to ten days following the date of attack, no attempt being made to base the period of isolation on cultural results, as required by State regulations. Equally untrustworthy methods were followed in handling scarlet fever and other communicable diseases in some localities. Where conditions such as these existed the District Health Officer was able through personal contact with local health officials and physicians to have the regulations of the State Sanitary Code better complied with in these respects.

Very little progress has thus far been made, however, in getting local boards of health in the district to enforce the regulations of the State Sanitary Code that relate to the abatement of nuisances constituting potential sources of danger to the public health, such as insanitary privies, polluted wells, refuse accumulations in which fly larvæ breed, and mosquito breeding areas; and it is doubtful if much can be accomplished in this direction in those municipalities in which the population is too small to warrant the employment of a full-time health officer.

Taking into consideration all that has been accomplished in this district during the past nine months, it is my judgment that the work more than justifies its continuance and fully warrants the extension of this plan of State supervision throughout the entire State.

*District Health Nurse.*—While the greater portion of the time of the District Health Nurse attached to this Bureau, and now stationed in a special sanitary district in Burlington County, has been taken up with duties usually performed by public health nurses, she has been doing a considerable amount of work analogous to that performed by a District Health Officer. This special sanitary district covers an area of about one hundred and thirty-seven square miles in a strictly rural section of Burlington County that surrounds Camp Dix. It takes in two boroughs,

seven entire townships and a portion of two others, in which there is a population of about ten thousand. Pemberton and New Egypt, each having a population of about one thousand, are the two largest villages in the district. Pemberton Township, with a population of about two thousand, is the largest political unit.

The present District Health Nurse entered the employ of the Department on December 31, 1918, after having been working under the supervision of the Bureau of Local Health Administration, as an employee of the American Red Cross in a sanitary unit financed by that organization to assist the State Department of Health in enforcing sanitary regulations in a special sanitary zone surrounding Camp Dix. The work that was accomplished in this zone during the progress of the war proved of such value in bettering sanitary conditions in the small villages and farming district to which it was extended, that it was deemed advisable that it should be continued even after the armistice was signed and the army disbanded.

The work that has been accomplished during the year in the Burlington County special sanitary district has been set forth in detail in a special report. It is merely referred to here in order to call attention to what has probably been as important a single piece of work in carrying public health education directly into the homes of families residing in rural districts, and in giving practical demonstrations of what can and should be done by local boards of health and civic organizations in rural districts to improve sanitary conditions in their respective districts, as this Bureau has done during the year. This fact has been attested to by public officials, physicians and private citizens in the district who have voluntarily spoken in terms of highest praise of what the Department has already accomplished in the district, and in their earnest request that the District Nurse shall not be withdrawn until some other satisfactory arrangements can be made to have the work continued under supervision of the State Department of Health. Appreciation of the work has also been shown in a more substantial manner through private contributions that have been made to the cause, sufficient to defray all

expenses connected with the upkeep of an automobile which was also donated.

#### EPIDEMIC DISEASES.

*Influenza.*—After the 1918 pandemic of influenza had subsided there was much speculation as to whether or not there would be a recurrence of the disease in epidemic form a year later. That this would happen was predicted by many authorities on epidemic diseases. Public health officials were therefore anticipating the outbreak of influenza that made its appearance in this State about the middle of January 1920, and extended over a period of approximately twelve weeks.

While the 1918 pandemic was at its height there was no inconsiderable number of communities in which there were not enough physicians to treat all who were made ill. As a result many persons died without receiving medical attention or proper nursing care. Under these distressing circumstances local health officials in severely stricken districts sought to procure physicians and nurses from more favored localities, and in doing so were obliged to pay physicians as high as one hundred and twenty-five dollars per day, plus expenses, and proportionately high wages were paid to nurses. Furthermore, it was not always communities that were in the direst need of emergency relief work that got it, but those that were able to pay the highest prices. To meet these conditions the United States Public Health Service and the American Red Cross co-operated with the State Department of Health to furnish physicians and nurses to many localities, as well as hospital equipment and supplies to a number of municipalities that were unable to procure them from other sources.

In preparing to take similar action should it be made necessary by a recurrence of influenza in epidemic form in 1919, early in September of that year this Bureau sent out circular letters to all physicians in the State whose names appeared on the Department's mailing list, requesting them to indicate whether or not in such an event they would be willing to accept a temporary appointment in the United States Public Health Service or with the State Department of Health, either to serve in their own

locality or in other parts of the State where their services might be required. By this means it was hoped to prepare a list of names of physicians who would be available for emergency duty in an epidemic in any part of the State. Out of about twenty-five hundred physicians circularized seven hundred and ninety-eight replied. Of this number 193 were willing to serve without restriction as to locality, 299 were willing to serve locally only, and 306 were not willing to serve at all.

During the 1919 epidemic there were more than 27,500 cases of influenza and 5,301 cases of pneumonia reported to the State Department of Health. As indicated by these reports the disease spread rapidly from day to day and from week to week from the middle of January to the second week in February. Thereafter there was a steady decrease each day in the number of reports received until the middle of March.

While it is true that influenza morbidity reports cannot be taken as a very reliable index of the prevalence of the disease in the community, there can be no doubt but that the more recent epidemic would have been regarded by both health officials and the public as far more serious were it not for the fact that it was so greatly overshadowed by the magnitude of the 1918-19 pandemic that preceded it by a little more than one year. Recognizing the untrustworthiness of case reports, when it became apparent about the middle of January 1920, that influenza and pneumonia were taking a sharp upward trend, the local registrar of each sanitary district in the State was requested to forward to the State Department of Health a daily report showing the number of new cases and the number of deaths from these causes in the district in which he had supervision, and from these combined morbidity and mortality reports it was possible to keep fairly well informed concerning the progress of the epidemic in different parts of the State.

Deaths from influenza and pneumonia (all forms) began to show a marked increase above normal by the middle of January. On January 15th there were 15 deaths reported from these causes. Each day thereafter showed a steady increase until February 10th, when 117 deaths occurred. This marked the crest

of the epidemic, and by the latter part of March its force was about spent.

The severity of the 1920 epidemic can be realized more fully by comparing the total number of deaths that occurred from influenza and pneumonia (all forms) during its most active period with the number that usually result from the same causes in corresponding months of non-epidemic years. During the months of January and February 1920, there were 3,217 deaths attributed to influenza and pneumonia, whereas not more than about 600 deaths would normally have occurred. Therefore, the death toll exacted from New Jersey by this epidemic can be roughly estimated at about 2,600.

*Smallpox.*—Since October, 1919, smallpox is known to have occurred in eleven counties. Cases have been reported in twenty municipalities, and epidemiological investigations conducted by this Bureau in seventeen. In five separate outbreaks it was definitely established that the original cases were due to infection contracted in other States. This may likewise have been true in two other localized outbreaks in which the original source of infection was not positively determined.

All cases of smallpox that were seen by representatives of this Bureau during the past year were apparently due to a mild type of infection that seldom, if ever, proves fatal. While less infectious than virulent smallpox, outbreaks due to this type of the disease are quite as difficult to control by health officials as the more virulent type, owing to the greater frequency with which errors in diagnosis occur, and the relatively large number of cases that recover without having been seen by a physician during the infective stages of the disease, and which are not, therefore, reported to the health department. Many who contract this mild smallpox are made so slightly ill that medical aid is not sought until the eruption is well out, and then only on account of the unsightly appearance of the lesions on the face and hands, while others only seek treatment during the prodromal stage of the disease when a definite diagnosis cannot be made, and fail to see a physician thereafter or neglect to do so until many persons have been exposed to infection.

In the investigation of outbreaks of this kind it is not uncommon to find whole families who give unmistakable evidence of having passed through the successive stages of smallpox without seeking medical advice, or without actually suspecting the true character of their illness. The protection that vaccination confers against smallpox, and the susceptibility to the infection of unvaccinated persons of all ages, is clearly demonstrated in instances of this kind. Recently vaccinated members of such infected families invariably escape the disease, while those who have never been vaccinated are equally sure to succumb irrespective of their ages. Those who have not been vaccinated for ten, twenty or fifty years may or may not contract the disease. With this type of smallpox becoming more widely disseminated throughout the country, and vaccination being neglected, as it surely is, by a considerable proportion of the population of many communities, the disease is quite likely to become endemic unless more drastic measures are taken to prevent it.

Some idea of the apathy of the public towards this means of obtaining immunity against a loathsome and highly infectious disease was strikingly illustrated while a representative of the Bureau was assisting local health officials in controlling an outbreak of smallpox that occurred in Ocean County during the past winter. In one public school inspected in the infected district, out of a total enrollment of two hundred and fourteen scholars, only nine of these, including teachers, had ever been vaccinated, and yet not a single parent was found whose children attended this school who held any conscientious scruple against vaccination. Much to their credit, when free vaccinations were begun in the school, a number of parents took occasion to satisfy themselves that the operation would be performed in a clean and proper manner. That the per cent. of unvaccinated persons was so high among the younger members of these rural communities was not due to any anti-vaccination propaganda that had been carried on, but to the fact that no smallpox had occurred in the vicinity for many years, and parents had not had their attention called to the advisability of having their children vaccinated



early in life as a wise and necessary precaution against chance exposure to infection.

*Typhoid Fever.*—Twenty-two small outbreaks of typhoid fever were investigated by representatives of this Bureau during the past year. Ten cases investigated in one of these outbreaks are believed to have been due to eating raw oysters taken from the Navesink River near the point at which sewage from the Borough of Red Bank is discharged into the stream. In a recent outbreak in Lakewood, in which nine cases and one death occurred, the vector of infection was definitely traced to milk produced on a dairy on which two typhoid "carriers" were found. Owing to the conditions that existed on this dairy, and the manner in which the milk produced thereon was distributed, it is rather surprising that a larger number of persons did not contract the disease before the investigation that promptly located and eliminated the source of infection was begun.

With the perfection of laboratory technique which has made it possible to isolate the typhoid bacillus with a considerable degree of success when present in stool and urine specimens, it has become much less difficult than was formerly the case to definitely determine the source of infection causing localized outbreaks of typhoid fever when due to infected milk and other articles of food. It is not so easy, however, to solve the problems which the typhoid "carrier" presents in the spread of this disease. There is now on record in the Bureau of Local Health Administration a history of fourteen chronic typhoid fever "carriers" that have been discovered in investigations conducted by this Bureau during the past eight years. To each of these infected individuals one or more outbreaks of typhoid fever of greater or less magnitude have been traced. One of them, since he came under our observation five years ago, is known to have been responsible for three separate outbreaks in which there were seventy-three cases and three deaths. This man has probably been a typhoid "carrier" for about forty years, and during a greater portion of this time has worked on dairies located in various parts of the country, a kind of work which he has preferred to all other occupations. He represents a class of

infected individuals that fail to realize their obligation to society, and who without close supervision cannot be trusted to carefully and persistently follow the few rules that are necessary to protect others against their uncleanly habits. The State Department of Health has no adequate means for keeping track of the movements of disease "carriers" of this sort, and with the exception of the few municipalities in which there are efficient health organizations with full-time employees, the same is true of the local health departments.

*Communicable Diseases on Dairy Premises.*—Communicable diseases, the infective agent of which is known to be transmissible through milk and other dairy products, were investigated by the Bureau of Local Health Administration on fifty-six dairies during the year. These dairies were located in forty-six separate municipalities distributed among eighteen counties and represented a total daily production of seven thousand nine hundred and twenty-two quarts of milk. The milk produced on thirty-seven was sold in municipalities other than that in which the dairy was located, therefore its production was not subject to the immediate supervision of the local health officer of the sanitary district in which it was consumed.

Prohibition of the sale of milk produced or stored on premises on which an active source of infection is known to exist is a comparatively easy and safe procedure. It is not the policy of the Bureau, however, to resort to such drastic measures when the dairyman is able and willing to conduct his business in a manner that, in our judgment, will prevent the products of his dairy from becoming a conveyor of infection. This latter procedure requires the exercise of good judgment and a greater amount of supervision than is necessary when the sale of milk is arbitrarily prohibited, but it saves valuable food products that would otherwise be partially or totally lost. Furthermore, it appeals to the reasonableness of the dairyman and tends to discourage any attempt on his part to surreptitiously dispose of a food product that might transmit infection.

On the fifty-six dairies on which communicable diseases were reported and investigated during the year, there occurred thirty-

one cases of diphtheria, thirty-nine cases of scarlet fever, five cases of typhoid fever and three cases of advanced pulmonary tuberculosis among the dairy workers or persons with whom they closely associated. The action taken to prevent the spread of infection through the products of these dairies is summarized as follows:

	<i>No. of Premises.</i>
(a) Dairy workers examined and those showing no evidence of infection required to remain away from infected building and its inmates, .....	23
(b) Satisfactory isolation of patients and attendants, .....	16
(c) Sale of milk prohibited by State Health Officer, .....	5
(d) Disposition of case left to local health officials, .....	6
(In 3 of these cases sale of milk was prohibited.)	
(e) Sale of milk voluntarily discontinued by dairymen, .....	1
(f) Patient removed from dairy premises, .....	4
(g) Cows taken to non-infected dairy, .....	1
Total, .....	56

#### CO-OPERATION WITH LOCAL BOARDS OF HEALTH.

One of the chief functions of this Bureau is to co-operate with local health authorities in solving their problems and to assist them in the enforcement of the State Sanitary Code. The value of this particular kind of work in the prevention of disease and conservation of public health is not likely to be overestimated, but this Bureau is unable to render the amount of service that it should in this direction with its present limited force.

There are now over five hundred and ten local boards of health in the State. Sixty of these are located in special sanitary district No. 1, to which brief mention is made in preceding pages of this report, and to which one of the employees of the Bureau was detailed during the past year to act as a full time District Health Officer. This leaves two assistant epidemiologists, one district public health nurse and the chief of the Bureau to co-operate with the remaining four hundred and fifty odd local boards of health in the State on the multiplicity of matters upon which they seek aid and advice, and to make special sanitary surveys and investigations in various parts of the State. The Bureau is also re-

quired to take charge of all epidemics of unusual magnitude and to take an active part in preventing the spread of infection from localized outbreaks of epidemic diseases.

During the past year the work which the Department is supposed to do in the way of enforcing the law relating to the prevention and control of tuberculosis was placed upon this Bureau, without additional funds for carrying it on. I am therefore obliged to report that practically nothing has been done along this line. If the amount of money that is now spent to maintain this entire Bureau should be devoted to the prevention of this disease alone it would be insufficient to support the work that should be done by the State for the control of a disease that is now causing nearly three thousand deaths annually in New Jersey.

At the time the Bureau of Local Health Administration was established in 1915, its duties were definitely defined. Since then it has been charged with additional duties from time to time until the volume of work which it is required to do has grown to such an extent that it cannot be given the careful attention that it should receive without increasing the limited number of employees that now are attached to this Bureau. Therefore much important work that should be done is being entirely neglected or receiving scant attention, the entire time of the personnel of the Bureau being taken up with matters of an emergency nature.

#### MORBIDITY REPORTS FOR THE CALENDAR YEAR 1919.

As indicated by morbidity reports diphtheria, scarlet fever, chickenpox and smallpox were more prevalent during the calendar year 1919 than during the preceding year; while measles, German measles, typhoid fever, epidemic cerebrospinal meningitis and whooping cough were less prevalent. The indicated fatality rates from all of these diseases were also substantially lower in 1919 than 1918, except from German measles. However, there is good reason to believe that communicable diseases were better reported in 1919 than in 1918, which would in a measure account for the apparent lower fatality rates in 1919.

*Diphtheria.*—There were 7,270 cases reported and 572 deaths attributed to diphtheria in 1919, whereas 4,466 cases were re-

ported and 485 deaths registered in 1918. According to these figures the indicated fatality rate was 10.08 in 1918 and 7.86 in 1919. It is doubtful, however, if the actual fatality rate from diphtheria in 1918 exceeded that in 1919 as much as it appears from these figures. The indicated fatality rate for all reportable epidemic diseases was substantially lower in New Jersey in 1919 than in 1918, except for influenza, pneumonia, measles and epidemic cerebrospinal meningitis. These relatively high indicated fatality rates for 1918, based on reported cases and deaths, are believed to be chiefly attributable to unusually poor reporting in that year, due to the fact that such a large per cent. of the medical profession was engaged in military operations and the civilian population was therefore actually unable to procure adequate medical care. While this condition prevailed undoubtedly all morbidity reports were less complete than normally, and in the case of diphtheria, in which the early administration of antitoxin plays such an important part in successful treatment, it might also have operated to bring about an actual higher death rate.

*Chickenpox.*—There were 6,245 cases and 8 deaths reported from chickenpox during the calendar year 1919, against 2,952 cases and 2 deaths in 1918.

*Scarlet Fever.*—There were 4,240 cases and 70 deaths reported from scarlet fever in 1919 against 2,818 cases and 57 deaths in 1918. Based on these figures the indicated fatality rate for scarlet fever in 1919 was 1.65 against 2.00 in 1918.

*Measles.*—A low case rate from measles was to be expected in 1919 since the disease was unusually prevalent throughout the State during the preceding year. There were 4,774 cases and 55 deaths reported, equal to a fatality rate of 1.15. This is the lowest indicated fatality rate from measles that has occurred since the disease was made reportable in 1917.

*German Measles.*—German measles was likewise less prevalent in 1919 than during the preceding year, there having been only 351 cases and 3 deaths reported against 2,272 with the same number of deaths in 1918.

*Whooping Cough.*—There were only 1,889 cases and 89 deaths reported from whooping cough in 1919 against 8,310 cases and

562 deaths reported in 1918. The indicated fatality rates were 4.59 in 1919 and 6.7 in 1918. The excessively high indicated fatality rates from this disease are undoubtedly due to poor reporting, since many cases are not seen by a physician and doubtless many that receive medical treatment are not reported.

*Influenza.*—During the calendar year 1919 there were 22,554 cases reported and 2,483 deaths attributed to influenza, which gives an indicated fatality rate for the year of 11.01. In 1918 there were 292,839 cases reported and 10,963 deaths occurred that were assigned to this disease, equal to a fatality rate of only 3.7. No trustworthy deductions can be drawn from these figures alone. In this disease too many factors must be taken into account to place any reliance on an indicated fatality rate based on reported cases and deaths coming through regular channels. Before this will be possible some more reliable method of making a diagnosis must be found, and a more uniform system of reporting established.

*Pneumonia.*—What has been said about the fatality rate in influenza applies equally well to pneumonia. There were 7,017 cases of pneumonia (all forms) with 4,545 deaths reported in 1919, equal to an indicated fatality rate of 64.77. In 1918 there were 18,027 cases and 5,874 deaths reported, equal to an indicated fatality rate of 22.9.

*Meningitis, Epidemic Cerebrospinal.*—In 1919 there were 149 cases and 82 deaths reported from epidemic cerebrospinal meningitis, equal to an indicated fatality rate of 55.03 against 265 cases and 69 deaths in 1918, equal to a fatality rate of 22.6. No cases nor deaths from this disease were reported from Cape May, Morris, Ocean, Salem, Sussex or Warren Counties, in which the population is largely rural.

*Typhoid Fever.*—Each year since 1912 has shown a marked diminution in the number of reported cases and deaths from typhoid fever. In that year there were 2,024 cases reported and 328 deaths. In 1919 there were 617 cases reported and 92 deaths, equal to an indicated fatality rate of 14.91. In 1918 the indicated fatality rate, based on reported cases and deaths, was 21.9. As before stated, the relatively high indicated fatality

rate for 1918 is undoubtedly due to poor reporting and not to a more severe type of the disease in that year.

*Smallpox.*—During the calendar year there were 109 cases of smallpox reported with no deaths. As a rule virulent smallpox is the one disease that is well reported. This is not true, however, in outbreaks of the mild type of infection, referred to elsewhere in this report, as many cases are overlooked and never become a matter of record.

TABULATION OF REPORTED CASES AND DEATHS FROM CERTAIN COMMUNICABLE DISEASES FOR THE TEN YEARS, 1910-1919. (MEASLES AND WHOOPING COUGH WERE NOT REPORTABLE PRIOR TO JUNE 1, 1917.)

YEAR.	TYPHOID FEVER.		SCARLET FEVER.		DIPHThERIA.		MEASLES.		WHOOPING COUGH.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1910, .....	1,134	392	6,955	229	5,072	630	.....	186	.....	389
1911, .....	1,617	337	5,333	214	5,884	458	.....	281	.....	364
1912, .....	2,024	328	3,987	146	4,829	412	.....	296	.....	211
1913, .....	1,825	216	5,255	218	6,574	306	.....	216	.....	386
1914, .....	1,604	223	6,552	242	6,863	545	.....	240	.....	299
1915, .....	1,425	188	4,735	97	7,410	501	.....	205	.....	259
1916, .....	1,390	194	4,209	69	5,586	444	.....	344	.....	262
1917, .....	1,151	191	4,776	49	5,326	447	.....	121	.....	292
1918, .....	739	162	2,818	57	4,465	485	28,437	523	8,310	562
1919, .....	617	92	4,240	70	7,270	572	4,774	55	1,889	89

#### VENEREAL DISEASES.

To Chapter 288, Laws of 1915, which created the State Department of Health, a supplement was enacted in 1917 which made venereal diseases reportable. This supplement requires physicians, superintendents of institutions and other persons who treat or attempt to treat by prescription, formula, patented or proprietary medicine any venereal disease to "report immediately to the Department of Health of this State the name, sex, address, color and nationality of the said person so infected with such disease, and the age as nearly as practicable, together with the character of the disease and the probable source of infection and whether previously reported or not, and if so, when, where and by whom." A further requirement in the same act reads as follows: "The Department of Health of this State shall make and enforce such rules and regulations for the quarantining and

treatment of venereal diseases, such as chancroid, gonorrhea, syphilis or any of the varieties or stages of such disease reported to it as may be deemed necessary for the protection of the public. Said Department of Health shall not disclose the names and addresses of such persons reported or treated to any person other than a prosecuting officer or in court in prosecutions under this or any other State law."

This act differs materially from other laws relating to the reporting of communicable diseases. First, this act requires physicians and others who treat venereal diseases to report such cases directly to the State Department of Health, whereas physicians are required to report other communicable diseases to an official of the local board of health in the municipality in which the case exists. This official in turn is required to transmit a copy of such reports to the Director of Health. Second, the act requiring venereal diseases to be reported places a specific duty upon the State Department of Health to make and enforce such rules and regulations for the quarantining and treatment of venereal diseases as may be necessary for the protection of the public; whereas, in other laws, as well as in the regulations of the State Sanitary Code, the enforcement of precautionary measures against the spread of transmissible diseases is made the mandatory duty of local boards of health. Third, while the venereal disease reporting law makes it mandatory upon the State Department of Health to make and enforce such rules and regulations as are deemed necessary for the protection of the public, it also specifically commands the Department not to disclose the names or addresses of a person reported or treated to any person other than the prosecuting officer or in court in prosecutions under a State law. A literal interpretation of the latter provision of the law practically debar the Department from using the information contained in case reports that might otherwise be judiciously used in securing proper supervision and treatment of infected individuals who constitute a menace to the public. It also acts as an obstacle to full co-operation between State and local health officials in their efforts to secure reports of and in applying restrictive measures against the spread of venereal diseases. There-

fore, the enforcement of the law, in so far as this is possible, is a matter that entirely devolves upon the State Department of Health, both in respect to the reporting and treating of cases as well as in the enforcement of measures to prevent the transmission of infection. The two latter provisions of the law are being enforced through the Bureau of Venereal Disease Control, while this Bureau is charged with the collection, tabulation and filing of venereal disease reports.

From the foregoing it is obvious that reports of venereal diseases that reach this Department must be handled in a different manner than are morbidity reports of other diseases. It is equally plain that all action to secure compliance with the requirements of this law in respect to reporting cases must emanate from the Department and must deal directly with those who treat or care for venereal disease patients, whereas in dealing with reports of other communicable diseases the Department works mainly through local health authorities. Therefore, it can hardly be expected that venereal diseases will be as completely reported as most other communicable diseases until the law is modified so as to enable the enforcing power to exercise greater latitude in the use of information contained in reports of cases.

It is a fundamental principle underlying practically all health legislation, barring the act under discussion, that the control of communicable diseases dangerous to the public health should be undertaken by local health officials. As local boards of health in rural districts are now constituted there may be some good reasons why this same principle should not apply to venereal infections, but in communities in which there are efficient health departments these objections do not hold. A number of local health departments are now enforcing regulations that require venereal diseases to be reported, thus making it obligatory on physicians to report the same case to two separate agencies, thereby entailing an unnecessary and unwarranted duplication of work on their part and leading to duplication in the work of investigation.

Including reports from all sources, there were fewer cases of venereal diseases reported during the calendar year 1919 than

during the previous year. This was evidently not due to failure on the part of private physicians to observe the requirements of the law less closely since there were 5,787 cases reported in the civilian population in 1919 against 2,290 cases in 1918. On the other hand, there were fewer cases reported in 1919 from Government military camps and reservations, there having been reported from these sources 9,530 cases in 1918 against 4,821 cases in 1919.

There were also more cases reported from State institutions in 1919 than during the preceding year, as may be seen by reference to the following table:

NUMBER OF CASES OF SYPHILIS, GONORRHEA AND CHANCROID REPORTED DURING THE CALENDAR YEARS 1918 AND 1919.

	1918.				1919.				
	Syphilis.	Gonorrhoea.	Chancroid.	Total.	Syphilis.	Gonorrhoea.	Chancroid.	Character not stated.	Total.
Reported by private physicians, .....	962	1,266	62	2,290	2,547	3,098	142	0	5,787
Reported from military camps and reservations, .....	957	8,110	433	9,530	958	2,371	1,387	0	4,821
Reported from Federal industries, .....	20	41	3	64	2	14	0	0	16
Reported from State institutions, .....	226	5	0	231	275	51	0	0	326
Totals, .....	2,195	9,422	498	12,115	3,782	5,534	1,529	105	10,950

In tabulating venereal diseases for the calendar year 1919 by counties there is shown a wide discrepancy between the number of cases reported in each one thousand inhabitants in groups of counties that are comparable in respect to density of population and other factors that might be expected to have an influence on the spread of venereal infections. The following table shows the case rate per one thousand population of venereal diseases (all forms) during 1919, exclusive of cases reported from State and county institutions:

SHOWING NUMBER OF REPORTED CASES OF VENEREAL DISEASES (ALL FORMS),  
EXCLUSIVE OF CASES REPORTED FROM STATE AND COUNTY INSTITUTIONS,  
AND CASE RATES PER 1,000 POPULATION, ARRANGED BY  
COUNTIES FOR THE YEAR 1919.

County.	No. of Cases Reported.	Cases per 1,000 Population.
Group 1—		
Mercer, .....	672	4.36
Camden, .....	698	4.00
Essex, .....	2,196	3.28
Union, .....	281	1.55
Passaic, .....	379	1.39
Bergen, .....	173	0.89
Middlesex, .....	118	0.80
Hudson, .....	416	0.61
Group Total, .....	4,933	2.00
Group 2—		
Monmouth, .....	209	1.96
Burlington, .....	124	1.66
Gloucester, .....	63	1.48
Cumberland, .....	67	1.13
Salem, .....	25	0.88
Somerset, .....	39	0.88
Atlantic, .....	69	0.72
Group Total, .....	596	1.32
Group 3—		
Morris, .....	112	1.33
Cape May, .....	30	1.16
Hunterdon, .....	36	1.10
Ocean, .....	23	1.00
Sussex, .....	12	0.41
Warren, .....	15	0.31
Group Total, .....	228	0.94
State Totals, .....	5,757	1.82

There is only one construction that can be placed on the figures in the above table, and that is that in some counties physicians and others whose duty it is to report venereal diseases are not living up to their obligation under the law. Only one hundred and seventy-three cases of venereal diseases were reported during the entire calendar year of 1919 in Hudson County, while in the clinic conducted in Jersey City by the Bureau of Venereal Disease

Control of the State Department of Health over five hundred patients were treated during that year. Bergen County likewise shows a relatively low indicated case rate when compared to other counties containing one or more large centers of population. This low rate can only be explained by poor reporting. In the counties which show the higher case rates local boards of health in some of the larger municipalities have been active in venereal disease control work.

Considerable effort has been made by the Bureau during the past year to acquaint physicians and superintendents of institutions with their duty under the law in respect to reporting cases of venereal diseases, and it was largely due to this work that there was a substantial gain in the number of cases reported in 1919.

Another method that has been followed as a means toward securing better reporting of cases of syphilis has been to check off against reported cases the results of all Wasserman tests made in the State Laboratory of Hygiene and giving four plus reaction. This has resulted in securing reports of 343 cases of syphilis, which otherwise would not have been made.

Still another check has been kept on physicians who fail to report cases of venereal diseases by comparing certificates of death from these causes with reported cases on file. This has resulted in disclosing sixty-one deaths attributed to a venereal disease in persons who had never been reported. A similar checking procedure has been followed in cases of death from other reportable diseases, and when unreported cases were found the local boards of health in the districts where the deaths occurred were requested to make an investigation to learn why no report had been received.

NUMBER OF CASES OF REPORTABLE DISEASES REPORTED TO THE STATE DEPARTMENT OF HEALTH DURING THE YEARS 1916, 1917, 1918 AND 1919.

	1916.	1917.	1918.	1919.
Number of reported cases of diseases reportable prior to 1917, .....	29,034	27,308	19,593	26,376
diseases made reportable since 1916, ..	.....	13,345	352,781	42,874
Number of reported cases of additional				
Number of cases of above two classes reported from military posts, .....	.....	794	12,918	5,373
Totals, .....	29,034	41,447	385,292	74,623

## REPORTED CASES OF CHICKEN POX IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	97	29	10	13	14	10	8	4	2	3	2	2	5
1 year, .....	174	28	20	21	25	15	17	18	5	4	8	4	9
2 years, .....	187	49	18	15	19	23	8	17	12	4	...	6	10
3 years, .....	219	59	30	22	21	26	12	8	9	3	11	6	18
4 years, .....	224	41	29	23	31	19	14	18	9	5	13	9	13
Under 5 years, .....	901	206	107	94	110	93	54	65	37	19	34	27	55
5 to 9 years, .....	1357	324	158	212	167	205	123	96	17	18	66	58	113
10 to 14 years, .....	331	70	41	47	39	40	18	13	14	2	9	14	24
15 to 19 years, .....	65	19	4	7	11	9	2	2	...	1	2	3	5
20 to 24 years, .....	24	7	5	1	3	1	2	1	...	1	1	1	1
25 to 34 years, .....	44	11	7	7	8	1	2	2	2	...	...	1	3
35 to 44 years, .....	11	3	2	...	2	1	...	...	1	...	...	...	2
45 to 54 years, .....	1	...	...	1	...	...	...	...	...	...	...	...	...
55 to 64 years, .....	2	...	1	1	...	...	...	...	...	...	...	...	...
65 years and over, .....	1	...	...	...	1	...	...	...	...	...	...	...	...
Unknown age, .....	21	2	...	1	1	2	...	2	...	...	8	...	5
Total, .....	2958	642	325	370	342	352	202	181	71	41	120	104	208

## REPORTED CASES AND DEATHS FROM CHICKENPOX IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	*Deaths.	Cases.	*Deaths.	Cases.	Deaths.
Under 1 year, .....	49	....	48	....	97	....
1 year, .....	91	....	83	....	174	....
2 years, .....	89	....	98	....	187	....
3 years, .....	121	....	98	....	219	....
4 years, .....	104	....	120	....	224	....
Under 5 years, .....	454	....	447	....	901	....
5 to 9 years, .....	815	....	742	....	1557	....
10 to 14 years, .....	159	....	172	....	331	....
15 to 19 years, .....	33	....	32	....	65	....
20 to 24 years, .....	13	....	11	....	24	....
25 to 34 years, .....	21	....	23	....	44	....
35 to 44 years, .....	6	....	5	....	11	....
45 to 54 years, .....	1	....	...	....	1	....
55 to 64 years, .....	1	....	1	....	2	....
65 years and over, .....	1	....	...	....	1	....
Age unknown, .....	9	....	12	....	21	....
Total, .....	1513	....	1445	....	2958	....

\*Deaths not available in this bureau.

## REPORTED CASES OF DIPHTHERIA IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	56	8	4	3	7	9	1	5	1	5	4	4	5
1 year, .....	247	30	33	32	39	17	11	14	8	9	19	19	16
2 years, .....	404	44	37	44	46	30	22	28	14	29	31	41	38
3 years, .....	453	51	44	42	46	33	39	26	16	35	38	36	47
4 years, .....	451	44	30	41	46	34	30	37	22	32	35	45	55
Under 5 years, .....	1611	177	148	162	184	123	103	110	61	110	127	145	161
5 to 9 years, .....	1676	138	121	140	163	120	117	131	82	154	149	170	191
10 to 14 years, .....	537	43	38	43	58	38	50	48	26	34	48	46	65
15 to 19 years, .....	174	14	14	20	20	19	7	10	11	16	9	20	20
20 to 24 years, .....	144	23	13	16	15	13	9	12	9	3	7	14	10
25 to 34 years, .....	183	16	15	20	22	19	9	16	4	6	15	19	22
35 to 44 years, .....	68	3	8	2	13	9	4	6	2	3	5	5	8
45 to 54 years, .....	24	3	1	4	3	1	1	2	2	2	2	1	2
55 to 64 years, .....	2	...	...	1	1	...	...	...	...	...	...	...	...
65 years and over, .....	2	...	1	...	...	...	...	...	...	...	...	...	...
Unknown age, .....	45	3	4	3	2	2	...	3	4	2	5	6	11
Total, .....	4466	420	363	411	481	344	300	338	201	324	368	428	490

## REPORTED CASES AND DEATHS FROM DIPHTHERIA IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	39	....	17	....	56	24
1 year, .....	145	....	102	....	247	86
2 years, .....	209	....	195	....	404	74
3 years, .....	238	....	215	....	453	56
4 years, .....	253	....	198	....	451	58
Under 5 years, .....	834	....	727	....	1611	298
5 to 9 years, .....	803	....	873	....	1676	144
10 to 14 years, .....	233	....	304	....	537	30
15 to 19 years, .....	65	....	109	....	182	...
20 to 24 years, .....	35	....	109	....	144	...
25 to 34 years, .....	54	....	129	....	183	...
35 to 44 years, .....	23	....	45	....	68	28
45 to 54 years, .....	6	....	18	....	24	2
55 to 64 years, .....	...	....	2	....	2	...
65 years and over, .....	1	....	1	....	2	...
Age unknown, .....	22	....	23	....	45	....
Total, .....	2128	269	2340	229	4466	498

REPORTED CASES OF MALARIA IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	3	2											1
1 year, .....	3	1			1		1						
2 years, .....	9			1		3	1	1	1				2
3 years, .....	6	1					2						3
4 years, .....	21	4		1		4	3	2	1				6
5 to 9 years, .....	36					8	2	4	2	3	1		16
10 to 14 years, .....	28					2	2	8	5	5	2		4
15 to 19 years, .....	18					4	3	3	1	4	3		
20 to 24 years, .....	27	2	1	3	4	2	3	2	4	4	2		
25 to 34 years, .....	43			1	1	5	7	9	5	5	2	2	6
35 to 44 years, .....	52	1		3	3	11	3	6	5	6	5	2	7
45 to 54 years, .....	21			4	2	2	2	3	1	1	2		4
55 to 64 years, .....	14			2	2	3	1	1		4			1
65 years and over, .....	9			1		1		1	3	1			2
Unknown age, .....	8			1	1	1		1	2	1			1
Total, .....	277	7	1	16	17	42	26	37	30	35	15	4	47

REPORTED CASES AND DEATHS FROM MALARIA IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....						
1 year, .....	1		2		3	
2 years, .....	1		2		3	1
3 years, .....	5		4		9	
4 years, .....	2		4		6	
Under 5 years, .....	9		12		21	1
5 to 9 years, .....	15		21		36	
10 to 14 years, .....	18		10		28	
15 to 19 years, .....	14		4		18	1
20 to 24 years, .....	14		13		27	
25 to 34 years, .....	28		15		43	
35 to 44 years, .....	29		23		52	
45 to 54 years, .....	11		10		21	11
55 to 64 years, .....	6		8		14	
65 years and over, .....	4		5		9	
Age unknown, .....	4		4		8	
Total, .....	152	4	125	9	277	13

REPORTED CASES OF POLIOMYELITIS IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	4			2			2						
1 year, .....	9		1	1					3	3			1
2 years, .....	4					1				1	1	1	
3 years, .....	9		2	1		1				1			4
4 years, .....	4	1				1			1		1		
Under 5 years, .....	30	1	3	4	1	2	2	4	5	2	1		5
5 to 9 years, .....	7		1		2					2	1	1	
10 to 14 years, .....	2									1	1		
15 to 19 years, .....	1												
20 to 24 years, .....	1									1			
25 to 34 years, .....	1												
35 to 44 years, .....	1												
45 to 54 years, .....	1			1									
55 to 64 years, .....													
65 years and over, .....													
Unknown age, .....													
Total, .....	42	1	4	5	3	2	2	4	9	5	2		5

REPORTED CASES AND DEATHS FROM POLIOMYELITIS IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	*Deaths.	Cases.	*Deaths.	Cases.	Deaths.
Under 1 year, .....	2		2		4	
1 year, .....	4		5		9	
2 years, .....	1		3		4	
3 years, .....	4		5		9	
4 years, .....	4				4	
Under 5 years, .....	15		15		30	
5 to 9 years, .....	3		4		7	
10 to 14 years, .....						
15 to 19 years, .....	2				2	
20 to 24 years, .....						
25 to 34 years, .....	1		1		1	
35 to 44 years, .....						
45 to 54 years, .....	1				1	
55 to 64 years, .....						
65 years and over, .....						
Age unknown, .....						
Total, .....	22		20		42	

\* Deaths not available in this bureau.



REPORTED CASES OF SCARLET FEVER IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	16	3	2	...	4	3	...	...	...	...	3	1	
1 year, .....	50	8	5	7	11	6	4	2	...	3	2	...	2
2 years, .....	157	28	19	20	26	16	9	8	1	6	4	7	13
3 years, .....	200	36	28	32	26	17	8	10	5	9	5	10	14
4 years, .....	246	32	23	27	42	25	18	14	1	8	11	15	30
Under 5 years, .....	669	107	77	86	109	67	39	34	7	28	22	35	60
5 to 9 years, .....	1177	153	115	145	148	81	60	109	38	65	65	78	120
10 to 14 years, .....	496	50	50	73	72	50	26	16	13	26	28	40	52
15 to 19 years, .....	189	26	30	28	32	22	6	6	1	5	7	11	15
20 to 24 years, .....	113	22	17	18	18	11	5	3	1	2	1	8	7
25 to 34 years, .....	94	7	17	11	12	11	9	6	3	4	2	4	8
35 to 44 years, .....	28	5	4	4	6	1	1	1	...	1	1	1	3
45 to 54 years, .....	9	3	...	...	2	1	...	...	1	...	...	...	2
55 to 64 years, .....	1	...	...	...	1	...	...	...	...	...	...	...	...
65 years and over, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Unknown age, .....	13	1	...	2	1	4	...	...	1	1	...	1	2
Total, .....	2789	374	310	367	461	248	146	175	65	130	126	178	269

REPORTED CASES AND DEATHS FROM SCARLET FEVER IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	10	...	6	...	16	1
1 year, .....	30	...	20	...	50	6
2 years, .....	85	...	72	...	157	3
3 years, .....	91	...	109	...	200	11
4 years, .....	116	...	130	...	246	6
Under 5 years, .....	332	...	337	...	669	27
5 to 9 years, .....	558	...	619	...	1177	12
10 to 14 years, .....	237	...	259	...	496	9
15 to 19 years, .....	87	...	102	...	189	
20 to 24 years, .....	34	...	79	...	113	9
25 to 34 years, .....	33	...	56	...	94	
35 to 44 years, .....	12	...	16	...	28	1
45 to 54 years, .....	4	...	5	...	9	
55 to 64 years, .....	1	...	...	...	1	...
65 years and over, .....	...	...	...	...	...	
Age unknown, .....	5	...	8	...	13	...
Total, .....	1308	24	1481	33	2789	57

REPORTED CASES OF SMALLPOX IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	1	...	...	1	...	...	...	...	...	...	...	...	...
1 year, .....	2	...	...	2	...	...	...	...	...	...	...	...	...
2 years, .....	3	...	...	2	...	...	...	1	...	...	...	...	...
3 years, .....	3	...	...	2	...	...	...	1	...	...	...	...	...
4 years, .....	1	...	...	...	...	...	...	1	...	...	...	...	...
Under 5 years, .....	10	...	...	7	...	...	...	1	2	...	...	...	...
5 to 9 years, .....	14	...	1	11	...	...	...	...	1	...	...	...	1
10 to 14 years, .....	1	...	...	1	...	...	...	...	...	...	...	...	...
15 to 19 years, .....	7	...	...	1	...	...	...	6	...	...	...	...	...
20 to 24 years, .....	13	...	...	1	...	1	5	3	1	...	...	...	2
25 to 34 years, .....	9	1	...	5	...	1	1	1	1	...	...	...	...
35 to 44 years, .....	5	...	1	3	...	...	...	1	...	...	...	...	...
45 to 54 years, .....	4	...	1	1	...	1	...	1	...	...	...	...	...
55 to 64 years, .....	...	...	...	...	...	1	...	...	...	...	...	...	...
65 years and over, .....	1	...	...	...	...	1	...	...	...	...	...	...	...
Unknown age, .....	1	...	...	...	...	1	...	...	...	...	...	...	...
Total, .....	65	1	3	30	...	4	14	7	3	...	...	...	3

REPORTED CASES AND DEATHS FROM SMALLPOX IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	1	...	...	...	1	...
1 year, .....	1	...	1	...	2	...
2 years, .....	2	...	1	...	3	...
3 years, .....	2	...	1	...	3	...
4 years, .....	...	...	1	...	1	...
Under 5 years, .....	6	...	4	...	10	...
5 to 9 years, .....	6	...	8	...	14	...
10 to 14 years, .....	1	...	...	...	1	...
15 to 19 years, .....	1	...	6	...	7	...
20 to 24 years, .....	5	...	8	...	13	...
25 to 34 years, .....	8	...	1	...	9	...
35 to 44 years, .....	3	...	2	...	5	...
45 to 54 years, .....	2	...	2	...	4	...
55 to 64 years, .....	...	...	...	...	...	...
65 years and over, .....	1	...	...	...	1	...
Age unknown, .....	1	...	...	...	1	...
Total, .....	34	...	31	...	65	...

REPORTED CASES OF TUBERCULOSIS IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	36	1	2	4	10	6	4	1	2	2	2	...	2
1 year, .....	61	3	3	8	10	8	7	4	3	4	4	4	3
2 years, .....	56	7	3	4	6	7	9	7	4	1	2	4	2
3 years, .....	36	3	5	3	6	1	2	3	4	...	1	2	6
4 years, .....	62	8	7	7	7	10	5	4	1	3	2	1	7
Under 5 years, .....	251	22	20	26	39	32	27	19	14	10	11	11	20
5 to 9 years, .....	328	16	38	36	33	34	31	30	14	27	19	28	24
10 to 14 years, .....	351	10	17	40	35	35	33	18	32	40	33	27	33
15 to 19 years, .....	602	37	39	56	59	66	48	62	61	46	28	37	63
20 to 24 years, .....	1115	98	101	93	111	100	98	118	94	92	45	104	61
25 to 34 years, .....	2152	129	167	216	228	189	183	180	187	161	147	218	147
35 to 44 years, .....	1450	105	115	153	154	118	92	149	124	111	100	103	124
45 to 54 years, .....	912	56	72	110	96	74	69	90	78	53	79	63	67
55 to 64 years, .....	369	21	31	47	38	35	35	28	28	24	32	25	25
65 years and over, .....	169	14	9	19	13	26	11	20	13	21	9	6	8
Unknown age, .....	248	14	10	19	21	20	3	9	8	4	9	114	17
Total, .....	7947	522	617	817	827	729	630	721	653	594	512	736	589

REPORTED CASES AND DEATHS FROM TUBERCULOSIS IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	21	...	15	...	36	93
1 year, .....	22	...	39	...	61	75
2 years, .....	35	...	21	...	56	54
3 years, .....	17	...	19	...	36	42
4 years, .....	29	...	33	...	62	22
Under 5 years, .....	124	...	127	...	251	286
5 to 9 years, .....	171	...	157	...	328	78
10 to 14 years, .....	144	...	207	...	351	447
15 to 19 years, .....	288	...	314	...	602	
20 to 24 years, .....	506	...	609	...	1115	4064
25 to 34 years, .....	1308	...	844	...	2152	
35 to 44 years, .....	978	...	472	...	1450	112
45 to 54 years, .....	671	...	241	...	912	
55 to 64 years, .....	281	...	88	...	369	4
65 years and over, .....	102	...	67	...	169	
Age unknown, .....	175	...	73	...	248	....
Total, .....	4748	2908	3199	1907	7947	4815

REPORTED CASES OF TYPHOID FEVER IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
1 year, .....	3	1	...	...	...	...	...	...	1	...	...	...	1
2 years, .....	10	1	...	1	2	...	1	1	1	2	...	...	1
3 years, .....	8	1	...	...	1	1	1	1	1	1	1	...	1
4 years, .....	14	4	...	3	1	...	1	2	1	1	...	1	...
Under 5 years, .....	35	7	...	4	3	1	3	4	5	4	1	1	2
5 to 9 years, .....	99	2	5	11	4	3	4	9	20	33	1	2	5
10 to 14 years, .....	119	5	5	5	6	6	6	14	22	24	11	7	8
15 to 19 years, .....	122	7	2	4	10	6	7	8	14	22	17	2	6
20 to 24 years, .....	106	11	9	8	7	4	3	8	14	22	10	4	6
25 to 34 years, .....	133	9	6	7	4	4	4	8	10	20	27	16	5
35 to 44 years, .....	64	7	4	5	2	2	1	9	12	9	5	2	6
45 to 54 years, .....	35	4	1	2	...	2	2	3	9	8	1	2	1
55 to 64 years, .....	11	1	1	...	1	...	...	2	4	2	...	...	...
65 years and over, .....	4	...	...	1	...	...	...	...	1	2	...	...	...
Unknown age, .....	12	...	1	...	1	1	2	1	1	1	2	...	2
Total, .....	740	53	34	47	38	35	36	68	133	160	64	25	47

REPORTED CASES AND DEATHS FROM TYPHOID FEVER IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	...	...	...	...	...	...
1 year, .....	2	...	...	...	3	1
2 years, .....	7	...	3	...	10	2
3 years, .....	5	...	3	...	8	1
4 years, .....	9	...	5	...	14	1
Under 5 years, .....	23	...	12	...	35	5
5 to 9 years, .....	50	...	49	...	99	10
10 to 14 years, .....	78	...	43	...	119	33
15 to 19 years, .....	66	...	56	...	122	
20 to 24 years, .....	66	...	40	...	106	112
25 to 34 years, .....	74	...	59	...	133	
35 to 44 years, .....	35	...	29	...	64	4
45 to 54 years, .....	25	...	10	...	35	
55 to 64 years, .....	5	...	6	...	11	....
65 years and over, .....	2	...	2	...	4	
Age unknown, .....	8	...	4	...	12	....
Total, .....	430	90	310	70	740	160

## REPORTED CASES OF DYSENTERY IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	2	...	...	...	...	1	1	...	...	...	...	...	...
1 year, .....	3	...	...	1	...	...	1	1	...	...	...	...	...
2 years, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
3 years, .....	3	...	...	1	...	1	1	...	...	...	...	...	...
4 years, .....	1	...	...	...	...	...	...	1	...	...	...	...	...
Under 5 years, .....	9	...	...	2	...	1	1	3	2	...	...	...	...
5 to 9 years, .....	4	...	...	...	...	...	3	1	...	...	...	...	...
10 to 14 years, .....	1	...	...	...	...	...	1	...	...	...	...	...	...
15 to 19 years, .....	1	...	...	...	...	...	...	1	...	...	...	...	...
20 to 24 years, .....	1	...	...	1	...	...	...	...	...	...	...	...	...
25 to 34 years, .....	1	...	1	...	...	...	...	...	...	...	...	...	...
35 to 44 years, .....	2	...	...	...	...	1	...	1	...	...	...	...	...
45 to 54 years, .....	1	1	...	...	...	...	...	...	...	...	...	...	...
55 to 64 years, .....	...	...	...	...	...	...	...	...	...	1	...	...	...
65 years and over, .....	2	...	...	...	...	...	1	...	...	1	...	...	...
Unknown age, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Total, .....	22	1	...	3	1	1	2	8	3	2	1	...	...

## REPORTED CASES AND DEATHS FROM DYSENTERY IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	...	...	2	...	2	...
1 year, .....	...	...	3	...	3	...
2 years, .....	...	...	...	...	...	...
3 years, .....	1	...	2	...	3	...
4 years, .....	...	...	1	...	1	...
Under 5 years, .....	1	...	8	...	9	...
5 to 9 years, .....	3	...	1	...	4	...
10 to 14 years, .....	...	...	1	...	1	...
15 to 19 years, .....	...	...	1	...	1	...
20 to 24 years, .....	1	...	...	...	1	...
25 to 34 years, .....	...	...	1	...	1	...
35 to 44 years, .....	1	...	1	...	2	...
45 to 54 years, .....	1	...	...	...	1	...
55 to 64 years, .....	...	...	...	...	...	...
65 years and over, .....	...	...	2	...	2	...
Age unknown, .....	...	...	...	...	...	...
Total, .....	7	...	15	...	22	56

## REPORTED CASES OF EPIDEMIC CEREBRO SPINAL MENINGITIS IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	34	2	...	3	6	8	3	3	5	...	...	3	1
1 year, .....	23	1	3	3	5	2	...	3	1	1	1	2	1
2 years, .....	28	2	1	7	4	6	3	1	2	...	...	1	1
3 years, .....	15	...	1	1	2	3	2	...	3	...	1	1	1
4 years, .....	18	2	4	3	1	3	2	...	1	...	1	1	...
Under 5 years, .....	118	7	9	17	18	22	10	7	12	1	3	8	4
5 to 9 years, .....	56	2	7	7	12	4	3	7	2	4	8	3	2
10 to 14 years, .....	25	6	1	5	6	3	1	1	1	1	...	...	...
15 to 19 years, .....	14	1	...	3	3	...	...	2	2	...	2	1	...
20 to 24 years, .....	9	1	1	...	1	...	2	2	2	...	...	...	...
25 to 34 years, .....	29	3	5	1	4	3	1	1	1	...	9	...	1
35 to 44 years, .....	7	2	1	...	1	1	...	...	1	...	1	...	...
45 to 54 years, .....	4	...	...	1	...	2	...	...	...	...	1	...	...
55 to 64 years, .....	2	...	...	...	1	...	...	...	...	...	...	...	1
65 years and over, .....	1	...	...	...	1	...	...	...	...	...	...	...	...
Unknown age, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Total, .....	265	22	24	34	47	35	17	20	21	6	19	12	8

## REPORTED CASES AND DEATHS FROM EPIDEMIC CEREBRO SPINAL MENINGITIS IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	*Deaths.	Cases.	*Deaths.	Cases.	Deaths.
Under 1 year, .....	15	...	19	...	34	...
1 year, .....	14	...	9	...	23	...
2 years, .....	18	...	10	...	28	...
3 years, .....	10	...	5	...	15	...
4 years, .....	7	...	11	...	18	...
Under 5 years, .....	64	...	54	...	118	...
5 to 9 years, .....	31	...	25	...	56	...
10 to 14 years, .....	18	...	7	...	25	...
15 to 19 years, .....	11	...	3	...	14	...
20 to 24 years, .....	7	...	2	...	9	...
25 to 34 years, .....	15	...	14	...	29	...
35 to 44 years, .....	7	...	...	...	7	...
45 to 54 years, .....	4	...	...	...	4	...
55 to 64 years, .....	2	...	...	...	2	...
65 years and over, .....	...	...	1	...	1	...
Age unknown, .....	...	...	...	...	...	...
Total, .....	159	...	106	...	265	...

\* Deaths not available in this bureau.

## REPORTED CASES OF GERMAN MEASLES IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	47	4	7	6	10	14	1	1	1	1	2	2	2
1 year, .....	83	5	12	15	18	17	8	2	1	1	2	2	2
2 years, .....	106	1	13	28	27	18	7	3	4	...	2	2	1
3 years, .....	97	8	16	27	24	12	2	4	1	...	2	...	1
4 years, .....	106	4	15	27	27	20	4	5	1	...	1	...	2
Under 5 years, .....	439	22	63	103	106	81	22	15	8	2	6	5	6
5 to 9 years, .....	842	52	127	166	259	164	48	10	5	1	3	2	5
10 to 14 years, .....	440	42	87	111	110	67	11	4	3	2	1	2	...
15 to 19 years, .....	229	30	40	73	54	26	3	...	1	1	...	...	1
20 to 24 years, .....	117	8	18	47	27	14	1	...	...	...	1	...	1
25 to 34 years, .....	133	17	25	40	30	15	3	3	...	...	...	...	...
35 to 44 years, .....	36	1	8	9	12	6	...	...	...	...	...	...	...
45 to 54 years, .....	17	1	...	5	5	5	1	...	...	...	...	...	...
55 to 64 years, .....	3	...	...	...	2	...	...	...	...	...	...	...	...
65 years and over, .....	...	...	...	...	...	...	...	1	...	...	...	...	...
Unknown age, .....	16	2	4	2	5	1	...	1	...	...	...	...	...
Total, .....	2272	173	372	556	610	379	89	33	18	6	11	9	13

## REPORTED CASES AND DEATHS FROM GERMAN MEASLES IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	*Deaths.	Cases.	*Deaths.	Cases.	Deaths.
Under 1 year, .....	24	...	23	...	47	...
1 year, .....	44	...	39	...	83	...
2 years, .....	56	...	50	...	106	...
3 years, .....	41	...	56	...	97	...
4 years, .....	50	...	56	...	106	...
Under 5 years, .....	215	...	224	...	439	...
5 to 9 years, .....	396	...	446	...	842	...
10 to 14 years, .....	198	...	244	...	440	...
15 to 19 years, .....	117	...	112	...	229	...
20 to 24 years, .....	44	...	73	...	117	...
25 to 34 years, .....	51	...	82	...	133	...
35 to 44 years, .....	11	...	25	...	36	...
45 to 54 years, .....	7	...	10	...	17	...
55 to 64 years, .....	2	...	1	...	3	...
65 years and over, .....	...	...	...	...	...	...
Age unknown, .....	5	...	11	...	16	...
Total, .....	1044	...	1228	...	2272	...

\* Deaths not available in this bureau.

## REPORTED CASES OF MEASLES IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	611	45	66	105	128	142	64	33	8	6	7	3	4
1 year, .....	2369	158	207	370	578	479	330	129	37	10	4	7	9
2 years, .....	2532	204	228	426	641	551	310	120	26	7	7	10	2
3 years, .....	2676	245	275	449	663	563	314	121	25	10	2	4	5
4 years, .....	3932	256	269	564	735	679	348	126	28	13	4	7	3
Under 5 years, .....	11160	908	1045	1914	2745	2414	1366	520	124	46	24	31	23
5 to 9 years, .....	13273	1183	1846	2756	2992	2772	1215	372	55	29	23	19	20
10 to 14 years, .....	2122	207	400	526	453	329	123	54	8	5	1	3	4
15 to 19 years, .....	719	70	145	173	153	105	38	21	5	2	2	1	4
20 to 24 years, .....	392	49	71	87	94	48	25	12	2	3	1	...	...
25 to 34 years, .....	491	48	37	93	102	70	24	11	6	1	4	2	3
35 to 44 years, .....	151	15	18	39	48	19	12	2	...	...	...	...	...
45 to 54 years, .....	42	3	8	12	8	8	2	...	1	...	...	...	...
55 to 64 years, .....	13	...	1	2	6	3	...	1	...	...	...	...	...
65 years and over, .....	10	...	2	2	1	...	4	...	...	...	1	...	...
Unknown age, .....	151	16	23	39	35	24	8	1	1	2	...	1	1
Total, .....	28437	2499	3605	5643	6637	5792	2817	994	202	79	56	58	55

## REPORTED CASES AND DEATHS FROM MEASLES IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	300	...	311	...	611	138
1 year, .....	1267	...	1042	...	2309	209
2 years, .....	1291	...	1241	...	2532	86
3 years, .....	1395	...	1281	...	2676	33
4 years, .....	1543	...	1489	...	3032	23
Under 5 years, .....	5796	...	5364	...	11160	489
5 to 9 years, .....	6432	...	6841	...	13273	20
10 to 14 years, .....	973	...	1149	...	2122	...
15 to 19 years, .....	317	...	402	...	719	5
20 to 24 years, .....	176	...	218	...	392	...
25 to 34 years, .....	157	...	244	...	401	...
35 to 44 years, .....	74	...	80	...	154	...
45 to 54 years, .....	18	...	24	...	42	12
55 to 64 years, .....	3	...	10	...	13	...
65 years and over, .....	5	...	5	...	10	...
Age unknown, .....	80	...	71	...	151	...
Total, .....	14031	270	14406	266	28437	526

REPORTED CASES OF PARATYPHOID IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year.	1							1					
1 year.													
2 years.													
3 years.													
4 years.													
Under 5 years.	1							1					
5 to 9 years.	1									1			
10 to 14 years.	2									2			
15 to 19 years.	2						1			1			
20 to 24 years.	2						1	1					
25 to 34 years.	2	1				1							
35 to 44 years.													
45 to 54 years.													
55 to 64 years.	1			1									
65 years and over.													
Unknown age.													
Total.	11	1		1		1	2	2		4			

REPORTED CASES AND DEATHS FROM PARATYPHOID IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	*Deaths.	Cases.	*Deaths.	Cases.	Deaths.
Under 1 year.			1		1	
1 year.						
2 years.						
3 years.						
4 years.						
Under 5 years.			1		1	
5 to 9 years.	1				1	
10 to 14 years.	2				2	
15 to 19 years.	1		1		2	
20 to 24 years.	1		1		2	
25 to 34 years.			2		2	
35 to 44 years.						
45 to 54 years.	1				1	
55 to 64 years.						
65 years and over.						
Age unknown.						
Total.	6		5		11	

\* Deaths not available in this bureau.

REPORTED CASES OF WHOOPING COUGH IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year.	465	57	52	56	52	60	45	61	44	14	6	9	9
1 year.	864	93	72	85	137	131	102	110	66	28	21	14	5
2 years.	886	121	87	86	146	144	83	89	57	36	16	10	11
3 years.	952	110	98	100	122	144	127	121	59	33	16	5	17
4 years.	978	130	102	93	178	135	120	94	60	26	18	13	9
Under 5 years.	4145	511	411	420	635	614	477	475	256	137	77	51	51
5 to 9 years.	3567	530	441	545	619	538	355	283	115	60	26	43	12
10 to 14 years.	363	45	45	51	66	61	36	27	12	10	5	4	1
15 to 19 years.	44	4	6	5	7	11	3	4	3	1			
20 to 24 years.	22	4	2	1	3	4	4	2		1			
25 to 34 years.	57	4	9	5	7	14	8	5	3	1	1		
35 to 44 years.	37	3	5	4	3	7	7	5	3				
45 to 54 years.	13	1	2	2	1	2		5					
55 to 64 years.	7				2	3			1			1	
65 years and over.	4			1		3							
Unknown age.	51	9	6	4	5	1	4	6	8		1		7
Total.	8310	1111	927	1038	1348	1258	894	812	431	210	110	100	71

REPORTED CASES AND DEATHS FROM WHOOPING COUGH IN NEW JERSEY

For the Calendar Year 1918 By Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year.	221		244		465	248
1 year.	437		427		864	164
2 years.	422		464		886	79
3 years.	443		509		952	23
4 years.	485		493		978	25
Under 5 years.	2008		2137		4145	549
5 to 9 years.	1758		1809		3567	24
10 to 14 years.	168		197		363	
15 to 19 years.	20		24		44	
20 to 24 years.	5		17		22	
25 to 34 years.	28		29		52	
35 to 44 years.	9		28		37	
45 to 54 years.	2		11		13	4
55 to 64 years.	4		3		7	
65 years and over.	1		3		4	
Age unknown.	28		23		51	
Total.	4029	247	4281	330	8310	577

## REPORTED CASES OF CHICKEN POX IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	198	11	11	23	39	35	18	6	4	2	8	13	28
1 year, .....	298	22	26	23	56	53	38	13	7	1	10	22	27
2 years, .....	337	16	29	32	44	51	49	18	7	5	17	20	49
3 years, .....	415	25	21	53	67	71	58	18	8	5	16	27	46
4 years, .....	472	30	37	58	66	78	60	15	1	9	21	35	62
Under 5 years, .....	1724	104	124	189	272	288	223	70	27	22	72	117	212
5 to 9 years, .....	3656	286	328	485	576	578	425	68	20	26	145	274	445
10 to 14 years, .....	574	58	43	78	90	87	64	10	8	6	21	32	65
15 to 19 years, .....	108	5	6	13	17	25	12	7	...	1	3	8	11
20 to 24 years, .....	43	2	1	8	10	4	6	...	...	1	1	1	9
25 to 34 years, .....	67	7	5	9	15	4	8	4	1	...	...	4	10
35 to 44 years, .....	29	1	1	4	3	4	3	1	1	1	2	1	7
45 to 54 years, .....	5	1	...	1	1	1	...	...	...	...	1	...	...
55 to 64 years, .....	2	...	...	...	...	...	1	...	...	...	...	...	1
65 years and over, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Unknown age, .....	41	5	3	8	8	4	...	...	...	2	3	3	5
Total, .....	6245	469	513	795	992	1005	742	160	57	59	248	440	765

## REPORTED CASES AND DEATHS FROM CHICKENPOX IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	111	1	87	4	...	198	5
1 year, .....	136	...	161	1	1	298	1
2 years, .....	173	...	164	...	...	337	...
3 years, .....	210	1	204	1	1	415	2
4 years, .....	227	...	244	...	1	472	...
Under 5 years, .....	857	2	860	6	3	1720	8
5 to 9 years, .....	1846	...	1804	...	6	3656	...
10 to 14 years, .....	274	...	300	...	...	574	...
15 to 19 years, .....	53	...	53	...	2	108	...
20 to 24 years, .....	21	...	22	...	...	43	...
25 to 34 years, .....	37	...	30	...	...	67	...
35 to 44 years, .....	17	...	12	...	...	29	...
45 to 54 years, .....	3	...	2	...	...	5	...
55 to 64 years, .....	...	...	2	...	...	2	...
65 years and over, .....	...	...	...	...	...	...	...
Age unknown, .....	16	...	19	...	6	41	...
Total, .....	3124	2	3104	6	17	6245	8

## REPORTED CASES OF DIPHTHERIA IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	97	8	21	10	13	5	6	4	2	6	7	7	8
1 year, .....	311	33	43	31	38	28	13	15	10	13	21	24	42
2 years, .....	541	46	62	47	54	46	36	32	28	39	44	41	66
3 years, .....	657	63	66	70	47	50	38	32	28	32	72	77	82
4 years, .....	741	75	77	59	59	49	32	48	43	56	81	65	97
Under 5 years, .....	2347	225	269	217	211	178	125	131	111	146	225	214	295
5 to 9 years, .....	2934	286	209	224	189	202	220	173	114	178	350	409	380
10 to 14 years, .....	978	65	79	91	63	86	69	68	26	56	106	137	132
15 to 19 years, .....	281	23	22	21	21	30	20	16	14	14	25	37	38
20 to 24 years, .....	199	14	23	18	17	20	15	6	6	16	14	25	25
25 to 34 years, .....	277	17	25	32	19	17	20	17	17	17	22	29	45
35 to 44 years, .....	139	10	10	17	20	13	6	4	5	8	7	18	21
45 to 54 years, .....	30	5	4	2	2	1	1	2	...	1	1	6	5
55 to 64 years, .....	9	...	1	1	1	2	...	...	...	...	1	1	2
65 years and over, .....	3	1	...	...	...	1	...	1	...	...	...	...	...
Unknown age, .....	73	9	7	5	4	8	3	1	2	4	5	9	16
Total, .....	7270	655	649	628	547	558	479	419	295	440	756	885	959

## REPORTED CASES AND DEATHS FROM DIPHTHERIA IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	46	15	51	12	...	97	27
1 year, .....	177	39	134	41	...	311	80
2 years, .....	306	36	234	39	1	541	75
3 years, .....	326	40	329	32	2	657	72
4 years, .....	390	36	350	32	1	741	68
Under 5 years, .....	1245	166	1098	156	4	2347	322
5 to 9 years, .....	1394	87	1333	193	7	2934	196
10 to 14 years, .....	452	17	524	17	2	978	34
15 to 19 years, .....	107	1	174	2	...	281	3
20 to 24 years, .....	66	4	133	2	...	199	6
25 to 34 years, .....	76	2	199	3	2	277	5
35 to 44 years, .....	40	2	99	2	...	139	4
45 to 54 years, .....	3	...	27	1	...	30	1
55 to 64 years, .....	5	...	4	2	...	9	2
65 years and over, .....	2	...	1	1	...	3	1
Age unknown, .....	20	...	32	...	15	73	...
Total, .....	3416	279	3824	289	30	7270	568

## REPORTED CASES OF MALARIA IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	1	1											
1 year, .....	1												
2 years, .....	4												
3 years, .....	2	1	1										
4 years, .....	7	1	1		1	2			1	1			
5 to 9 years, .....	13		2	1	1	1	1	4	1	1			
10 to 14 years, .....	6			1		2	1	1	1				
15 to 19 years, .....	8			1	2	1	1			2	1		
20 to 24 years, .....	15				1	2	2	6	2				
25 to 34 years, .....	29		1		2	4	7	7	2	3	3		
35 to 44 years, .....	19	1	2	1		3	3	5		1	2	1	
45 to 54 years, .....	14		1		1	3	1	3	1	1	2		
55 to 64 years, .....	12			1	2		2	1	1	4		1	
65 years and over, .....	1												
Unknown age, .....	1									1			
Total, .....	124	2	7	5	3	12	16	18	23	10	12	9	2

## REPORTED CASES AND DEATHS FROM MALARIA IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	1					1	
1 year, .....	1					1	
2 years, .....	1		3			4	
3 years, .....	1		1			2	
4 years, .....	3		4			7	
5 to 9 years, .....	6		7			13	
10 to 14 years, .....	4		2			6	
15 to 19 years, .....	5		3			8	
20 to 24 years, .....	9		6			15	
25 to 34 years, .....	19		10	1		29	1
35 to 44 years, .....	12	1	6		1	19	1
45 to 54 years, .....	8		6			14	
55 to 64 years, .....	8		4			12	
65 years and over, .....							
Age unknown, .....			1			1	
Total, .....	74	1	49	1	1	124	2

## REPORTED CASES OF ACUTE ANTERIOR POLIOMYELITIS IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	8	1		1							3	2	1
1 year, .....	10	1		1		2				3			3
2 years, .....	7		1		1				1	1	1	1	
3 years, .....	4												
4 years, .....	4								1	1	1		1
Under 5 years, .....	29	2	1	2	1	2			2	5	5	3	4
5 to 9 years, .....	12	1			1	2	2	2	2		2	1	1
10 to 14 years, .....	2										1	1	
15 to 19 years, .....													
20 to 24 years, .....	1											1	
25 to 34 years, .....													
35 to 44 years, .....													
45 to 54 years, .....													
55 to 64 years, .....													
65 years and over, .....													
Unknown age, .....													
Total, .....	44	3	1	2	2	4	2	4	5	8	6	4	3

## REPORTED CASES AND DEATHS FROM ACUTE ANTERIOR POLIOMYELITIS IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	5		3	3	8	3
1 year, .....	4		6		10	
2 years, .....	3		4	1	7	1
3 years, .....		1				1
4 years, .....	1		3	1	4	1
Under 5 years, .....	13	1	16	5	29	6
5 to 9 years, .....	7	2	5	1	12	3
10 to 14 years, .....		1	2		2	1
15 to 19 years, .....						
20 to 24 years, .....			1		1	
25 to 34 years, .....						
35 to 44 years, .....						
45 to 54 years, .....		1				1
55 to 64 years, .....				1		1
65 years and over, .....						
Age unknown, .....						
Total, .....	20	5	24	7	44	12

## REPORTED CASES OF SCARLET FEVER IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	23	2	1	2	1	2	2	1	...	2	7	1	2
1 year, .....	81	7	9	7	7	9	4	9	1	2	5	9	12
2 years, .....	188	18	20	18	23	26	9	6	4	11	9	10	34
3 years, .....	256	23	25	24	27	38	19	8	6	12	17	23	34
4 years, .....	344	27	32	32	34	41	25	14	17	15	26	45	36
Under 5 years, .....	892	77	87	83	92	116	59	38	28	42	64	88	118
5 to 9 years, .....	1982	140	161	194	224	237	136	61	58	102	181	236	252
10 to 14 years, .....	860	78	69	114	100	104	50	25	24	33	79	92	92
15 to 19 years, .....	194	18	22	19	24	21	7	5	3	9	19	21	26
20 to 24 years, .....	112	9	16	7	16	10	2	4	5	11	15	13	13
25 to 34 years, .....	118	10	8	17	13	16	13	2	4	1	4	13	17
35 to 44 years, .....	36	3	6	2	4	7	2	2	...	...	2	2	6
45 to 54 years, .....	8	4	2	...	...	1	...	...	...	...	1	...	...
55 to 64 years, .....	5	...	2	...	...	1	...	...	...	...	1	...	...
65 years and over, .....	5	...	1	1	1	...	...	...	...	...	1	...	...
Unknown age, .....	28	5	...	1	1	1	2	1	...	1	2	2	9
Total, .....	4246	344	374	439	477	516	272	138	121	193	362	471	533

## REPORTED CASES AND DEATHS FROM SCARLET FEVER IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	13	3	10	1	...	23	4
1 year, .....	45	4	36	3	...	81	7
2 years, .....	84	3	103	5	1	188	8
3 years, .....	112	4	144	2	...	256	6
4 years, .....	182	4	162	8	...	344	12
Under 5 years, .....	436	18	455	19	1	892	37
5 to 9 years, .....	969	10	1012	9	1	1982	19
10 to 14 years, .....	383	2	476	3	1	860	5
15 to 19 years, .....	90	1	104	...	...	194	1
20 to 24 years, .....	34	...	78	2	...	112	2
25 to 34 years, .....	46	...	72	3	...	118	3
35 to 44 years, .....	12	...	24	3	...	36	3
45 to 54 years, .....	2	...	6	...	...	8	...
55 to 64 years, .....	3	1	2	...	...	5	1
65 years and over, .....	2	...	3	...	...	5	...
Age unknown, .....	10	...	14	...	4	28	...
Total, .....	1987	32	2246	39	7	4240	71

## REPORTED CASES OF SMALLPOX IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
1 year, .....	2	...	...	1	...	1	...	...	...	...	...	...	...
2 years, .....	2	1	...	...	...	...	...	...	...	...	...	...	...
3 years, .....	3	1	...	1	1	...	...	...	...	...	...	...	...
4 years, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Under 5 years, .....	7	2	...	2	1	2	...	...	...	...	...	...	...
5 to 9 years, .....	14	...	1	8	3	1	...	...	...	...	...	1	...
10 to 14 years, .....	13	1	...	2	6	3	1	...	...	...	...	...	...
15 to 19 years, .....	24	1	1	6	6	8	2	...	...	...	...	...	...
20 to 24 years, .....	4	1	...	1	...	...	1	...	...	...	...	...	1
25 to 34 years, .....	9	1	...	1	2	4	...	...	...	...	...	...	1
35 to 44 years, .....	18	1	...	4	8	4	1	...	...	...	...	...	...
45 to 54 years, .....	10	...	...	3	3	1	2	...	...	1	...	...	...
55 to 64 years, .....	8	...	...	1	3	3	...	...	...	...	...	...	1
65 years and over, .....	2	...	...	2	...	...	...	...	...	...	...	...	...
Unknown age, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Total, .....	109	7	2	18	40	27	10	...	...	1	...	1	3

## REPORTED CASES AND DEATHS FROM SMALLPOX IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	...	...	...	...	...	...
1 year, .....	1	...	1	...	2	...
2 years, .....	1	...	1	...	2	...
3 years, .....	2	...	1	...	3	...
4 years, .....	...	...	...	...	...	...
Under 5 years, .....	4	...	3	...	7	...
5 to 9 years, .....	7	...	7	...	14	...
10 to 14 years, .....	7	...	6	...	13	...
15 to 19 years, .....	11	...	13	...	24	...
20 to 24 years, .....	3	...	1	...	4	...
25 to 34 years, .....	5	...	4	...	9	...
35 to 44 years, .....	10	...	8	...	18	...
45 to 54 years, .....	6	...	4	...	10	...
55 to 64 years, .....	4	...	4	...	8	...
65 years and over, .....	1	...	1	...	2	...
Age unknown, .....	...	...	...	...	...	...
Total, .....	58	...	51	...	109	...



## REPORTED CASES OF TUBERCULOSIS IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	31	4	5	6	1	2	3	2	3	2	4	2	...
1 year, .....	52	4	4	5	6	7	3	7	3	3	3	2	5
2 years, .....	60	3	6	1	4	10	2	9	9	5	4	4	3
3 years, .....	28	3	3	...	3	3	2	3	1	1	5	3	1
4 years, .....	28	2	4	3	5	4	3	3	1	...	1	...	2
Under 5 years, .....	199	16	22	12	19	26	13	24	17	11	17	11	11
5 to 9 years, .....	303	23	22	32	22	26	36	39	28	14	27	19	15
10 to 14 years, .....	402	46	24	34	25	25	34	62	28	33	38	26	27
15 to 19 years, .....	661	42	52	58	60	61	56	53	53	48	48	34	36
20 to 24 years, .....	968	87	58	85	108	82	98	76	87	83	93	74	67
25 to 34 years, .....	2,011	178	148	197	173	145	186	190	170	152	181	149	132
35 to 44 years, .....	1,517	131	94	166	132	142	127	159	133	113	125	108	87
45 to 54 years, .....	822	85	68	80	74	54	87	72	76	58	65	54	54
55 to 64 years, .....	348	25	27	37	22	37	27	39	25	25	29	20	20
65 years and over, .....	163	12	12	21	12	8	21	14	13	10	17	11	...
Unknown age, .....	106	10	12	8	12	8	12	9	6	10	9	10	...
Total, .....	7460	655	539	730	669	618	684	744	637	555	638	531	469

## REPORTED CASES AND DEATHS FROM TUBERCULOSIS IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	21	54	10	26	...	31	80
1 year, .....	25	39	27	32	...	52	71
2 years, .....	31	27	29	17	...	60	44
3 years, .....	11	11	17	11	...	28	22
4 years, .....	13	13	15	10	...	28	23
Under 5 years, .....	101	144	98	96	...	199	240
5 to 9 years, .....	139	28	164	31	...	303	59
10 to 14 years, .....	189	21	213	50	...	402	71
15 to 19 years, .....	237	100	343	165	1	601	265
20 to 24 years, .....	455	181	542	259	1	998	440
25 to 34 years, .....	1,109	467	899	476	2	2,001	943
35 to 44 years, .....	979	544	538	290	...	1,517	834
45 to 54 years, .....	622	404	200	155	...	822	559
55 to 64 years, .....	231	202	117	109	...	348	311
65 years and over, .....	104	91	59	69	...	163	160
Age unknown, .....	49	...	45	...	12	106	...
Total, .....	4235	2182	3209	1700	16	7460	3882

## REPORTED CASES OF TYPHOID FEVER IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	2	...	1	...	...	...	...	...	...	...	1	...	...
1 year, .....	6	...	...	1	...	...	1	...	1	1	...	...	3
2 years, .....	7	...	...	1	...	...	1	...	1	...	3	1	1
3 years, .....	12	2	...	1	...	...	2	1	...	3	1	2	...
4 years, .....	11	...	...	...	...	2	...	1	2	2	4	...	...
Under 5 years, .....	38	2	1	2	...	3	2	3	3	16	6	2	4
5 to 9 years, .....	82	1	...	3	3	3	8	8	15	22	10	2	7
10 to 14 years, .....	87	3	1	3	4	1	9	7	18	14	11	9	7
15 to 19 years, .....	85	1	3	...	4	4	11	8	11	14	19	4	6
20 to 24 years, .....	69	6	3	4	2	4	2	1	12	6	13	13	3
25 to 34 years, .....	114	4	2	3	3	5	9	7	15	20	17	14	15
35 to 44 years, .....	70	3	3	...	4	4	2	6	12	11	10	11	4
45 to 54 years, .....	35	1	2	...	2	1	5	3	8	6	2	3	...
55 to 64 years, .....	18	...	...	...	1	...	2	2	3	3	5	4	...
65 years and over, .....	5	...	...	...	1	1	...	...	...	...	2	1	...
Unknown age, .....	14	3	1	2	...	1	...	...	1	3	...	3	...
Total, .....	617	24	16	17	22	29	45	47	92	111	95	65	54

## REPORTED CASES AND DEATHS FROM TYPHOID FEVER IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	1	...	1	...	...	2	...
1 year, .....	1	...	5	...	...	6	...
2 years, .....	5	...	2	2	...	7	2
3 years, .....	4	...	8	...	...	12	...
4 years, .....	3	...	8	...	...	11	...
Under 5 years, .....	14	...	24	2	...	38	2
5 to 9 years, .....	32	5	30	2	...	82	7
10 to 14 years, .....	48	4	39	4	...	87	8
15 to 19 years, .....	49	7	45	8	...	85	15
20 to 24 years, .....	32	8	37	10	...	69	18
25 to 34 years, .....	69	10	45	6	...	114	16
35 to 44 years, .....	43	6	27	6	...	70	12
45 to 54 years, .....	24	6	11	2	...	35	8
55 to 64 years, .....	10	3	8	...	...	18	3
65 years and over, .....	3	2	2	...	...	5	2
Age unknown, .....	6	...	6	...	2	14	...
Total, .....	341	51	274	40	2	617	91

## REPORTED CASES OF DYSENTERY IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year.	5	...	...	1	...	...	...	3	...	...	...	...	1
1 year.	2	...	...	...	...	...	...	2	...	...	...	...	...
2 years.	1	...	...	...	...	...	...	1	...	...	...	...	...
3 years.	1	...	...	...	...	...	...	...	1	...	...	...	...
4 years.	1	...	...	...	...	...	...	1	...	...	...	...	...
Under 5 years.	10	...	...	1	...	...	...	3	4	1	...	...	1
5 to 9 years.	1	...	...	...	...	...	...	1	...	...	...	...	...
10 to 14 years.	1	...	...	...	...	...	1	...	...	...	...	...	...
15 to 19 years.	...	...	...	...	...	...	...	...	...	...	...	...	...
20 to 24 years.	1	...	...	...	...	...	...	1	...	...	...	...	...
25 to 34 years.	...	...	...	...	...	...	...	...	...	...	...	...	...
35 to 44 years.	...	...	...	...	...	...	...	...	...	...	...	...	...
45 to 54 years.	1	...	...	...	...	...	...	1	...	...	...	...	...
55 to 64 years.	2	...	...	...	...	...	...	1	1	...	...	...	...
65 years and over.	...	...	...	...	...	...	...	...	...	...	...	...	...
Unknown age.	...	...	...	...	...	...	...	...	...	...	...	...	...
Total.	16	...	...	1	...	...	...	4	8	2	...	...	1

## REPORTED CASES AND DEATHS FROM DYSENTERY IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year.	4	5	1	6	5	11
1 year.	1	4	1	5	2	9
2 years.	...	1	1	...	1	1
3 years.	1	...	...	...	1	...
4 years.	1	1	...	...	1	1
Under 5 years.	7	11	3	11	10	22
5 to 9 years.	1	1	...	...	1	1
10 to 14 years.	...	...	1	...	1	...
15 to 19 years.	...	...	...	...	...	...
20 to 24 years.	...	...	1	1	1	1
25 to 34 years.	...	...	2	1	2	1
35 to 44 years.	...	...	1	1	1	1
45 to 54 years.	1	2	...	...	1	2
55 to 64 years.	1	3	1	...	2	3
65 years and over.	...	6	...	3	...	9
Age unknown.	...	...	...	...	...	...
Total.	10	23	6	18	16	41

## REPORTED CASES OF EPIDEMIC CEREBRO SPINAL MENINGITIS IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year.	27	5	1	2	3	4	...	2	2	...	6	1	1
1 year.	18	4	2	4	1	2	...	1	1	...	2	...	1
2 years.	11	...	1	1	2	...	1	1	1	2	1	...	1
3 years.	7	...	1	...	2	2	...	...	...	1	...	...	1
4 years.	9	1	1	...	2	1	...	...	...	...	1	1	2
Under 5 years.	72	10	6	7	10	9	1	4	4	3	10	2	6
5 to 9 years.	26	4	4	1	2	2	...	2	2	4	2	1	2
10 to 14 years.	20	2	2	3	1	1	2	2	1	2	2	1	1
15 to 19 years.	8	...	...	4	1	1	...	...	...	1	...	...	1
20 to 24 years.	5	1	1	1	1	...	...	1	...	...	...	...	...
25 to 34 years.	13	...	2	1	...	2	1	4	...	...	2	...	1
35 to 44 years.	3	...	...	1	...	1	...	...	...	...	...	...	1
45 to 54 years.	1	...	...	...	1	...	...	...	...	...	...	...	...
55 to 64 years.	1	...	...	...	...	1	...	...	...	...	...	...	...
65 years and over.	...	...	...	...	...	...	...	...	...	...	...	...	...
Unknown age.	...	...	...	...	...	...	...	...	...	...	...	...	...
Total.	149	17	15	18	16	15	6	13	7	10	16	4	12

## REPORTED CASES AND DEATHS FROM EPIDEMIC CEREBRO SPINAL MENINGITIS IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year.	15	11	12	1	27	12
1 year.	9	7	9	5	18	12
2 years.	6	3	5	1	11	4
3 years.	4	1	3	3	7	4
4 years.	5	1	4	2	9	3
Under 5 years.	39	23	33	12	72	35
5 to 9 years.	12	6	14	9	26	15
10 to 14 years.	12	4	8	7	20	11
15 to 19 years.	5	1	3	1	8	2
20 to 24 years.	4	...	1	1	5	1
25 to 34 years.	9	8	4	2	13	10
35 to 44 years.	3	4	...	...	3	4
45 to 54 years.	...	...	1	3	1	3
55 to 64 years.	...	...	1	1	1	1
65 years and over.	...	...	...	...	...	...
Age unknown.	...	...	...	...	...	...
Total.	84	46	65	36	149	82

REPORTED CASES OF GERMAN MEASLES IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	31	1	2	2	2	5	2	1	5	4	3	2	
1 year, .....	30	2	...	7	1	2	3	2	3	1	3	2	4
2 years, .....	29	2	1	3	5	3	4	3	...	1	3	3	1
3 years, .....	23	...	1	1	5	1	4	2	2	...	2	2	3
4 years, .....	22	2	1	2	2	3	.3	1	1	...	2	1	4
Under 5 years, .....	135	7	5	15	15	11	19	10	7	7	14	11	14
5 to 9 years, .....	136	7	7	12	16	22	31	6	3	1	11	3	17
10 to 14 years, .....	49	...	4	6	4	17	7	3	...	1	1	2	4
15 to 19 years, .....	16	7	...	...	3	3	1	...	...	...	...	...	2
20 to 24 years, .....	5	...	...	...	2	1	1	...	...	...	1	...	...
25 to 34 years, .....	6	...	1	...	2	2	...	...	...	...	...	...	1
35 to 44 years, .....	1	...	...	...	...	1	...	...	...	...	...	...	...
45 to 54 years, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
55 to 64 years, .....	...	...	...	...	...	...	...	...	...	...	...	...	...
65 years and over, .....	1	...	...	...	...	...	...	...	...	1	...	...	...
Unknown age, .....	2	1	...	...	...	...	1	...	...	...	...	...	...
Total, .....	351	22	17	33	42	57	59	20	10	9	28	16	38

REPORTED CASES AND DEATHS FROM GERMAN MEASLES IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	14	...	17	...	...	...	31
1 year, .....	18	...	10	...	2	...	30
2 years, .....	15	...	13	...	1	...	29
3 years, .....	9	...	13	...	1	...	23
4 years, .....	12	...	10	...	...	...	22
Under 5 years, .....	68	...	63	...	4	...	135
5 to 9 years, .....	63	...	73	...	...	...	136
10 to 14 years, .....	19	...	30	...	...	...	49
15 to 19 years, .....	10	...	6	...	...	...	16
20 to 24 years, .....	2	...	3	...	...	...	5
25 to 34 years, .....	1	...	5	...	...	...	6
35 to 44 years, .....	1	...	...	...	...	...	1
45 to 54 years, .....	...	...	...	...	...	...	...
55 to 64 years, .....	...	...	...	...	...	...	...
65 years and over, .....	...	...	...	...	1	...	1
Age unknown, .....	1	...	1	...	...	...	2
Total, .....	165	...	181	...	5	...	351

REPORTED CASES OF INFLUENZA IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	278	151	58	45	15	4	...	...	...	...	3	1	1
1 year, .....	437	202	112	79	28	4	1	...	1	1	3	4	2
2 years, .....	627	317	179	77	32	7	...	...	...	1	8	5	1
3 years, .....	680	360	164	107	30	6	...	...	...	1	7	2	3
4 years, .....	775	428	176	121	33	9	1	...	...	2	2	1	2
Under 5 years, .....	2797	1458	680	429	138	30	2	...	1	5	23	13	9
5 to 9 years, .....	2897	1551	739	421	133	8	1	1	3	10	13	12	5
10 to 14 years, .....	2911	1166	479	208	111	10	2	1	4	6	13	4	7
15 to 19 years, .....	1592	839	309	268	85	8	4	2	5	11	14	7	10
20 to 24 years, .....	1739	980	378	240	89	9	4	2	4	15	10	9	10
25 to 34 years, .....	4528	2363	999	695	265	32	2	7	9	36	49	35	36
35 to 44 years, .....	2677	1337	637	394	173	21	6	3	9	24	36	15	22
45 to 54 years, .....	1337	699	292	218	77	16	3	4	3	12	18	12	13
55 to 64 years, .....	630	299	148	112	33	5	1	1	2	5	5	10	9
65 years and over, .....	318	123	74	72	28	8	...	...	...	2	5	3	3
Unknown age, .....	1236	852	296	122	28	9	1	1	...	7	14	1	1
Total, .....	*21672	11637	4942	3119	1151	156	26	22	40	133	200	121	125

\* Total does not include a number of cases reported by letter as follows:  
 Chesterfield Township, ..... 42 Cases  
 Jersey City, ..... 821 "  
 Sussex Borough, ..... 9 "

872 "  
 \*21,672 "  
 Total Number of cases reported... 22,544 "

REPORTED CASES AND DEATHS FROM INFLUENZA IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	151	104	125	70	2	278	174
1 year, .....	239	42	193	48	5	437	88
2 years, .....	356	23	286	31	5	627	54
3 years, .....	335	23	357	13	8	680	36
4 years, .....	435	15	334	17	6	775	32
Under 5 years, .....	1518	297	1255	177	26	2797	384
5 to 9 years, .....	1476	43	1497	46	14	2897	89
10 to 14 years, .....	982	28	1017	34	12	2011	62
15 to 19 years, .....	685	59	813	54	4	1592	113
20 to 24 years, .....	694	77	1129	135	6	1739	212
25 to 34 years, .....	1922	360	2592	410	14	4528	770
35 to 44 years, .....	1316	290	1352	138	9	2677	338
45 to 54 years, .....	618	103	714	93	5	1337	196
55 to 64 years, .....	276	50	353	75	1	630	125
65 years and over, .....	141	82	176	112	1	318	194
Age unknown, .....	486	...	561	...	189	1236	...
Total, .....	10922	1299	11369	1274	281	*21672	2483

\* Total does not include a number of cases reported by letter as follows:  
 Chesterfield Township, ..... 42 Cases  
 Jersey City, ..... 821 "  
 Sussex Borough, ..... 9 "

872 "  
 \*21,672 "  
 Total number of cases reported... 22,544 "

## REPORTED CASES OF MEASLES IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	159	6	4	11	19	19	17	20	4	6	4	16	24
1 year, .....	305	8	12	20	15	48	44	29	12	6	12	27	72
2 years, .....	372	10	12	27	31	54	53	38	12	4	21	25	83
3 years, .....	422	10	12	31	28	68	70	45	11	9	21	27	90
4 years, .....	481	2	19	26	47	75	76	46	14	5	25	34	121
Under 5 years, .....	1739	36	59	115	140	264	262	178	53	30	83	129	390
5 to 9 years, .....	2378	49	89	192	267	381	364	127	22	25	131	176	504
10 to 14 years, .....	368	23	23	48	46	69	44	23	1	4	8	20	54
15 to 19 years, .....	106	20	7	10	12	17	11	9	2	1	1	5	11
20 to 24 years, .....	72	9	2	6	6	11	9	5	4	2	3	9	6
25 to 34 years, .....	47	6	3	2	5	11	8	2	3	1	1	1	4
35 to 44 years, .....	24	4	3	5	4	1	3	1	1	1	1	1	2
45 to 54 years, .....	10	1	1	1	1	1	1	1	1	1	1	1	2
55 to 64 years, .....	2	1	1	1	1	1	1	1	1	1	1	1	2
65 years and over, .....	6	1	1	1	1	1	1	1	1	1	1	1	3
Unknown age, .....	33	3	2	3	3	8	4	1	1	2	1	2	6
Total, .....	4774	151	173	382	486	763	706	347	90	65	227	344	1040

## REPORTED CASES AND DEATHS FROM MEASLES IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year, .....	70	9	80	5	.....	150	14
1 year, .....	170	11	134	9	1	305	20
2 years, .....	184	6	188	3	.....	372	9
3 years, .....	177	1	245	4	.....	422	5
4 years, .....	245	1	236	2	.....	481	3
Under 5 years, .....	846	28	883	23	1	1730	51
5 to 9 years, .....	1225	2	1150	1	3	2378	3
10 to 14 years, .....	185	.....	180	.....	1	366	.....
15 to 19 years, .....	48	1	58	.....	.....	106	1
20 to 24 years, .....	29	.....	43	.....	.....	72	.....
25 to 34 years, .....	19	1	28	.....	.....	47	1
35 to 44 years, .....	8	.....	16	.....	.....	24	.....
45 to 54 years, .....	5	1	5	.....	.....	10	1
55 to 64 years, .....	2	.....	.....	.....	.....	2	.....
65 years and over, .....	6	1	.....	.....	.....	6	1
Age unknown, .....	10	.....	15	.....	8	33	.....
Total, .....	2883	34	2878	24	13	4774	58

## REPORTED CASES OF PARATYPHOID FEVER IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1 year, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2 years, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3 years, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4 years, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Under 5 years, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5 to 9 years, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10 to 14 years, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15 to 19 years, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20 to 24 years, .....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
25 to 34 years, .....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
35 to 44 years, .....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45 to 54 years, .....	2	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....
55 to 64 years, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
65 years and over, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unknown age, .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total, .....	3	.....	.....	1	.....	.....	.....	.....	.....	2	1	1	.....

## REPORTED CASES AND DEATHS FROM PARATYPHOID FEVER IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 1 year, .....	.....	.....	.....	.....	.....	.....
1 year, .....	.....	.....	.....	.....	.....	.....
2 years, .....	.....	.....	.....	.....	.....	.....
3 years, .....	.....	.....	.....	.....	.....	.....
4 years, .....	.....	.....	.....	.....	.....	.....
Under 5 years, .....	.....	.....	.....	.....	.....	.....
5 to 9 years, .....	.....	.....	.....	.....	.....	.....
10 to 14 years, .....	.....	.....	.....	.....	.....	.....
15 to 19 years, .....	.....	.....	.....	.....	.....	.....
20 to 24 years, .....	1	.....	.....	.....	.....	1
25 to 34 years, .....	.....	.....	.....	1	.....	1
35 to 44 years, .....	.....	.....	.....	1	.....	1
45 to 54 years, .....	2	.....	.....	.....	.....	2
55 to 64 years, .....	.....	.....	.....	.....	.....	.....
65 years and over, .....	.....	.....	.....	.....	.....	.....
Unknown age, .....	.....	.....	.....	.....	.....	.....
Total, .....	3	.....	2	.....	5	.....

REPORTED CASES OF PNEUMONIA IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year.	455	119	90	62	46	24	14	9	6	10	21	19	41
1 year.	556	131	102	75	59	39	15	13	8	14	22	29	49
2 years.	451	99	73	48	55	26	12	12	13	22	25	34	34
3 years.	286	66	42	49	23	17	11	7	8	7	15	12	29
4 years.	239	52	48	31	27	16	4	4	4	11	6	11	25
Under 5 years.	1567	467	355	265	204	122	56	45	38	55	86	96	178
5 to 9 years.	818	168	154	114	87	56	28	17	8	21	34	44	87
10 to 14 years.	309	79	54	30	26	13	14	6	2	9	15	23	38
15 to 19 years.	310	91	76	45	24	16	6	6	6	4	9	7	20
20 to 24 years.	395	138	80	82	25	14	11	5	3	3	1	10	23
25 to 34 years.	1218	420	264	211	107	39	10	15	10	13	20	47	62
35 to 44 years.	664	190	129	110	59	33	12	11	5	6	24	34	60
45 to 54 years.	421	96	69	69	52	21	15	11	3	13	14	16	42
55 to 64 years.	291	64	44	52	30	9	9	2	5	4	9	16	47
65 years and over.	311	55	57	53	33	16	6	5	4	7	12	18	45
Unknown age.	138	72	31	17	3	5	1	1	1	1	1	3	4
Total.	*6842	1840	1304	1048	652	344	167	124	84	135	224	314	606

\*Total does not include 175 cases of pneumonia reported by letter from Jersey City.

REPORTED CASES AND DEATHS FROM PNEUMONIA IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year.	258	486	196	393	1	455	873
1 year.	313	227	243	199	...	556	426
2 years.	257	81	199	50	2	431	131
3 years.	154	36	130	39	2	286	75
4 years.	140	19	98	34	1	239	53
Under 5 years.	1095	843	866	715	6	1967	1558
5 to 9 years.	440	75	377	59	1	818	134
10 to 14 years.	166	38	143	37	...	309	75
15 to 19 years.	167	59	143	66	...	310	125
20 to 24 years.	168	84	227	109	...	395	193
25 to 34 years.	589	310	627	326	2	1218	636
35 to 44 years.	378	306	285	162	1	664	468
45 to 54 years.	237	237	184	149	...	421	386
55 to 64 years.	149	183	142	149	...	291	332
65 years and over.	125	269	185	383	1	311	652
Age unknown.	63	...	61	...	14	138	...
Total.	3577	2404	3240	2155	25	*6842	4559

\* Total does not include 175 cases pneumonia reported by letter from Jersey City.

REPORTED CASES OF WHOOPING COUGH IN NEW JERSEY

For the Calendar Year 1919 By Age Groups and Months (Exclusive of Cases Reported from Military Posts).

AGE GROUPS.	NUMBER OF CASES												
	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Under 1 year.	167	8	2	3	6	11	15	20	18	20	14	17	33
1 year.	219	9	7	5	19	9	19	24	30	22	20	19	27
2 years.	224	6	8	10	6	15	24	32	25	21	18	26	33
3 years.	225	9	5	12	7	13	22	34	34	16	24	13	36
4 years.	243	10	7	7	13	12	27	29	32	32	17	15	42
Under 5 years.	1069	42	29	37	51	60	107	139	139	111	93	90	171
5 to 9 years.	698	26	22	30	33	53	62	65	60	59	70	76	142
10 to 14 years.	62	4	2	1	5	11	4	7	8	2	4	8	6
15 to 19 years.	10	...	...	...	1	...	...	3	1	1	1	1	2
20 to 24 years.	9	...	...	1	...	...	...	3	1	3	...	...	1
25 to 34 years.	11	...	...	2	...	...	...	1	3	4	...	...	1
35 to 44 years.	10	...	...	1	2	...	1	2	2	...	1	...	1
45 to 54 years.	2	...	...	...	1	...	1	...	1	...	...	...	...
55 to 64 years.	...	...	...	...	...	...	1	...	1	...	...	...	...
65 years and over.	2	...	...	...	...	...	1	...	1	...	...	...	...
Unknown age.	16	2	1	...	2	...	1	5	1	...	...	1	3
Total.	1889	74	54	70	95	125	177	221	217	177	176	176	327

REPORTED CASES AND DEATHS FROM WHOOPING COUGH IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts).

AGE GROUPS.	Male		Female		Sex Not Stated. Cases.	Total	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.
Under 1 year.	86	23	81	25	...	167	48
1 year.	109	13	161	10	...	210	23
2 years.	95	2	129	6	...	224	8
3 years.	112	2	113	4	...	225	6
4 years.	109	1	133	1	1	243	2
Under 5 years.	511	41	557	46	1	1069	87
5 to 9 years.	310	1	388	3	...	698	4
10 to 14 years.	33	...	29	...	...	62	...
15 to 19 years.	4	...	6	...	...	10	...
20 to 24 years.	3	...	6	...	...	9	...
25 to 34 years.	3	...	8	...	...	11	...
35 to 44 years.	4	...	6	...	...	10	...
45 to 54 years.	2	...	...	...	...	2	...
55 to 64 years.	...	...	...	...	...	...	...
65 years and over.	1	...	1	...	...	2	...
Age unknown.	6	...	5	...	5	16	...
Total.	877	42	1066	49	6	1889	91

## REPORTED CASES OF CHANROID IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Months (Exclusive of Cases Reported From Military Posts.)

AGE GROUPS.	NUMBER OF CASES.												
	Total.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Under 2 years, .....													
2-9 years, .....													
10-14 years, .....													
15-19 years, .....	16	1	2	3	4								1
20-24 years, .....	47	3	1	4	3	3							2
25-34 years, .....	54	6	5	5	1	6	3	2	3	5	11	3	2
35 and over, .....	23	2	2	4	3	1	2	2	1	1	3	3	3
Age unknown, .....	3		2	1									
Total, .....	143	12	12	17	11	10	13	5	12	10	21	8	12

## REPORTED CASES OF GONORRHEA IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Months (Exclusive of Cases Reported From Military Posts.)

AGE GROUPS.	NUMBER OF CASES.												
	Total.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Under 2 years, .....	20			6	3			1	4			2	1
2-9 years, .....	54	7	4	5	3	1	4	2	2	4	9	4	5
10-14 years, .....	23		2	3	4	2	4	2	1	5	1	1	1
15-19 years, .....	470	35	34	44	32	27	45	54	46	37	48	31	37
20-24 years, .....	1159	72	81	91	57	89	132	108	128	111	107	96	86
25-34 years, .....	1017	75	89	85	67	84	90	89	111	87	86	72	82
35 and over, .....	362	28	30	38	25	30	39	30	32	35	37	24	20
Age unknown, .....	48		5	11	5	1		1	12	2	2	2	4
Total, .....	3161	219	251	280	195	235	313	289	340	277	294	232	236

## REPORTED CASES OF SYPHILIS IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Months (Exclusive of Cases Reported From Military Posts.)

AGE GROUPS.	NUMBER OF CASES.												
	Total.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Under 2 years, .....	28	1	1	4	3	3	1	3	3	4	1	1	3
2-9 years, .....	53	13	4	4	3	7	4	5	2	4	5	5	8
10-14 years, .....	52	6	2	4	4	5	3	2	3	3	6	2	9
15-19 years, .....	215	15	7	17	14	12	17	17	20	22	37	15	19
20-24 years, .....	531	32	26	44	42	35	43	59	53	46	48	39	58
25-34 years, .....	919	70	53	57	73	69	91	79	101	77	82	61	106
35 and over, .....	976	51	57	84	61	95	84	94	81	134	92	66	77
Age unknown, .....	51	4	6	4	5	6	2	5	10		4		5
Total, .....	2825	190	156	218	205	232	245	270	270	290	275	189	285

## REPORTED CASES AND DEATHS FROM VENEREAL DISEASES IN NEW JERSEY

For the Calendar Year 1919 by Age Groups and Sex (Exclusive of Cases and Deaths Reported from Military Posts.)

AGE GROUPS.	Male		Female		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Under 2 years, .....	22	29	26	21	48	50
2 to 9 years, .....	49	4	67	2	107	6
10 to 14 years, .....	24	1	53	...	77	1
15 to 19 years, .....	460	2	241	1	701	3
20 to 24 years, .....	1465	4	275	5	1740	9
25 to 34 years, .....	1568	12	424	10	1992	22
35 and over, .....	1089	71	288	36	1368	107
Age unknown, .....	75	...	21	...	96	...
Total, .....	4734	123	1395	75	6129	*198

\* No deaths occurred from  
 156 " " " " Chaneroid.  
 12 " " " " Sypphilis.  
 12 " " " " Gonorrhoea.

198 " total.

MORBIDITY AND MORTALITY FROM CHICKENPOX AND DIPHTHERIA FOR 1919.

COUNTIES.	CHICKENPOX.				DIPHTHERIA.			
	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.
Atlantic, .....	163	1.72	0	0	141	1.47	19	13.47
Bergen, .....	318	1.64	0	0	299	1.54	14	4.63
Burlington, .....	153	2.05	0	0	127	1.70	10	7.87
Camden, .....	312	1.79	0	0	276	1.58	27	9.78
Cape May, .....	53	2.05	0	0	33	1.27	5	15.15
Cumberland, .....	116	1.97	0	0	130	2.20	11	8.46
Essex, .....	2697	4.10	2	0.07	2933	3.09	168	5.31
Gloucester, .....	137	3.22	0	0	40	.94	4	10.00
Hudson, .....	426	.62	1	0.23	2001	2.95	172	8.59
Hunterdon, .....	34	1.03	0	0	14	.42	1	7.14
Mercer, .....	214	1.39	0	0	267	1.73	26	9.73
Middlesex, .....	38	.25	0	0	255	1.73	40	15.68
Monmouth, .....	193	1.81	1	0.52	136	1.27	9	6.61
Morris, .....	80	.71	0	0	145	1.73	10	6.89
Ocean, .....	13	.37	0	0	31	1.36	2	6.45
Passaic, .....	465	1.70	1	0.21	690	2.53	50	7.24
Salem, .....	22	.77	0	0	15	.52	4	26.66
Somerset, .....	30	.67	0	0	134	3.02	18	13.43
Sussex, .....	15	.51	0	0	14	.47	4	28.57
Union, .....	777	4.28	2	0.25	437	2.41	33	7.55
Warren, .....	7	.14	1	14.28	52	1.07	5	9.61
State, .....	6245	1.98	8	0.12	7270	2.30	572	7.86
Military posts, .....	13				45		6	

MORBIDITY AND MORTALITY FROM INFLUENZA AND PNEUMONIA FOR 1919.

COUNTIES.	INFLUENZA.			PNEUMONIA.		
	Cases.	Deaths.	Per Cent. Fatality.	Cases.	Deaths.	Per Cent. Fatality.
Atlantic, .....	494	72	14.57	84	108	*
Bergen, .....	1458	153	10.49	283	218	77.03
Burlington, .....	777	104	13.38	82	117	*
Camden, .....	861	153	17.77	358	308	86.03
Cape May, .....	465	19	4.08	8	20	*
Cumberland, .....	324	61	18.82	31	68	*
Essex, .....	6509	374	5.74	3640	890	24.45
Gloucester, .....	710	46	6.47	63	61	96.82
Hudson, .....	2314	529	22.47	614	1174	*
Hunterdon, .....	761	53	6.96	35	31	88.57
Mercer, .....	1097	113	10.39	339	225	66.37
Middlesex, .....	418	97	23.29	46	249	*
Monmouth, .....	632	93	14.71	100	92	92.00
Morris, .....	723	89	12.30	121	132	*
Ocean, .....	211	10	4.73	6	17	*
Passaic, .....	2059	236	11.46	603	301	49.91
Salem, .....	85	37	43.52	7	55	*
Somerset, .....	757	43	5.68	88	55	62.50
Sussex, .....	446	38	8.63	68	56	82.35
Union, .....	1412	141	9.95	434	327	75.34
Warren, .....	67	31	46.26	7	45	*
State, .....	22544	2483	11.01	7017	4545	64.77
Military posts, .....	13	36	*	12	90	*

\* More deaths than cases reported.

MORBIDITY AND MORTALITY FROM MALARIA AND EPIDEMIC CEREBROSPINAL MENINGITIS FOR 1919.

COUNTIES.	MALARIA.				EPIDEMIC CEREBROSPINAL MENINGITIS.			
	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.	Cases.	Cases per 1000 Pop.	* Deaths.	Per Cent. Fatality.
Atlantic, .....	0	0.00	0	0	1	0.01		
Bergen, .....	4	0.02	1	25.00	8	0.04		
Burlington, .....	0	0.00	0	0	3	0.04		
Camden, .....	1	0.005	0	0	2	0.01		
Cape May, .....	0	0.00	0	0	0	0.00		
Cumberland, .....	0	0.00	0	0	1	0.01		
Essex, .....	41	0.46	0	0	61	0.09		
Gloucester, .....	0	0.00	0	0	1	0.02		
Hudson, .....	5	0.007	0	0	27	0.03		
Hunterdon, .....	0	0.00	0	0	2	0.06		
Mercer, .....	19	0.06	1	10.00	9	0.05		
Middlesex, .....	4	0.02	0	0	7	0.04		
Monmouth, .....	7	0.06	0	0	2	0.01		
Morris, .....	4	0.04	0	0	0	0.00		
Ocean, .....	0	0.00	0	0	0	0.00		
Passaic, .....	14	0.05	0	0	15	0.05		
Salem, .....	0	0.00	0	0	0	0.00		
Somerset, .....	21	0.47	0	0	1	0.02		
Sussex, .....	3	0.10	0	0	0	0.00		
Union, .....	10	.05	0	0	9	0.04		
Warren, .....	0	0.00	0	0	0	0.00		
State, .....	124	0.03	2	1.61	149	0.04	*82	*55.03
Military posts, .....	3				13		13	

\* Deaths from Epidemic Cerebrospinal Meningitis by counties not available for 1919.

MORBIDITY AND MORTALITY FROM MEASLES AND GERMAN MEASLES FOR 1919.

COUNTIES.	MEASLES.				GERMAN MEASLES.			
	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.
Atlantic, .....	193	2.06	0	0	6	.06	0	0
Bergen, .....	250	1.29	5	20.00	10	.55	0	0
Burlington, .....	74	.99	3	4.05	7	.09	0	0
Camden, .....	214	1.22	3	1.40	2	.01	0	0
Cape May, .....	17	.65	0	0	0	0.00	0	0
Cumberland, .....	16	.27	0	0	3	.05	0	0
Essex, .....	841	1.28	8	0.95	196	.29	2	1.02
Gloucester, .....	31	.73	0	0	3	.07	0	0
Hudson, .....	584	.86	12	2.05	42	.66	0	0
Hunterdon, .....	234	7.15	1	0.42	0	0.00	0	0
Mercer, .....	866	5.62	11	1.27	7	0.04	0	0
Middlesex, .....	120	.31	4	3.33	0	0.00	0	0
Monmouth, .....	135	1.26	0	0	8	0.07	0	0
Morris, .....	173	2.06	0	0	3	0.03	0	0
Ocean, .....	25	1.09	0	0	6	.26	0	0
Passaic, .....	128	.46	1	0.78	4	.61	0	0
Salem, .....	29	1.02	0	0	1	.03	0	0
Somerset, .....	69	1.55	2	2.87	0	0.00	0	0
Sussex, .....	49	1.67	0	0	7	0.23	0	0
Union, .....	721	3.97	1	0.13	46	0.25	1	2.17
Warren, .....	0	0.00	4	*	0	0.00	0	0
State, .....	4774	1.51	55	1.15	351	0.11	3	0.85
Military posts, .....	139		2		9			

\* More deaths than cases reported.

MORBIDITY AND MORTALITY FROM A. A. POLIOMYELITIS AND SCARLET FEVER FOR 1919.

COUNTIES.	POLIOMYELITIS.				SCARLET FEVER.			
	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.
Atlantic, .....	0	0.00	0	0	102	1.06	2	1.96
Bergen, .....	4	0.02	1	25.00	305	1.57	8	2.62
Burlington, .....	3	0.04	3	100.00	74	.99	2	2.70
Camden, .....	0	0.00	0	0	226	1.29	3	1.32
Cape May, .....	1	0.03	0	0	24	.92	0	0
Cumberland, .....	0	0.00	0	0	104	1.76	2	1.92
Essex, .....	13	0.01	2	15.38	1443	2.19	29	0.13
Gloucester, .....	1	0.02	0	0	55	1.29	3	5.45
Hudson, .....	6	0.008	1	16.66	596	.57	16	2.68
Hunterdon, .....	1	0.03	1	100.00	6	.18	0	0
Mercer, .....	3	0.01	1	33.33	90	.58	1	1.11
Middlesex, .....	2	0.01	0	0	145	.98	1	0.68
Monmouth, .....	0	0.00	0	0	126	1.18	1	0.79
Morris, .....	1	0.01	0	0	100	1.19	1	1.00
Ocean, .....	0	0.00	0	0	14	.61	1	7.14
Passaic, .....	3	0.01	0	0	240	.88	2	0.83
Salem, .....	1	0.03	0	0	31	1.09	1	3.22
Somerset, .....	1	0.02	0	0	62	1.39	1	1.61
Sussex, .....	0	0.00	0	0	37	1.26	0	0
Union, .....	3	0.01	2	66.66	446	2.46	5	1.12
Warren, .....	1	0.02	1	100.00	14	.29	0	0
State, .....	44	0.01	12	27.27	4246	1.34	70	1.65
Military posts, .....					53		3	

MORBIDITY AND MORTALITY FROM SMALLPOX AND TUBERCULOSIS FOR 1919.

COUNTIES.	SMALLPOX.				TUBERCULOSIS.			
	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.
Atlantic, .....	35	0.36	0	0	179	1.87	109	60.88
Bergen, .....	0	0.00	0	0	259	1.33	169	65.25
Burlington, .....	27	0.36	0	0	127	1.70	55	66.92
Camden, .....	7	0.04	0	0	374	2.14	216	57.75
Cape May, .....	30	1.16	0	0	8	.30	11	*
Cumberland, .....	1	0.01	0	0	74	1.25	59	79.72
Essex, .....	4	0.006	0	0	2417	3.68	882	36.49
Gloucester, .....	1	0.02	0	0	53	1.24	52	98.11
Hudson, .....	3	0.004	0	0	1529	2.25	845	55.28
Hunterdon, .....	0	0.00	0	0	33	1.00	33	100.00
Mercer, .....	0	0.00	0	0	455	2.95	262	57.58
Middlesex, .....	0	0.00	0	0	326	2.22	185	56.74
Monmouth, .....	1	0.009	0	0	123	1.15	160	81.30
Morris, .....	0	0.00	0	0	76	.90	91	*
Ocean, .....	0	0.00	0	0	17	.74	26	*
Passaic, .....	0	0.00	0	0	641	2.35	278	43.26
Salem, .....	0	0.00	0	0	17	.59	39	*
Somerset, .....	0	0.00	0	0	68	1.53	47	69.11
Sussex, .....	0	0.00	0	0	9	0.30	25	*
Union, .....	0	0.00	0	0	640	3.53	275	42.96
Warren, .....	0	0.00	0	0	35	.72	31	88.57
State, .....	109	0.63	0	0	7460	2.36	3820	51.20
Military posts, .....	1				351		66	

MORBIDITY AND MORTALITY FROM TYPHOID FEVER AND WHOOPING COUGH FOR 1919.

COUNTIES.	TYPHOID FEVER.				WHOOPING COUGH.			
	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.	Cases.	Cases per 1000 Pop.	Deaths.	Per Cent. Fatality.
Atlantic, .....	28	.29	4	14.28	55	.57	3	5.43
Bergen, .....	23	.11	3	13.04	141	.72	1	0.70
Burlington, .....	39	.52	7	17.94	22	.29	6	27.27
Camden, .....	47	.26	9	19.14	11	.08	5	45.45
Cape May, .....	5	.19	0	0	17	.65	2	11.76
Cumberland, .....	21	.35	3	6.14	0	0.00	0	0
Essex, .....	115	.17	14	12.17	856	1.30	6	0.70
Gloucester, .....	14	.32	2	14.28	12	.28	0	0
Hudson, .....	54	.07	11	20.37	206	.30	31	1.50
Hunterdon, .....	1	.03	0	0	1	.03	0	0
Mercer, .....	52	.33	10	19.23	119	.77	8	6.72
Middlesex, .....	20	.13	1	5.00	35	0.25	10	26.31
Monmouth, .....	53	.49	14	26.41	33	0.30	6	18.18
Morris, .....	27	.32	3	11.11	7	0.08	0	0
Ocean, .....	7	.30	1	14.28	0	0.00	1	*
Passaic, .....	44	.16	4	9.09	70	0.25	2	2.85
Salem, .....	6	.21	0	0	0	0.00	0	0
Somerset, .....	7	.15	0	0	15	0.33	1	6.66
Sussex, .....	7	.23	0	0	4	0.13	1	0.25
Union, .....	41	.22	4	9.75	282	1.55	6	2.05
Warren, .....	6	.12	2	33.33	0	0.00	0	0
State, .....	617	.19	92	14.91	1889	.59	89	4.59
Military posts, .....	1		1					

\* More deaths than cases reported.

MORBIDITY AND MORTALITY FROM GONORRHEA AND SYPHILIS AND CHANCROID FOR 1919.

COUNTIES.	GONORRHEA.				SYPHILIS.				CHANCROID.	
	Cases.	Cases Per 1000 Pop.	Deaths.	Per Cent. Fatality.	Cases.	Cases Per 1000 Pop.	Deaths.	Per Cent. Fatality.	Cases.	Cases Per 1000 Pop.
Atlantic, .....	26	0.27	0	0	40	0.41	10	25.00	3	0.03
Bergen, .....	80	0.41	0	0	92	0.47	5	5.43	1	0.005
Burlington, .....	71	0.95	1	1.40	52	0.69	2	3.84	2	0.02
Camden, .....	406	2.33	0	0	267	1.53	11	4.11	25	.14
Cape May, .....	22	0.85	0	0	4	0.15	1	25.00	4	0.15
Cumberland, .....	33	0.56	0	0	35	0.59	6	17.14	0	0
Essex, .....	1260	1.91	5	0.39	926	1.41	57	6.15	55	0.08
Gloucester, .....	32	0.75	0	0	27	0.63	0	0	4	0.09
Hudson, .....	225	0.33	2	0.88	186	0.27	30	16.12	5	0.07
Hunterdon, .....	23	0.70	0	0	82	2.50	0	0	1	0.03
Mercer, .....	387	2.51	0	0	519	3.37	20	3.85	7	0.04
Middlesex, .....	59	0.40	0	0	58	0.39	4	6.77	3	0.02
Monmouth, .....	98	0.91	0	0	106	0.99	7	6.60	5	0.04
Morris, .....	69	0.82	1	1.44	40	0.47	5	12.50	4	0.04
Ocean, .....	18	0.79	0	0	3	0.13	1	33.33	2	0.08
Passaic, .....	172	0.63	0	0	196	0.71	12	6.12	11	0.04
Salem, .....	4	0.14	0	0	21	0.74	2	9.52	0	0
Somerset, .....	16	0.36	0	0	33	0.74	2	6.06	1	0.02
Sussex, .....	7	0.23	0	0	4	0.13	3	75.00	1	0.03
Union, .....	148	0.81	2	1.35	125	0.68	4	3.20	8	0.04
Warren, .....	7	0.14	0	0	8	0.16	0	0	0	0
State, .....	3163	1.60	11	0.34	2824	0.89	182	6.44	142	0.04
Military posts, .....	2371				958				1337	



MORBIDITY AND MORTALITY FROM DYSENTERY, LEPROSY, OPTHALMIA  
NEONATORUM AND PARATYPHOID FEVER FOR 1919.

COUNTIES.	DYSENTERY.		LEPROSY.		OPHTHALMIA NEONATORUM.		PARA- TYPHOID.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Atlantic, .....	0	2	0	0	1	0	1	0
Bergen, .....	0	1	0	0	1	0	0	0
Burlington, .....	0	0	0	0	2	0	0	0
Camden, .....	0	0	0	0	2	0	0	0
Cape May, .....	0	1	0	0	0	0	0	0
Cumberland, .....	1	4	0	0	0	0	0	0
Essex, .....	12	5	0	0	23	0	0	0
Gloucester, .....	0	0	0	0	0	0	0	0
Hudson, .....	1	9	0	1	0	0	2	0
Hunterdon, .....	0	1	0	0	1	0	0	0
Mercer, .....	0	0	0	0	1	0	0	0
Middlesex, .....	0	2	0	0	0	0	0	0
Monmouth, .....	0	0	0	0	0	0	1	0
Morris, .....	0	1	0	0	1	0	0	0
Ocean, .....	0	0	0	0	0	0	0	0
Passaic, .....	0	3	0	0	5	0	1	1
Salem, .....	0	0	0	0	0	0	0	0
Somerset, .....	0	0	0	0	2	0	0	0
Sussex, .....	1	0	0	0	0	0	0	0
Union, .....	1	3	0	0	4	0	0	0
Warren, .....	0	3	0	0	0	0	0	0
State, .....	16	41	0	1	52	0	5	1
Military posts, .....	3						1	

MORBIDITY AND MORTALITY FROM RABIES, TRACHOMA AND TRICHINOSIS  
FOR 1919.

COUNTIES.	RABIES.		TRACHOMA.		TRICHINOSIS.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Atlantic, .....	0	0	0	0	0	0
Bergen, .....	1	1	2	0	0	0
Burlington, .....	0	0	0	0	0	1
Camden, .....	0	0	0	0	0	0
Cape May, .....	0	0	0	0	0	0
Cumberland, .....	0	0	0	0	0	0
Essex, .....	0	0	27	0	0	0
Gloucester, .....	0	0	0	0	0	0
Hudson, .....	0	0	7	0	0	0
Hunterdon, .....	0	0	0	0	0	0
Mercer, .....	0	0	1	0	0	0
Middlesex, .....	0	0	0	0	0	0
Monmouth, .....	0	0	0	0	0	1
Morris, .....	0	0	0	0	0	0
Ocean, .....	0	0	0	0	0	0
Passaic, .....	0	0	19	0	0	0
Salem, .....	0	0	0	0	0	0
Somerset, .....	0	0	0	0	1	0
Sussex, .....	0	0	0	0	0	0
Union, .....	0	0	2	0	0	0
Warren, .....	0	0	0	0	0	0
State, .....	1	1	53	0	1	2
Military posts, .....						

ERRATUM.—Through an oversight in printing, an error occurred in the paging of this report, there being an omission in the page numbering from page 82 to page 93. No printed matter has been omitted.

## Report of the Bureau of Food and Drugs.

WALTER W. SCOFIELD, CHIEF.

The Bureau of Food and Drugs enforces the law relating to the production and distribution of milk and milk products (Chapter 78 of the Laws of 1914); the law controlling the pasteurization of milk and its products (Chapter 285 of the Laws of 1915); the law governing the operation of creameries (Chapter 139 of the Laws of 1906); the law governing the production and distribution of certified milk (Chapter 237 of the Laws of 1909); the slaughter-house act (Chapter 295 of the Laws of 1910); the cold storage act (Chapter 101 of the Laws of 1916); the law regulating the breaking and sale of eggs (Chapter 30 of the Laws of 1914); the methyl alcohol act (Chapter 286 of the Laws of 1912); the oleomargarine laws (Chapter 84 of the Laws of 1886 and its supplements), and the food and drugs act (Chapter 217 of the Laws of 1907) and its amendments and supplements, which include the sanitary act of 1909 and the non-alcoholic beverage act of 1915.

*Milk Control.*—The control of the production and distribution of milk demands greater attention from food and drug officials than any other phase of the food and drug work, because of the vital importance of a safe and clean milk supply. During the year emphasis has been placed on those branches of milk work which have a direct bearing upon the wholesomeness and safety of milk. The increasing use of pasteurization for milk sold in the larger communities of the State has, to a degree, diverted the problem to the control of milk sold in the raw state. The possible dangers from the use of raw milk from cows affected with tuberculosis or from cows suffering with udder infections justifies the expenditure of the major portion of the energy, time and appropriation from food officials at this time. However, the

supervision of milk pasteurizing plants has received careful attention in order to assure efficient pasteurization.

The recommendations made by the milk committee of the Central Atlantic States Dairy and Food Officials' Association for the minimum requirements for a clean and safe milk have been followed. The essential factors for such milk have been considered to be healthy cattle, healthy milkers and milk handlers, a pure water supply, the proper cooling of milk, sterilization of utensils, clean flanks and udders of cows and small top milking pails. Those factors which have little or no effect upon the quality of the milk have been minimized.

Conferences were held during the year with representatives of the Department of Agriculture of the State of New Jersey for the purpose of adopting recommendations for a uniform grading system for milk and also for the purpose of encouraging the adoption of uniform ordinances by municipalities, which would result in a safe milk supply, if the provisions of the ordinances were enforced. These conferences resulted in the formulation of the following proposed definitions or grades of milk:

1. "Certified Milk" is milk which has been produced in conformity with the provisions of Chapter 237 of the Laws of 1909 and the amendments and supplements thereto and with the rules and regulations for the production and distribution of "Certified Milk" adopted by the Department of Health of the State of New Jersey.
2. "Raw Milk" is milk produced from healthy cows which have been tested at least once each year with tuberculin under Federal and State supervision or under State supervision or by veterinarians approved by the New Jersey Department of Agriculture, and which have not reacted to such test.
3. "Pasteurized Milk" is milk which has been heated to a temperature of 142 to 145 degrees Fahrenheit, held at such temperature for a period of at least thirty minutes, immediately cooled to a temperature of 50 degrees Fahrenheit or below and held at such temperature until distributed or sold.

All milk not produced in accordance with the requirements for "Certified Milk" or "Raw Milk" shall be pasteurized.

This proposed uniform grading system has been presented to the New Jersey Sanitary Association, at their meeting at Lakewood and at the annual conference between State and local health officials held in the State House, Trenton, N. J., on Feb-

ruary 27, 1920. The co-operation of the New Jersey Department of Agriculture has been obtained in presenting and recommending this grading system to various organizations of milk producers of the State.

*Dairy Inspection.*—The character of milk supplies depends to a large degree upon the knowledge and care exercised by producers. Attempts to control the cleanliness and safety of milk by bacterial standards and laboratory control without a knowledge of the actual conditions of production, may lead to erroneous conclusions. Dairy inspection, therefore, has proved to be an important factor in obtaining a clean and safe milk supply.

In order to obtain permanent results from dairy inspection, it is necessary to convince producers of milk that suggested changes in their equipment or in the methods used in the production of milk, will materially improve the milk and will aid them in marketing their product. The recommendations which have been made to dairymen as a result of inspections of dairy premises by representatives of this Department during the year, have been confined to those requirements which are necessary to secure a safe and clean milk supply.

It has been the policy of the Department to interest and assist local boards of health in the investigation of their milk supplies. When practical, dairy inspections have been made jointly by representatives of this Department with representatives of local boards of health of those municipalities in which the milk was distributed. Recommendations for changes in equipment have been made in written notices from this Department to producers as a result of such inspections and copies of the notices have been furnished to the local authorities. Such joint inspections and co-operation tends to stimulate the interest of local authorities in securing a clean milk supply. It also prevents duplication of inspection and conflicting orders for changes in equipment or methods employed by dairymen in the handling of milk.

In order to bring about a common understanding of the State requirements for the production of milk by local authorities engaged in dairy inspection work and by dairymen engaged in the production of milk the following circular was prepared and widely distributed during the year, which contains the essential requirements for the production of milk:

DEPARTMENT OF HEALTH OF THE STATE OF NEW JERSEY.  
BUREAU OF FOOD AND DRUGS.

Cir. 159.

Dec., 1919.

We desire to direct the attention of all producers of milk to the policy which has been adopted in regard to dairy inspection. This policy has been adopted as a result of a study of dairy inspection work in New Jersey and consideration of reports of certain committees appointed by different associations and by conferences with leading authorities interested in the production and distribution of a clean and safe milk.

It is believed that the principles outlined in the report of the Committee of the Central Atlantic States Dairy, Food and Drug Officials' Association are sound. This report reads, in part, as follows:

"It seems essential that the requirements imposed upon milk producers by public officials should be limited to those which are absolutely necessary to secure a clean and safe milk."

This department desires to obtain the co-operation of all milk producers in obtaining a better milk supply. We believe this will be accomplished if producers adhere to the following simple but essential requirements:

1. All persons who keep cows for the production or sale of milk or milk products shall file at least once each year in the office of the State Department of Health of New Jersey, at Trenton, a certificate signed by a duly licensed veterinarian, stating the results of the physical examination of the cows.

2. Flanks and udders of cows shall be clean at the time of milking.

3. Milking shall be done with clean, dry hands, or with a properly cleansed mechanical milker.

4. The floors, sidewalls and ceiling of cow stables shall be kept in a reasonably clean condition. Manure shall not be permitted to accumulate where it will be necessary for cows to pass through the same in going to and from the cow stable.

5. Some type of a small top milk pail shall be used in the process of milking.

6. All receptacles used as containers for milk and milk products shall be cleansed by washing with a solution of one per cent. alkali at a temperature of not less than 125° Fahrenheit, scrubbed inside and out with suitable brushes, rinsed with warm water and then scalded with hot water or steam, or by some other method which will result in the same degree of cleanliness as the method described.

7. Within one hour after milking, all milk shall be cooled to a temperature of 60° F. or below, and held at such temperature at all times.

8. The necessary precautions shall be taken to protect milk from contamination at all times, by flies, dust, dirt and other foreign material.

We desire to emphasize the fact that care and cleanliness in milk production are most important. Clean and safe milk may be produced in ordinary stables with inexpensive equipment.

The rules were confined to simple requirements for common cleanliness in the production and handling of milk and avoided recommendations for expensive equipment which might be desirable, but which is not necessary.

There has been a steadily increasing interest and demand on the part of local health authorities for assistance in improving their milk supply. Only three men are available for dairy inspection work in the employ of the Department, and, consequently, it has been impossible to comply with all requests for dairy inspection. There are approximately 10,000 dairies in New Jersey, and it is obvious that only a small percentage of them can be visited each year with the present force of inspectors. The growing demand from local authorities for assistance and the importance and volume of the work warrants the employment of at least three additional men in this work.

Special attention has been paid to certain dairies which produce milk intended for sale in the raw state, which are located in or near the cities of Bayonne and Passaic. The location of such dairies makes it difficult to operate them in a sanitary manner. In such locations it is necessary to keep the cows in the stable most of the time. Material suitable for bedding for the dairy animals is expensive and difficult to obtain, and in many cases no bedding is used. Many of the persons operating such dairies bottle and distribute milk at retail. Frequently the bottles and other containers used in handling the milk are not thoroughly cleansed and no attempt is made to sterilize them. Raw milk produced and distributed under such conditions is a dangerous article of food.

In the case of the dairies located in Bayonne, several investigations had been made in past years and corrective recommendations had been made repeatedly. As it seemed impossible to control the production of milk on these dairies, the local board of health was advised to pass an ordinance to prohibit the keeping of dairy cattle within the limits of that municipality.

In the case of the dairies located near Passaic, the local board of health was advised to require the pasteurization of all milk excepting that from tuberculin tested cows, which had been

tested by the Bureau of Animal Industry of the New Jersey Department of Agriculture or by veterinarians approved by such Department.

During the year it was necessary to prohibit the sale of milk produced on certain dairies in the State, because of gross negligence in the production and handling of the milk, or because of insanitary conditions which rendered the milk dangerous for human consumption. In each case where the sale of milk has been prohibited by the Department the local board of health has been advised, in writing, to prohibit the sale of milk from such dairies within the jurisdiction of their department. These prohibitive orders remained in effect until such time as the insanitary conditions had been corrected. The seriousness of prohibiting the sale of milk at this time, when there is a shortage of food and when high prices prevail, has received careful consideration, but it is the duty of this Department to take such extreme action when milk is found to be a probable source of injury to the consumer. The prohibition of the sale of milk has been most effective in bringing about the changes demanded.

The representatives of the Bureau have continued to use the blank devised by representatives of this Bureau in reporting inspections of dairy premises in place of the dairy score card. By the use of this blank it has been possible to obtain reports of dairy inspections which give a clear description of the essential points of milk production.

Inspections have been made of 1,823 dairies in this State during the year.

*Physical Examination of Dairy Animals.*—Section 5, Chapter 78, of the Laws of 1914 requires that each dairyman, engaged in the production of milk for sale, shall submit a certificate to the Department of Health of the State of New Jersey, at least once each year, stating the results of the examination of the cows, signed by a duly licensed veterinarian, with reference to the existence of any disease with which the animals may be affected. A compilation of the data contained in reports of physical examinations of dairy animals which were received during the period of July 1, 1918, to January 1, 1919, shows

that 19,873 animals were examined and of this number 67 were suspected of being affected with tuberculosis. From January 1, 1919, to July 1, 1919, the number of animals examined was 46,542, and 118 of this number were reported as suspected of being affected with tuberculosis. During the period from July 1, 1919, to January 1, 1920, the number of animals examined was 26,365, and 88 were reported as suspected of being affected with tuberculosis. During the time from January 1, 1920, to July 1, 1920, there were 56,167 animals examined, and 113 were suspected of being affected with tuberculosis. Information regarding suspected cases of tuberculosis in dairy animals received by the Department is reported to the Bureau of Animal Industry, New Jersey Department of Agriculture.

The increase in the number of reports of examinations of dairy animals is attributed to requests which have been made by letter from this Department.

The following table shows the results of physical examinations made of dairy animals by the veterinarian employed by this Department:

CITIES.	Number of Herds.	Number of Cattle Examined.	Acute Mastitis.	Abscesses in Udders.	Open Sores in Udders.	Tumorous Growth in Udders.	Abnormal Lymphatic Glands.	Suspected Tuberculosis.	Other Diseased Conditions.	Herd Tuberculin Tested.	Reactors Found.	Physical Cases Slaughtered.	Number Passed for Food.	Number Condemned.
Bayonne, .....	9	324	2	5	2	3	3	1	2	0	0	0	0	1
Passaic, .....	29	688	3	1	3	4	20	8	0	0	0	2	2	0
Miscellaneous, .....	41	450	4	5	4	3	24	36	8	2	72	26	15	11
Totals, .....	79	1462	9	11	9	10	47	45	10	2	72	28	17	12

By consulting the above table it will be seen that the percentage of advanced cases of tuberculosis among dairy animals is much higher in those herds grouped as "miscellaneous." The examinations classed as "miscellaneous" include herds in all parts of the State. The results of these investigations show the need for the frequent physical examination of dairy animals.

*Creameries and Milk Pasteurizing Plants.*—There are in this State at the present time 105 milk pasteurizing plants and 61 creameries where milk is not pasteurized. During the year 524 inspections have been made of these establishments with particular attention to the cleanliness of the milk before pasteurization, proper pasteurizing temperatures, cleanliness of apparatus and containers and the cooling and storage of the milk.

Centrifugal clarification, straining, pasteurization or other handling of milk at the creamery will not yield a clean product unless care, cleanliness and cooling to the proper temperature have been carried out at the place and time of production. Frequently, sediment tests made of the milk delivered to creameries have shown that the milk contained considerable dirt. In such cases notices have been sent to the producers to exercise greater care to protect the milk from contamination by dust and dirt.

All milk to be sold as "pasteurized" must be heated to a temperature of 142-145 degrees Fahrenheit, and held at that temperature at least thirty minutes. Unless such temperatures and time of holding are maintained there can be no certainty that possible disease-producing organisms have been destroyed. During the past winter operators of certain types of pasteurizing apparatus have experienced difficulty in passing the first milk through the holding tanks at the proper temperature on account of the loss of heat due to contact with the cold surfaces of the tanks. Where this trouble has occurred, it has been suggested that the holding tanks be heated with steam or hot water immediately before the milk enters. As often as possible inspections have been made during course of pasteurization, and the temperature and time of holding of the milk was noted. The regulations of this Department require that all pasteurizing apparatus be equipped with recording thermometers so as to show the temperatures at which milk is heated each day. It is also required that temperature records be dated and kept on file at the pasteurizing plant, in order that there may be some evidence of the efficiency of pasteurization at times other than the days on which inspections were made. These records at the various plants have been inspected regularly by representatives of this Bureau, and in general have shown efficient operation.

The desired results of pasteurization cannot be obtained unless all vats, pumps, pipes, pasteurizers, coolers, bottle-fillers, cans and bottles are thoroughly cleansed and protected from contamination by flies, dust and dirt. A concerted effort has been made to cause the operators of milk pasteurizing plants to comply with the regulations of this Department governing the cleansing of apparatus and containers and the covering of vats and coolers.

After pasteurization of the milk it must be cooled to a temperature of 50 degrees Fahrenheit or below and held at or below that temperature until delivery to the consumer. Failure to cool the milk to the proper temperature, especially in warm weather, may cause an enormous increase in the bacterial content as well as the spoiling of the milk within a short time.

The rigid enforcement of the regulations of the Department governing the above-mentioned essential factors in the process of pasteurization, has resulted in placing upon the market a reasonably safe pasteurized milk.

During the year special visits were made to a number of pasteurizing plants for the purpose of collecting samples, before and after pasteurization, for the purpose of making bacteriological examinations and checking the temperatures of the milk during heating, holding and cooling. The plants selected for such tests comprised those where irregularities, especially in the pasteurizing process, were suspected or where a lack of care or cleanliness was known to exist. The proprietors of these plants had no advance knowledge as to the time of collecting these samples. In all twenty-four tests were made, the bacterial counts in nineteen cases showing satisfactory results, which would indicate that the milk had been properly pasteurized and received no subsequent contamination. In five cases the results obtained were not satisfactory, the probable causes of which, as determined by our observations, being due to insufficient holding of the milk, contaminated milk cooler, bottle filler or bottles. In each of these five instances the proprietors were given a warning and prompt follow-up tests showed that the trouble had been corrected.

In cases where the operators of creameries or milk pasteurizing plants have allowed serious violations of the regulations to exist

in their plants, the operators have been summoned to appear before the Director and they have been given a specified time to meet the requirements. In one case suit was instituted for an intolerable condition affecting the purity of the milk supply.

*Investigations of the Sale of Milk for which Special Claims are Made.*—During the past year the Department has found that certain dealers have offered for sale milk of identically the same quality, in bottles bearing caps marked with different statements or symbols, for different prices. Claims such as "Tuberculin Tested," milk from cattle of a particular breed or the minimum butterfat content of the milk convey definite meaning. Investigations have been made of such claims and in those cases where the facts did not support the claims, misbranding of the product was proved, penalties were collected and the practice was stopped. However, in many instances it has been impossible to attach any definite meaning to such statements or symbols as "Special," "Nursery," "Hygienic," "Sanitary," "XXX" and "A", and no satisfactory explanation could be given by the dealers to support the alleged difference in quality and to warrant the advanced price at which the product was sold. Certain dealers admitted that there was no difference whatever in the quality of milk.

The consumer is interested in obtaining a milk of superior quality as to its richness and safety. Claims that the milk is produced by a particular breed of cattle or that the milk has a definite minimum fat content are justified in many cases, in our opinion. The consumer is asked to protect himself from deception and extortion based upon indefinite statements or symbols, and is advised to demand proof of the alleged superior quality of the milk. The consumer is also advised to request information from the local board of health as to the justification of the claims made by distributors of milk within their jurisdiction.

*Certified Milk.*—The investigation of the production and distribution of certified milk started early in the year of 1919 has been continued during the past year. As a result of this work it was learned that certain medical milk commissions certifying to milk sold in this State were not organized in accordance with the law governing the production and sale of certified milk. On cer-

tain dairies where "Certified Milk" was produced, the most important requirements were neglected, and cows affected with tuberculosis and diseases of the udder were being milked and the milk was distributed as "Certified Milk." It was also found, in certain cases, that no medical examination was given to persons handling the milk. In other cases the milk commission had not entered into any contract, in writing, and in fact no definite instructions had been given the dairymen as to the details of production. Misbranding of the milk has been discovered in the marking of caps, in such a manner as to make it appear that the milk was of more recent production than it actually was.

When the Department directed the attention of certain medical milk commissions to these deviations from the original principles, the reply was received to the effect that each medical milk commission could make its own regulations. The Department was also informed that the pamphlet issued by the United States Treasury Department was not a true copy of the methods and standards adopted by the American Association of Medical Milk Commissions. An attempt was made to obtain a certified copy of the requirements from the Secretary of the American Association of Medical Milk Commissions and in reply a copy of Bulletin 85, issued by the Treasury Department, was received. At the same time the Secretary informed us that the regulations were to be changed in the near future.

This Department did not desire to be compelled to abide by the methods and standards fixed and changed from time to time by an association which is not responsible to the State in any way and one in which the food control officials of this State have no voice. For this reason an amendment to the present certified milk law was prepared and submitted to the Legislature. This amendment was passed by the Legislature and will enable the Department to adopt rules and regulations to govern the production, distribution and sale of certified milk and to fix standards of purity and quality for such milk, and such standards and regulations when adopted shall become a part of the State Sanitary Code. These rules are now in the course of preparation and will soon be ready for distribution.

This amendment requires medical milk commissions in other States, which certify to milk sold in New Jersey, to obtain permits from this Department, before their certification will be accepted and such permits will be revocable at any time for cause.

The amendment also empowers local boards of health to bring legal action for the collection of penalties for violations of the certified milk law and regulations which occur within their jurisdiction.

*Canning Factory Inspection.*—The canning factories of the State were visited by a representative of this Department, accompanied by a representative of the Bureau of Chemistry, United States Department of Agriculture, during the early part of the canning season. Investigations were made at each factory and recommendations were made for improvements where changes were deemed necessary.

The failure of the tomato crop in this State was so complete during the last canning season that many of the factories did not open and others operated only a few hours each week. For this reason the supervision of the canning factories demanded less attention than in former years.

*Cold Storage.*—There has been a gradual decrease in the amounts of foodstuffs held in cold storage warehouses in this State, in comparison with the amounts held during the past three years. This decrease in the amounts of foodstuffs held in cold storage can be attributed to the release of large stores held by the United States Government, the Allied countries and also to the difficulties recently experienced in transportation from points of production to the warehouses. Sections of some of the larger warehouses which were leased by various branches of the United States Army and Navy and by Departments of foreign countries have been abandoned as food supply bases.

During the summer of 1919 there was a general agitation relative to the high cost of foodstuffs, which was alleged to have been caused in part by the holding of foodstuffs in cold storage for long periods of time. As a result of our investigations it was learned that foods were not held in the warehouses in this State

for periods of time in excess of twelve calendar months permitted by Chapter 101 of the Laws of 1916. However, several lots of meats and poultry were found in cold storage which had been held for periods of approximately twelve months in cold storage warehouses located in other States previous to entrance into cold storage in this State. Upon request from the Attorney-General of New Jersey, who was co-operating with the U. S. District Attorney in the investigation of the cold storage industry, detailed information was submitted to him regarding all cases in which the total length of storage in the different States exceeded twelve calendar months. The amounts of food found to have been transferred to cold storage warehouses in this State, and which had been held in cold storage for a total period of time in excess of one year, however, represented only a small proportion of the food held in cold storage in this State.

Although the storage of foods in the warehouses of the different States, for periods of time in excess of twelve months seems to be objectionable, such practice does not constitute a violation of the Cold Storage Act in force in this State. The Attorney-General of this State has ruled that articles of food can be stored for twelve months in this State, regardless of the time of storage in other States, provided that further storage would not impair their purity, quality or wholesomeness. Therefore, if the storage of foodstuffs for periods of time in excess of twelve calendar months is to be prohibited, Federal legislation and supervision over the inter-state traffic of such goods is necessary.

During the Spring of 1920 the transportation of perishable foodstuffs from points of production was seriously interfered with by a general strike of employees of the railroad systems. The food held in cold storage warehouses in or near the large cities at this time were drawn upon immediately. The value of cold storage as a most effectual agent in the preservation of the food supply of our large cities, to tide over unforeseen emergencies was clearly demonstrated at this time.

During the year 347 inspections were made at the twenty-five cold storage warehouses located in this State. During the year seven applications have been received to store foodstuffs

beyond the time limit of twelve months. The action taken with respect to such applications will be found in detail in the report of the Director.

The following table shows the kinds and amounts of foods held in cold storage in the warehouses of this State on the last day of each month during the year :

SUMMARY OF THE KINDS AND AMOUNTS OF FOODSTUFFS HELD IN COLD STORAGE IN NEW JERSEY ON THE LAST DAY OF EACH MONTH DURING THE PAST YEAR.

ARTICLE.	July, 1919.	Aug., 1919.	Sept., 1919.	Oct., 1919.	Nov., 1919.	Dec., 1919.	Jan., 1920.	Feb., 1920.	Mar., 1920.	April, 1920.	May, 1920.	June, 1920.
Eggs, cases, .....	550,885	526,787	471,771	381,604	289,785	144,278	28,938	1,450	67	57,343	235,949	486,307
Eggs, broken—lbs., .....	157,290	153,300	243,330	236,655	258,645	209,575	202,280	272,580	336,020	130,815	107,950	230,170
Cheese, lbs., .....	1,443,553	2,174,373	2,253,623	2,443,339	1,786,880	1,219,018	1,010,539	797,409	508,186	368,050	241,627	335,645
Butter, lbs., .....	7,655,016	8,250,492	7,103,934	6,157,479	5,133,144	4,498,180	3,700,671	3,238,610	2,104,340	1,612,608	1,326,001	2,550,941
Poultry, lbs., .....	3,664,872	3,071,516	2,288,056	2,217,208	2,313,455	3,976,870	5,856,129	6,936,570	8,168,137	3,091,745	2,200,207	1,830,498
Meats, fresh—lbs., .....	25,013,954	23,683,078	15,572,562	20,092,217	11,540,004	10,943,702	14,162,521	10,025,066	17,544,880	12,468,614	12,305,523	11,551,514
Fish, fresh—lbs., .....	1,794,160	1,562,618	1,874,320	2,280,928	2,619,690	2,366,295	1,437,813	859,834	614,966	431,609	536,731	1,190,205
Milk and Milk products—lbs., .....	539,670	576,138	609,618	597,571	378,330	215,350	260,710	22,500	45,970	55,940	112,837	608,374
Edible fats and oils—lbs., .....	3,214,265	3,870,760	2,968,743	2,086,449	1,894,170	1,714,900	1,206,441	1,711,188	2,193,597	851,628	750,439	1,683,358
Game—lbs., .....	171,207	171,464	169,545	169,544	166,808	175,248	111,677	114,938	93,339	68,312	66,805	60,085
Miscellaneous articles—pkgs., .....	21,890	32,640	67,415	176,509	272,639	362,048	273,341	279,607	199,595	97,064	341,117	133,640



*Meat Inspection.*—The following table shows the amounts and kinds of meat which has been inspected during the year:

	CARCASSES.		PARTS OF CARCASSES.		
	<i>Passed.</i>	<i>Condemned.</i>		<i>Passed lbs.</i>	<i>Condemned lbs.</i>
Beef, .....	182	11	Beef, .....	3,100	6,232
Hogs, .....	34	.....	Pork, .....	1,550	.....
Calves, .....	172	.....	Veal, .....	75	.....
Sheep, .....	65	.....	Lamb, .....	300	.....
Totals, .	453	11	Totals, .	5,025	6,232

The above-mentioned meat inspections were made in conjunction with slaughter-house inspection work and in connection with post-mortem inspection of dairy animals which were suspected of being affected with tuberculosis.

With the present small force of inspectors to carry on food control work it has not been possible to carry on state-wide meat inspection. Certain municipalities in the State maintain a meat inspection service which has resulted in the exclusion of unwholesome meats. It is hoped that other municipalities will undertake this work during the coming year.

*Non-alcoholic Beverages.*—The advent of prohibition gave a stimulus to the business of preparing soda waters and the bottling of non-alcoholic beverages. The control of soda fountains and stands where non-alcoholic beverages are sold at retail has been regarded as the function of the local boards of health, and very little supervision has been given to such places by this Bureau during the year. Sanitary surveys of premises where non-alcoholic beverages are prepared and bottled for distribution at wholesale have been made by representatives of this Department. The failure to provide adequate equipment for the thorough cleansing of containers and utensils has been the most frequent cause of complaint. In cases where insanitary premises or unclean equip-

ment or containers were found, notices containing corrective recommendations have been sent to the operators. Copies of such notices have been sent to the local health authorities in each case, in order that they might become familiar with the conditions at such plants. Certain local boards of health have caused inspections to be made of the establishments and a material improvement has resulted. As such beverages are consumed largely by the inhabitants of the municipalities in which they are prepared, supervision of their preparation by local authorities is most effective.

The labels used by certain dealers on containers in which non-alcoholic beverages are sold were found to be so worded, or bore symbols or designs of such a character as to lead the purchaser to believe that the beverage was prepared from fruits or fruit juices, when in fact only synthetic flavors were used in the preparation of the beverage. Such labeling constitutes a violation of Chapter 237 of the Laws of 1915 and objection has been made to the use of such labels.

Representatives of this Department have collected 199 samples of non-alcoholic beverages during the year for the purpose of ascertaining whether or not the beverages contained substances which are prohibited by law. Of this number 50 were found to be sold illegally.

*Slaughter-house Inspection.*—The operators of slaughter-houses in this State are required by Chapter 295 of the Laws of 1910 to obtain a license each year from the State Department of Health to conduct their business. Before an application for a license to operate a slaughter-house is acted upon the proprietor must obtain the approval of the site from the local board of health within whose jurisdiction the establishment will be located. Such approval when obtained must be submitted to the State Department of Health when application for a license is made. The power to revoke licenses for failure to comply with the law and regulations governing the operation of slaughter-houses, has been an effective means of controlling the sanitary conditions under which the business of slaughtering is conducted. On June 30, 1920, 223 slaughter-houses were being operated in this State

under a license from this Department. During the year 1,000 inspections have been made of establishments where the slaughtering of animals is carried on. Our list of licensed slaughterhouses does not include small dealers and farmers who slaughter animals occasionally on farms where the animals are raised.

*Egg-Breaking Establishments.*—At the present time there are eight egg-breaking establishments operated in this State under a license from the Department. During the year inspections were made of these plants for the purpose of ascertaining if the establishments were being operated in compliance with the law and regulations in force in this State governing the breaking of eggs, and for the purpose of ascertaining the quality of the eggs handled at such places. Seven establishments break eggs for food purposes. One establishment handles nothing but "rots" and eggs which are not fit for food purposes. The egg material handled at this establishment is sold for tanning purposes. During the year 22 inspections were made of the eight establishments.

*Sanitary Inspection of Food Establishments.*—The following table shows the number and kinds of establishments where sanitary inspections have been made during the year:

Dairies, .....	1,823
Creameries, .....	524
Milk depots, .....	87
Cheese factories, .....	16
Slaughter-houses, .....	1,000
Cold storage warehouses, .....	347
Egg-breaking establishments, .....	22
Meat markets, .....	28
Canning factories, .....	146
Bottling establishments, .....	52
Miscellaneous inspections, .....	26

*Chemical Examinations of Samples of Milk.*—Samples of milk and cream to the number of 3,084 were collected for analysis. Of this number 518 samples were found to differ from the legal standard. The samples which were found to differ from the legal standard may be divided into the following classes:

Milk deficient in total solids, .....	444
Milk containing added water, .....	64
Cream deficient in fat, .....	10
Total, .....	518

The following table shows the number and kinds of samples of food other than milk and cream collected during the period from June 30, 1919, to July 1, 1920:

Article.	Total.	Above Standard.	Below Standard.
Apples, dried, .....	2	1	1
Apple butter, .....	2	2	..
Bread and rolls, .....	7	7	..
Beans, canned, .....	1	1	..
Butter, .....	102	85	17
Condensed milk, .....	1	..	1
Cranberry sauce, .....	1	1	..
Egg products, .....	33	31	2
Fish, .....	3	..	3
Grapes, dried, .....	1	1	..
Hamburg steak, .....	23	12	11
Jelly, .....	1	1	..
Lard, .....	7	4	3
Lemon extract, .....	19	18	1
Meat, canned, .....	4	4	..
Milk, powdered, .....	3	3	..
Olive oil, .....	59	57	2
Olives, ripe, .....	3	3	..
Pears, canned, .....	1	1	..
Sauerkraut, .....	1	1	..
Soft drinks, .....	199	149	50
Sausage, .....	16	15	1
Sugar, .....	1	1	..
Tomato products, .....	33	29	4
Vinegar, .....	37	23	14
Miscellaneous samples, .....	12	12	..
Totals, .....	572	462	110

*Patent Medicines.*—The section of the food and drug law which provides that a drug shall be deemed to be adulterated if its package or label shall bear or contain any statement, design or device regarding the curative or therapeutic effect of such article or any of the ingredients or substances contained therein which is false or fraudulent, has received the attention of the Bureau

during the last year. In order to facilitate the work of investigating the statements, designs and devices used upon preparations distributed in this State, it was decided to scrutinize the preparations in the wholesale houses.

Samples of drugs manufactured outside of New Jersey, together with evidence of inter-state shipment, were collected by representatives of the Bureau and submitted to the Bureau of Chemistry, United States Department of Agriculture. The labels and packages under which these preparations were sold bore statements that the articles would positively cure catarrh, asthma, skin diseases and other diseases. The extensive campaign carried on by the Department in the past and the campaign carried out by the U. S. Bureau of Chemistry has resulted in a general compliance with the law. In many cases the statements used by manufacturers on patent medicines have been so modified or cleverly worded as to comply with the law, although the consumer may still be misled by inference from the statements upon the label or the package.

The following table shows the number and kind of samples of drugs collected by representatives of the Bureau, purchased under names recognized by the 9th Revision of the U. S. Pharmacopœia and by the 4th edition of the National Formulary:

Article.	Total.	Above Standard.	Below Standard.
Alcohol, .....	1	1	..
Aqua destillata, .....	15	4	11
Aqua Hamamelidis, .....	24	24	..
Bismuthi Subnitras, .....	8	8	..
Emulsum Olei Morrhuæ, .....	5	5	..
Linimentum Camphoræ, .....	5	5	..
Liquor Hydrogenii Dioxidii, .....	20	12	8
Liquor Magnesi Citratis, .....	20	14	6
Spiritus Camphoræ, .....	10	10	..
Spiritus Menthæ Piperitæ, .....	14	11	3
Spiritus Myrciæ Compositus, .....	20	19	1
Tinctura Ferri Chloridi, .....	24	20	4
Tinctura Iodi, .....	37	35	2
Totals, .....	203	168	35

*Methyl Alcohol.*—The investigation of those drugs and toilet preparations likely to contain methyl alcohol or wood alcohol started in 1913, has been continued during the year. In this investigation 47 samples of toilet preparations and 44 samples of drugs were collected for analysis and in no case was methyl alcohol found to be present. Chapter 286 of the Laws of 1912, the Methyl Alcohol Act, was amended by the present Legislature so that the use of methyl or wood alcohol in veterinary preparations is prohibited. During the coming year it is the purpose of the Bureau to conduct an investigation of the veterinary preparations sold in the State.

The following table shows the number and kinds of drugs collected under names other than those recognized by the U. S. Pharmacopœia and National Formulary:

Hair tonic, .....	38
Toilet waters, .....	9
Veterinary preparations, .....	2
Miscellaneous samples, .....	4
Total, .....	53

All of the above-mentioned samples were found to comply with the law.

*Co-operation.*—The Bureau has endeavored to co-operate with the Bureau of Chemistry, U. S. Department of Agriculture, and collected evidence in inter-state shipments of questionable foods and drugs. We have also worked in co-operation with the various Bureaus of this Department, the New Jersey Department of Agriculture, and the various local boards of health in the State in matters pertaining to food control work.

## Report of George W. McGuire.

SPECIAL AGENT IN CHARGE OF ICE CREAM FACTORY  
INSPECTION.

The assignment to the work of investigating the conditions under which ice cream is being manufactured and sold in this State took place in December, 1918, and the first yearly report was made to the Director for the calendar year ending December 31, 1919. The same plan for the ensuing year has been followed for the purpose of showing relative sanitary conditions existing in the inspected factories for the two years in which the work has progressed.

The figures obtained by personal interview with each ice cream manufacturer shows that during the year 1919 there was a large increase in the number of gallons of ice cream produced over that of the previous year. This partially is accounted for by the requirements of the soldiers encamped in the several camps and cantonments located throughout the State. The requirements from this source taxed the capacity of the different factories to meet the demands thus made upon them.

The following table will show the relative quantities of ice cream made in 1918 and 1919, the percentage of increased production and of the milk required in its manufacture:

Ice cream made in this State in 1918, .....	3,756,665 gallons.
Ice cream made in this State in 1919, .....	6,044,460 "
Increase in number of gallons in 1919, .....	2,287,795 "
Milk required for output in 1918, .....	5,275,553 "
Milk required for output in 1919, .....	8,032,888 "
Per cent. of increase in the product in one year, approximately	60%.

There were in operation at the end of the year 475 factories as against 443 last year. Each one of these establishments was in-

spected at least once and others a number of times, for the purpose of seeing that the orders of the Department regarding faulty methods or inadequate equipment were complied with.

Of the 475 factories inspected 241 were located above ground and 234 in cellars.

We have discouraged applicants for new places from locating their plants in cellars, and a number of applicants have been rejected for the reason that there was too much risk involved in exposing the milk products to the air and dirt entering these places from the sidewalk and street through cellar doors and windows. It is only where these basements are large and properly ventilated that their use is approved by the Department.

One of the defects found in the management of many of these factories last year was in the cleansing methods employed. The examination of the apparatus, cans and utensils too frequently disclosed unclean surfaces and hidden deposits of the decomposing materials in the crevices, showing that little care was exercised in the cleansing processes and that cold water exclusively had been used for washing. This year we have insisted that operators install systems of running hot water, and, where practical, provision for applying steam to all surfaces which come in contact with the mixture. It is our purpose in the future to require, as a prerequisite to issuing a license, that all factories having sufficient capacity to warrant it, shall be equipped with improved hot water facilities.

Out of the 475 factories licensed 48 have steam boilers and 254 have a supply of running hot water. The others depend upon gas and coal stoves to heat the water as it is required.

The types of freezers in use last year were as follows: Ice packed tub freezers, 341; modern brine cooled freezers, 101. This year there are 357 tub freezers and 158 modern brine cooled freezers.

There is less danger of outside contamination with the use of the brine system of freezing, and the increased number of these machines in operation indicate an improvement in the quality of the product.

The milk products handled by our ice cream manufacturers appear to be of good quality, and in most cases they are properly

cared for pending manufacture. In the smaller factories the milk and cream is mixed and frozen immediately after reaching the factory.

The large operators place the product in cold storage until ready for freezing. Since most of the milk products used in ice cream manufacture are shipped from creameries having pasteurizing equipment there is a certain safeguard to the products of which the ordinary operator himself seems to be ignorant.

For the past two years we have endeavored to impress upon manufacturers the value of using none other than pasteurized materials. In 1918 only 37 of them showed a knowledge of the term. The others were instructed and advised to insist upon their dealer furnishing them the pasteurized article, properly labeled. Our visits this year showed that 195 of them had invoices plainly marked "Pasteurized."

Our records show that 11 operators use raw unpasteurized milk products. Twenty-seven manufacturers heat or pasteurize the whole mixture. This is especially so of the larger operators. This safeguards the product by reducing the bacterial content.

The most popular formula used in this State is a mixture of about equal parts of 20 per cent. cream, whole milk and condensed skimmed milk, about 14 per cent. sugar and one-half per cent. gelatine. The quantities of these ingredients, however, vary according to the ideas of the manufacturers.

So far as it has been possible, all orders from the Department requiring better sanitary conditions have been complied with, although it will require the services of one or two more men, constantly at work supervising the manufacture of ice cream plants, to fully insure a safe product. With the efforts of one man much of the work is required to be done through correspondence, especially the follow-up work. It has been impossible to reinspect all the places in which defects have been found, but letters from the operators have assured us that the orders of the Department for improvements have been complied with.

Owing to the fact that at the end of the fiscal year we would be requested to issue licenses without an assurance that the product was surrounded with proper safeguards, with the concur-

rence of the Director, a plan to secure the active co-operation of health officers in the larger cities to assist in the work of inspection was agreed upon. The local boards of health of Trenton, Jersey City, Newark, Elizabeth, Paterson, Passaic, Hackensack and Hoboken being consulted, readily agreed to a scheme by which one of the inspectors of each local board was designated to make periodical inspections of the plants within their municipal limits and report the result of their inspections to this Department, and upon their approval of a factory a license would be issued. The plan so far has worked out very well. When in doubt as to any plant meeting the requirements of this Department, we have made the final inspection with the local officer and have so adjusted doubtful questions that satisfactory results have been obtained. We feel sure that this team work will be beneficial to both State and local authorities.

During the past year it became necessary to cite two manufacturers to appear before the Director to show cause why their licenses should not be revoked. At the hearings one large corporation agreed to meet every requirement of the Department if allowed to go on. They were given a reasonable time to do so, but ceased to manufacture until they had complied with the order. Reinspections have shown marked improvement in their methods of handling the product. In the other case the license was revoked on account of the lax and dangerous methods in use, and, notwithstanding much correspondence, it has not been deemed wise to permit them to again enter the business in their former location.

In the latter part of the year we found a few dealers purchasing a mixture already prepared for freezing. This had been prepared for them by the milk dealers from whom they purchased their supplies. As far as we could ascertain it was composed of milk, condensed milk and sugar. It is quite probable that this practice will increase during the coming year, and we shall be obliged to collect samples of the mixture for analysis, as there have been intimations that fats other than milk fats may be used in the mixture. Since there is no legal standard in this State for ice cream other than that the ingredients shall be

pure and wholesome, there is great danger that foreign substances, especially fats, will be used by some manufacturers for the purpose of cheapening the product, and it is conceded by many manufacturers as well as by health officials that the time has arrived for the enactment of a State law defining ice cream. A bill to regulate the manufacture and sale of ice cream was introduced in the Legislature at its last session requiring the State Department of Health and local boards of health to enforce it. The bill did not meet with the approval of this Department, as much of the matter contained in it was already provided for in existing law, and there seemed to be no reason for re-enacting it. The most serious objection to the bill, however, was the clause permitting the use of homogenized fats. As the bill stood it permitted the use of fats, other than butter fats, in the product. The Assistant Director informed the introducer of the measure that by the use of a homogenizer various fats can be successfully incorporated in an ice cream mixture at a very considerable decrease in the cost of the resulting product, and without the possibility of detection on the part of the consumer. He also stated that it had been recently established that butter fat contains substances necessary to the growth of the human body, which are almost entirely absent in the case of many other commercial fats, so that the substitution of other fats for butter fats will have a distinctly injurious effect upon the nutritious properties of ice cream. The bill was finally withdrawn from the files of the Senate. Should the Department decide that a bill be prepared for introduction into the Legislature providing for an ice cream standard, it is desirable that a conference of State and local health officials, together with a few representative ice cream manufacturers, be called to consider the subject and agree upon a measure which will be acceptable to the Department.

## Report of the Bureau of Engineering.

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H. P. CROFT, CHIEF.

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In the summer of 1919, the staff of the Bureau was increased to nearly its former personnel by the return of its engineers from the service, and it was expected that this increase in the force would enable the Bureau to enlarge upon its limited schedule under which it was forced to work during the war, especially as the number of inspections would be increased by the use of automobiles. Early inspections showed, however, that most of the water and sewage plants had so deteriorated that it was necessary to materially increase the number of investigations at some plants in order to improve their operation and arouse the interest of the communities which maintain water purification and sewage treatment works. As a result of this increase, difficulty has been experienced in maintaining a schedule of routine inspections.

With the removal of restrictions imposed by war conditions, the number of plans for the installation of water and sewerage works received for examination and action increased over those submitted in the previous year. These plans were examined not only to see that the latest developments in design were embodied, but to ascertain whether or not accessories and appliances were included facilitating proper operation of the plant after completion.

In every case possible the desired changes have been taken up directly with the designing engineer, and in a number of cases the latter has obtained advice as to the method of treatment required by the Department before actually starting on the design. Although a certain amount of this work has been done in the past the increase during the last year has been marked, and is believed to have resulted in promoting a greater degree of co-operation

between the engineer representing the interested municipality or company and the Department.

In connection with the design of sewage treatment plants, a number of engineers have expressed the desire to have the Department state definitely its opinion in regard to allowable rates on different types of sewage beds, storage capacity of one and two-story settling tanks, contact period for chlorinated sewage and other similar data. The work of compiling such figures has already begun as shown in the "Discussion of Rates upon Sand Filtration Beds," in the latter part of this report.

Two radical departures from the ordinary method of sewage treatment have been made in the cases of the Activated Sludge Process at the factory of the E. A. Stevenson Company at Boonton, and the Direct Oxidation Process at Phillipsburg. A description of the former is contained in another part of this report.

The Department has been criticised for allowing the Direct Oxidation Process to be installed, inasmuch as it is believed that the required work could be done by some standard method at a smaller cost. The town of Phillipsburg was advised as to the cost of this experiment, and on March 18, 1919, when the application for a permanent installation was disapproved, the belief was expressed that "The same degree of purification can be secured at less expense by other established methods." The municipality was also informed that the project was of an experimental nature, but the officials of the town stated that they were satisfied that the process, for which the approval was requested was the most economical method for the town to adopt, and urged that inasmuch as the town had to bear the cost in construction and operation the town be allowed to select the method of disposal.

On August 18, 1919, the Department acted upon plans for the Landreth or "Direct Oxidation" method of sewage treatment, and adopted the following resolution:

WHEREAS, The State Department of Health has been unable to secure sufficient information regarding the efficiency of the Direct Oxidation, or "Landreth," method for the treatment of sewage to enable it to definitely determine at this time whether this process can be depended upon to treat sewage successfully at a reasonable cost, but from the information now available, however, the Department is of the opinion that substantially the same

results can be secured by the use of lime alone at a lesser cost; be it therefore

*Resolved*, That if the inhabitants of the Town of Phillipsburg are desirous of installing a plant for the treatment of sewage by this method, this Department will interpose no objection for the construction of such a plant as an experimental installation and its operation for a period of one year, provided:

1. That no sludge from said plant be discharged into the Delaware River or its tributaries at any time, and that a settling period of six hours, based upon the average sewage flow, shall be provided for the lime-electric treated sewage.

2. That adequate laboratory facilities be provided, and that a sufficient number of routine chemical and bacteriological tests be made by the Town of Phillipsburg under the supervision of this Department, and that at the expiration of one year from the date when the plant is put into operation the inhabitants of the Town of Phillipsburg may make application for the approval of this method of sewage treatment.

In the approval of plans for any experimental method of sewage treatment, the right is reserved to revoke the approval at any time, and to call for modifications or changes in the operation or construction of the sewerage works when necessary.

The pollution of the streams of the State by manufacturing wastes has increased. During the war many chemical factories, as well as other industries located in the State, had pursued the primitive method of discharging industrial wastes into the nearest water course. The increase in the number of these industries, especially in the northern half of the State, with the resulting contamination of its streams, continues to present a pressing problem.

The Department is charged with the duty of investigating and preventing the pollution of the waters of the State, but it has never been given sufficient funds to secure the necessary technical assistance to determine the most advantageous methods of treating industrial wastes. If the Department finds that pollution exists, it has only the authority to enter the courts for the collection of a penalty or the institution of injunction proceedings.

Investigations of industrial wastes come within the sphere of the State Health Department, and the same recommendation as made in the report for 1919 is repeated, "The growing importance of the trade waste disposal problem warrants the appropriation of a certain fund for research work in this field."

In addition to the regular work of the Bureau, several special investigations are planned for the summer of 1920, but it is be-



lieved that the limited amount of the appropriation will prevent the employment of the necessary temporary technical assistants to complete these investigations, which are:

1. Newark Bay—pollution of bathing beaches:

Complaints have been received from the municipality of Bayonne regarding the ever-increasing pollution of the public bathing beaches in the city parks bordering on Newark Bay. The proposed investigation is for the purpose of locating all sources of pollution on the bay, securing data on the condition of the water by extensive analytical work, and determining whether or not measures can be taken to abate the existing pollutions.

2. Hackensack River:

The necessity for this investigation is set forth in the preliminary report on the Hackensack River elsewhere in this report. It is also proposed to study the impending construction of a comprehensive sewerage system to be connected with the present Camp Merritt sewage treatment plant (on the Hackensack River) to serve about eight adjacent small municipalities.

3. Survey of the Elizabeth and Rahway Watersheds:

The constantly increasing pollution of the waters of the above sheds by industrial and domestic wastes renders imperative a careful sanitary survey in the near future. The population is rapidly increasing, industrial plants are being built, storm sewers are being installed, and the load on the filtration plants is becoming heavier daily. The Joint Outlet Sewer, serving South Orange, Summit, Irvington and other suburban communities, runs through the Elizabeth and Rahway sheds. During heavy storms manholes along the sewer line sometimes overflow, discharging raw sewage into the rivers from which the Elizabeth and Rahway supplies are taken. It is proposed to study this sewer to determine the future policy of the Department when extensions to it are presented for action.

4. Montclair Watershed:

As mentioned in another part of this report, unsanitary conditions exist on the Montclair Watershed near the water company's intake. Evidence necessary for the abatement of these pollutions should be secured this summer if possible, as a great many of the bungalows and tents with polluting privies are tenanted only during warm weather.

5. Phillipsburg:

An electrolytic sewage disposal plant (Landreth Direct Oxidation Process) is being installed at Phillipsburg, supposedly the very latest and most up-to-date plant of its kind. For various reasons, both the town and this Department have been criticised by the engineering press for allowing so expensive an installation to be put in on an experimental basis. Upon completion, an extensive test of the plant should be made to definitely determine the merits and demerits of the process in order that the future policy of the Department be established as regards the electrolytic treatment of sewage.

RATES OF FILTRATION ON SAND FILTER BEDS FOR SEWAGE TREATMENT PLANTS.

In the design of sand beds for the filtration of sewage, several factors must be considered. At the outset it should be recognized that sand beds do not act merely as strainers but have a definite function in the nitrification of the organic matter through bacterial action. Oxidation also takes place by aeration. The bacterial action, most important of the three functions mentioned, requires the presence of abundant oxygen. The quality of the sewage filtered is important, slightly higher rates being allowable for treated sewage than for raw. Sand used in the beds must have an effective size between 0.25 and 0.40 mm., according to leading authorities, larger sizes giving insufficient purification, and smaller tending to clog quickly. A uniformity coefficient of less than 4 is desirable.

If a sand filter, although constructed of the best materials and carefully supervised, receives too large a dose of sewage for its size, bacterial action is inhibited from lack of oxygen, the surface and later the body of the bed becomes impregnated and clogged with organic matter, and the term "sewage sick," as used for overdosed broad irrigation fields, may well be applied to it. The effluent becomes putrescible with a high bacterial count, and the object of the treatment, a nonputrescible effluent with high bacterial reduction, is defeated.

Actual experience over a long period of years has shown that for the production of a satisfactory effluent from a sand bed designed according to the fundamental principles set forth above, a satisfactory rate per acre per day with preliminary treatment consisting of sedimentation and contact beds is 150,000 gallons applied intermittently through suitable dosing devices. It is admitted that with very careful supervision that a higher rate may be used for short periods of time and still produce a satisfactory effluent. With higher rates, however, clogging is inevitable sooner or later with a consequent production of a poor effluent. This means frequent replacement of sand and higher labor costs for cleaning, with much more expense involved than

if adequate area had been provided at first. A case in point is that of Merchantville, New Jersey, which has a plant overloaded from the start through failure to take into account a large amount of leakage in the sewers. This municipality has spent thousands of dollars in cleaning and resanding the beds, but has never succeeded in producing a good effluent. It is now confronted with the problem of remodelling the entire plant, either doubling the sand bed area or changing to sprinkling filters. Several other municipalities must do likewise at great expense, due to lack of forethought on the part of those responsible for the installation of the original works.

Experience in other States has borne out the above conclusion. Experiments at Lawrence, Mass. (Kinnicutt, Winslow & Pratt, page 238), showed that good purification was secured with rates of 50 to 100,000 gallons per acre per day. This was with raw sewage. Saratoga, New York, has a plant using preliminary treatment for clarification with a rate of 60,000 gallons. Mr. Barbour, the engineer, states that the rate could be doubled with as good results. An average of rates used at 24 Massachusetts plants (Metcalf & Eddy, page 637) shows 75,700 gallons per acre per day. These plants are of various types, some with preliminary treatment and some without. On page 633 of the same book experimental data is given, showing a range of dosage from 79,500 gallons per acre per day, raw sewage, to 155,900 gallons per acre per day, treated sewage. On page 635 the opinion is given that for settled sewage in Massachusetts a reasonable load for one acre is 75,000 gallons. In a special report by the Ohio State Board of Health in 1908, it is stated that "preparatory treatment, broadly speaking, makes possible about double the rate where crude sewage is applied to the filters—from 1,000 to 1,200 (persons per acre)." Messrs. Hering, Stearns & Gray, in connection with the Baltimore sewage project, "determined that settled sewage \* \* \* could be applied at an average rate of 150,000 gallons per acre per day." This rate was adopted with the expectation that several inches of sand would have to be removed annually due to clogging. Alvord, Eddy & Fuller, Consulting Engineers for the

North Shore Sanitary District, Lake County, Illinois, advise that with settled sewage one acre of sand beds be provided for each 1,000 persons, a rate, roughly speaking, of 100,000 gallons per acre per day.

In New Jersey it may be said that, with possibly one exception, all plants having sand filtration and which are operated at rates in excess of 165,000 gallons per acre per day, whatever the preliminary treatment may be, are not producing a satisfactory effluent, and will either have to be enlarged or abandoned. The sand filters at Bordentown and Roebling are examples of the latter case.

In view of the above facts, the conclusion has been reached that for the protection of the streams into which treated sewage flows the absolute maximum acceptable basis for sand filter design is 175,000 gallons per acre per day. This rate only applies to plants designed to produce an exceptionally well clarified preliminary effluent, and with disinfection as the final process in the method of treatment. It may not be expected that in the future this Department will approve of any sewage treatment plant using sand filtration as the final process at which the rate exceeds 100,000 to 150,000 gallons per acre per day, the rate to be governed by local conditions.

It has been found from experience that ground water infiltration, particularly during storms, usually greatly exceeds the estimate made by the designing engineer, and this should be a controlling factor in determining the rate to be used. In all cases sufficient reserve area must be provided for additional sand beds when required by growth and population.

The accompanying tabulation gives data on the larger plants of the State having sand filters for sewage treatment. At the Chatham-Madison plant the sewage receives a thorough preliminary treatment, and the entire plant is under careful supervision. At Lakewood, due to the poor preliminary treatment and an unsuitable quality of said, a rate of 140,000 gallons per acre per day is too high to produce a satisfactory effluent. The two plants at Newton, which consistently give good results, operate at a rate between 100,000 and 160,000 gallons per acre per day.

TOWN.	Plans Approved.	Date Constructed.	Number of Beds.	Total Area in Acres.	Present Rate Gal. Per Acre Per Day.	Sand.	
						Effective Size in mm.	Uniformity Coefficient.
Anatol.	1918	1918	5	0.345	.....	.....	.....
Caldwell.	1912	1915	4	0.712	850,000	0.34	3.8
Chatham-Madison.*	1909	1911	4	1.155	210,000	0.28	3.5
Essex Felis.	1910	1910	6	0.50	134,000	0.26	3.8
Haddon Heights.	1910	1911	5	1.2	148,000	0.36	2.11
Island Heights.	1916	1919	2	0.2	.....	0.31	2.6
Lakehurst.	1906	1907	2	0.96	24,000	0.20	3.5
Lakewood.	1908	1909	5	1.14	140,000	0.24	5.05
Little Falls.	1915	1918	1	1.0	100,000	0.19	2.9
Medford.	1905	1911	2	0.28	77,000	0.17	3.2
Merchantville.	1906	1909	3	0.975	250,000	0.28	2.1
Morristown.*	1907	1910	4	1.52	525,000	0.31	2.7
Newton (Clinton St.).	1905	1905	5	1.52	100,000	0.31	5.6
Newton (Sparta St.).	1905	1905	5	2.90	140,000	0.31	5.6
Princeton (N. W.).	.....	1899	8	1.295	244,000	0.27	2.1
Ridgewood (Home of Divine Providence).	1919	1919	3	0.08	.....	0.33	2.7
Skillman.*	1916	1917	4	0.89	165,600	0.39	3.2
Verona.*	1914	1917	4	0.46	370,000	0.166	4.18
Washington.*	1909	1911	4	0.380	600,000	0.29	2.69
Westfield.	1912	1913	8	8.0	75,000	0.29	9.8
Woodstown.	1905	1906	2	0.6	80,000	.....	.....

\*Contact Beds in addition to sedimentation.

#### RED BANK—INVESTIGATION OF SEWAGE TREATMENT PLANT.

The tests made at this sewage plant from October 20 to 31, 1919, were primarily to determine the dosage of hypochlorite of lime necessary so that the number of B. coli should not exceed 100 per cubic centimeter. Comparative data upon the efficiency in sedimentation secured with the two types of tanks used was collected.

The sewage treatment plant consists of a small detritus chamber, a circular sedimentation tank, with a capacity of 95,000 gallons, a rectangular sedimentation tank of 185,600 gallons capacity, divided into two equal compartments, a hypochlorite of lime apparatus, and two sterilization or detention tanks, each with a capacity of 6,750 gallons.

The hypochlorite of lime apparatus consists of a concrete mixing tank, a concrete dosing tank and two constant head orifice boxes. With a hypochlorite solution of one per cent., the tank is of capacity sufficient to dose the sewage with 8 p.p.m. of available chlorine for 24 hours. The constant head orifice boxes are designed to feed the solution equally into the sewage at the intake

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of the two detention tanks, proportional to the rate of sewage flow.

The hypochlorite apparatus requires constant attention as it frequently becomes clogged. At times the quantities of the solution discharged into one of the detention tanks was twice as much as that discharged into the other tank. The hypochlorite of lime is ordinarily mixed each morning and allowed to settle 24 hours before discharging the solution into the dosing tank. The mixing tank has a blow-off valve through which the lime sludge is drawn off at frequent intervals.

In 1907 the sewage flow was 265,000 gallons per day; in 1916 it was about the same; but since that time many sewer connections have been made, over 50 having been installed between January and October of 1919. The average sewage flow is 500,000 gallons per 24 hours. The flow between 9 A. M. and 4 P. M. at the time of this investigation had a fairly constant rate of about 26,000 gallons per hour, and around noon reached a maximum of 35,000 gallons per hour.

The sewage is nearly all domestic; is light in color, above normal in strength, and contains considerable mineral matter. After 1½ hours settling, the tank effluent has a relative stability (by methylene blue) of over 25 per cent., which facilitates sterilization.

During the first week of the investigation, the circular tank was in use while one of the compartments in the rectangular tank was used during the second week.

In the operation of the rectangular tank it was found, by the use of Imhoff glasses, that samples taken in this tank at mid-depth and at different points indicated that 50 per cent. of the settleable solids were settled out in the first 10 feet of travel. Analyses for suspended solids showed a 59 per cent. reduction in the rectangular tank and a 41 per cent. reduction in the circular tank.

Composite samples were collected of the raw sewage and of the effluents from the tanks. The analyses of these samples follow:

Results Expressed in P. P. M.	Raw Sewage.	Effluent	
		Circular Tank.	Rectangular Tank.
Solids, total, .....	780	720	565
Solids, organic, .....	440	380	220
Solids, total suspended, .....	160	90	65
Solids, total suspended, organic, ..	100	20	...
Nitrogen, total organic, .....	76	66	47.5
Nitrogen, total organic, in solution,	56	55	42.5
Nitrogen, as nitrites, .....	0.00	0.12	0.06
Nitrogen, as nitrates, .....	0.08	0.08	0.12
Nitrogen, as free ammonia, .....	44	54	34
Oxygen consumed, total, .....	98.0	81.2	60.8
Oxygen consumed in solution, ..	53.6	52.0	38.4

Data upon the B. coli show that no appreciable reduction is obtained below 4 p.p.m.; that 8 p.p.m. gave a good reduction, and that no further reduction is obtained until 20 p.p.m. of chlorine is applied. Free chlorine tests of the effluent from the detention tanks were made frequently and showed positive results almost invariably, indicating that the detention period (by dye test, 3 minutes) was insufficient to allow all of the available chlorine to act.

In 1915 and 1916 tests were made on the Red Bank plant, which gave results somewhat at variance with those secured on this investigation. Summarized, the findings are as follows:

Year.	Chlorine in p.p.m. re- quired to reduce B. coli below 100 per c.c.	Flow gals. per day.	Suspended Solids p.p.m.
1915, .....	12	336,000	395
1916, .....	7	423,000	57
1919, .....	8	525,000	80

At the time of the 1915 tests the sedimentation tank had not been cleaned out for a year, the settling period was very short, and the sewage was not well clarified. The higher organic content of the sewage, therefore, required more available chlorine for disinfection. In 1916 conditions were more favorable with a much lower average in suspended solids. Hence, the amount of chlorine to be added was much less. Professor Phelps, in his 1909 experiments at this plant, found that 12-13 p.p.m. of available chlorine were necessary. Figures are lacking regarding the

sewage analyses at that time, but it is thought that a more concentrated sewage was treated because of the absence of the present summer resort population, with consequent less water consumption per capita.

It was recommended that some plan be evolved whereby only the new tanks will be used, converting the old tank into a sludge digestion chamber. This will do away with the present plan of cleaning out the tanks by hand at least once a year, and disposing of a large quantity of offensive sludge on farms nearby. The sludge could easily be given a six months' digestion, and, at the end of that period would be smaller in volume, inoffensive, and easier to handle.

It is suggested that these tanks be remodeled, so as to be connected in series giving a longer sterilization period, and doing away with the duplicate hypo feed, the hypo to be fed from one dosing tank instead of two.

The cost of commercial hypochlorite of lime delivered at the plant is 3¼c. per pound. From the bacteriological results obtained with various amounts of hypochlorite it appears that to obtain an effluent showing B. coli in less than 0.01 c.c., 120 pounds of hypo per day must be used under present operating conditions. This would cost \$3.90 per day. Using liquid chlorine, the cost would be somewhat greater, \$4.40 per day. It is believed that the extra cost would be more than offset by increased plant efficiency, and that a better effluent would be secured. It is to be noted that the conditions under which the tests were made operated so as to make only approximate deductions possible. Wide fluctuations in hypo strength and quantity of flow during the day made comparisons with bacteriological results difficult. The tests show, however, that eight (8) p.p.m., or about 120 pounds per day gives the desired result under the test conditions of fairly well clarified sewage with low H<sub>2</sub>S and organic composition.

#### CREAMERY WASTES INVESTIGATION.

During the latter part of 1919 extensive investigations were made of the method of treating and disposing of the milk wastes from creameries. Most of these establishments (the creameries)

receive the milk from the farmers, placing it in sterilized cans, either with or without pasteurization, or in bottles after pasteurization, and shipping the products to distribution stations. In the process of washing cans and bottles various cleaners are used which give the wastes a high alkalinity. In tests run the alkalinities were found to vary from 1400 to 9000 p.p.m., and this fact aided materially in the process of treatment experimented with.

The problem of disposing of these wastes in this State is therefore fixed within a more or less definite limit by the character of the wastes. At the Supplee-Wills-Jones Company creamery at Woodstown, New Jersey, where the majority of experiments were run, the treatment plant consists of two concrete sedimentation tanks, 5 feet by 8 feet in plan and 6 feet in depth, with two sprinkling filter units for final purification. The tanks are operated alternately on the fill and draw plan, each tank receiving the wastes from a day's run, to which is added un-slacked lime, or rock lime hydrated, just before using, the mixture being stirred vigorously several times during the day. The following day the supernatant liquor is pumped to the sprinkling filters, trickling through the same to the effluent drain.

While this treatment produces a non-putrescible effluent, the actual precipitation of solids in the tank is very slight, thereby causing deposition and discoloration in the stream bed. It was found that the sprinkling filters had little or no effect in the purification of the wastes.

The use of alum as a substitute for lime, which obtains a greater reduction of solids and a clearer effluent, has been tried at this plant in the past. Such experiments have shown that three or four days after treatment, the evolution of gas in the sludge through bacterial action caused the sludge to boil up, carrying most of the solids to the surface in the form of scum.

These results were checked by laboratory experiments on a small scale, which further demonstrated that at least 30 grains of alum per gallon of wastes must be used to produce adequate precipitation.

It was evident from the results obtained that this bacterial action must be checked, and, with this in view, experiments were conducted using hypochlorite of lime as a disinfectant.

It was satisfactorily demonstrated that the use of 18 grains per gallon of the latter, in combination with 30 grains per gallon of alum, gave the best results, although it is believed that a non-putrescible effluent could be obtained with a much smaller percentage of hypochlorite if adequate mixing apparatus were provided.

Experiments conducted at another plant, where condenser water and other clear liquids were mixed with the creamery wastes, indicated that the exclusion of such from the wastes to be treated is highly desirable. Conclusions drawn from this series of tests were as follows:

(A.) The treatment of creamery wastes by chemical action and precipitation with alum and calcium hypochlorite is an excellent method of producing a non-offensive effluent, if properly controlled. The amount of alum necessary is about 30 grains per gallon, and the amount of hypo probably less than 18 grains per gallon, as compared with 150 grains per gallon of lime used at present. The cost of the former method is estimated to be 10 to 12 cents per 1,000 gallons, which compares very favorably with an estimated cost of 15 cents for the latter, the alum and hypochlorite producing better results at lower cost. The first cost of the plant in either case is estimated to be about the same.

(B.) The plant should be operated on the fill and draw principle, requiring at least two tanks, each having a capacity sufficient to retain the waste flow for one day.

(C.) The addition of a clear hypochlorite solution, thorough mixing, and a sufficient period of sedimentation, are important factors in the treatment process.

(D.) The sludge, which is very fluid, flowing readily, should be drained from the tank at least every three days.

(E.) The exclusion of all liquids not requiring treatment from the process greatly aids precipitation and purification.

(F.) The wastes should be treated on the same day in which they are allowed to run into the tank.

The Bureau has prepared plans for a plant using alum and hypochlorite as a means of treatment, designed to handle about 2,000 gallons of wastes per day, which plans may be inspected by those interested.

*Springfield (Chemical Company of America, Inc.)*.—As the result of injunction proceedings brought to prevent the pollution of the Rahway River, the source of water supply for the city of Rahway, by wastes from the manufacture of dyes, this company is now treating the industrial wastes by a method of precipitation followed by filtration through sand.

In November, 1919, an investigation was made of the treatment plant, at which time violet and guinea green dyes were manufactured, and the wastes were 12,500 gallons per day, approximately 25 gallons of waste per pound of dye produced. The analyses of the raw wastes follow:

P. P. M.

Total solids, .....	3080
Solids as NaCl, .....	2240
Acidity (Phenolphthalein), hot, as $H_2SO_4$ , .....	18
Acidity (Phenolphthalein), cold, as $H_2SO_4$ , .....	62
Alkalinity (Methyl red), .....	56

The system consists of collecting pits, pumps, chemical mixing and solution apparatus, chemical dosing apparatus, settling tanks and sand filtration beds.

The settling tanks are two in number, each a circular wooden tank with a conical hopper bottom. The wastes, already treated with lime and copperas, flow directly through the discharge pipe from the pumps to the tanks. In the center of each tank is a pipe extending downward to the base of the circular section. The wastes enter this pipe from the pumps' discharge line and flow downward and then vertically upward, the precipitation taking place during the upward flow. The clarified effluent is drawn off at the top from four small stilling boxes set at the quarter points of the periphery. It is then carried by a series of troughs to the sand filter beds. The sludge settles to the bottom and is drawn off from the base of the conical section through a 6" cast-iron pipe with a valve. The capacity of the circular portion of the tanks is 1,600 cu. ft. The amount of sludge drawn each day is about 530 cu. ft. The sludge has a very high moisture content, 96.46%, but oxidizes and dries rapidly if spread out in a thin layer. If the sludge is allowed to settle for 24 hours, it will have

a clear supernatant liquid, amounting to approximately 80% of its volume.

The average amount of lime used during the investigation was 504 pounds per day, and of copperas, 749 pounds. Chemical analysis of the milk of lime solution gave 11.4% as  $Ca(OH)_2$ , and of the copperas solution, 8% as  $FeSO_4$ .

The following is a tabulation of the operating costs, and does not include repairs, depreciation, etc.:

Article.	Amount	Unit Cost.	Total.
Lime, .....	504 lbs.	\$13 00 per ton	\$3 27
Copperas, .....	749 lbs.	18 00 per ton	6 75
Labor, .....	1 man for full day.	5 00 per day	5 00
Electricity 25 Kilo-Watt hours, 0.10 per K. W. H., .....			2 50
			\$17 52

The cost of treatment, as covered in the above, is .03504 per pound of dye produced, or \$1.40 per 1,000 gallons of trade waste.

The examination of the results secured in the operation of this plant was to determine if the effluent as discharged was of such a character as to be objectionable to a community along the Rahway River, add to the burden of a water treatment plant, or constitute a direct or indirect menace to the public health, all of which were touched upon in the injunction proceedings.

The following is a summary of the conclusions arrived at when the company was manufacturing violet and guinea green dyes and the wastes were 12,500 gallons per day:

A. The effluent does not increase the bacterial contamination of the Rahway River, neither does it add to the burden of the water works of Rahway City.

B. It does not produce unsightly or malodorous conditions, neither does it imperil the health or welfare of the citizens.

C. It is capable of producing an unpalatable water when chlorine is used as a sterilizing agent, but, due to unknown causes, it does not now produce obnoxious tastes in the water supply of the City of Rahway.

ACTIVATED SLUDGE TREATMENT OF WASTES FROM A NUT MARGARINE FACTORY AT BOONTON, N. J.

*Boonton (The E. A. Stevenson & Company, Inc.)*—This manufacturing plant is engaged in the refining of crude cocoanut oil and the manufacture of cooking oil, soap bases and butter.

The wastes resulting from the manufacture of nut margarine, in which cocoanut oil and milk products are the chief raw materials, are treated by aeration and sedimentation. In addition to the above, there is a small amount of domestic sewage from toilets and wash room in the factory. The average wastes discharged during 8 hours of 6 days a week consist of about 16,000 gallons. The rate of flow is extremely variable, the peaks occurring just after each batch of churns is emptied. There are usually 3 churn spills per day.

The former method of treatment, sedimentation in lagoons, was unsatisfactory, and in January, 1919, plans were submitted to this Department consisting of a grit and grease tank, each 6 ft. 10 inches by 10 ft. in plan, of three compartments; aerating tank of two compartments, each 10 ft. by 30 ft. by 10 ft.; re-aerating tank of one compartment, 5 ft. by 30 ft. by 10 ft.; a building to house motors and air compressor; a settling tank of Dortmund type, 11 ft. 6 inches in diameter and 10 ft. 6 inches deep, and sludge ditches. The flow being much larger at this time, the plant was designed for a capacity of 4,500 gallons per hour. The plans called for air production equivalent to 1.5 to 2.0 cu. ft. per gallon of waste treated. The plans were approved with the proviso that air meters for determining the amount of air used be installed.

The plant was constructed according to plans with the exception that the re-aerating tank and air meters were omitted. Later, after the plant was placed in operation, the grease traps were by-passed, the air was obtained from the main compressor at the factory and one of the two aerating tanks was cut out of the system to be used as a settling tank for cocoanut oil and other foreign wastes. This was made possible by separating the milk

from the oil, thereby cutting down the wastes to be treated by aeration to one-third the former quantity.

The plant was placed in operation during the summer of 1919, and was reported on favorably by the designers. Repeated inspections by this Department, however, showed numerous breakdowns and unsatisfactory results. It was therefore decided that an extended investigation over a period of a number of days be made. Each time that a date was set by this Department to make this investigation, the factory authorities wrote in asking that the date be extended. Finally, during the week of May 17, 1920, a four days' investigation was carried on by representatives of this Department.

The tests made showed:

(a) That the sewage throughout the process was excessively acid; (b) that there is a higher average 37° C. bacterial count in the effluent than in the raw sewage; (c) that there is a decrease in the relative stability of the sewage throughout the plant; (d) that the process as at present conducted shows a very slight nitrifying action; (e) that due to the present method of application of the air, large bubbles are formed which escape through the sewage; (f) that there is a large quantity of finely divided suspended matter in the effluent; (g) that the present supply of air is not entirely dependable and due to the absence of a meter there is no way to determine the quantity used; (h) that offensive odors come from the plant; (i) that the effluent is of a polluting nature.

The following conclusions were arrived at by the representatives who made the investigations and tests:

1. That the aeration accelerates the growth of lactic acid bacteria producing an acid condition in the sewage.
2. That this growth and subsequent acidity inhibits the growth of the nitrifying bacteria, resulting in the observed decrease in relative stability of the sewage.
3. That this small nitrification accomplished in the process is due both to the inhibition of the nitrifying bacteria and to the fact that denitrifying bacteria may be added with the manure now used for "body."
4. That due to the large air bubbles much of the air is not utilized in the aeration.

PRELIMINARY REPORT ON THE HACKENSACK RIVER.

The Hackensack River and its tributaries from New Milford to the point of junction with Newark Bay are rapidly approach-

ing a condition as regards pollution comparable with that of the Passaic River. With the growth of the suburban population along its banks, sewerage systems and disposal plants are being installed which add to the burden that the river must carry. In all there are about 34 miles of streams in the portion of the watershed referred to, most of which are believed to be practically at their limit as far as the assimilation of sewage is concerned. There are 15 disposal plants and hundreds of sewer outlets throughout the shed discharging approximately 15,000,000 gallons of treated and untreated sewage daily. A list of plants follows, with the type of installation and amount of sewage discharged:

<i>Town and Type of Installation.</i>	<i>Flow Gals in Day.</i>
Delford—single-story sedimentation tank, .....	90,000
New Milford—two-hopper bottom Doten tanks, chlorine disinfection and sterilization tank, .....	+....
River Edge—circular Imhoff tank, .....	60,000
Maywood—rectangular Imhoff tank, .....	84,000
West Englewood—rectangular Imhoff tank, with two sand beds, ....	4,000
Englewood—single-story sedimentation tank, .....	720,000
Bogota—single-story sedimentation tank, .....	180,000
Leonia—rectangular Imhoff tank, .....	150,000
Ridgefield Park—rectangular Imhoff tank, not connected, .....	420,000
Palisades Park—circular Imhoff tank, .....	140,000
Ridgefield—two plants; rectangular Imhoff tanks; one not built and the other not connected, .....	72,000
Fairview—two circular Imhoff tanks, and contact beds, .....	300,000
Carlstadt—single-story sedimentation tank, .....	300,000
East Rutherford—single-story sedimentation tank, .....	30,000
Secaucus—single-story sedimentation tank, .....	300,000

Quantities estimated on basis of population served.

The portions of the stream under discussion are tidal in character, the tide having a range of about three feet even as far up as New Milford. Under these circumstances the sewage discharged into the stream must necessarily remain there for several days before finally reaching Newark Bay. In addition to this, Newark Bay, being highly polluted from Newark, Jersey City, Bayonne, and several large trunk sewers serving extensive

+ = To be used for adjacent municipalities not yet connected.

areas adjacent to these towns, is in itself a source of pollution to the Hackensack River and tributaries through the tidal flow. Another more indirect source of pollution is New York Bay, some of the sewage from which is carried into Newark Bay through Kill von Kull past Staten Island. Many complaints have been received from residents along the Hackensack who have been accustomed to using it for pleasure purposes during the summer season, the majority of these living in and around the Town of Hackensack. Inasmuch, however, as the Town of Hackensack itself is discharging several million gallons of raw sewage daily into the river, complaints from the residents of the town are scarcely justifiable.

It is the intention of the Bureau of Engineering to conduct rather a extensive survey of the Hackensack River and its tributaries in order that a definite policy may be formulated for future sanitary developments along the river, determining the present loading on the stream, and whether or not a higher degree of purification should be required from sewage disposal plants discharging into the river. It is hoped that the adoption of a policy such as is contemplated will insure a great improvement in present conditions, allowing the river to be used for boating and other pleasure purposes without detrimental effect on the health of those participating in them.

#### WATERSHED CONDITIONS.

By employing a watershed inspector for three months in the summer of 1919, the Bureau was enabled to have all of the southern watersheds inspected. The northern watersheds, however, owing to lack of personnel, were not thoroughly inspected.

Small portions of the sheds were gone over from time to time as a result of complaints from residents of particular sections. A recent case before the Conservation and Development Commission, brought by the Town of Montclair, showed the necessity for constant patrolling of these watersheds.

The Town of Montclair desired to do away with the use of the Montclair Water Company's service in Montclair, and obtain a supply of its own from Split Rock Pond. Part of the



evidence submitted by the town, to show that the Montclair Water Company's water was not suitable for consumption, consisted in photographs of a bungalow colony situated a few miles above the Little Falls intake of the water company, showing open privies that had been inundated by the spring floods of 1920. Expert witnesses testified that the condition there was a menace to the people using water from the Passaic River, on which the colony is situated.

While it is true that local boards of health and water companies have power by law to correct these conditions, it is still necessary, due to laxity and indifference on the part of officials concerned, that the State maintain supervision.

#### WATERSHED AREA.

The area of the watersheds used for public water supplies in the State total 3,579.5 square miles. The area of the State is 8,224 square miles, the ration of watershed area to State area being 43 per cent.

#### SMALL ELECTROLYTIC CELL INSTALLATION FOR CHLORINE GENERATION.

One of the most perplexing problems facing this Bureau of recent years has been to provide a satisfactory method of water treatment for small plants on streams where the turbidity is practically negligible, but changes in color and organic content vary greatly with changes in weather conditions.

Hypochlorite of lime, due to the unpleasant features in handling, to its tendency to corrode and clog, and to its rapid deterioration when exposed to the air, has been largely replaced by liquid chlorine.

This product, while offering many advantages, as compared with hypochlorite of lime, is not as reliable when fed in small amounts as in greater quantities, due to the difficulty in feeding the gas under pressure at a constant dose through small orifices, the size of which must be varied to counteract great changes in pressure due to exhaustion of the supply and changes in temperature.

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In spite of very ingenious devices in the form of control apparatus, it has been found, due to the above-mentioned causes, that apparatus controlling the application of chlorine to the water to be pumped will often cease to function unexpectedly, thereby making it necessary to provide the consumers with water which may contain impurities highly dangerous from a public health standpoint.

These conditions are aggravated by a tendency on the part of the operators to view the presence of this gas in large quantities with suspicion and fear, causing them often to neglect making simple repairs to avoid potential breakdowns, or failure to make quick repairs when such mishaps occur.

Recently a small experimental electrolytic cell for the generation of chlorine gas has been installed at the filtration plant of the Mount Holly Water Company by the manufacturers of the commercial apparatus of this type now in use at the water filtration plants of the cities of Trenton, New Jersey, and Ontario, Canada. The cell does not differ materially in construction from those installed in the above-mentioned cities, but is much simpler to operate inasmuch as purification of the brine, an essential feature of the large commercial installations, has been done away with, permitting the use of a commercial rock salt secured at a very low cost.

The experimental installation is designed to operate with a 4 volt current at 50 amperes, and at this rate has a capacity of  $2\frac{1}{2}$  pounds of chlorine per day. The cell can be overloaded to produce larger quantities of gas by increasing the amperage.

The rate of chlorine generation is computed by measuring the rate of flow of caustic from the cell together with the strength of the solution by titration with hydrochloric acid and phenolphthalein, and applying these figures in a formula with known factors one of which is the amperage.

At the ends of periods averaging 10 days each, it is necessary to unbolt a plate from each side of the cell and replace an asbestos paper diaphragm at a nominal cost; this operation requires about 1 hour for completion.

An examination of the interior of the cell, after a run of 6 months, failed to reveal any appreciable deterioration of the

graphite anode. The slotted iron cathode plates, which also serve to hold the asbestos sheets in place, were eaten away considerably, but the replacement of these is neither expensive nor inconvenient.

The simplicity of this installation, together with the first cost, will compare favorably with apparatus of the same capacity now on the market; and the dependability, shown by the experimental unit, would indicate a wide field of application in the future for it at small water purification plants.

Representatives of this Bureau have run a series of tests on this installation, under varying conditions, the results of which have been highly satisfactory in spite of the fact that the plant is operated only 10 hours each day, thereby necessitating daily attention, which would be obviated under continuous operation.

#### ALLENTOWN—SPECIAL INVESTIGATION.

Trouble has been experienced during the past year at the Allentown filtration plant in producing a satisfactory delivered water, as analyses showed *B. coli*, and at times high turbidity after filtration. The plant consists of a wooden coagulation basin of approximately 3,400 gallons and a circular wooden filter with dosing apparatus for alum and soda ash. This plant is only operated for a few hours each day, and it was formerly the custom to wash the filter just before operations were started in the morning. This left the sand without its top mat, and, the floc having settled out in the coagulation basin in the night, it was several hours before a suitable filter medium was again formed on top of the sand. After investigation by this Department, it was recommended that the filter be washed at the end of the day's run, and that the water be filtered to waste for several minutes after washing. This left a mat on the top of the filter sand ready for the next day. It was also recommended that a secondary alum feed be installed just before the water entered the filter to overcome the difficulty caused by the floc settling out in the coagulation basin over night. These changes appeared to remedy the trouble until it was found in March that there was much difficulty in securing the proper floc. Analyses of the water made at

this time showed that there was an acid reaction in the raw water, necessitating a much larger dose of soda ash than that normally used. The operator of the plant, having no means of analyzing the water, was ignorant of this fact. Previous analyses of water from the supply showed an alkalinity at all times of from 2 to 14 p.p.m. At no time had the water been acid. Complete chemical analyses of the water were then made, which showed the presence of unusual amounts of phosphoric acid. The watershed of the stream supplying the pond from which the water is taken consists mostly of farm lands, which are fertilized in the fall by commercial chemical fertilizer containing phosphoric acid. These farms are tile underdrained. A large portion of the so-called unavailable phosphoric acid in fertilizer becomes available and water soluble by the action of the winter "elements." From the presence of phosphoric acid in the raw water as analyzed, it seemed plausible that this available fertilizer was what caused the water to become acid. Ordinarily, thaws occur during the winter time which allow this phosphoric acid in the fertilizer to leach out in small quantities all during the winter. The past winter, however, was very severe with no thaw, so that when a spring thaw did occur large quantities of phosphoric acid were washed down into the pond. This condition was again found later after unusually heavy rainfalls, during the period in which the farmers were doing their spring fertilizing, at which time excess sulphuric acid was also found in the raw water, showing the leaching of water-soluble fresh fertilizer. The condition outlined above was corrected by the use of additional amounts of soda ash.

*Elizabeth (Elizabethtown Water Company).*—The former method of treatment of the Ursino Lake water supply of the Elizabethtown Water Company was one of disinfection with chlorine. The company, acting under the orders issued by the Department, that a filtration plant be installed, constructed the gravity sand filtration plant described in this article. The filtration plant located directly north of the city of Elizabeth was placed in operation in the early part of 1919.

The water passing through the filter plant is drawn from Ursino Lake. This lake has a watershed area of 17.4 square

miles, and the lake itself has a storage capacity of 25,000,000 gallons. The watershed, with a population of over 3,800 persons per square mile, is the most densely populated shed in the State, and includes the following municipalities: Irvington, South Orange, East Orange, Orange and part of Newark.

The streams flowing into the lake receive a certain amount of polluting material, and the water is so changeable in character that the problem of treating it is a difficult one. The following is the average of the results obtained in the bacteriological examination of the raw water samples collected from January, 1918, to January, 1920: 20° C. bacteria, 31,500 per 1 c.c.; 37° C. bacteria, 25,900 per 1 c.c.; and B. coli, 17 in 5 c.c.

The main units of the plant are the pumps, coagulating basin, alum feed, filters, clear water conduit, wash water tank and liquid chlorine apparatus.

The water is delivered directly from the pumps to the coagulating basin through a 12" main. It flows first into a small baffle chamber, and then into the main basin. The main basin, with a capacity of 483,000 gallons, is rectangular in shape, with a longitudinal baffle wall, and provides a detention period of 6.2 hours with the present capacity of the plant. This period of detention is rather excessive, but the basin has been designed to take care of a possible future capacity of 6,000,000 gallons. On account of the long detention period very excellent results are obtained in regard to the amount of suspended materials removed in the basin, and the difference in the color and turbidity of the water at opposite ends of the basin is clearly noticeable.

There are four filters, each with an area of .006 acres, with a total capacity of 3,000,000 gallons per day. Each filter is 22 feet in width and is divided into four equal parts by two wash water troughs. The depth of the gravel is 15 inches, and is graded in size from 1/4 inch to 2 inches. The depth of the sand is 27 inches; the effective size is 45 millimeters, and the uniformity coefficient 1.8.

From the filtering material the water passes through a series of perforated iron pipes directly into the effluent line and through the rate controller into a small concrete basin. From this small

rectangular basin the water flows through a 4-inch orifice in the bottom of the basin. Gauges are installed in each of the small basins so that the rate of filtration can be easily determined. Samples may also be collected from these basins to determine the results obtained with each filter.

An investigation was made of the operation of the plant in August, 1919. In the earlier part of the investigation alum was added at the rate of 2 1/2 grains per gallon, and then at 1 3/4 grains per gallon. The filtered water also received chlorine at a dosage of 0.5 parts per million.

The following tabulation is the average of the results obtained by analyses of the samples collected every two hours throughout the test:

SOURCE OF SAMPLE.	Parts per million.				Bacteria per c.c.		B. coli.
	Alk.	Color.	Turb.	CO2.	20°C.	37°C.	
Raw. ....	46	39	64	7	150,000	64,500	+ in .01 c.c.
Top of filter, .....	32	22	7	..	17,000	41,200	+ in .5 c.c.
Filtered, .....	28	6	0	18	13,600	13,750	5 in 5 c.c.
Delivered, .....	..	..	..	..	600	1,070	5 in 5 c.c.

Although the actual percentage of reduction secured with the plant is very high, the water showed the presence of B. coli in the final effluent. A positive free chlorine test was obtained in all samples of delivered water.

It is the belief of the investigators that the fault laid with the system of what is known as "bumping" the filters. This "bumping" is done in the following manner:

When the loss of head through the filter has become so high that the filter would ordinarily have to be washed, the influent and effluent valves are closed and the wash water turned on. The sand, including the top mat, is lifted and loosened by the upward flow of the wash water. After a minute or so the wash water is turned off and the valves mentioned above reopened. The rate through the filter is then found to be nearly back to

normal, and a further filter run can be obtained, without washing, nearly equal to that which would ensue if the filter had been washed instead of "bumped." This procedure saves many thousands of gallons of wash water, and is, therefore, a satisfactory operating method from a financial standpoint. It is believed, however, that a less desirable quality of water is produced, and that too great a load is thereby thrown on the chlorination process.

A recommendation was made that "bumping" the filters be discontinued, and that the period of washing and filtering to waste be extended at times of high turbidity.

These recommendations were complied with, and in a subsequent investigation at which time alum was added at the rate of 1.1 grains per gallon, and the chlorine dosage was at a rate of .5 parts per million, the following bacteriological results (average) were obtained:

Source of Sample.	Bacteria per c.c.		B. coli.
	20° C.	37° C.	
Raw, .....	38,700	70	+ in .2 c.c.
Top of filters, .....	20,400	27	+ in 2 c.c.
Filtered, .....	650	3	— in 5 c.c.
Delivered, .....	2	0	— in 5 c.c.

#### ODORS AND TASTES IN WATER.

During the past winter several municipalities were inconvenienced by the presence of objectionable odors and tastes in the water supply. The most important of these were Elizabeth, Trenton, New Brunswick and Kenil.

ELIZABETH.—In the latter part of January, 1920, the Elizabethtown Water Company notified the Department that complaints were being received as to the quality of the water supplied by the company, and requested that an inspection be made. Accordingly, an extensive investigation was made covering a period from January to the middle of March, during which time a large

portion of the watershed area was inspected. It was found that the complaints were most numerous from one to two days after a thaw had taken place during warm periods. The tastes and odors were given many different descriptions, and, as usual, numerous cases of illness were attributed to the condition of the water by the consumer. In no case could these claims of illness due to the water be substantiated. It appeared that the odor was usually more pronounced when the water was boiled, and it was also found that the taste was somewhat increased by the chemical treatment at the filtration plant. Consensus of opinion indicated that the taste was that of a "disinfectant" nature resembling cresol or creosote. The preliminary investigation indicated that the tastes were due either to waste material that had been discharged by manufacturing concerns into the streams on the watershed or to the condition of the reservoir. The latter theory was advanced because it was found that from one to two feet of mud had deposited on the bottom of the reservoir. Putrefaction was supposed to have set in in the mud, producing gases which went into solution, being entrapped in the ice-covered reservoir. This theory was given strong support by the fact that the carbon dioxide content of the water constantly increased during the winter. Samples of the raw and delivered water from the filtration plant, subjected to complete chemical analyses early in the investigation, gave no definite indication of the character of the polluting material. The bacteriological analyses of the delivered water were all satisfactory. A large number of the manufacturing plants situated upon the shed were visited during February, and one of these was found to be manufacturing creosote oil from hardwood oil. This plant was connected with a sewer, a lateral of the Joint Trunk Sewer, and it was denied by the officials in charge that any wastes had been discharged into the tributary of the Elizabeth River nearby since November, 1919, the time when the connection had been made to the sewer. Inspections of this plant during and immediately following heavy rains indicated that wastes, spilled around the buildings, were washed into the brook. An inspection of the brook itself showed deposits of tarry material along the banks and on stumps and underbrush

in the stream bed. If the statements of company officials were correct this would have had to have happened prior to November, 1919. Under the circumstances therefore the wastes would have to reach a stream through an overflow of the sewer, if at all. In March a heavy thaw occurred, and an inspection of the sewer made at this time showed several overflowing manholes along the line into which the factory connected. In each case the overflowing material had a very strong odor and taste of creosote.

At a point on the main outlet sewer several hundred feet below the point at which the line containing creosote wastes enter, there is an overflow opening which this Department had ordered closed following the investigation in 1916. A large iron cover had been set down over the opening but the head under which the sewage was flowing, due to excessive ground water infiltration, had forced the cover up sufficiently to allow the sewage to overflow in a stream of considerable size. The creosote odor and taste was very noticeable in this overflow and could also be detected in the river below the point at which the overflowing sewage entered.

Samples of the creosote base were taken to the State Laboratory and tested to determine the dilutions in which it could be tasted. It was found that it could be tasted in very high dilutions, and that the addition of chlorine gas increased the taste materially, while aeration caused a marked decrease in the taste. A summary of the conclusions made in the final report follows:

1. The tastes and odors were due to some form of creosote or its derivatives in combination with a lack of aeration and severe winter conditions.
2. The taste was intensified by the treatment of the water with chemicals at the water purification plant.
3. The former wastes from the chemical plant entering the stream directly were not as much responsible for the tastes and odors as the overflow from the sewer into which the wastes from the plant were discharged.

TRENTON.—In Trenton the presence of a peculiar taste in the water has almost always prevailed during parts of the winter, but was probably worse during the past winter than at any time since the installation of the filtration plant. The investigation of the cause was not carried out under the jurisdiction of this De-

partment, but the conclusions were that the wastes from the coke ovens and from manufacturing plants on the Lehigh River were not receiving the customary aeration required to render them more or less unobjectionable, due to the thick ice that existed on the Delaware River for about two months.

NEW BRUNSWICK.—The new reservoir for the New Brunswick supply was placed in operation during 1919, and, due to incomplete stripping, the water contained a higher quantity of organic matter than previously. No trouble was experienced until the collection of ice in and around the aerator led the operator to discontinue the use of that unit. Almost immediately the people began to complain of odors and tastes in the water. These complaints ceased almost simultaneously with the placing of the aerator in use again.

KENVIL.—In the middle of April a letter was received from the local board of health, asking this Department to investigate the cause of peculiar tastes in water supplies used by residents in the town. Upon investigation it was found that the complaint was of "ether" and "chemical" tastes in the water from individual wells used by residents near a large munitions plant on the outskirts of the town. These wells are shallow, being driven only about 25 feet in depth. The soil for the first 15 or 20 feet is almost entirely sand, below which is a thin layer of hard-pan.

Analyses of the wastes from the munitions plant showed large amounts of sulphates present. Samples taken from wells in the vicinity also showed sulphates present to a larger degree than is normal for well water in this section of the country. Other samples taken from wells in the same strata, a considerable distance from the plant, failed to show the presence of sulphates in any marked quantity. Wells formerly in use at the plant itself have been abandoned and water is obtained from a supply  $1\frac{1}{2}$  miles distant.

The area involved is flat and provides very poor facilities for run-off and drainage. The evidence secured would indicate that the waste materials from the plant, which are spilled on the ground nearby, are taken into solution by storm water and gradually percolate into the underground strata in which the

wells in question are situated. From statements made by inhabitants of the town the polluted area is gradually increasing, and it will probably eventually be necessary to secure a new source of supply for the town, located at some distance from the munitions plant.

The following table shows the average of results obtained in analyses of samples collected by representatives of the Bureau during the year and quarterly samples submitted to the Department for analyses:

AVERAGE RESULTS OF ANALYSES OF SAMPLES COLLECTED AT WATER TREATMENT PLANTS

PLANT OR LOCATION.	TREATMENT.	Number of inspections.	Color.	Alkalinity in p. p. m.	Iron in p. p. m.	20° C. Bacteria per c.c.	37° C. Bacteria per c.c.	Per cent. of samples containing B. Coll.
Allenhurst, .....	Lime, Sedimentation, Pressure filtration for iron removal, .....	1			0.1			0
Allentown, .....	Gravity sand filtration, .....	11	10	11		200	40	25
Asbury Park, .....	Aeration and pressure filtration for iron removal, .....	5			0.35			0
Atlantic City, .....	Chlorine disinfection, .....	10				26	8	0
Atlantic Highlands, .....	Aeration and pressure filtration for iron removal, .....	1			0.5		1	20
Belvidere Water Sup. Co., ..	Chlorine disinfection, .....	6				700	250	70
(Discontinued Sept. 15th.)								
Bergen Water Co., .....	Hypochlorite disinfection, .....							
Bernaards Water Co., .....	Chlorine disinfection, .....	8	20			250	48	44
Blackwood Water Co., .....	Aeration and gravity sand filtration for iron removal, .....	1			0.05			0
Bound Brook Water Co., ....	Pressure filtration and chlorine disinfection, .....	11	15	14		65	20	27
Bridgeton, .....	Gravity sand filtration and chlorine disinfection, .....	19	10	6		25	15	14
Burlington, .....	Gravity sand filtration and chlorine disinfection, .....	10	10	14		30	12	20
Cranbury, .....	Aeration and lime treatment for CO <sub>2</sub> removal, .....	3			0.7	20	0	0
Dover, .....	Chlorine disinfection, .....	2	5	24	0.2	500	25	36
Elizabethtown Water Co., ...	Gravity sand filtration and chlorine disinfection, .....	36				80	15	21
Flemington Water Co., .....	Gravity sand filtration and hypochlorite disinfection, .....	7	5	34		15	6	0
Franklin, .....	Gravity sand filtration and hypochlorite disinfection, .....	7	10	79		28	5	14
Frenchtown, .....	Chlorine disinfection, .....	11	13	20		95	26	83
Glen Gardner, .....	Gravity sand filtration and chlorine disinfection, .....	4	10	20		50	12	30
(N. J. T. S.)								
Gloucester, .....	Aeration, gravity sand filtration for iron removal; chlorine disinfection on emergency supply, .....	10			0.5	300	300	55
Hackensack Water Co., .....	Gravity sand filtration and chlorine disinfection, .....	3	5	8		12	7	0
Haledon, .....	Slow sand filtration, .....	4				45	23	17
Helmetta, .....	Permutit pressure filtration for iron removal, .....	2						25
High Bridge, .....	Chlorine disinfection, .....	7	10			65	35	43
Highlands, .....	Aeration and gravity sand filtration for iron removal, .....							0
Highlands, .....	Gravity sand filtration for iron removal, .....							0
(J. M. Johnson.)								
Hightstown, .....	Aeration, lime treatment and gravity sand filtration for iron and CO <sub>2</sub> removal, .....	8			0.35	7	1	0
Ideal Beach Water Co., ....	Aeration and gravity sand filtration for iron removal, .....	1			0.1			0
(Keansburg.)								
Jersey City, .....	Chlorine disinfection, .....	3				14	14	0
Keansburg Water Co., .....	Aeration and gravity sand filtration for iron removal, .....	2	20		1.0	70	2	0
Keansburg Beach Water Co., ..	Aeration and pressure filtration for iron removal, .....	1			0.3			0

AVERAGE RESULTS OF ANALYSES OF SAMPLES COLLECTED AT WATER TREATMENT PLANTS  
—(Continued).

AVERAGE RESULTS OF ANALYSES OF SAMPLES COLLECTED AT WATER TREATMENT PLANTS  
—(Continued).

PLANT OR LOCATION.	TREATMENT.	Number of inspections.	Per cent. of samples containing B. Coll.				
			Color.	Alkalinity in p. p. m.	Iron in p. p. m.	20° C. Bacteria per c.c.	37° C. Bacteria per c.c.
Keypoint, .....	Aeration and gravity sand filtration for iron removal. ....	3		0.3	30	10	10
Lakeside Park Water Co., ... (Kirkwood.)	Aeration and gravity sand filtration for iron removal. ....	1		0.1			40
Lambertville, .....	Slow sand filtration. ....	2			120	60	33
Lehigh Water Co., .....	Hypochlorite disinfection; mechanical filtration at times. ....					5	33
Lumberton, .....	Chlorine disinfection. ....	14			300	60	42
Maple Shade Water Co., .....	Aeration and gravity sand filtration for iron removal. ....	2		0.2	1	4	25
Matawan, .....	Aeration and slow sand filtration for iron removal. ....	1		0.1	88	185	0
Medford Water Co., .....	Chlorine disinfection. ....	7	50	2	250	60	20
Merchantville Water Co., .....	Aeration and pressure filtration for iron removal. ....	1		0.2			0
Middlesex Water Co., .....	Pressure filtration and hypochlorite disinfection. ....	9	20	24	500	55	20
Millville Water Co., .....	Gravity sand filtration and chlorine disinfection. ....	11	60	3	40	21	0
Monmouth County Water Co., (Asbury Park.)	Pressure filtration and lime addition with sedimentation for iron removal. ....	1	0	13	0.1		0
Montclair Water Co., .....	Gravity sand filtration and chlorine disinfection. ....	4		23	70	27	0
Moorestown, .....	Aeration, sedimentation and gravity sand filtration for iron removal. ....	10		0.75	69	2	33
Mount Holly Water Co., .....	Gravity sand filtration and chlorine disinfection. ....	22	50	26	350	50	8
Newark, .....	Chlorine disinfection. ....	1				10	0
New Brunswick, .....	Aeration, gravity sand filtration and chlorine disinfection. ....	9	30	12	50	35	35
Orange, .....	Chlorine disinfection. ....	7			250	35	0
Pemberton Twp. Water, Sewerage & Light Co., .....	Chlorine disinfection. ....	12			65	25	30
Pennsgrove Water Supply Co., .....	Aeration, sedimentation and gravity sand filtration for iron removal. Mechanical filtration for emergency supply with hypochlorite disinfection. ....	6	90	30	2.0	40	11
Peoples' Water Company, ... (Millville.)	Aeration and pressure filtration for iron removal. ....	1		0.7	1	0	0
Perth Amboy, .....	Aeration and gravity sand filtration for iron removal on deep wells. Chlorine disinfection on surface water. ....	2		1.5			0
Piscataway Water Company, (Middlesex Borough.)	Chlorine disinfection. ....	2			1	2	0
Pompton Lakes, .....	Chlorine disinfection. ....	3					14
Rahway, .....	Pressure filtration and chlorine disinfection. ....	12	20	50	900	250	59
Red Bank, .....	Aeration and sedimentation for iron removal. ....	2		0.1	13	1	60
Roebling, .....	Gravity sand filtration and chlorine disinfection. ....	5	15	25	300	20	20

PLANT OR LOCATION.	TREATMENT.	Number of inspections.	Per cent. of samples containing B. Coll.				
			Color.	Alkalinity in p. p. m.	Iron in p. p. m.	20° C. Bacteria per c.c.	37° C. Bacteria per c.c.
Ramson Improvement Co., ...	Aeration and gravity sand filtration for iron removal. ....	4					
Salem, .....	Chlorine disinfection. ....	17	20	3	0.1	8	6
Skillman, (N. J. State Village.)	Gravity sand filtration and hypochlorite disinfection. ....	17	20	3	2.0	150	35
Smithville, .....	Aeration and gravity sand filtration for iron removal. ....	4	15	30		45	12
Somerville Water Co., (H. B. Smith Machine Co.)	Pressure filtration and hypochlorite disinfection. ....						0
Tintern Manor Water Co., (Long Branch.)	Pressure filtration and chlorine disinfection. ....	4	8	40		28	17
Trenton, .....	Gravity sand filtration and chlorine disinfection. ....	6	10	12			6
Vincentown, .....	Chlorine disinfection. ....	1	10	43			25
Watchung Water Co., (Dunellen.)	Emergency chlorine disinfection. ....	6				400	38
		1				130	5

## Report of the State Laboratory of Hygiene.

R. B. FITZ-RANDOLPH, CHIEF.

This report covers the operations of the bacteriological laboratory, the food and drugs laboratory, and the water and sewage laboratory for the fiscal year ending June 30, 1920.

*Bacteriological Laboratory.*—In the bacteriological division of the Laboratory of Hygiene, practically the same kind of examinations were made as has been described in past reports. The total number of specimens examined during the year was considerably larger than the numbers examined during the past four years. As the methods of examination are constantly being improved and becoming more accurate and time consuming, the actual increase in the work of the bacteriological laboratory is much greater than is indicated by the increase in the number of specimens examined.

Table No. 1 shows the number of specimens which have been examined each year since the laboratory was founded in 1896. It will be observed that these figures fluctuate considerably from year to year. The fluctuation is due very largely to considerable yearly variations in the number of specimens from suspected cases of diphtheria. In 1915, for example, over 25,000 diphtheria specimens were examined because of widespread outbreaks of this disease in two of the State institutions from which over 12,000 specimens were received. Aside from this fluctuation in the number of diphtheria specimens from year to year, the laboratory work increases at a steady rate, which is limited very largely by the lack of proper working facilities in our present quarters. The laboratory is located on the top floor of the State House, in quarters which were too small when first made available, over ten years ago. At the present time the



laboratory facilities are utterly inadequate to carry on the work which the Department is expected to do. If further progress is to be made in this important branch of health work, and a number of extensions to the work are being constantly requested by physicians throughout the State, a laboratory building not connected with the State Capitol must be provided which will be large enough to enable the work to be economically and efficiently performed, and which will be so located and constructed that persons living in its vicinity will not be exposed to danger of infection. A number of changes have been made in the arrangement of the laboratory, which materially improve the working conditions, but these changes only provide temporary relief. At the present time the wash room is so badly overcrowded that the cleansing of laboratory apparatus, the preparation of mailing cases and the manufacture of culture media are carried on under great difficulty.

The microscopical room has been greatly benefited by the new arrangement, as has also the room where the Wassermann tests are made. In this room need of greater refrigeration space is the most pressing want, but cannot be provided because of lack of room.

As a result of the intense educational campaign being waged against venereal diseases, the laboratory is called upon more than ever to examine specimens of suspected cases of syphilis, as can be seen by the large increase in the number of these specimens examined. It is, therefore, essential that additional working space be provided in the near future. For a short time it was possible for physicians to forward specimens for examination for syphilis and gonorrhoea without postage under the franking privilege, but this privilege was later withdrawn so that postage is required at parcel post rates, although the specimen is forwarded with letter mail.

The Teachers of Infant Hygiene, working under the supervision of the Bureau of Child Hygiene, collect considerable numbers of specimens from babies' eyes and both smears and swabs are submitted to the laboratory for examination and cultural work. The examination of these specimens is time consuming

and adds greatly to the volume of diagnostic work. Special outfits for the collection of these specimens are supplied to the Bureau of Child Hygiene, and may be obtained by physicians upon request.

Examinations made for the Bureau of Local Health Administration of feces and urine submitted from persons suspected of being typhoid carriers have resulted in a number of instances in the detection of carriers on dairy premises and in other locations where they had the opportunity to, and probably did, infect foods, causing small outbreaks of typhoid fever. The same kind of examinations are made of specimens from suspected carriers when submitted by physicians, after cases of typhoid fever have occurred in one family from time to time and they are led to suspect a member of the household as a possible carrier.

Table V shows the number of outfits prepared and sent to repositories and physicians throughout the State. During the last few months it has been very unfortunate that there has been considerable delay in supplying these outfits to physicians and druggists due to the fact that our supply was exhausted before a new supply could be obtained from the manufacturer. These outfits have been ordered for months, but because of labor shortage and freight congestion it has been impossible to obtain them. We are advised that they have been shipped, so after their receipt it will be possible to supply requests for supplies more promptly.

Rabies has been on the increase in this State for the past few years. So much difficulty has been experienced in the examination of improperly prepared specimens submitted for examination from animals suspected of having had rabies that directions for collecting and sending specimens to the laboratory are inserted here. Emphasis is laid on the importance of confining the animal, if possible, instead of killing it at once, as it is more difficult to determine whether an animal was rabid or not if killed too early in the disease. Hold the dog in quarantine for ten days; dogs bitten may be infectious as much as six days before symptoms of the disease develop, so if ten days have elapsed without symptoms, there is no danger of rabies infection even though the dog should develop rabies later on. If the dog should die while

in quarantine, or should be killed, the head can then be sent for examination for rabies.

#### HOW TO SHIP A HEAD TO THE LABORATORY.

When killing an animal do not shoot it through the head or beat its brains out. Injury to the brain may prevent the finding of the Negri bodies in the brain cells and cause much time to be lost by the necessity of animal inoculation. Such loss of time has been known to be fatal to the person bitten.

As soon as the animal is killed, remove the head, wrap it in a cloth, place in a tight container—preferably a can with a close fitting cover, soldered tight—pack the container in ice and express to the State Laboratory of Hygiene at Trenton without delay. Sawdust or other absorbent material should be used to prevent leakage of blood if a perfectly tight container cannot be secured. Care should be used to prevent wounding the hand or inoculating scratches or abrasions with saliva or blood while handling the head.

When shipping a head mark package plainly with the name and address of the sender. Then write a letter to the laboratory, giving full particulars concerning the case. In this letter be sure to give all the following points of information:

Sender's name, ..... Address, .....  
 Health Officer's name, ..... Address, .....  
 Name of owner of animal, ..... Address, .....  
 Description of animal whose head is sent, .....  
 Where the animal was found, .....  
 Whether the animal was killed or allowed to die, .....  
 How long sick, .....  
 Diagnosis from symptoms, .....  
 What other animals were bitten by this one, .....  
 What human beings were bitten, .....  
 Whether report of results of examination is to be sent by telegraph (collect) or mail, and to whom.

TABLE I.

SHOWING NUMBER OF SPECIMENS EXAMINED IN THE STATE LABORATORY OF HYGIENE EACH YEAR.

Year	Number of Specimens.	Year.	Number of Specimens.
1896	....	....	.....
1897	914	1909	21,594
1898	1,313	1910	16,424
1899	1,682	1911	13,718
1900	2,380	1912	15,313
1901	3,955	1913	18,342
1902	4,080	1914	22,272
1903	5,559	1915	38,048
1904	6,730	1916	24,986
1905	7,048	1917	28,713
1906	8,033	1918 (8 mos.)	14,667
1907	8,993	1919	22,915
1908	12,618	1920	33,510

TABLE II.—The following table gives a summary by months of the specimens examined from July 1st, 1919, to June 30th, 1920, inclusive:

MONTH.	*DIPHTHERIA.						TUBERCULOSIS.					
	Primary.			Secondary.			Primary.			Secondary.		
	P <sup>1</sup>	N <sup>2</sup>	U <sup>3</sup>	P	N	U	P	N	U	P	N	U
July, .....	40	156	10	25	127	13	102	300	5	23	50	.....
August, .....	37	297	15	36	210	4	123	283	5	21	40	.....
September, .....	50	181	16	33	148	8	112	346	3	23	51	.....
October, .....	111	395	16	83	261	7	114	354	12	20	65	2
November, .....	159	588	22	162	418	8	92	372	4	17	71	1
December, .....	243	1575	23	260	1352	9	83	359	3	17	63	1
January, .....	123	720	21	222	518	13	99	416	5	22	73	2
February, .....	40	339	18	92	205	3	82	367	2	23	66	1
March, .....	51	297	10	82	210	2	114	422	13	30	80	.....
April, .....	74	263	7	83	155	3	129	423	7	26	93	.....
May, .....	69	278	9	71	184	6	131	431	5	34	91	1
June, .....	66	263	13	60	221	5	123	394	6	23	62	1
Total, .....	1063	5352	180	1209	4007	81	1304	4467	70	279	805	9

MONTH.	TYPHOID FEVER.						MALARIA.					
	Primary.			Secondary.			Primary.			Secondary.		
	P	N	U	P	N	U	P	N	U	P	N	U
July, .....	16	162	12	5	20	2	6	46	3	.....	2	.....
August, .....	33	162	11	5	20	3	3	52	5	.....	1	.....
September, .....	24	113	20	11	21	6	4	20	1	.....	1	.....
October, .....	38	117	15	14	17	4	.....	40	4	1	3	.....
November, .....	26	133	7	9	14	2	1	14	.....	.....	1	.....
December, .....	20	75	7	4	10	2	1	13	1	1	.....	.....
January, .....	12	81	6	5	5	1	1	12	3	.....	.....	.....
February, .....	5	70	2	2	5	3	.....	10	1	.....	1	1
March, .....	11	79	2	7	8	2	.....	16	.....	.....	.....	.....
April, .....	9	115	7	4	16	5	.....	21	2	1	3	.....
May, .....	21	151	7	5	9	5	.....	21	4	.....	4	1
June, .....	12	126	14	10	27	8	.....	42	3	1	3	.....
Total, .....	227	1384	110	81	172	43	16	307	27	4	19	2

\*During the year 16 tests were made for the virulence of the diphtheria bacillus.

- (1) P = positive.  
 (2) N = negative.  
 (3) U = unsatisfactory.

MONTH.	GONORRHEA.						MISCELLANEOUS.					
	Primary.			Secondary.			Primary.			Secondary.		
	P	N	U	P	N	U	P	N	U	P	N	U
July, .....	55	61	14	6	12	3	7	41	4	.....	4	.....
August, .....	50	69	18	11	14	3	10	21	2	2	3	.....
September, .....	57	77	9	5	18	6	14	23	3	2	4	.....
October, .....	55	85	15	15	22	1	10	45	3	1	2	.....
November, .....	40	73	7	4	21	3	23	40	4	2	2	.....
December, .....	32	59	10	6	25	3	23	31	1	.....	4	.....
January, .....	26	52	11	5	20	5	22	23	3	2	.....	.....
February, .....	9	44	12	.....	11	4	18	28	3	4	.....	1
March, .....	27	57	16	8	24	5	28	23	3	2	2	1
April, .....	34	89	12	4	21	1	16	29	2	2	.....	.....
May, .....	34	86	11	5	23	1	27	47	5	6	19	2
June, .....	43	89	9	5	25	1	19	66	3	5	10	.....
Total, .....	462	841	153	74	236	36	217	422	36	28	50	4

MONTH.	COMPLEMENT FIXATION FOR SYPHILIS.														
	Primary.							Secondary.							Total
	4+	3+	2+	+	±	-	U	4+	3+	2+	+	±	-	U	
July, .....	116	13	9	5	8	386	34	39	6	11	4	7	78	2	2050
August, .....	86	13	13	7	8	352	13	25	8	6	5	3	41	3	2152
September, .....	95	19	13	7	8	429	23	36	9	6	5	7	64	9	2143
October, .....	101	10	13	10	9	556	28	34	9	14	3	8	103	6	2851
November, .....	100	4	16	10	8	396	18	60	2	17	5	8	78	3	3065
December, .....	108	17	41	13	12	405	41	74	17	18	7	11	87	10	5186
January, .....	120	9	30	18	3	334	76	98	11	20	17	6	61	19	3351
February, .....	71	3	6	8	3	322	33	36	3	6	4	1	69	8	2045
March, .....	87	8	15	10	3	412	39	44	6	9	7	3	93	8	2386
April, .....	153	14	25	13	11	611	57	60	11	19	12	4	148	17	2811
May, .....	109	6	18	7	8	493	37	51	9	12	3	11	122	10	2700
June, .....	106	4	22	3	14	530	52	41	3	10	5	12	182	28	2770
Total, .....	1262	120	221	111	95	5226	451	598	94	146	77	81	1126	123	33510

While the laboratory examines each specimen of blood for syphilis by means of the Wassermann reaction with two antigens, one a plain alcoholic extract of guinea pig heart antigen, and the other an alcoholic extract of either human heart or guinea pig heart reinforced with the addition of 0.2 per cent. cholesterin, the classification of results as shown in Table II are based on the results obtained with the plain alcoholic extract antigen. It is felt that the positive reactions obtained with this antigen are of more value in cases for diagnosis than the positive reactions obtained with the more sensitive cholesterin antigen, especially when any result under four plus is obtained. In old or treated cases of syphilis, however, the cholesterin antigen is of great value to the physician, as the reaction in these cases persists for a longer time than with the plain antigen, and indicates to the physician the need of further treatment.

According to the classification in this table a number of specimens grouped under the negative column would give a four plus or some lesser degree of reaction with the cholesterin antigen.

As the cholesterin antigen is more sensitive, a negative reaction with it has more value in excluding syphilis than has a negative reaction with the plain antigen.

TABLE III.—The following table shows the number and various kinds of miscellaneous specimens examined in the laboratory from July 1st, 1919, to June 30th, 1920, inclusive:

Specimen for	Positive.	Negative.	Unsatis- factory.
Rabies, .....	16	37	9
B. tuberculosis (pleural and spinal fluid), .....	...	10	...
B. tuberculosis (urine), .....	2	34	...
B. tuberculosis (various other lesions), .....	6	18	...
B. typhosus (blood), .....	...	2	...
B. typhosus (feces), .....	10	94	2
B. typhosus (urine), .....	1	21	...
B. typhosus (water), .....	...	1	...
B. para-typhosus (agglutination test), .....	...	31	2
B. para-typhosus (feces), .....	...	2	...
Bacterial infection (blood), .....	...	12	2
Bacterial infection (feces), .....	2	8	...
Bacterial infection (pleural and spinal fluid), ...	3	8	...
Bacterial infection (pus), .....	101	20	2
Bacterial infection (sputum), .....	8	...	...
Bacterial infection (urine), .....	13	2	1
Bacterial infection (various other kinds), .....	3	7	...
Diphtheretic infection (ear, etc.), .....	2	1	3
Glanders, .....	...	1	...
Gonococcus infection (eye), .....	7	59	5
Gonococcus infection (urine), .....	...	13	1
Ophthalmia Neonatorum, .....	54	68	8
Pneumonia, .....	9	6	2
Treponema pallida, .....	...	11	2
Vincent's Angina, .....	8	2	...
Miscellaneous, .....	...	4	1
Totals, .....	245	472	40

TABLE IV.—The following table shows the number and species of animals examined for rabies from July 1st, 1919, to June 30th, 1920, inclusive:

Dogs—Positive, 16; negative, 33; unsatisfactory, 9.

Cats—Negative, 2.

Cows—Negative, 1.

Rabbits—Negative, 1.

Following are the towns arranged by counties, from which animals found to be rabid were received from July 1st, 1919, to June 30th, 1920, inclusive:

Bergen County—North Arlington, 1.

Burlington County—Beverly, 1.

Essex County—Glen Ridge, 1; Irvington, 1.

Gloucester County—Gibbstown, 1; Glassboro, 1; Paulsboro, 1; Sewell, 1.

Mercer County—Trenton, 1.

Morris County—Dover, 1; Towaco, 1.

Salem County—Centreton, 1.

Union County—Elizabeth, 3; Rahway, 1.

TABLE V.—The following table shows the number of outfits supplied to repositories maintained throughout the State and to physicians who are not conveniently located near repositories, from July 1st, 1919, to June 30th, 1920, inclusive:

Diphtheria—Regular outfits, .....	11,954
Serum tubes and swabs, .....	1,880
Extra swabs, .....	3,489
Tuberculosis outfits, .....	17,323
Typhoid fever outfits, .....	8,881
Malaria outfits, .....	2,935
Gonorrhoea outfits, .....	1,155
Syphilis outfits, .....	3,864
Feces and urine outfits, .....	10,309
Silver nitrate outfits, .....	40
Total, .....	988
Total, .....	45,495

*Chemical Laboratory.*—Throughout the past year the effort of the Chemical Division of the Laboratory of Hygiene has been devoted, for the most part, to the analyses of samples submitted by the Bureau of Food and Drugs, the Bureau of Engineering and local health departments. Because of the resignation of the Chief Chemist and the transferring of one of the analysts to the Bureau of Engineering, neither of whom have been replaced up to this time, the working force of the Laboratory is barely sufficient to carry on routine analyses, leaving no time for research on a number of problems which require investigation.

Table VI.—This table shows the number and character of samples examined during the past fiscal year.

Character of Sample.	FOODS.	Number Examined.
Milk and cream, chem. exam., .....	2,714	
Milk, bact. exam., .....	378	
Milk, human and special samples, .....	27	
Soft drinks, .....	174	
Meat products, .....	44	
Flavoring extracts, .....	22	
Butter and oleomargarine, .....	101	
Cider and vinegar, .....	53	
Salad oils, .....	63	
Egg products, .....	32	
Tomato products, .....	32	
Other foods, .....	41	
Total, .....	3,681	

## DRUGS AND TOILET PREPARATIONS.

<i>Character of Sample.</i>	<i>Number Examined.</i>
U. S. P. and N. F. preparations, .....	161
Hair tonics and toilet waters, .....	69
Proprietary medicines, .....	8
Other drugs, .....	40
Total, .....	278
Total Foods and Drugs, .....	3,959

During the past fiscal year the Water and Sewage Laboratory has analyzed 3,247 samples.

## SUMMARY OF SAMPLES ANALYZED.

Public water supplies, .....	2,316
Private water supplies, .....	104
State institution supplies, .....	58
Waters for railroad certification, .....	93
Special waters, .....	51
Sewage samples, .....	469
Trade wastes samples, .....	95
Sands, .....	58
Miscellaneous samples, .....	3
Total, .....	3,247

Towards the end of the fiscal year an investigation was carried on to determine the percentage of *B. coli* of fecal origin present in public water supplies, by the Voges-Proskauer medium. Slightly over 200 cultures giving positive endo reactions were inoculated into this media with the following results

Total number of cultures tested, .....	209
Fecal types, .....	166.....80%
Non-fecal types, .....	22.....10%
Doubtful, .....	21.....10%

The volume of work done by the water and sewage laboratory is constantly on the increase. The Department frequently receives requests for analyses of water from private concerns, and during the past year over \$300 has been turned into the State Treasury from this source.

The investigations of trade wastes in conjunction with the Engineering Bureau could be more thoroughly conducted if we had more assistance. As it is, this work is becoming more important each year, yet the lack of experienced men does not allow us to cope with it. A rather complete investigation of the trade wastes from the Chemical Company of America will be found under the report of the Engineering Bureau.

Realizing that the present system of obtaining quarterly water samples is not all that might be desired, the Department has in mind a scheme for the collection of water samples by automobile. It is hoped that at least one sample from every public water supply may be collected once a year in order that we may have on file a complete chemical analysis of the water supplies of the State. Under existing conditions it is not possible to return to our pre-war system of having these samples forwarded by designated persons by express, as we find the delay and breakage to be such as to make the former system impracticable.

In order to have the bacteriological analyses of all samples centralized under the laboratory and incidentally relieve the engineers of this work, it has been found advisable to employ an additional technician in the water laboratory. The present arrangement is very satisfactory, and avoids the overcrowding and confusion which formerly resulted when several extra persons endeavored to work in the cramped quarters of the water laboratory.

A system has now been devised whereby the certification of waters for interstate railroad use is done without the collection of special samples twice a year. Whenever such a water supply is visited by members of the Engineering Bureau or laboratory, a sample is collected and analyzed in accordance with the procedure laid down by the Public Health Service. From the data so obtained, together with sanitary inspections, it is possible to pass upon the supply for use in interstate traffic.

## FACTORY INSPECTIONS.

The advantages possessed by middle central New Jersey as to railroad facilities, available water courses for disposition of trade wastes, etc., make this portion of our State attractive for

chemical industries. Particularly since the impetus to the dye industry, we find quite a few concerns locating in this State.

As the manufacture of various organic and inorganic chemical products give rise to objectionable fumes, these fumes, if not properly taken care of, will produce nuisances and occasionally have deleterious effects on the health of the community. It falls to the lot of the Department to investigate complaints of this nature, and we are prepared to furnish a limited amount of assistance to local health boards. This work is assuming such proportions that we could readily utilize the services of a competent man whose time would be wholly devoted to investigations of trade wastes and to factory inspections. The attitude of most manufacturers is one of cooperation, and they are generally willing to install such improvements as will take care of objectionable odors and fumes. Occasionally more drastic action must be taken, which consists of formal hearings, after which the evidence is turned over to the Attorney-General for prosecution.

The Department appreciates the fact that these concerns are vital to the welfare of our State, as they pay taxes and employ large numbers of men. For this reason we endeavor to maintain an attitude which will protect our residents from odors and fumes which adversely affect the health, yet not be so drastic as to discourage new enterprises from locating in our State.

*Shellfish Investigations.*—It has been well established that the consumption of raw shellfish has been responsible for typhoid fever epidemics. The Department, early recognizing the advantages of being able to make sanitary surveys and examinations of shellfish and waters in which they grow in the field, presented the matter to the Legislature with the result that a sum was appropriated for the construction of a suitable boat for this purpose. This boat was built and put in operation in the spring of 1912.

Since the largest oyster business in the State is centered in the Maurice River district, it might not be amiss to make a brief comparison of sanitary conditions existing in 1912 and at the present time. When the "Inspector" was put in commission oyster houses in the Maurice River were provided with individ-

ual toilets which emptied directly into the river; the crews of the oyster boats, comprising 400 to 500 men, used the river and banks of the stream for dumping wastes; the town of Port Norris was not sewerred and the open vault type privy prevailed. A large number of these privies polluted Dickey's Ditch, which emptied into the river in the vicinity of Long Reach. Oysters floated in the waters were naturally heavily polluted. Contrasting these conditions with those existing at the present time, we find the town of Port Norris equipped with sanitary toilets; Dickey's Ditch has been banked up so as not to enter the Maurice River and dredged so it empties into the bay some distance from the floating grounds; all individual toilets on the oyster wharves have been done away with, and sanitary toilets provided at convenient places on both sides of the river some distance back. A scavenger system is in operation, whereby each boat is provided with two pails; the scavenger collects the filled ones upon the arrival of the boats at Maurice River and delivers clean, empty pails. The filled containers are treated with lime, and the contents put on farms far removed from the river.

Results from these kinds have only been accomplished by the hearty cooperation of the oystermen and untiring work upon the part of the Department. We believe the improvement in sanitary conditions of the oyster grounds throughout the State has shown the wisdom of the Legislature in providing a boat for this work.

During the past year the work has consisted of sanitary investigations and the analyses of oysters and waters very much as it has in past years.

#### ATLANTIC CITY SECTION.

During the months of June and July, with the co-operation and assistance of the Health Officer of Atlantic City, an almost continuous patrol was maintained of the condemned areas in that vicinity. Four persons were arrested and fines imposed for removing clams from condemned waters; in addition, one local dealer was arrested for receiving clams taken from these waters and offering the same for sale as food. The representative of the Department was accompanied in the patrol work by an

officer of the Atlantic City Police Department, and the arrests were made possible under a local ordinance passed by the city of Atlantic City. The condemned waters were placarded with large signs at reasonable intervals on prominent locations. These signs were printed on muslin and tacked on wooden supports. Altogether, sixty-five such signs were placed between the Atlantic Inlet and Risleys Channel, and between Atlantic City proper and Lake and Absecon Bays.

In February the Department received a request from the Atlantic County Baymen's Association that a reinvestigation of the condemned areas be made, with a view to throwing open some of this area to clambers. This investigation was conducted during the month of June, 1920, and consisted of thoroughly sampling the waters of Absecon Channel, timing of floats placed at the entrance of Mankiller Channel and sampling oysters located in the upper end of the condemned area. The work done in the southern end of the area was similar, with the exception of sampling of the oysters. It was found that floats would reach the upper limit of the condemned area of Absecon Channel in one hour and forty minutes, and when placed in Beach thoro-fare at the "Straits" they would travel to the outer limit of the condemned area in Shelter Island Bay in fifty minutes.

Bacteriological examination of the water samples collected at regular time intervals during the movement of the floats indicate that the badly polluted waters of Beach Thorofare are pushed up into Absecon Channel and Shelter Island Bay on the flood tide. The work done confirms previous findings, *i. e.*, that shellfish removed from the areas now condemned are a menace to the public health if consumed raw as food, and we are, therefore, unable to reduce the extent of the condemned area.

A tabulation of the results of the bacteriological findings of the waters of the Atlantic City Section follows:

*Beach Thorofare at Persimmon Point to Risleys Channel.*

Number of samples collected, .....	29
Number showing bacillus coli present in 1 c.c., .....	13 = 44.8%
Number showing bacillus coli present in .1 c.c., .....	4 = 13.8%

*Straits, One-hour Flood Tide.*

Number of samples collected, .....	20
Number showing bacillus coli present in 1 c.c., .....	20 = 100%
Number showing bacillus coli present in .1 c.c., .....	16 = 80%
Number showing bacillus coli present in .01 c.c., .....	4 = 20%

*Shelter Island Thorofare to Shelter Island Bay (One-hour Flood Tide).*

Number of samples collected, .....	20
Number showing bacillus coli present in 1 c.c., .....	20 = 100%
Number showing bacillus coli present in .1 c.c., .....	18 = 90%
Number showing bacillus coli present in .01 c.c., .....	4 = 20%

Floats traversed the distance from Beach Thorofare through to the outer limits of Shelter Island Bay in fifty minutes. Samples were taken at ten minute intervals, and 83% showed the presence of bacillus coli in 1 c.c.

*Absecon Channel from the lower end of Mankiller Island to the outer limit of the condemned area in Absecon Bay.*

Number of samples collected, .....	40
Number showing bacillus coli present in 1 c.c., .....	31 = 77.5%
Number showing bacillus coli present in .1 c.c., .....	18 = 45%
Number showing bacillus coli present in .01 c.c., .....	4 = 10%

The time necessary for the floats to travel this specified distance was one hour and forty minutes. Ten water samples were taken at equal time intervals during the floating experiment and are included in the above tabulation.

About 75 oysters were taken from grounds in Absecon Bay, four samples of which were examined bacteriologically, and the others were placed in a container within the upper limits of the condemned area and allowed to remain there for a period of two days, when four samples were taken for bacteriological examination. Two days later four additional samples were collected for the same kind of analysis.

*Scores of Oysters from Absecon Bay (not in condemned area)—32, 3, 4, 23.*  
*Scores of Oysters after remaining in condemned area two days—320, 140, 41, 50.*

These samples were removed from the water after two hours flood tide. The floating experiments indicate that polluting matter will reach this spot in something like one hour and a half.

*Scores of Oysters after remaining in condemned area four days—23, 2, 1, 1.*

These oysters were removed from the waters after three hours ebb tide. The decrease in the scores is due to the fact that the oysters have filtered through themselves from 25 to 50 gallons of water, which our many bacteriological examinations have shown to be free of bacillus coli in 1 c.c dilutions. During the warm weather months the physiological activities of the oyster are at the maximum, and these experiments show that oysters in the upper limit of the condemned area are dangerously polluted during the first two to three hours of flood tide. On the balance of the flood tide and the returning ebb tide the water is of sufficient purity for the oysters to nearly cleanse themselves of intestinal organisms.

*Absecon Creek.*

This creek is about five miles in length, originating in swamps above the town of Absecon, and receives a portion of the waste water of the Atlantic City potable water supply.

The floating of oysters from Reeds Bay and Brigantine in this creek has been described in reports of previous years. Eight samples of oysters floated one and two low waters were collected from the creek with the following scores: 5, 14, 5, 5, 14, 41, 14, 23.

Ninety-nine samples of water were collected from the creek with the following results:

*Absecon Creek, Flood Tide.*

Number of samples collected, .....	36
Number showing bacillus coli present in 1 c.c., .....	22 = 61.1%
Number showing bacillus coli present in .1 c.c., .....	10 = 27.7%
Number showing bacillus coli present in .01 c.c., .....	3 = 8.3%

*Absecon Creek, Ebb Tide.*

Number of samples collected, .....	63
Number showing bacillus coli present in 1 c.c., .....	63 = 100%
Number showing bacillus coli present in .1 c.c., .....	55 = 84.6%
Number showing bacillus coli present in .01 c.c., .....	25 = 38.3%

Salinity samples taken at the oyster floats during the last of the flood and the ebb tide showed a range of salt from 1.54% to .16%, indicating that the creek at the oyster houses contains very little bay water the last of the ebb tide.

No direct pollutions were disclosed by the sanitary survey of the creek, but it receives practically all the surface water from the town of Absecon and surrounding farm lands, and to this cause must be attributed the high coli count of the creek.

*Pleasantville.*

The four ditches used for the floating of oysters gathered from Lake Bay are located in Egg Harbor Township, outside the boundary limits of Pleasantville. The procedure followed in floating oysters has been described in previous reports. The sources of the ditches are numerous springs in the swampy land lying between the main road and the bay, a distance of about one mile. The ditches receive surface waters from the farm lands above the source of the springs, and most likely indirect pollutions from leaching cesspools. There are no public toilets in the vicinity of the oyster houses, and as there is some bathing in the bay in the immediate vicinity of the oyster house of Mr. Hilton located over ditch No. 2, it has become the practice for bathers to defecate in the bushes in the vicinity of the mouth of the above-mentioned ditch. Human feces were found on the banks of this ditch and directly at the mouth of the flume leading to same. The matter was presented rather strongly to Mr. Hilton with a view to having him construct a sanitary toilet for the bathers. Up to the present time he has not done so.

*Results of Analyses of Water from Ditch of W. H. Mathis.*

Number of samples collected, .....	4
Number showing bacillus coli present in 1 c.c. ....	4 = 100%
Number showing bacillus coli present in .1 c.c., .....	4 = 100%
Number showing bacillus coli present in .01 c.c., .....	2 = 50%

*Ditch of J. M. Hilton.*

Number of samples collected, .....	4
Number showing bacillus coli present in 1 c.c., .....	4 = 100%
Number showing bacillus coli present in .1 c.c., .....	4 = 100%
Number showing bacillus coli present in .01 c.c., .....	1 = 25%



*Ditch of J. M. Hilton, formerly Fish's Ditch.*

Number of samples collected, .....	4
Number showing bacillus coli present in 1 c.c., .....	4 = 100%
Number showing bacillus coli present in .1 c.c., .....	4 = 100%
Number showing bacillus coli present in .01 c.c., .....	2 = 50%

*Ditch of Hugh Collins.*

Number of samples collected, .....	4
Number showing bacillus coli present in 1 c.c., .....	4 = 100%
Number showing bacillus coli present in .1 c.c., .....	3 = 75%
Number showing bacillus coli present in .01 c.c., .....	1 = 25%

Five samples of floated oysters were collected which scored as follows: 32, 41, 41, 23, 5.

Salinity samples were taken at high and low water from the different ditches, and changed from 2.18% to .13% salt. This indicates that at low water the ditches contain very little bay water.

With the idea of determining whether the gas forming organisms were of fecal or non-fecal type, forty samples were collected from these ditches during the latter part of ebb tide. The samples were planted in lactose broth and the two lowest dilutions showing gas production were streaked upon Endo and Eosin agar medium, and the reaction tested with Methyl Red. At least two isolated colonies from the Endo plate were transferred to Voges-Proskauer medium and allowed to incubate at room temperature for five days. A portion of each culture was then removed and its reaction with Methyl red tested, and all showing alkaline reaction were streaked upon plain agar slants. 10% KOH solution was then added to all Voges-Proskauer tubes, and same allowed to remain an additional 24 hours when the final reading was made.

Bunker, Tucker and Green\* call attention to apparent discrepancies in the Voges-Proskauer reaction as carried out in the Standard procedure, and recommend incubation at 30° C. for two days and the use of 45% KOH instead of 10%. A com-

\* Journal of Bacteriology, Vol. 3, 1918.

parison of the Standard method and this modified procedure was made upon all the cultures alkaline to methyl red. We found by transferring 1 c.c. of a two-day-old culture to a fairly deep porcelain spot plate, and adding ½ c.c. of 45% KOH that the maximum pink color would develop in from 30 minutes to an hour. This modification permits of the Voges-Proskauer reaction being completed in a little over two days. Deeper pink colors also develop and any likelihood of these colors fading out is obviated. We were able to obtain more positive Voges-Proskauers with this method than with the standard procedure.

Our investigations indicate that colonies which produce acid invariably give negative Voges-Proskauer reaction, while colonies which produce alkali may or may not give a positive reaction. Three cultures were positive on Eosin agar plates and negative on Endo plates, and one of these cultures was Voges-Proskauer positive. Seven cultures were positive on Endo and negative on Eosin agar, four of which were Voges-Proskauer positive. Cultures giving the positive Voges-Proskauer reaction were alkaline with the exception of two and these were neutral to methyl red. Ten alkali producers gave positive Voges-Proskauer reaction, and six of the cultures giving positive Voges-Proskauer reaction gave a typical coli colony on both Endo and Eosin agar plates. The other four Voges-Proskauer positive cultures gave questionable Endo positive plates and Eosin agar negatives.

Levine has done considerable work on differentiation of non-fecal and fecal coli, and claims to be able to distinguish B. coli from B. aerogenes on Eosin Methylene Blue agar from cultural characteristics. We believe that these differentiations mentioned are not sufficiently pronounced to be more than an indication.

*Conclusions.*—The B. coli present in the ditches at Pleasantville, N. J., is mostly of fecal origin.

Alkali production is indicative of non-fecal coli, while acid production is indicative of fecal coli.

The modified procedure as outlined for carrying out the Voges-Proskauer reaction has the advantages of giving more positives, more pronounced colors, and can be completed in considerably less time.

*Oyster Ditches at Pleasantville.*

Total number of samples of water collected, .....	40
Total showing confirmed B. Coli in 1 c.c., .....	38 = 95.0%
Total showing confirmed B. Coli in .1 c.c., .....	27 = 67.5%
Total showing confirmed B. Coli in .01 c.c., .....	12 = 30.0%

## TUCKERTON SECTION.

Sanitary inspections of Tuckerton Creek and lake feeding same indicate that the creek is receiving very little pollution other than surface water from the town. Twenty samples of water were collected from the lake and thirty from the creek. Of the twenty samples taken from the lake only one sample showed colon bacillus in dilutions of 1 c.c. The thirty samples collected from the creek were taken on ebb tide, and twenty-one showed bacillus coli present in 1 c.c., and six in 0.1 c.c.

## MULLICA RIVER SECTION.

The sanitary survey of the Mullica River was made for the purpose of determining the extent of pollution in the river, and what effect, if any, such pollution might have upon the sanitary conditions of the water over the areas in Great Bay where oysters are grown. Examinations were made of samples of water collected from the bay, the river and some of its more important tributaries. It was found impracticable, with the available force and time, to secure information upon the stream flow and conduct float experiments.

The Mullica River is the largest of the Atlantic coast group. It rises near Atco and flows for 32 miles east, southeast to the head of Great Bay, 6 miles from the ocean. The drainage area is about 570 square miles. The river is tidal and navigable to the dam at Batsto, a distance of 20 miles. The area of the watershed above this town is 221.6 square miles, and about 15% of the whole drainage area is cleared. The principal tributaries converging at Batsto are the Batsto, Atsion, Mechescatauxin, Nescochague and Hammonton Brook. The larger tributaries below Mullica River are Ballanger Creek, Nacote Creek, Bass River and Wading River. The average flow of the whole stream

into Great Bay is estimated at 593,000,000 gallons daily, with a minimum flow of 95,800,000 gallons daily. The watershed of the Mullica River is very sparsely settled, and the sewage of the scattered farm houses and small villages is taken care of by privies some distance from the river bank.

The principal source of direct pollution of the river is domestic sewage from the municipality of Hammonton and Amato. The proposed sewage treatment plan for Egg Harbor City will be an additional source of pollution in the future.

Hammonton, in 1915, had a population of about 6,000 people, and the sewage of 50,000 gallons per day is treated by a plant installed in 1914. This consists of a circular Imhoff tank, sprinkling filter, secondary settling tank and sand filters. The effluent is discharged into Hammonton Creek, 7.5 miles above Batsto.

Amato was established in 1918, as a shell loading plant by the Atlantic Loading Company. The population in 1918 was 7,000, but had decreased to a few hundred in 1920. The sewage treatment plant was constructed in 1918, and consists of a one-story sedimentation tank and sand filters. The effluent is discharged into Lucas Brook, 20.5 miles from the head of Great Bay.

Plans have been submitted to this Department for the installation of a sewage system for Egg Harbor City, which calls for the construction of an Imhoff tank and sand filters. The effluent will be discharged into Landing Creek, 24.0 miles from the mouth of the river. The approximate average sewage flow from this plant will be 200,000 gallons for 1920. This will give a dilution of about 1 to 16 at Gloucester Lake, which is located at the mouth of Landing Creek.

Water samples were collected from the Mullica River and its principal tributaries at intervals varying from 1 to 2 miles. The result of the bacterial examinations of the water shows that the Mullica River at present is remarkably free from pollution. The following tables give the result of the bacterial examinations of the water of different rivers.

*Mullica River.*

Number of samples collected, .....	38
Number showing bacillus coli present in 1 c.c., .....	6 = 15.8%
Number showing bacillus coli present in .1 c.c., .....	2 = 5.3%
Number showing bacillus coli present in .01 c.c., .....	1 = 2.6%

*Wading River.*

Number of samples collected, .....	12
Number showing bacillus coli present in 1 c.c., .....	1 = 8.5%
Number showing bacillus coli present in .1 c.c., .....	0

*Bass River (ebb tide).*

Number of samples collected, .....	15
Number showing bacillus coli present in 1 c.c., .....	1 = 6.6%
Number showing bacillus coli present in .1 c.c., .....	1 = 6.6%

*Ballinger Creek.*

Number of samples collected, .....	6
Number showing bacillus coli present in 1 c.c., .....	3 = 50%
Number showing bacillus coli present in .1 c.c., .....	0

*Nacote Creek (ebb tide).*

Number of samples collected, .....	11
Number showing bacillus coli present in 1 c.c., .....	2 = 18.1%
Number showing bacillus coli present in .1 c.c., .....	1 = 9%
Number showing bacillus coli present in .01 c.c., .....	1 = 9%

*Great Bay.*

Sixteen samples of water were collected from Great Bay, none of which showed bacillus coli present in 1.0 c.c. dilutions.

All oyster samples collected in Great Bay gave a score of zero, and samples of plankton taken at the mouth of the Mullica River and in the bay indicate an abundance of oyster food.

Salinity samples taken in Great Bay from Grassy Channel to mouth of Mullica River show a gradual decrease in salt content from 1.9% to 1.27%. Continuing up the Mullica River the salinity was found to be .30% salt at the bridge at Chestnut Neck, above which point in the river very few oysters grow naturally.

The small amount of sewage entering the Mullica River and the great dilution it receives before reaching Great Bay, together

with the abundance of oyster food in the lower Mullica River and Great Bay, makes this area particularly adapted for the cultivation and propagation of oysters. As mentioned in previous reports, the railroad facilities in this area are very poor, which partially explains the reason for the sparsely settled country. The raising of seed oysters is attempted in dredged ditches, in the lower reaches of the Mullica River by the Sooeey Oyster Company, and as far as we know this is the only commercial attempt in this State to propagate oysters in a scientific manner. While the absence of the Mullica River from pollution makes the river particularly adapted for the floating of oysters, very little is attempted, due to the lack of shipping facilities, and it is a question if the river will ever be extensively used for this purpose.

MAURICE RIVER SECTION.

Large numbers of water and oyster samples were collected from the Maurice River and Long Reach, and subjected to the usual bacteriological examinations as in past years. Sanitary surveys of the oyster houses along the banks of the Maurice River, particularly along Long Reach, show that the oystermen are keenly interested in the sanitary conditions along this stream. The scavenger system for the collection of fecal matter from the oyster boats was found to be working in a satisfactory manner. The docks are kept clean, and broken oyster shells and rattlers are carted away from the scows daily. A close watch was kept as to the cleanliness of the box cars used for the shipment of oysters. Generally these cars were maintained in a sanitary condition, but one car was found to have been freighted to Bivalve empty in filthy condition, not having been previously cleaned and disinfected. This car was posted, returned empty and the matter so presented to the freight agent that it did not reoccur.

The sampling of the river was done by sections. Section No. 4 includes that portion of the Maurice River immediately adjacent to Millville.

Number of samples collected, .....	10
Number showing bacillus coli present in 1 c.c., .....	10 = 100%
Number showing bacillus coli present in .1 c.c., .....	8 = 80%
Number showing bacillus coli present in .01 c.c., .....	2 = 20%

Section No. 3. Extends from below the sewage disposal plant to short distance above Manumuskin Creek.

Number of samples collected, .....	10
Number showing bacillus coli present in 1 c.c., .....	6 = 60%
Number showing bacillus coli present in .1 c.c., .....	1 = 10%
Number showing bacillus coli present in .01 c.c., .....	0

Section No. 2. Extends from above Manumuskin Creek to a point just above Leesburg.

Number of samples collected, .....	10
Number showing bacillus coli present in 1 c.c., .....	3 = 30%
Number showing bacillus coli present in .1 c.c., .....	0

Section No. 1. Extends from Leesburg to the mouth of the river and Maurice River Cove.

Number of samples collected, .....	20
Number showing bacillus coli present in 1 c.c., .....	15 = 75%
Number showing bacillus coli present in .1 c.c., .....	1 = 5%
Number showing bacillus coli present in .01 c.c., .....	0

#### *Long Reach.*

Number of samples collected, .....	30
Number showing bacillus coli present in 1 c.c., .....	20 = 67%
Number showing bacillus coli present in .1 c.c., .....	0

Twenty-five samples of salt oysters from various points in the Maurice River Cove were analyzed, and the following results were obtained:

Number of samples having score of 0, .....	10 = 40%
Number of samples having score of 1, .....	6 = 24%
Number of samples having score of 2, .....	4 = 16%
Number of samples having score of 3, .....	3 = 12%
Number of samples having score of 14, .....	1 = 4%
Number of samples having score of 32, .....	1 = 4%
Average score 2.8.	

One hundred samples of oysters floated in Long Reach were taken for examination with the following scores:

Number of samples having score of 0, .....	16 = 16%
Number of samples having score of 1, .....	23 = 23%
Number of samples having score of 2, .....	18 = 18%
Number of samples having score of 3, .....	17 = 17%
Number of samples having score of 4, .....	8 = 8%

Number of samples having score of 5, .....	6 = 6%
Number of samples having score of 14, .....	7 = 7%
Number of samples having score of 23, .....	3 = 3%
Number of samples having score of 32, .....	1 = 1%
Number of samples having score of 140, .....	1 = 1%

Investigations at various times of the Millville Sewage Disposal Plant show that it is turning out a very satisfactory effluent. Previous to the fall of 1917 the effluent was looked upon as being somewhat of a menace to the oysters floated in Long Reach. At that time the matter was presented to the Commissioners of Millville in such a way that they agreed to provide the necessary bacteriological facilities, and assign a responsible person to supervise the plant and make the necessary daily tests of the effluent. City Engineer Wade was designated to do this work, and his supervision of the plant has been most conscientious. Reports of the quality of the effluent emptied into the Maurice River are submitted to this Department by Mr. Wade, and generally show the absence of bacillus coli in 1 and 0.1 c.c. Frequent samples of the effluent taken by representatives of this Department have shown that these are not chance or freak results. We, therefore, no longer look upon the emptying of the Millville disposal plant effluent into the Maurice River with suspicion.

#### RARITAN BAY SECTION.

The work done in this section consisted of sanitary surveys of the Cheesequake Creek, Back Creek, Luppaccong Creek and Conoskonk Creek.

#### *Cheesequake Creek.*

This creek has not been used for the floating of oysters for a period of over four years. It is about four or five miles long and runs through an uninhabited territory, with the exception of a summer colony located near the mouth. It is tidal and navigable for about four miles. At the upper end there is a wharf, from which considerable truck is shipped by boat to New York City. During the war the Gillespie Loading Company located

upon this creek, same forming the southern boundary of their plant. This organization was taken over by the government, and is now known as the Morgan Ordnance Loading Depot. The sewage disposal plant of this munition plant discharges into Back Creek, a tributary of the Cheesequake Creek.

Number of samples collected, ebb tide, .....	45
Number showing bacillus coli present in 1 c.c., .....	41 = 91.1%
Number showing bacillus coli present in .1 c.c., .....	18 = 40%
Number showing bacillus coli present in .01 c.c., .....	5 = 11%

Number of samples collected, flood tide, .....	26
Number showing bacillus coli present in 1 c.c., .....	19 = 73%
Number showing bacillus coli present in .1 c.c., .....	4 = 15.4%
Number showing bacillus coli present in .01 c.c., .....	2 = 7.7%

Bacteriological results show this creek so badly polluted as to be unfit for floating oysters.

#### *Back Creek.*

This is a small tributary of the Cheesequake Creek, the mouth of which is located about one hundred (100) feet from Raritan Bay, and extends back some two or three miles, running through the grounds of the Morgan Loading Company. It is a tidal stream about twenty feet wide at the mouth, and ebbs almost bare. Nine samples of water were collected, all of which showed the creek to be badly polluted. The nature of the polluting matter entering Back Creek indicates that the creek is not fit for the floating of oysters.

#### *Conoskonk Creek.*

This is a small creek running along the northeasterly end of Keyport. The samples of water collected indicate a considerable amount of pollution and that the creek is not suitable for the drinking of oysters.

#### *Luppatcong Creek.*

This creek was officially condemned by the Department as a floating place for oysters, and the bacteriological examination

of the waters and shellfish floated therein shows that the creek is still receiving considerable amounts of polluting material, probably due to surface wash and backing up on flood tide of contaminated waters from Matawan Creek.

Number of samples collected, ebb tide, .....	16
Number showing bacillus coli present in 1 c.c., .....	16 = 100%
Number showing bacillus coli present in .1 c.c., .....	8 = 50%
Number showing bacillus coli present in .01 c.c., .....	2 = 12.5%
Number of samples collected, flood tide, .....	28
Number showing bacillus coli present in 1 c.c., .....	26 = 92.8%
Number showing bacillus coli present in .1 c.c., .....	4 = 14.3%
Number showing bacillus coli present in .01 c.c., .....	2 = 7.1%

Approximately two hundred samples of salt oysters from the grounds off Conoskonk Point were collected, and two samples gave a score of 2 and 5. The balance were placed in an individual float and set out in Luppatcong Creek about two hundred feet from the mouth. Samples from this float were collected on one, two and three low waters with the following results:

Floated one low-water score 32, .....	140
Floated two low-water score 500, .....	500
Floated three low-water score 5, .....	140
Floated four low-water score 230, .....	410

#### Salinity—

Raritan Bay, flood tide, 2.2% salt.

Raritan Bay, low water, 1.94% salt.

Cheesequake Creek, flood tide, 1.63% salt.

(From floating grounds.)

Cheesequake Creek, low water, .95% salt.

Luppatcong Creek (500 ft. from mouth), flood tide, 1.62% salt.

Luppatcong Creek, low water, .38% salt.

Conoskonk Creek (100 ft. from mouth), flood tide, 1.88% salt.

Conoskonk Creek, low water, .11% salt.

A series of samples of water from Raritan Bay were collected about three-fourths of mile off shore from a section which has been proposed as an oyster planting ground. These samples were collected at regular intervals, beginning at a point off Port Monmouth Range Light and ending off East Point. This section lies off Keansburg, well up the bay. Samples were taken about four hours after flood tide.

Number of samples collected, .....	30
Number showing bacillus coli present in 1 c.c., .....	18 = 60%
Number showing bacillus coli present in .1 c.c., .....	2 = 7%
Number showing bacillus coli present in .01 c.c., .....	0

Investigation does not indicate that Luppaticong Creek is being used for the floating of oysters during the prohibited period. In order to provide for an adequate supply of oysters for shucking it is customary for the Ellsworth people to store large quantities in the creek during the cold weather. This is done because the storms and freezing up of the bay makes it impossible to obtain oysters from the grounds at that time. It is a well established fact that oysters are in a partial state of hibernation during the cold winter months, and the countenance of this storing practice by this Department is also approved by the United States Department of Agriculture.

#### SHREWSBURY RIVER SECTION.

Comparatively little oystering is being conducted on this river. A few are marketed from Parker's Creek, Pleasure Bay and Blackberry Cove, while none are taken from Little Silver Creek.

Analyses of fifteen samples of oysters indicate that Parker's Creek is receiving considerable pollution, Pleasure Bay is receiving a small amount, and Blackberry Cove is comparatively free from Pollution.

#### *Shrewsbury River Salt Oysters.*

Parker's Creek—Scores, 140, 140, 32, 320, 23.
Blackberry Cove—Scores, 1, 1, 2, 1, 2.
Pleasure Bay—Scores, 4, 14, 5, 4, 14.

#### *Navesink River.*

Investigation was made of the Navesink River, with analyses of its waters and oysters grown therein. The gravest source of pollution is the sewage plant at Red Bank, and during the summer season there is an increase in the number of tenants along the shore and house and cabin boats on the river, which tend to augment the pollution of the stream. The oyster industry seems to be lessening yearly, due to a number of factors, the principal

one being that the New York City Department of Health refuses to allow these oysters in the city markets unless the shipper can supply a certificate from the New Jersey State Department of Health as to their freedom from pollution. Although no parts of this river have been officially condemned, this Department has always looked upon the river with suspicion, and, consequently, has refused to supply these necessary certificates. Most of the oysters are located in Section 4, which extends from Guyon's Point to Brown's Dock. The river is divided into six sections, extending from the sewage disposal plant to the Oceanic Bridge. Bacteriological results of samples collected from each section are as follows:

#### Section No. 1—

Number of samples collected, .....	17
Number showing bacillus coli present in 1 c.c., .....	17 = 100%
Number showing bacillus coli present in .1 c.c., .....	17 = 100%
Number showing bacillus coli present in .01 c.c., .....	9 = 53%

#### Section No. 2—

Number of samples collected, .....	17
Number showing bacillus coli present in 1 c.c., .....	17 = 100%
Number showing bacillus coli present in .1 c.c., .....	17 = 100%
Number showing bacillus coli present in .01 c.c., .....	14 = 82%

#### Section No. 3—

Number of samples collected, .....	17
Number showing bacillus coli present in 1 c.c., .....	17 = 100%
Number showing bacillus coli present in .1 c.c., .....	11 = 65%
Number showing bacillus coli present in .01 c.c., .....	1 = 6%

#### Section No. 4—

Number of samples collected, .....	17
Number showing bacillus coli present in 1 c.c., .....	17 = 100%
Number showing bacillus coli present in .1 c.c., .....	11 = 65%
Number showing bacillus coli present in .01 c.c., .....	4 = 23%

#### Section 5—

Number of samples collected, .....	17
Number showing bacillus coli present in 1 c.c., .....	16 = 94%
Number showing bacillus coli present in .1 c.c., .....	9 = 53%
Number showing bacillus coli present in .01 c.c., .....	1 = 6%

#### Section 6—

Number of samples collected, .....	17
Number showing bacillus coli present in 1 c.c., .....	16 = 94%
Number showing bacillus coli present in .1 c.c., .....	12 = 71%
Number showing bacillus coli present in .01 c.c., .....	0

Forty-two samples of oysters were collected, principally from Section 4, with the following results:

Section No. 4—

Scores—4, 3, 4, 41, 5, 23.

4, 5, 23, 3, 3, 3, 2.

5, 3, 0, 3, 4, 5, 3.

2, 3, 4, 23, 5, 4.

2, 3, 23, 23, 5, 5, 2, 2, 4, 23, 1.

Section No. 5—

Scores—3, 4, 3, 2, 14.

The Department is aware that oysters are removed from the Navesink River from grounds located rather close to the sewage plant effluent outlet. These oysters are consumed locally, and just what relation this has to the high typhoid fever rate at Red Bank we are not prepared to state. However, it is the intention during the next fiscal year to determine how far down the river the Red Bank sewage will travel during ebb tide. It will be necessary to condemn some portion of this river, and after the necessary official action has been taken by the Department placards will be posted at various spots in the river, and the matter brought to the attention of the local board of health with a view to having the removal of shellfish from such condemned area discontinued.

Low score oysters floated in waters which show considerable more pollution on ebb than flood tide—

Due to the large quantities of water which an oyster filters through itself, it is usually the case that the shell liquor will show the presence of intestinal organisms in much lower dilution than the water in which the oyster grows. Contrary to general expectations, floated oysters in a good many places in the State of New Jersey show the reverse of this as water samples collected at the same time as oysters will show intestinal organisms present in lower dilutions than the shell liquor of the oyster. In most of the creeks and rivers in which oysters are floated in this State the water at high tide consists mostly of bay water, and is always less contaminated at this stage of the tide than after same has ebbed some five or six hours. It is possible that at low water the salinity decreases to such an extent that oysters will no longer

feed. If such is the case, the shell liquor would not be representative of creek or river water at last of ebb tide, and this may explain the low oyster scores obtained when the water shows a greater degree of pollution. It is the intention to do some experimental work next year which may give some definite information upon this phase of the oyster situation.

A number of conferences have been held with the Commission of Shell Fisheries for the purpose of devising some plan which will permit the removal of the clams from the polluted areas adjacent to Atlantic City to unpolluted waters under suitable safeguards. Two plans, both of which seemed feasible, were presented to the clambers operating in these waters, but were rejected by them. This Department believes that the only permanent solution of the difficulties which have been experienced in preventing the gathering and sale of clams from the grossly polluted waters lies in some plan which will permit the transplantation of the clams to pure water by responsible persons under proper supervision. Such a plan is bitterly opposed by the irresponsible clambers who use these waters, and they have succeeded in securing a measure of political support which has prevented the putting of such a plan in operation; nevertheless, it should be done. The consumption of these clams, which are at present being stolen in large numbers from the condemned areas, is a menace to the health of persons in Atlantic City, where they are, for the most part, consumed. An effort to secure legislation last winter which would strengthen the procedure for the enforcement of the Shellfish Act in these areas failed. The bill introduced by this Department passed both Houses of the Legislature, but was vetoed by the Governor.

## Report of the Bureau of Child Hygiene.

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JULIUS LEVY, M.D., CONSULTANT.

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In transmitting the Annual Report for the Bureau of Child Hygiene for the year 1919 permit me to call your attention to several factors of considerable interest to the future welfare of the State of New Jersey which may be summarized as follows:

### INFANT LIVES SAVED.

In 1919 there were 2,359 fewer deaths of babies than in the preceding year. If the infant mortality rate of 1919, which was the lowest in the history of the State, had obtained for the past decade, 19,955 fewer babies would have died. During that decade 70,935 babies were born and 6,013 died under the age of one year, giving an infant mortality rate of 84.7.

### SUPERVISION OF MOTHERS AND CHILDREN.

The appropriation of \$125,000, the largest granted to any State Department of Health in the United States for Child Hygiene work, permitted the establishment of Child Hygiene activities in every county in the State and the concentration of activities in the communities with the highest infant mortality rates.

Since the organization of the Bureau the following municipalities have authorized Child Hygiene activities under the Department of Health and have appropriated from \$1,000 to \$10,000 for this purpose: Elizabeth, Kearny, Passaic, Rahway, Trenton, Woodbridge.

Seventy nurses are following the State's plan of Child Hygiene work, of which fifty-three are paid by the State Department



of Health and seventeen by private organizations and municipalities.

The nurses made over 80,000 visits to approximately 10,000 babies and 2,000 expectant mothers, exercising at the same time supervision over the children of pre-school age, detecting and having corrected many defects and deformities that otherwise would lead to mental and physical disabilities that so frequently interfere with mental, physical and moral progress of the school child. In twenty (20) municipalities nurses were assigned to carry on school work as part of the Child Hygiene Program, but it was possible to make proper arrangements for this work in only eight (8) communities.

We hope to have each nurse include the supervision of the school children in her district so that one nurse will supervise the health of the child from conception to adolescence. In this way there is not only less likelihood of duplication and annoyance to the family, but less danger of conditions developing that can be prevented in the pre-school period.

#### SUPERVISION OF MIDWIVES, MIDWIFERY LAWS.

An analysis of the deaths under one year has shown that the deaths under one month represent one-third to one-half of the deaths under one year, and that the development of prenatal care and better obstetrics is urgently required if we would prevent this needless waste of life.

The Bureau has devoted itself to improve the obstetrical service rendered by midwives, who attend more than one-third of the births in the State and more than one-half of the births in certain cities and counties, and whose work is practically restricted to the families that are least able to obtain proper advice and service.

Of the 946 midwives that have been licensed since 1892, 450 are known to be actively practicing to-day. These midwives have received active supervision and instruction in child hygiene as well as obstetrics, and as a result 30,000 women are receiving better care from their midwives and 30,000 infants are receiving better care from their mothers. Efforts have been made to

eliminate the unfit, the incompetent and the dangerous midwife, but not with the success that the life and health of the mothers and infants require.

The successful prosecution of this phase of the work requires radical changes in the midwifery law and its administration. The State Board of Medical Examiners, the Department of Health, the Health Officers' Association, State Medical Society, County Prosecutors and City Law Departments are interested in the drafting of a law that will make it easier properly to control the activities of certain midwives, and a conference should be arranged before the meeting of the next Legislature for the purpose of drafting a law that will give ample power to regulate effectively this important branch of obstetrics.

#### MATERNITY HOMES.

Maternity Homes have been placed under the supervision and control of the Bureau by an addition to the Sanitary Code of the State Department of Health, which now requires all Maternity Homes to be licensed. Investigation showed that these homes were frequently used for illegal purposes and were usually in the control of midwives.

#### PREVENTION OF BLINDNESS.

The prevention of blindness through the control of ophthalmia neonatorum is an essential part of preventive child hygiene, and is incorporated in the daily work of each nurse and midwife.

Midwives are required to use silver nitrate in the eyes of each new-born baby as a prophylactic, to send for a doctor as soon as the eyes appear inflamed, and to notify the District Supervisor of Midwives. The nurses are required to examine carefully the eyes of each new-born baby, to send to the laboratory a smear of any discharge, and to visit frequently until cured any infant with sore eyes, no matter how mild the infection may appear to be.

The 63 cases of reported ophthalmia referred to this Bureau by the Department of Health were placed under proper medical and nursing care. Only in 14 instances had midwives attended

the delivery, and in only two of these had the midwives failed to use silver nitrate as required by law.

#### LICENSING OF BOARDING HOMES.

The prevention of the unnecessary separation of mothers and children, of improper care of children, of foundlings and public charges, has been made possible by the addition of Chapter 8 to the Sanitary Code, which now requires anyone who boards one or more children for hire to obtain a license from a Department of Health and to conform to its regulations.

We have arranged with private societies who place children in boarding homes properly inspected and supervised to issue licenses on their recommendation and to accept their reports of supervision in place of inspection by our Department.

We believe this will enable the State Department to discharge its duties to this class of children without interfering in any way with the efforts of private societies or public departments to obtain boarding homes for children.

A summary of only four boarding homes that were actively functioning prior to the enactment of this ordinance is sufficient evidence to convince anyone who wishes children who are deprived of parental care to be properly protected of the value of this ordinance. These boarding homes were in large cities, and the existence of one had not only been known to several departments but had been previously investigated and condemned. Since the passage of the ordinance all have been closed.

In these 4 homes there were 55 children between the ages of 3 weeks and 12 years.

1. 28 children, ages 3 weeks to 12 years, 19 under 1 year of age;  
2 women caring for these children;  
3 babies sleeping in one crib.
2. 11 children, ages 3 weeks to 12 years;  
1 attendant to care for them;  
1 bedroom contained 8 cribs.
3. 6 children, ages 2 to 9 years;  
1 attendant to care for them;  
7 persons sleeping in one bedroom.

4. 10 children, ages 9 months to 6 years;  
woman assisted by 15 year old girl in caring for children;  
5 children sleep in room 5 x 8.

#### LICENSING OF DAY NURSERIES.

The supervision of day nurseries by a Child Hygiene Bureau is desirable not only to insure to children proper physical care under sanitary conditions, but to enable the Bureau to influence an agency of this character to make every effort to prevent the separation of children, and more particularly infants, from their mothers. We must resist at every point the economic and social forces that are undermining family life, among which are to be emphasized those social and economic conditions that either encourage or make necessary the employment of women in industry.

We believe that it is desirable to point out that the Day Nurseries are and do serve a very useful purpose in certain places and in certain times, not as a permanent institution of progress but rather as a make-shift during the transitional social period and that the managers of day nurseries will serve the community best by removing or helping to remove conditions that for the time seem to make it necessary for a child to be placed in a day nursery.

A survey of the physical conditions of certain Day Nurseries has indicated the need of control and supervision, and regulations have been prepared to be incorporated in the Sanitary Code which will require all day nurseries to obtain a license from the Department of Health and to conform to the regulations for the proper care and protection of children. It is gratifying to report that this ordinance has been approved by the leaders in Day Nursery work and will establish a standard to which practically all managers of day nurseries are anxious to conform.

#### UNMARRIED MOTHERS.

The protection of the infant of the unmarried mother has been made an integral part of the preventive Child Hygiene program. Special emphasis has been given to this phase of child

care on account of the health and social problems that are bound up with the unmarried mother and her infant. The infant mortality rate is ordinarily two and three times as high as the average, the incidence of syphilis and gonorrhoea is greater, the opportunity of prenatal or even proper obstetrical care is less, and the chance of the baby receiving its birthright of maternal care and breast feeding is almost nil.

The vice investigation in Baltimore and studies in New Jersey have shown that where no special effort is made to guarantee proper care to such infants they are deserted, become public charges or are placed in infant asylums, where the infant mortality is exceedingly high, ranging from 42% to 95%.

There were 741 illegitimate births referred to the Bureau during the year. An effort has been made to place each girl under the direct supervision of a social agency or a nurse in the community so that the baby will be breast-fed and the problems of the mother properly dealt with. Hospitals, social agencies and Florence Crittendon Homes have been deeply interested and very helpful, and in the course of a few years New Jersey will have a very comprehensive program for the unmarried mother and her infant.

One of the urgent needs to properly carry on this work is Convalescent Homes for nursing mothers, where girls can regain their strength, receive proper examinations and be given an opportunity to acquire training in the care of their baby and in personal hygiene and perhaps in a vocation that will make them better fitted properly to adjust themselves to their environment.

#### WOMEN IN INDUSTRY.

The employment of women in factories and stores more than eight hours a day or in positions that require prolonged standing is likely to produce conditions of fatigue, of local congestion that will interfere with the normal functions of women. The employment of married women, especially during pregnancy or the nursing period, is a direct menace to the health of the mother and the life of the infant. It either produces a premature or immature infant, interferes with breast-feeding, a recognized essential

to normal development, or prevents that care of home and children upon which American standards are based.

No practice that interferes with the health or life of the mother or child will in the lapse of years benefit the community, and it will be to the credit as well as to the benefit of New Jersey to use the power of the Legislature as well as public opinion to place the necessary safeguards around women who enter industry.

The nurses have induced mothers to remain at home and out of industry, and have referred to social agencies those families in which the mother works from the apparent necessity to supplement family income.

Social agencies are not sufficiently organized in many parts of the State to carry out properly this principle of preventive child hygiene, and the Bureau has taken up these questions with the overseers of the poor and pointed out the need of developing organizations properly to deal with this and other social problems.

#### BIRTH REGISTRATIONS.

This Bureau has naturally been very much interested in the perfection of birth registration, as a complete and prompt notification of all births is essential to effective, preventive child hygiene, as nurses should visit the babies as soon after birth as possible. During the year a survey was made to determine the degree of completeness of birth registration in New Jersey, under the immediate direction of Mrs. Harold S. Bittenheim, Chairman State Council of Child Welfare, and the active cooperation of local registrars and the State Bureau of Vital Statistics.

While the study was not extensive enough to permit positive statements, it appears that there is a considerable variability in different parts of the State, both in promptness and completeness, with which births are reported. In certain localities the study indicated that only 66% of the births were reported, while in many of the communities the study showed 97% and 98% birth registration.

During the year the Bureau of Vital Statistics has succeeded in having most of the communities in New Jersey send mothers certificates as receipts for birth records.

These two activities with the reports from the nurses and supervisors have undoubtedly considerably increased the birth registration of the State.

## CO-OPERATION.

Active co-operation in the various phases of preventive Child Hygiene work has been received from State Departments, local health departments, police departments, hospitals, social organizations and agencies, and we wish to make clear that only through this assistance has it been possible for the Bureau to make an effective beginning of the large and difficult program it has undertaken.

It seems proper and essential to mention under this heading the indebtedness of this Bureau to the State Council of Child Welfare, which not only assisted in obtaining the appropriation but has rendered, and it is hoped will continue to render, a unique service in co-ordinating groups of citizens, women's clubs and other private organizations that desire to assist in the protection of child life. The effective help that has been given by the Council of Child Welfare should serve as a model to other organizations who may wish to assist public departments.

Especially helpful and stimulating has been the confidence and support of the members of the Department of Health and the devotion and loyalty of the staff of the Bureau. While only a beginning has been made, with this support it should be possible

"To make growth more perfect, life more vigorous,  
Decay less rapid, and death more remote"

for the mothers and children of the whole State, no matter what their station may be.

## SUMMARY OF NURSES' ACTIVITIES.

Consultation stations, .....	61
I. Child Hygiene Nurses under supervision of the State Department of Health, .....	70
Paid by the State Department of Health, .....	53
Paid by private organizations or municipalities, .....	17
Physicians in charge of the consultation stations, .....	76

A. Supervision of Mothers and Children—	
Visits to homes, .....	80,637
Visits to consultation stations, .....	16,058
Prenatal examinations, .....	442
Cases on visiting list at the end of fiscal year, .....	6,937
Birth record cases, .....	5,207
Casual, .....	638
Prenatal, .....	1,092
Supervised babies, .....	10,429
Birth Record cases, .....	7,345
Casual, .....	2,994
Deaths of supervised birth record cases, .....	337
B. Prenatal Care—	
Expectant mothers supervised, .....	1,839
Pregnancies ended, .....	476
Live births, .....	469
Deaths of mothers who received prenatal care (puerperal deaths), .....	0
Deaths of babies under one month whose mothers received prenatal care, .....	10
C. Pre-school Age—	
Defects and illnesses detected, .....	499
Adenoids, .....	95
Tonsils, .....	95
Eyes, .....	79
Legs, .....	32
Teeth, .....	28
Ears, .....	12
Speech, .....	10
Rickets, .....	10
Hernia, .....	8
Feet, .....	8
Mental, .....	7
Tuberculosis, .....	6
Spine, .....	5
Nose, .....	2
Glands, .....	2
Others, .....	100
Defects corrected, .....	102
Adenoids, .....	26
Tonsils, .....	26
Eyes, .....	11
Ears, .....	2
Hernia, .....	2
Rickets, .....	2
Teeth, .....	1
Feet, .....	1
Speech, .....	1
Others, .....	30
D. School Hygiene—	
Inspections, .....	27,054
Defects found, .....	985
Pediculosis, .....	296
Skin diseases, .....	72
Contagious and infectious diseases, .....	91
Demonstrations, .....	206
In the homes, .....	169
In the schools, .....	37
Visits to homes, .....	716

E. Miscellaneous Activities of Child Hygiene Nurses—  
(Eight months' report—October, 1919, June, 1920.)

	Errors.	Corrections.
Babies fed irregularly, .....	2,879	1,602
Babies not sleeping alone, .....	1,791	733
Sleeping rooms poorly ventilated, .....	1,595	752
Pacifiers discovered, .....	934	563
Babies given narcotics, .....	227	164
Babies improperly dressed, .....	1,631	717
Mothers inclined to stop breast feeding, .....	492	391
Mothers in industry, .....	121	26
Reports referred to Board of Health and Charitable Agencies, .....	307	202
Unclean homes discovered, .....	729	327
Prenatal cases where no attendant had been engaged, .....	220	....
Engaging attendant before 7th month, .....	....	16
Inflamed eyes discovered, .....	....	197
Smears sent to State Laboratory, .....	....	151

F. Prevention of Blindness—

Eye smears taken by nurses, .....	151
Results—	
Gonococcus, .....	8
Streptococci, .....	6
Morax Axenfeld, .....	5
Hoffman type bacilli, ....	2
Pneumococci, .....	1
Diplococci, .....	20
Staphylococci, .....	5
Xerosis, .....	4
Kock-Weeks, .....	1
Undetermined, .....	99
Ophthalmia cases referred to Bureau and placed under medical and nursing supervision, .....	45
Contagious diseases, cases reported, .....	193
Unreported births discovered, .....	246
Unsanitary and bad housing conditions reported, .....	245
Relief cases referred to organizations, .....	67

2. Supervision of Midwives—

Visits made by supervisors, .....	4,688
Post partum cases, .....	1,138
Anti-partum cases, .....	20
Investigating puerperal deaths, .....	61
Deliveries witnessed by Supervisor, .....	7
Labors reported by midwives to supervisor, .....	12
Prenatal cases reported by midwives to Supervisor, .....	49
Cases referred to Prosecutors, .....	11
Cases referred to State Board of Medical Examiners, .....	15

STATISTICAL SUMMARY.

TABLE I.

1. Deaths under one year per 1,000 living births, 1900-1919:

Year.	Rate.	Year.	Rate.
1910, .....	154.8	1915, .....	106.4
1911, .....	131.4	1916, .....	104.7
1912, .....	124.1	1917, .....	100.7
1913, .....	122.7	1918, .....	112.3
1914, .....	113.6	1919, .....	84.7

2. Deaths under one month per 1,000 living births:

a. For entire State, .....	37.3
b. For infants whose mothers received prenatal care, .....	21.3

3. Still-births per 1,000 living births:

a. For entire State, .....	44.0
b. For infants whose mothers received prenatal care, .....	14.9

4. Puerperal deaths for 1,000 living births:

a. For entire State, .....	4.7
b. For mothers who received prenatal care (469 cases, no deaths), .....	0.0

TABLE II.

DEATHS OF INFANTS UNDER ONE YEAR PER 1,000 LIVING BIRTHS FOR EACH COUNTY BY RANK.

Infant Mortality Rate Rank.	Popu- lation Rank.	County.	Infant Mortality Rate			
			1919.	1918.	1917.	1916.
1	13	Monmouth, .....	65.6	84.6	106.8	111.9
2	16	Bergen, .....	68.3	97.5	92.3	98.7
3	20	Essex, .....	73.8	97.6	84.4	86.3
4	19	Passaic, .....	74.6	110.4	99.4	116.9
5	17	Union, .....	76.3	109.9	96.5	101.2
6	2	Ocean, .....	76.9	79.0	78.7	60.1
7	7	Somerset, .....	78.5	103.2	103.9	89.8
8	5	Hunterdon, .....	79.2	86.9	76.6	108.4
9	6	Gloucester, .....	82.3	147.2	103.7	128.5
10	1	Cape May, .....	83.3	91.8	111.0	84.1
11	11	Atlantic, .....	84.7	116.0	91.0	77.2
12	12	Morris, .....	85.3	118.1	104.4	90.2
13	4	Salem, .....	87.5	140.0	118.3	95.5
14	21	Hudson, .....	92.5	110.5	102.0	106.2
15	9	Cumberland, .....	98.4	108.1	90.3	107.3
16	14	Middlesex, .....	98.6	139.6	124.9	129.1
17	15	Mercer, .....	100.3	121.2	114.4	129.3
18	18	Camden, .....	112.2	148.0	128.7	124.0
19	8	Warren, .....	113.5	127.9	109.0	101.3
20	3	Sussex, .....	114.3	123.6	128.9	80.8
21	10	Burlington, .....	119.4	134.3	109.7	132.4

TABLE III.

DEATHS OF INFANTS UNDER ONE YEAR AND UNDER ONE MONTH PER 1,000 LIVING  
BIRTHS BY COUNTIES AND TOWNS FOR THE YEAR 1919.

One-fourth to One-half of all Deaths in the First Year Occur Before  
the First Month.

<i>Name of Town. (Counties Total.)</i>	<i>Deaths Under 1 Year.</i>	<i>Deaths Under 1 month.</i>
Atlantic County, .....	84.7	40.8
Atlantic City, .....	95.1	51.5
Hammonton, .....	74.2	5.7
Bergen County, .....	68.3	32.5
Englewood, .....	65.2	34.7
Garfield, .....	75.2	29.0
Hackensack, .....	45.9	20.6
Ridgewood, .....	68.9	45.9
Rutherford, .....	58.3	33.3
Burlington County, .....	119.4	44.3
Burlington, .....	94.4	25.7
Camden County, .....	112.2	48.3
Camden, .....	121.0	52.2
Gloucester, .....	100.0	46.6
Cape May County, .....	83.3	41.6
Cumberland County, .....	98.4	41.3
Bridgeton, .....	124.0	54.7
Millville, .....	102.4	38.8
Vineland, .....	46.7	23.3
Essex County, .....	73.8	32.3
Bloomfield, .....	61.5	29.7
East Orange, .....	60.6	38.3
Irvington, .....	47.8	23.9
Montclair, .....	67.9	35.5
Newark, .....	77.8	31.6
Nutley, .....	53.8	17.9
Orange, .....	75.9	41.6
South Orange, .....	48.0	32.0
West Orange, .....	63.7	28.9
Gloucester County, .....	82.3	39.2

<i>Name of Town. (Counties Total.)</i>	<i>Deaths Under 1 Year.</i>	<i>Deaths Under 1 month.</i>
Hudson County, .....	92.5	39.3
Bayonne, .....	104.5	48.0
Guttenberg, .....	62.1	37.2
Harrison, .....	80.0	32.4
Hoboken, .....	76.7	32.4
Jersey City, .....	102.8	42.6
Kearny, .....	74.5	36.3
Town of Union, .....	80.4	16.0
West Hoboken, .....	63.6	26.7
West New York, .....	56.5	24.2
Hunterdon County, .....	79.2	36.3
Mercer County, .....	100.3	39.6
Princeton, .....	59.4	9.9
Trenton, .....	106.6	39.8
Middlesex County, .....	98.6	41.6
New Brunswick, .....	98.1	46.5
Perth Amboy, .....	88.4	31.5
Roosevelt, .....	113.9	48.4
South Amboy, .....	77.2	24.1
Monmouth County, .....	65.6	31.1
Asbury Park, .....	57.9	38.6
Long Branch, .....	59.1	31.1
Red Bank, .....	75.1	40.4
Morris County, .....	85.3	40.0
Dover, .....	84.8	40.1
Morristown, .....	71.1	25.1
Ocean County, .....	76.9	34.9
Passaic County, .....	74.6	33.5
Passaic, .....	84.6	36.8
Paterson, .....	74.1	30.9
Salem County, .....	87.5	40.7
Salem, .....	79.8	42.9
Somerset County, .....	78.5	32.7
North Plainfield, .....	105.6	40.6
Somerville, .....	64.7	21.5

Name of Town. (Counties Total.)	Deaths Under 1 Year.	Deaths Under 1 month.
Sussex County, .....	114.3	59.1
Union County, .....	76.3	34.9
Elizabeth, .....	81.4	33.9
Plainfield, .....	70.5	31.8
Rahway, .....	66.6	48.8
Summit, .....	78.5	31.4
Westfield, .....	64.7	35.2
Warren County, .....	113.5	51.3
Phillipsburg, .....	113.5	52.6
Total, .....	84.7	37.4

TABLE IV.

DEATHS OF INFANTS UNDER ONE YEAR PER 1,000 LIVING BIRTHS FOR THE CITIES OF THE 1ST, 2D AND 3D CLASSES FOR THE YEAR 1919.

*First Class.*

Rank.	City.	Rate.	Rank.	City.	Rate.
1.	Newark, .....	77.8	2.	Jersey City, .....	102.8

*Second Class.*

Rank.	City.	Rate.	Rank.	City.	Rate.
1.	Long Branch, .....	59.1	9.	Perth Amboy, .....	88.4
2.	East Orange, .....	60.6	10.	New Brunswick, .....	98.1
3.	Plainfield, .....	70.5	11.	Millville, .....	102.4
4.	Paterson, .....	74.1	12.	Bayonne, .....	104.5
5.	Orange, .....	75.9	13.	Trenton, .....	106.6
6.	Hoboken, .....	76.7	14.	Camden, .....	121.0
7.	Elizabeth, .....	81.4	15.	Bridgeton, .....	124.0
8.	Passaic, .....	84.6			

*Third Class.*

Rank.	City.	Rate.	Rank.	City.	Rate.
1.	Hackensack, .....	45.9	19.	Ridgewood, .....	68.9
2.	Vineland, .....	46.7	20.	Morristown, .....	71.1
3.	Irvington, .....	47.8	21.	Hammonton, .....	74.2
4.	South Orange, .....	48.0	22.	Kearny, .....	74.5
5.	Nutley, .....	53.8	23.	Red Bank, .....	75.1
6.	West New York, .....	56.5	24.	Garfield, .....	75.2
7.	Asbury Park, .....	57.9	25.	South Amboy, .....	77.2
8.	Rutherford, .....	58.3	26.	Summit, .....	78.5
9.	Princeton, .....	59.4	27.	Salem, .....	79.8
10.	Bloomfield, .....	61.5	28.	Harrison, .....	80.0
11.	Guttenberg, .....	62.1	29.	Town of Union, .....	80.4
12.	West Hoboken, .....	63.6	30.	Dover, .....	84.8
13.	West Orange, .....	63.7	31.	Burlington, .....	94.4
14.	Somerville, .....	64.7	32.	Atlantic City, .....	95.1
15.	Westfield, .....	64.7	33.	Gloucester, .....	100.0
16.	Englewood, .....	65.2	34.	North Plainfield, .....	105.6
17.	Rahway, .....	66.6	35.	Phillipsburg, .....	113.5
18.	Montclair, .....	67.9	36.	Roosevelt, .....	113.9

*Note.*—Rates for cities of the 3d class are frequently based on small numbers, and therefore the rate for one year may not properly represent the conditions of the community.

# Report of the Bureau of Venereal Disease Control.

A. J. CASSELMAN, M.D., A.A. SURGEON, CHIEF.

I. Clinics—	
(a) No. of venereal disease clinics,.....	10
(b) Average daily attendance, .....	18
(c) No. of cases of gonorrhoea treated, .....	1,431
(d) No. of cases of syphilis treated, .....	1,165
(e) No. of cases of chancroid treated, .....	41
(f) No. of cases of other venereal diseases treated, .....	225
II. (a) No. of cases of gonorrhoea reported, .....	
(b) No. of cases of syphilis reported, .....	3,445
(c) No. of cases of chancroid reported, .....	3,477
	265
Total, .....	7,187
III. Number of doses of arsphenamine administered, .....	5,641
IV. Total number of treatments administered (including arsphen- amine), .....	38,586
V. No. of cases of venereal disease placed in detention homes, ..	174
VI. No. of cases (not included above), hospitalized, .....	448
VII. (a) No. of requests for pamphlets received.	
(1) Forwarded from U. S. Public Health Service, ....	1,001
(2) Directly from the public, .....	1,433
Total, .....	2,434
(b) No. of pamphlets purchased and reprinted.	
(1) A for young men, .....	85,500
(2) B for general public, .....	33,500
(3) C for boys, .....	80,600
(4) D for parents, .....	18,500
(5) E for girls, .....	101,200
(6) F for educators, .....	7,000
(7) "How to Fight V. D. in Your City," .....	3,500



## DEPARTMENT OF HEALTH.

(8) "To-day's World Problem in Disease Prevention," ..	3,500
(9) "Conquering an Old Enemy," .....	58,000
Other pamphlets, .....	40,550

Total, ..... 431,850

## (c) Pamphlets distributed.

(1) In response to requests received, .....	16,162
(2) In general circulation, .....	337,711

Total, ..... 353,873

## VIII. Total number of lectures given, ..... 376 Average attendance, 192

(1) No. of lectures illustrated with slides, .....	64
(2) No. of lectures illustrated with motion pictures, .....	105
(3) No. of lectures illustrated with slides and m. p., .....	23

IX. Number of days card exhibit shown, .. 402 Average attendance, 65  
Number of slide showings, ..... 77 Average attendance, 51

## X. Exhibits, slides and films purchased.

- 8 Adult Exhibits.
- 6 "Keeping Fit" Exhibits.
- 1 set of Adult Slides.
- 3 sets "Keeping Fit" Slides.
- 1 "Women's Lecture Film."
- 2 Attract-O-Scopes.

Films rented: "Modern Diagnosis and Treatment," ..... 3 times  
"End of the Road," ..... 10 times

## XI. Number of clippings received from newspapers, ..... 53

## XII. Number of city ordinances passed, ..... 4

## BUREAU OF VENEREAL DISEASE CONTROL, 1919-1920.

## MEDICAL.

During the war and during the first year of its establishment the Bureau of Venereal Disease Control was supported entirely by Federal funds and under the direct supervision of an officer of the United States Public Health Service. At that time the activities of the Bureau were centralized around the medical phase of the work. Free clinics were established for the treatment of infected individuals wherever it was possible to get the

## BUREAU OF VENEREAL DISEASE CONTROL. 205

approval of the city officials, and a desperate effort was made in this unorganized field to place every diseased individual under treatment.

During the second year the medical work was systematized and put on a firm business basis. It was found impossible to utilize methods previously employed to get people to attend the clinics and receive treatment, and it was also found impractical to use the same means for enforcing continuance of treatment as had been practiced during the emergency, therefore the medical work had to be revised. It was found necessary to obtain the co-operation of the Red Cross, the American Social Hygiene Association, associated churches, Y. M. C. A.'s, Boy Scouts and to correlate the work of all the agencies touching the control of venereal disease.

The clinics previously established were given such additional equipment as was required to enable them to make proper diagnoses and give the best treatment. Physicians in charge of the clinics were given an honorarium in appreciation of their services, which resulted in arousing a better feeling of co-operation between them and the Bureau. They attended the clinics more regularly and their interest was increased. In many cases the honorarium was not retained by the physician, but was paid to the clerk or donated to the hospital in which the clinic was located for the purchase of additional supplies and equipment. The attendance at the clinics has progressively increased and every city has been made to feel the necessity for such an institution.

Every medical society in the State has been urged to have a speaker from the Bureau address their members, in order that they might learn directly the purpose of the State laws, the necessity for requiring reporting of venereal diseases, and that they might receive instruction as to the best methods for diagnosing and treating gonorrhoea and syphilis. In order to make the instruction very definite and concrete, motion pictures prepared by the American Social Hygiene Association and the U. S. Interdepartmental Social Hygiene Board were used.

Physicians have been circularized and urged to comply with the State law on reporting, asked to distribute literature and to co-operate with the Bureau in educational work.

Druggists have been informed of the campaign for the control of venereal diseases, have been instructed as to the undesirable results from self-treatment or the use of proprietary remedies in the case of gonorrhea or syphilis, and urged to discontinue the sale of such preparations.

The dentists of the State have been appealed to and requested to urge all suspected cases of syphilis to consult a licensed physician for a thorough diagnosis.

The medical phase of the work is very important, since gonorrhea and syphilis are simply communicable diseases, and must be treated as such. Therefore, it is imperative that the medical aspect be given prominence and the necessity for gaining the friendly co-operation of the physicians be kept constantly in mind.

#### EDUCATIONAL.

There are two ways of controlling disease and of improving the general public health. Each method has its value and its proper use.

(1) The absolute control of all infected individuals and control of all conditions which may in any way affect the spread of the diseases.

(2) Popular education.

The first method is used in times of emergency by the local health authorities in case of smallpox or other contagious diseases, when the infected individuals or in rare cases certain sections of the city are quarantined. A smallpox epidemic is controlled chiefly by causing the exposed people to submit to vaccination. This measure is resorted to on a more extensive scale when the Federal authorities take control of the city or community and quarantine the entire population, allowing no one to enter or depart from the isolated district without permission or without proper examination and investigation. The people are told what to do and necessary measures are taken to see that they comply with all official requests. In conditions

like this, the matter of expediency or of public opinion is not considered, stringent rules and regulations are laid down and vigorously enforced and an appeal to other authorities than the health agents is not permitted. Personal rights, individual freedom, city or even State rights are completely ignored, and in their place the directions of the health authorities are substituted. A plan of this kind is wholly unwarranted when considered as a means for controlling venereal diseases, which are what might be termed endemic in the whole civilized world. Therefore, it is necessary to resort to the alternative of popular education.

In a democracy the expressed will of the majority must rule, hence in order successfully to decrease the prevalence of venereal diseases we must get the crystallized opinion of the majority demanding a diminution in the prevalence and supporting the health authorities in their vigorous enforcement of such rules and regulations as may be necessary to gain the desired end. Before this opinion could be obtained, in the case of venereal diseases, it was first necessary that the masses of people should know the prevalence of these diseases: their indifference has been due largely to the fact that although they knew the diseases existed they felt that they were not sufficiently common as to threaten or endanger their individual health. It is also necessary to make them appreciate the seriousness of the diseases, because if the ordinary individual does not think a disease may be serious in its consequences or after effects, unless the course of the disease is very troublesome or disagreeable, he will not greatly change his course of action or actively support or participate in a movement for the eradication of the disease. For example, measles, the most prevalent of all communicable diseases, could to a great extent be prevented, but since the course of the disease is usually short and not serious and the after effects do not greatly impair the physical or mental fitness of the individual, it seems impossible at present to start an effective movement for the control of measles.

To educate the people is becoming constantly more difficult because the facilities and means for educating are not increasing

with the same rapidity as the subjects for education. Never before have we had so many or such effective means for reaching the people as at present. We have the printed word, the lecturer, the motion picture, the bill board and the scores of other advertising mediums and the countless number of organizations and societies willing to lend their influence for the advancement of a cause they feel worthy; however, the number of questions of vital interest to the individual as such, and of local, national and international importance with which he is confronted are so numerous and so complex and are being presented in such masterly ways as to confuse the issues and to make it next to impossible to discriminate between those which should be approved and those which should be disapproved. This results in an increasing indifference on the part of the individual to actively participate in any of the great movements which are being urged. For these reasons our educational program has of necessity been rather complex and extensive. Venereal diseases are more than a health problem; they have a social, an economic, a biologic and a psychologic aspect, and from every point of view the ultimate eradication of venereal diseases is to be desired. Thus it is possible to make an effective appeal to every individual or group of individuals; business men are appealed to from the economic point of view, social organizations from the humanitarian aspect, religious societies from the moral side, etc. The people in every part of the State have been educated in such of these ways as was thought best able to arouse their interest and enthusiasm for the work and gain their support for the necessary health rules and regulations.

Wherever the American plan has been presented to the people it has met with their approval and been readily endorsed by them. Through official and volunteer agencies the Bureau has offered its services in such a comprehensive and extensive manner as to have made possible the reaching of every individual man, woman and child over fourteen years of age in the State. Sufficient co-operation has been received so that it has been possible to reach by lectures 75,000 people and to distribute a grand total of 354,000 pamphlets, or about one to every eight

individuals within the State. There can be little doubt as to the effectiveness of this work as shown by the increase of attendance at the free clinics and by the large number of cases reported by physicians (because these diseases have not previously been systematically reported, and even yet are not completely reported, it is impossible even to estimate the increased number of infected individuals seeking medical attention. It is the opinion of physicians and public health officers that self-treatment is falling into disfavor and the ethical physician is building up a very substantial practice).

A general educational movement in order to become effective must have some definite way of expressing itself if any tangible results are to accrue, so in order to get the benefit of the favorable public opinion which has been created and the interest of the health officers which has been stimulated, concentrated effort was directed in individual cities or districts. During such a campaign the time is opportune for the establishment of a clinic, for the passing of city ordinances and for the concrete expression in a tangible form of the public's willingness to have the city financially support the work and to support the police authorities, court judges and health officials in the liberal interpretation of such laws as were already on the books for improving the general health conditions.

During the year educational campaigns were carried on in Plainfield, Elizabeth, Perth Amboy and Newark, with a varying degree of success.

In Plainfield the Bureau had the advice of the city health officials and a committee of business men to arrange for the lectures and carry on the publicity work. The increased attendance at the clinic surpassed the expectations of the local physicians, and the clinic grew to be the largest per capita of any in the State.

In the City of Newark the city health department is well organized and keenly interested in venereal disease control. Here is located the largest and best systematized clinic in the State, and it was unnecessary for this Bureau to take the initiative in the educational campaign. We co-operated whenever

and wherever we could and supplemented the local board of health in its activities. The Newark Board of Health, in its publicity campaign, has shown the film "End of the Road" to more than forty thousand women.

In Elizabeth the campaign was conducted entirely by this Bureau. We had the approval of the city department of health, but not their active participation or support. Since the city officials did not support the work, it was impossible to get the support of the Rotary Club or the Chamber of Commerce, and as a result the campaign was not successful.

This series of campaigns has shown that where there is a live and progressive health department the work can be successfully carried on by the local authorities and the State Bureau needs only to render supplementary assistance.

Plainfield is an example of a city where local officials are interested and approve and endorse the work, but, because of limited resources, both in personnel and finances, the Health Department is unable actively to carry on the work. However, through its co-operation with this Bureau the work was very effective.

Elizabeth is an example of a city which demonstrates how futile it is for a State bureau to attempt to establish a venereal disease clinic and carry on an educational campaign with only the silent and inactive support of the Board of Health and without the interest of the city officials.

It is apparent from these examples that the Bureau should in the future direct its activities toward "selling" the idea to city officials. In order to accomplish this it may be necessary also to "sell" the program to some of the civic organizations which are influential with the city authorities and to take advantage of the general educational work already accomplished throughout the State and get a definite opinion from the public to the city officials.

For the coming year the educational activities of the Bureau will be devoted to the education of city officials and State legislators in order that the American plan may be suitably adapted and put on a practical working basis for the various communi-

ties, and in order that both city and State public officials will realize the need for the continuance of the work under proper supervision and will be ready and willing to make adequate appropriations for the eradication of venereal disease. This is practically the same as the educational program for the past year, with the exception that now the emphasis will be laid on the individual work with officials and citizens rather than stressing the education of the masses. This work will require as large a staff of representatives as possible to be kept in the field and in constant touch with the conditions in the twenty-nine largest cities of the State in which the campaigns will be conducted, and will require a reduction of general publicity work such as general distribution of circulars and pamphlets, the sending out of circular letters and the giving of illustrated lectures throughout the State. It is felt that individual concentrated effort on these cities will result in getting the greatest possible return from the money available and will accomplish the greatest possible good for the greatest number of people.

#### REPRESSIVE MEASURES.

During the past year comparatively little has been done in law enforcement. Public officials appreciate that it is absolutely impractical and inadvisable to attempt to enforce laws, city ordinances, rules or regulations for which there is not a strong public backing. The public official who carries out a law which is not approved by a majority of people is not esteemed or considered a patriotic official, but is, on the contrary, either held up to ridicule or condemned for his activities. For these reasons it has been considered best to precede any legal action with strong general publicity work and to acquaint the various officials with the requirements of the law and with the co-operation which is expected from them.

To make the work more effective for the coming year it will be necessary for the State Board of Health to pass certain rules and regulations. It has been found desirable to bring pressure on recalcitrant individuals who are unwilling to abide by the judgment of health officials and who persist in menacing the

general public health. Our relationship with city health officers has clearly demonstrated that they are generally unwilling to take any action which would restrain freedom of movement of any individual or would call for the prosecution of any citizen or professional man under their general health power. Therefore, it is apparent that before the cities can advance far in the campaign for the control and eradication of venereal diseases it is necessary that they shall have invested in them definite power and authority. With this end in view a number of cities have been asked during the past year to pass local ordinances, and during the coming year all of the larger cities of New Jersey will be urged and expected to pass such ordinances as may be necessary, according to their particular situation. Model ordinances will be offered to these cities by this Bureau.

#### PROTECTIVE SOCIAL MEASURES BUREAU.

On the first of June there was organized a Protective Social Measures Bureau to be a sub-bureau to the Bureau of Venereal Disease Control, with Dr. A. J. Casselman as Chief of the Bureau. The salaries and expenses of the personnel of this staff are paid by the U. S. Interdepartmental Social Hygiene Board, but the personnel is directed and responsible to Dr. Price through Dr. Casselman.

The functions of this Bureau are as follows:

- (a) Investigation of social conditions which encourage the spread of venereal disease, and search for the foci of infection with a view to securing the proper care or detention of civilian persons infected with venereal diseases.
- (b) Investigation of social conditions which encourage the spread of venereal diseases and follow-up work with persons who have been carriers to prevent them from again subjecting themselves to conditions which may lead to infection.
- (c) Investigation of provisions and facilities for the care and maintenance of persons infected with venereal diseases.
- (d) Encouraging vigorous and effective enforcement of venereal disease control laws and ordinances.

## Report of the Bureau of Vital Statistics.

DAVID S. SOUTH, STATE REGISTRAR.

The figures regarding mortality which appear in this report cover the calendar year 1919. Additional tables have been added which do not appear in previous reports.

Strenuous efforts have been made to improve birth registration, and while there is a decided improvement in filing the reports it is not yet up to the standard desired. At the time of writing this report the Legislature has just passed an act improving birth registration, and it is hoped that the figures published in the next annual report will reflect the value of this legislation.

The act above referred to is known as chapter 99, laws of 1920, and after the provisions of this act are generally known throughout the State improvement will probably be shown in birth registration. It will take considerable time to organize various local officers as provided under the statute referred to and in some cases, probably the larger cities, personal conferences will be held in order to get the law working smoothly and to obtain the best results therefrom.

The attention of local registrars is called to the fact that under the new law it is their duty to aid the State Registrar in enforcing the law for the complete registration of births and deaths and if any physician or midwife in any part of the State fail to report a birth within five days the local registrar should at once refer the case to the State Registrar for investigation, and if any undertaker removes a dead human body from any sanitary district without first securing a removal or transit permit the facts should at once be reported to the State Registrar.

Local registrars are urged to examine all death certificates to see that they are complete in every respect before giving the undertaker a burial, removal or transit permit, and in addition to this each local registrar should carefully examine all death certificates, and where deaths of infants are found he should at once examine his birth certificates to see whether a report of the birth of such child was properly made.

Local registrars are required under the new law to furnish parents with a certificate of birth of each child born in their district. They are also to keep an accurate record of births and deaths, and full instructions in regard to such duties will be found in Circular 160, copies of which will be furnished by the State Department of Health.

The Bureau of Vital Statistics is daily receiving additional requests for certified copies of births, marriages and deaths. This work is greatly on the increase, due to the fact that the law now requires certificates to be given without charge to applicants in pension cases, employment cases and for enlistment purposes, and this great increase of work multiplies the handling of the records to such an extent that many of the older books are in extremely bad condition, and I desire to repeat a recommendation made in the last report, as follows: "In a communication to the State Department of Health it has been recommended that the old records—that is, those records dating from 1847 to 1878—be completely indexed. While this would mean considerable work, the records are in such a state that the constant handling of the same will ruin them for all practicable purposes. It is, therefore, urged that an appropriation of about \$2,500 or \$3,000 per year be made for the purpose of starting and continuing such indexes until they are completed. Such an appropriation would permit the employment of three clerks at a salary of \$60 per month, the remainder of the appropriation being used for stationery and other incidentals. This appropriation would be made year after year until this work is completed."

A matter which must be given attention at an early date is additional vault space for the records of births, marriages and

deaths, also additional office space for the employees of the Bureau of Vital Statistics. At the present time there are twelve people doing the work of this Bureau in two small rooms.

In the majority of instances the preparation of statistical tables is carried on under great difficulty and at a loss of efficiency; therefore, it is hoped the department will see that additional vault and office space is provided.

The Bureau of Vital Statistics has from month to month during the year furnished the Bureau of Child Hygiene with numerous statistical tables and data for the promotion of this important work, and in order to make Child Hygiene work still more effective the Bureau of Vital Statistics will make every effort to procure the complete and accurate registration of births.

We are glad to state that the statistical treatment of births which appear in the tables of this report is the same as has been practiced with the deaths of nonresidents; therefore, every birth that took place in the State during the calendar year 1919 was credited to the place of residence of the mother, regardless of where the birth took place. This statistical treatment of births results in the many hospital cases being properly tabulated, and gives each sanitary district in the State credit for the number of births which actually belong in the said district.

The estimates of population which appear in the report of this Bureau are partly based on unofficial census figures for 1920. However, it was not possible to procure this data for many districts of the State, especially the counties, but nearly all of the city figures were received in time to compute rates upon the basis of the 1920 census.

The following table is a summary of the various records filed in the Bureau of Vital Statistics for the calendar years 1917, 1918 and 1919, together with the number of searches and certified copies prepared in the Bureau and the amount of fees received therefor:

## GENERAL SUMMARY.

	1917.	1918.	1919.	Total.
Deaths registered, indexed and tabulated, .....	43,532	60,852	39,979	144,363
Births registered, indexed and tabulated, .....	75,278	74,549	70,935	220,762
Still-births registered, indexed and tabulated, .....	3,183	3,525	3,047	9,755
Marriages registered, indexed and tabulated, .....	30,060	23,989	29,281	83,330
Total records registered, tabulated and permanently preserved, .....	152,053	162,915	143,242	458,210
Certified copies issued and searches made for which fees were received, .....	4,408	7,245	4,722	16,375
Certified copies issued and searches made in pension and employment cases for which no fees were received, .....	4,383	4,947	6,681	16,011
Fees returned to State Treasurer for certified copies and searches, .....	\$3,423.30	\$4,979.15	\$3,822.75	\$12,225.20

TABLE 1—BIRTHS, MARRIAGES AND DEATHS AND DEATHS UNDER ONE YEAR OF AGE BY COUNTIES, CITIES, BOROUGHS AND TOWNSHIPS, 1919.

## ATLANTIC COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Absecon City, .....	15	6	4	..
Atlantic City, .....	873	639	735	83
Buena Vista Township, .....	101	37	40	12
East Atlantic City, .....	..	..	..	..
Egg Harbor City, .....	87	37	44	5
Egg Harbor Township, .....	33	7	24	3
Folsom Borough, .....	5	..	4	..
Galloway Township, .....	22	4	16	2
Hamilton Township, .....	39	23	32	4
Hammonton Town, .....	175	80	70	12
Linwood Borough, .....	9	5	8	1
Longport Borough, .....	..	..	1	..
Margate City, .....	8	3	6	1
Mullica Township, .....	29	7	10	..
Northfield City, .....	16	2	23	..
Pleasantville City, .....	125	64	98	9
Port Republic City, .....	10	2	9	..
Somers Point City, .....	5	5	9	..
Ventnor City, .....	36	12	22	..
Weymouth Township, .....	24	1	12	2
Total, .....	1,592	939	1,184	134

## BERGEN COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Allendale Borough, .....	15	12	6	1
Alpine Borough, .....	7	2	4	1
Bergenfield Borough, .....	79	28	44	6
Bogota Borough, .....	76	28	38	9
Carlstadt Borough, .....	94	53	40	3
Cliffside Park Borough, .....	130	88	54	12
Closter Borough, .....	26	9	26	4
Cresskill Borough, .....	15	3	12	2
Delford Borough, .....	18	8	13	..
Demarest Borough, .....	13	..	9	1
Dumont Borough, .....	51	102	30	2
East Paterson Borough, .....	53	9	25	4
East Rutherford Borough, .....	101	51	60	7
Edgewater Borough, .....	95	27	45	6
Emerson Borough, .....	19	5	6	3
Englewood City, .....	230	122	132	14
Englewood Cliffs Borough, .....	9	5	1	..
Fairview Borough, .....	160	40	42	12
Fort Lee Borough, .....	91	62	65	7
Franklin Township, .....	32	10	25	2
Garfield Borough, .....	585	116	144	47
Glen Rock Borough, .....	28	4	22	1
Hackensack Town, .....	435	194	217	17
Harrington Park Borough, .....	12	6	6	..
Hasbrouck Heights Borough, .....	31	12	34	2
Haworth Borough, .....	13	13	13	2
Hillsdale Township, .....	14	13	14	2
Hohokus Borough, .....	9	6	8	..
Hohokus Township, .....	44	10	15	4
Leonia Borough, .....	53	20	27	4
Little Ferry Borough, .....	57	19	25	2
Lodi Borough, .....	214	73	76	22
Lodi Township, .....	17	16	4	2
Lyndhurst Township, .....	209	47	86	18
Maywood Borough, .....	26	9	15	2
Midland Township, .....	30	8	32	4
Midland Park Borough, .....	56	19	23	5
Montvale Borough, .....	14	4	9	..
Moonachie Borough, .....	26	9	13	4
North Arlington Borough, .....	29	3	18	5
Northvale Borough, .....	17	11	13	8
Norwood Borough, .....	12	1	8	..
Oakland Borough, .....	13	3	7	..
Old Tappan Borough, .....	8	..	4	..
Palisade Township, .....	34	6	20	1
Palisade Park Borough, .....	52	14	28	8
Park Ridge Borough, .....	25	14	18	1
Ramsey Borough, .....	25	11	22	..
Ridgefield Borough, .....	13	8	14	1
Ridgefield Park Borough, .....	124	55	62	6
Ridgewood Village, .....	57	56	83	5
Riverside Borough, .....	21	6	20	1
Rivervale Township, .....	4	2	7	..
Rutherford Borough, .....	120	66	87	7
Saddle River Borough, .....	18	1	7	..
Saddle River Township, .....	47	13	27	5
Teaneck Township, .....	74	20	38	8
Tenafly Borough, .....	68	42	33	1
Teterboro Borough, .....	..	..	..	..
Upper Saddle River Borough, .....	3	2	2	1
Waldwick Borough, .....	13	4	11	1
Washington Borough, .....	197	4	42	11
Washington Township, .....	1	1	3	..
Westwood Borough, .....	38	19	32	..
Woodcliffe Lake Borough, .....	..	..	12	..
Woodridge Borough, .....	38	5	14	8
Total, .....	4,268	1,584	2,092	293

## BURLINGTON COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Bass River Township, .....	6	4	11	..
Beverly City, .....	61	21	36	5
Beverly Township, .....	42	13	40	5
Bordentown City, .....	73	33	72	6
Bordentown Township, .....	8	..	12	1
Burlington City, .....	233	97	154	22
Burlington Township, .....	24	5	17	4
Chester Township, .....	137	53	100	16
Chesterfield Township, .....	16	13	21	1
Cinnaminson Township, .....	20	13	16	2
Delran Township, .....	12	2	21	3
Easthampton Township, .....	8	2	5	..
Evesham Township, .....	24	8	21	6
Fieldsboro Township, .....	7	2	5	1
Florence Township, .....	175	27	75	24
Lumberton Township, .....	36	2	30	6
Mansfield Township, .....	22	5	19	4
Medford Township, .....	44	11	32	7
Mount Laurel Township, .....	40	3	27	7
New Hanover Township, .....	20	38	22	3
Northampton Township, .....	116	65	136	9
North Hanover Township, .....	4	3	6	..
Palmyra Township, .....	64	20	62	10
Pemberton Borough, .....	6	8	15	..
Pemberton Township, .....	18	14	64	6
Riverside Township, .....	175	64	77	14
Riverton Borough, .....	30	17	29	3
Shamong Township, .....	7	4	5	1
Southampton Township, .....	30	4	23	1
Springfield Township, .....	11	4	13	1
Tabernacle Township, .....	6	..	8	1
Washington Township, .....	15	2	11	1
Westhampton Township, .....	15	1	10	2
Willingboro Township, .....	13	1	4	..
Woodland Township, .....	13	3	5	..
Wrightstown Borough, .....	1	..	1	..
Total, .....	1,532	562	1,205	162

## CAMDEN COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Audubon Borough, .....	85	20	45	6
Barrington Borough, .....	25	2	14	..
Berlin Township, .....	56	52	35	4
Camden City, .....	2,816	1,083	1,703	342
Centre Township, .....	99	13	49	8
Cheshurst Borough, .....	3	3	8	..
Clementon Township, .....	64	11	42	7
Collingswood Borough, .....	123	60	86	7
Delaware Township, .....	32	3	25	5
Gloucester City, .....	280	101	165	30
Gloucester Township, .....	55	16	42	4
Haddonfield Borough, .....	90	23	69	5
Haddon Heights Borough, .....	45	20	30	5
Haddon Township, .....	50	5	25	8
Laurel Springs Borough, .....	6	9	13	..
Magnolia Borough, .....	31	7	16	3
Merchantville Borough, .....	40	51	41	2
Oaklyn Borough, .....	20	4	10	3
Pensauken Township, .....	86	16	55	12
Voorhees Township, .....	38	10	17	5
Waterford Township, .....	63	15	32	5
Winslow Township, .....	82	11	51	12
Wood-Lynn Borough, .....	31	8	10	6
Total, .....	4,223	1,543	2,593	475

## CAPE MAY COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Avalon Borough, .....	3	1	4	..
Cape May City, .....	51	42	35	5
Cape May Point Borough, .....	4	..	..	..
Dennis Township, .....	33	6	18	2
Lower Township, .....	20	4	17	1
Middle Township, .....	41	12	33	7
North Wildwood City, .....	35	5	12	2
Ocean City, .....	56	30	35	4
Sea Isle City, .....	13	6	12	3
South Cape May Borough, .....	..	..	1	..
Stone Harbor Borough, .....	2	2	7	..
Upper Township, .....	13	7	15	2
West Cape May Borough, .....	18	4	15	8
Wildwood City, .....	38	32	41	2
Wildwood Crest Borough, .....	3	4	5	..
Woodbine Borough, .....	30	7	8	1
Total, .....	360	162	258	32

## CUMBERLAND COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Bridgeton City, .....	274	163	253	30
Commercial Township, .....	26	15	29	3
Deerfield Township, .....	47	10	34	4
Downe Township, .....	17	9	24	3
Fairfield Township, .....	31	10	20	8
Greenwich Township, .....	29	7	7	..
Hopewell Township, .....	32	8	41	6
Landis Township, .....	96	11	95	12
Lawrence Township, .....	33	7	25	2
Maurice River Township, .....	27	10	24	3
Millville City, .....	283	138	133	29
Stow Creek Township, .....	21	3	11	2
Vineland Borough, .....	171	174	100	8
Total, .....	1,087	565	846	105

## ESSEX COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Belleville Town, .....	379	115	178	35
Bloomfield Town, .....	471	159	254	29
Caldwell Borough, .....	72	24	46	..
Caldwell Township, .....	13	7	8	1
Cedar Grove Township, .....	19	4	21	4
East Orange City, .....	808	263	485	49
Essex Fells Borough, .....	10	2	10	..
Glen Ridge Borough, .....	52	13	49	..
Irvington Town, .....	502	179	248	1
Livingston Township, .....	19	6	20	24
Millburn Township, .....	88	22	45	4
Montclair Town, .....	618	199	325	4
Newark City, .....	10,952	4,841	5,489	42
North Caldwell Borough, .....	3	..	..	..
Nutley Town, .....	223	66	77	..
Orange City, .....	816	347	430	62
Roseland Borough, .....	10	2	10	..
South Orange Village, .....	125	44	89	6
South Orange Township, .....	101	37	79	8
Verona Borough, .....	44	16	29	2
West Caldwell Borough, .....	6	2	10	..
West Orange Town, .....	245	89	139	20
Total, .....	15,676	6,437	8,045	1,153



## GLOUCESTER COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Clayton Borough, .....	20	14	17	..
Deptford Township, .....	48	2	21	3
East Greenwich Township, .....	26	13	18	2
Elk Township, .....	16	2	5	..
Franklin Township, .....	68	7	35	3
Glassboro Township, .....	87	34	48	7
Greenwich Township, .....	58	5	20	11
Harrison Township, .....	33	6	23	3
Logan Township, .....	24	1	18	5
Mantua Township, .....	32	15	29	2
Monroe Township, .....	48	21	41	8
National Park Borough, .....	49	6	14	2
Paulsboro Borough, .....	135	29	68	12
Pitman Borough, .....	49	25	38	2
South Harrison Township, .....	9	..	6	1
Swedesboro Borough, .....	53	10	34	4
Washington Township, .....	26	9	17	1
Wenonah Borough, .....	13	6	10	2
West Deptford Township, .....	47	9	26	6
Westville Borough, .....	51	11	23	3
Woodbury City, .....	134	57	96	13
Woodbury Heights Borough, .....	12	2	7	2
Woolwich Township, .....	6	1	10	..
Total, .....	1,044	285	620	92

## HUDSON COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Bayonne City, .....	2,392	651	950	251
East Newark Borough, .....	42	20	21	4
Guttenberg Town, .....	161	25	76	10
Harrison Town, .....	462	139	193	37
Hoboken City, .....	1,694	1,326	877	130
Jersey City, .....	6,525	3,210	4,239	671
Kearny Town, .....	523	176	266	39
North Bergen Township, .....	470	157	248	38
Secaucus Borough, .....	59	91	176	11
Town of Union, .....	373	324	250	30
Weehawken Township, .....	114	36	180	18
West Hoboken Town, .....	786	396	411	56
West New York Town, .....	743	401	282	42
Total, .....	14,344	6,952	8,219	1,329

## HUNTERDON COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Alexandria Township, .....	15	6	13	..
Bethlehem Township, .....	12	..	8	..
Bloomsbury Borough, .....	10	8	12	4
Calton Borough, .....	..	9	10	..
Clinton Borough, .....	13	11	19	2
Clinton Township, .....	33	9	32	1
Delaware Township, .....	25	7	25	..
East Amwell Township, .....	25	8	18	1
Flemington Borough, .....	54	20	43	4
Franklin Township, .....	13	6	13	..
Frenchtown Borough, .....	12	10	25	2
Helen Gardner Borough, .....	9	2	6	1
Hampton Borough, .....	19	2	10	2
High Bridge Borough, .....	32	7	18	2
Holland Township, .....	7	1	8	1
Kingwood Township, .....	11	3	29	2
Lambertville City, .....	121	32	89	11
Lebanon Township, .....	20	8	22	..
Milford Borough, .....	24	4	6	..
Raritan Township, .....	36	4	28	8
Readington Township, .....	55	16	46	5
Stockton Borough, .....	8	..	6	2
Fewksbury Township, .....	19	3	20	..
Union Township, .....	22	1	17	5
West Amwell Township, .....	11	1	12	1
Total, .....	606	183	522	49

## MERCER COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
East Windsor Township, .....	12	2	10	2
Ewing Township, .....	89	10	44	11
Hamilton Township, .....	359	51	155	28
Hightstown Borough, .....	25	21	46	6
Hopewell Borough, .....	21	17	18	5
Hopewell Township, .....	43	14	37	4
Lawrence Township, .....	49	14	59	6
Pennington Borough, .....	24	12	14	2
Princeton Borough, .....	101	45	87	6
Princeton Township, .....	31	5	5	1
Trenton City, .....	3,011	1,283	1,575	321
Washington Township, .....	28	3	17	..
West Windsor Township, .....	15	4	11	..
Total, .....	3,808	1,481	2,078	392

## MIDDLESEX COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Cranbury Township, .....	18	10	24	1
Dunellen Borough, .....	74	25	32	4
East Brunswick Township, .....	41	4	16	3
Helmetta Borough, .....	27	5	8	5
Highland Park Borough, .....	90	24	45	7
Jamesburg Borough, .....	35	23	24	3
Madison Township, .....	40	1	25	4
Metuchen Borough, .....	61	29	58	4
Middlesex Borough, .....	24	1	13	2
Milltown Borough, .....	79	9	17	4
Monroe Township, .....	23	3	15	2
New Brunswick City, .....	988	371	458	98
North Brunswick Township, .....	21	4	24	1
Perth Amboy City, .....	1,583	458	524	137
Piscataway Township, .....	75	21	58	15
Plainsboro Township, .....	1	..	4	..
Raritan Township, .....	99	10	61	8
Roosevelt Borough, .....	351	78	126	40
Sayreville Borough, .....	269	53	90	25
South Amboy City, .....	207	83	83	18
South Brunswick Township, .....	37	18	38	5
South River Borough, .....	294	63	100	40
Spotswood Borough, .....	19	5	6	1
Woodbridge Borough, .....	419	54	183	50
Total, .....	4,875	1,352	2,082	477

## MONMOUTH COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Allenhurst Borough, .....	6	1	5	..
Allentown Borough, .....	4	5	15	..
Asbury Park City, .....	207	153	182	12
Atlantic Township, .....	2	1	10	1
Atlantic Highlands Borough, .....	26	25	21	4
Avon Borough, .....	10	10	5	..
Belmar Borough, .....	33	37	31	1
Bradley Beach Borough, .....	33	21	29	2
Brielle Borough, .....	2	..	1	..
Deal Borough, .....	8	9	8	1
Eatontown Township, .....	32	9	27	1
Englishtown Borough, .....	9	7	8	..
Fair Haven Borough, .....	14	10	22	1
Farmingdale Borough, .....	10	4	11	1
Freehold Borough, .....	73	43	60	5
Freehold Township, .....	8	9	23	2
Highlands Borough, .....	41	21	24	4
Holmdel Township, .....	19	5	15	1
Howell Township, .....	32	11	38	4
Keansburg Borough, .....	37	14	20	4
Keyport Borough, .....	75	61	60	2
Long Branch City, .....	321	154	185	19
Manalapan Township, .....	23	3	17	2
Manasquan Borough, .....	31	21	26	..
Marlboro Township, .....	26	7	16	..
Matawan Borough, .....	38	16	21	..
Matawan Township, .....	27	1	24	3
Middletown Township, .....	100	28	86	7
Millstone Township, .....	21	2	18	..
Monmouth Beach Borough, .....	3	1	6	1
Neptune Township, .....	132	59	112	11
Neptune City Borough, .....	11	3	10	3
Ocean Township, .....	24	5	31	1
Raritan Township, .....	35	5	33	5
Red Bank Borough, .....	173	94	125	13
Rumson Borough, .....	26	19	18	1
Sea Bright Borough, .....	16	6	12	..
Sea Girt Borough, .....	1	2	3	..
Shrewsbury Township, .....	19	13	33	1
Spring Lake Borough, .....	38	8	29	3
Upper Freehold Township, .....	36	15	19	1
Wall Township, .....	45	21	48	5
West Long Branch Borough, .....	1	..	2	..
Total, .....	1,828	919	1,487	122

## MORRIS COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Boonton Town, .....	94	47	61	8
Boonton Township, .....	8	..	2	..
Rutler Borough, .....	86	37	39	9
Chatham Borough, .....	42	21	26	1
Chatham Township, .....	4	2	4	1
Chester Township, .....	14	6	17	1
Denville Township, .....	27	7	11	2
Dover Town, .....	224	113	114	16
Florham Park Borough, .....	3	..	8	..
Hanover Township, .....	82	26	68	8
Jefferson Township, .....	24	4	18	3
Madison Borough, .....	107	37	67	7
Mendham Borough, .....	13	5	14	2
Mendham Township, .....	8	4	12	1
Montville Township, .....	23	13	22	..
Morristown Town, .....	239	94	175	19
Morris Township, .....	40	6	30	3
Mount Arlington Borough, .....	5	..	3	1
Mount Olive Township, .....	17	5	23	6
Netcong Borough, .....	43	13	29	7
Passaic Township, .....	48	15	25	..
Pequannock Township, .....	37	11	29	2
Randolph Township, .....	43	6	41	5
Rockaway Borough, .....	68	32	40	6
Rockaway Township, .....	60	5	39	6
Roxbury Township, .....	101	20	55	10
Washington Township, .....	13	9	25	1
Wharton Borough, .....	61	22	38	6
Total, .....	1,547	563	1,035	131

## OCEAN COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Barnegat City Borough, .....	2	..	3	..
Bay Head Borough, .....	10	3	2	..
Beach Haven Borough, .....	..	..	6	..
Beachwood Borough, .....	..	1	..	..
Berkeley Township, .....	3	7	8	..
Brick Township, .....	28	15	28	1
Dover Township, .....	32	32	36	8
Eagleswood Township, .....	2	5	6	..
Harvey Cedars Borough, .....	..	..	1	..
Island Heights Borough, .....	3	2	7	..
Jackson Township, .....	17	5	13	1
Lacey Township, .....	4	1	4	1
Lakewood Township, .....	85	54	69	5
Lavalette Borough, .....	1	..	..	..
Little Egg Harbor Township, .....	4	2	3	..
Long Beach Township, .....	..	..	1	1
Manchester Township, .....	21	8	13	1
Mantoloking Borough, .....	..	..	..	..
Ocean Township, .....	2	1	8	..
Plumstead Township, .....	31	9	17	1
Point Pleasant Beach Borough, .....	17	7	17	1
Sea Side Heights Borough, .....	1	..	1	..
Seaside Park Borough, .....	2	..	5	1
Stafford Township, .....	3	6	2	..
Surf City Borough, .....	..	..	..	..
Tuckerton Borough, .....	10	8	10	1
Union Township, .....	8	7	13	..
Total, .....	286	173	278	22

## PASSAIC COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Bloomington Borough, .....	72	17	28	7
Clifton City, .....	562	147	239	51
Haledon Borough, .....	43	24	34	5
Hawthorne Borough, .....	71	51	56	4
Little Falls Township, .....	54	23	37	1
North Haledon Borough, .....	11	1	7	..
Passaic City, .....	1,926	938	662	163
Paterson City, .....	2,634	1,554	1,717	199
Pompton Lakes Borough, .....	45	16	17	..
Prospect Park Borough, .....	95	37	25	5
Ringwood Borough, .....	26	6	15	3
Totowa Borough, .....	31	11	18	..
Wanaque Borough, .....	78	7	28	3
Wayne Township, .....	41	17	36	3
West Milford Township, .....	40	8	27	2
West Paterson Borough, .....	34	3	17	1
Total, .....	5,813	2,865	2,963	447

## SALEM COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Alloway Township, .....	23	7	21	1
Elmer Borough, .....	19	7	17	2
Elsinboro Township, .....	1	1	8	2
Lower Alloways Creek Township, .....	13	6	19	1
Lower Penns Neck Township, .....	34	9	20	5
Mannington Township, .....	18	8	19	1
Oldmans Township, .....	30	10	17	2
Penns Grove Borough, .....	160	49	84	15
Pilesgrove Township, .....	42	3	14	3
Pittsgrove Township, .....	30	4	17	3
Quinton Township, .....	23	11	16	2
Salem City, .....	163	61	100	14
Upper Penns Neck Township, .....	213	9	69	18
Upper Pittsgrove Township, .....	32	4	22	3
Woodstown Borough, .....	33	13	33	3
Total, .....	834	202	481	75

## SOMERSET COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Bedminster Township, .....	14	3	9	3
Bernards Township, .....	87	26	52	6
Bound Brook Borough, .....	178	69	73	8
Branchburg Township, .....	6	3	10	1
Bridgewater Township, .....	38	14	24	2
Franklin Township, .....	45	6	40	4
Hillsborough Township, .....	82	15	66	10
Millstone Borough, .....	3	1	3	..
Montgomery Township, .....	15	4	28	2
North Plainfield Borough, .....	123	34	94	13
North Plainfield Township, .....	8	5	8	1
Peapack-Gladstone Borough, .....	43	10	12	2
Raritan Borough, .....	83	25	48	8
Rocky Hill Borough, .....	9	1	10	..
Somerville Borough, .....	139	52	108	9
South Bound Brook Borough, .....	30	18	12	3
Warren Township, .....	14	7	12	..
Total, .....	917	288	605	72

## SUSSEX COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Andover Borough, .....	8	6	14	1
Andover Township, .....	8	..	6	1
Branchville Borough, .....	12	6	13	1
Byram Township, .....	8	2	13	2
Frankford Township, .....	13	8	20	1
Franklin Borough, .....	105	17	59	23
Fredon Township, .....	6	4	6	..
Green Township, .....	8	..	14	..
Hampton Township, .....	19	8	14	1
Hardyston Township, .....	45	23	26	6
Hopatcong Borough, .....	5	3	5	..
Lafayette Township, .....	10	3	9	..
Montague Township, .....	4	4	8	2
Newton Township, .....	74	59	70	6
Ogdensburg Borough, .....	27	2	19	3
Sandyston Township, .....	14	2	16	1
Sparta Township, .....	13	2	17	1
Stanhope Borough, .....	38	10	17	2
Stillwater Township, .....	9	9	9	..
Sussex Borough, .....	21	21	18	2
Vernon Township, .....	57	17	16	2
Walpack Township, .....	6	3	1	..
Wantage Township, .....	17	9	35	3
Total, .....	507	220	425	38

## UNION COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Clark Township, .....	7	2	9	2
Cranford Township, .....	104	48	65	8
Elizabeth City, .....	2,592	959	1,190	211
Fanwood Borough, .....	13	5	7	1
Garwood Borough, .....	64	7	23	4
Hillside Township, .....	113	27	38	8
Kenilworth Borough, .....	41	1	25	6
Linden Borough, .....	54	13	24	4
Linden Township, .....	195	14	43	13
Mountainside Borough, .....	1	..	1	1
New Providence Borough, .....	23	5	13	1
New Providence Township, .....	14	4	15	..
Plainfield City, .....	723	262	373	51
Rahway City, .....	225	111	151	15
Roselle Borough, .....	144	31	64	5
Roselle Park Borough, .....	118	43	49	8
Scotch Plains Township, .....	49	21	31	5
Springfield Township, .....	27	11	29	2
Summit City, .....	191	65	125	15
Union Township, .....	83	13	45	7
Westfield Town, .....	170	59	110	11
Total, .....	4,951	1,701	2,430	378

## WARREN COUNTY.

NAME OF PLACE.	Births.	Marriages.	Deaths.	Deaths under one year.
Alpha Borough, .....	74	14	17	9
Allamuchy Township, .....	5	2	9	3
Belvidere Town, .....	23	19	32	2
Blairtown Township, .....	7	5	23	3
Franklin Township, .....	26	4	26	7
Frelighuysen Township, .....	9	1	9	1
Greenwich Township, .....	14	10	15	1
Hackettstown Town, .....	66	26	44	1
Hardwick Township, .....	11	2	6	..
Harmony Township, .....	33	7	18	4
Hope Township, .....	..	3	18	3
Independence Township, .....	9	2	11	..
Knowlton Township, .....	17	10	19	1
Lopatcong Township, .....	15	..	15	2
Mansfield Township, .....	16	4	31	1
Oxford Township, .....	63	7	30	4
Pahaquarry Township, .....	..	..	2	..
Phillipsburg Township, .....	361	145	186	41
Pohatcong Township, .....	19	3	19	3
Washington Borough, .....	40	35	54	4
Washington Township, .....	12	2	8	..
White Township, .....	17	3	14	8
Total, .....	837	804	606	94
State Total, .....	70,985	29,281	39,979	6,111

TABLE 2.—DEATHS IN THE COUNTIES OF NEW JERSEY AND IN EACH MUNICIPALITY OF LIST):

	State Total.	Atlantic County.	Atlantic City.	Hammondon.	Bergen County.	Englewood.	Garfield.	Hackensack.	Ridgewood.	Rutherford.	Burlington County.	Burlington City.	Camden County.	
Typhoid fever, .....	1	91	4	2	3						7		9	
Typhus fever, .....	2													
Relapsing fever, .....	3													
Malaria, .....	4	2			1									
Smallpox, .....	5													
Measles, .....	6	58			5			1			3		3	
Scarlet fever, .....	7	71	2	1	1	8					2	1	3	
Whooping cough, .....	8	91	3	2	1	1		1			7		5	
Diphtheria and croup, .....	9	568	15	5	14	2				2	9		28	
Influenza, .....	10	2483	65	41	4	156	18	10	16	5	104	4	154	
Miliary fever, .....	11													
Asiatic cholera, .....	12													
Cholera nostras, .....	13		3											
Dysentery, .....	14	41	2	2	1								6	
Plague, .....	15													
Yellow fever, .....	16													
Leprosy, .....	17	1												
Erysipelas, .....	18	76	1	1	8				1		2		3	
Other epidemic diseases, .....	19	12			1									
Purulent infection and septicaemia, .....	20	69	1		5			1			1		11	
Glanders, .....	21													
Anthrax, .....	22	1											1	
Rabies, .....	23	1			1									
Tetanus, .....	24	34	1										3	
Mycoses, .....	25	1											1	
Pellagra, .....	26	4												
Berberi, .....	27													
Tuberculosis of the lungs, .....	28	3329	87	63	2	140	6	17	9	5	3	72	205	
Acute miliary tuberculosis, .....	29	166	8	6	1	6				2	6	2	6	
Tuberculous meningitis, .....	30	198	2	1		10		1	2		1	7	3	
Abdominal tuberculosis, .....	31	91	1	1		5		1	1		2	1	5	
Pott's disease, .....	32	32	2	1		3							2	
White swellings, .....	33	14	1	1		2		1			1		2	
Tuberculosis of other organs, .....	34	38	1			1					1		2	
Disseminated tuberculosis, .....	35	14	2	2									1	
Rickets, .....	36	26			2			1			1		1	
Syphills, .....	37	186	11	10		6	1	1			3		14	
Gonococcus infection, .....	38	12									1			
Cancer and other malignant tumors of the buccal cavity, .....	39	90			4	1		1			1		6	
Cancer and other malignant tumors of the stomach, liver, .....	40	1044	29	17	1	57	5	4	3		1	23	3	66
Cancer and other malignant tumors of the peritoneum, intestines, rectum, .....	41	373	11	9		27	2		6	2	1	7	1	18
Cancer and other malignant tumors of the female genital organs, .....	42	414	17	10	1	20	1	2	1	2	2	10	4	37
Cancer and other malignant tumors of the breast, .....	43	288	10	6	2	19		1	4	1		10	3	9
Cancer and other malignant tumors of the skin, .....	44	73	3	3		3		1	1			2		8
Cancer and other malignant tumors of other organs or of organs not specified, .....	45	415	16	11		31	3		3			5	1	23
Other tumors (tumors of the female genital organs excepted), .....	46	5										1		
Acute articular rheumatism, .....	47	188	5	3		5				1	2		10	
Chronic rheumatism and gout, .....	48	48	1	1		1					5		4	
Scurvy, .....	49	4			1									
Diabetes, .....	50	536	18	10	1	35	2	2	4	4	12	2	24	
Exophthalmic goitre, .....	51	37			2	2					1		1	
Addison's disease, .....	52	10			2									
Leucaemia, .....	53	55	4	2		7		1	2	1			4	

5,000 POPULATION OR OVER IN 1910, AND CAUSE OF DEATH (DETAILED INTERNATIONAL 1919.

	Camden City.	Gloucester City.	Cape May County.	Cumberland County.	Bridgeton.	Millville.	Vineyard.	Essex County.	Bloomfield.	East Orange.	Irvington.	Montclair.	Newark.	Nutley.	Orange.	South Orange.	West Orange.	Gloucester County.	Hudson County.	Bayonne.	Guttenberg.	Harrison.	Hoboken.	Jersey City.			
9	9			3	1			13		1	1		8		2			2	11					3	5		
2	2							10					3		1				12	16				3	8		
22	22			2			1	21	2			1	17		1			3	12	1			1	3	10		
5	5			2				7					5		1				30	9			1	3	11		
23	23			5	12	6	6	115	5	6	3	4	71	1	1		4	4	171	26			2	1	26	94	
96	96	7	19	61	16	10	7	871	14	26	13	18	243	2	15	3	2	46	524	64	6	4	4	43	277		
4	4			1	4	2		5					4						8		2				1	4	
3	3			1	1			17		1	1	1	12		1				21	3				4	3	1	
9	9							11	1	1			2			1		2	11		1			1	7	2	
1	1												1														
2	2			1	1			3				1	2						4	1						1	
1	1																										
1	1							1					1														
123	123	16	11	46	15	7	5	774	13	31	22	18	561	4	31	7	14	44	770	97	6	22	99	398	2		
2	2			6	1		1	36		1	2	4	29					4	37				1	2	23	3	
2	2	1	1	1				54	1	6	1	1	38		3			4	38	6			1	3	19	1	
2	2	1	1	2	1			19	1	2	1	1	10		2		1	2	19	2		1	2	12	2	1	
1	1			2				8					5		1			2	3	1					2	2	
2	2							7					1				1		4	1					2	2	
1	1							4		1			3						9	2			1	1	3	2	
10	10			4	2	1	1	58	3	2	1	44	1	4			1		31	7	1			1	1	2	
3	3			3	1	2		5				2	15		2	1		4	24	4				4	10	1	
39	39	6	4	20	9	4	3	199	4	15	9	8	133	2	11	4	4	15	184	12	2	2	16	100	2		
12	12	1	2	10	3		2	74	3	8	2	5	44		4	1	2	2	53	3	1	1	6	23	1		
23	23			2	16	5	4	78	6	8	1	2	50	1	3	1		4	72	4			3	10	42	4	
6	6	1	4	6	2		1	71	3	4	4	9	41		4	2		4	49		1			9	24	1	
6	6	1	1	2			1	17	1	1			12		2	1		2	8					1	5	1	
11	11	1	2	12	1	1	4	89	4	5	2	2	63	2	6			2	88	12	1	1	1	8	41	4	
2	2							2					1						1							1	1
4	4	1		4	1	1		41	1	2	5	1	27	1	2		1	6	51	4	1	2	5	25	2	2	
3	3			3			1	10	1	1			6		2			4	4	1						2	1
13	13			4	13	3	3	1	129	6	9	1	7	88	1	3	3	3	4	103	7	1	2	12	52	4	
1	1							15					11						8					1	2	4	1
3	3							4		1			3		1		1						1	1	5	1	1



TABLE 2.—DEATHS IN THE COUNTIES OF NEW JERSEY AND IN EACH MUNICIPALITY OF LIST): 1919

	State Total.	Atlantic County.	Atlantic City.	Hammonton.	Bergen County.	Englewood.	Garfield.	Hackensack.	Ridgewood.	Rutherford.	Burlington County.	Burlington City.	Camden County.	
Anaemia, chlorosis, . . . . .	54	95	2	2	8			1	1	1	4	1	5	
Other general diseases, . . . . .	55	31			1								4	
Alcoholism (acute or chronic), . . . . .	56	36	4	3				1			5		1	
Chronic lead poisoning, . . . . .	57	4			1									
Other chronic occupation poisonings, . . . . .	58													
Other chronic poisonings, . . . . .	59	2												
Encephalitis, . . . . .	60	62			3		1						3	
Simple meningitis, . . . . .	61	242	2	1	16	1	2				3		17	
Locomotor ataxia, . . . . .	62	56	3	2	1		2		1		3		8	
Other diseases of the spinal cord, . . . . .	63	140	5	2	10						3		5	
Cerebral hemorrhage, apoplexy, . . . . .	64	2808	89	48	10	156	11	3	27	8	8	95	10	165
Softening of the brain, . . . . .	65	34			1						1			4
Paralysis without specified cause, . . . . .	66	153	6	4	12		1	1	1	1	9	4	9	10
General paralysis of the insane, . . . . .	67	158	6	4	10	1	1	1	1	1	7	2	10	10
Other forms of mental alienation, . . . . .	68	43			3		1	1			1	1	4	4
Epilepsy, . . . . .	69	91	7	3	1						5		6	6
Convulsions (nonpuerperal), . . . . .	70	2	1	1										
Convulsions of infants, . . . . .	71	69	1	1	3						3		5	5
Chorea, . . . . .	72	4												
Neuralgia and neuritis, . . . . .	73	4	1											
Other diseases of the nervous system, . . . . .	74	63	2	2	5				1	1	1		3	3
Other diseases of the eyes and their annexa, . . . . .	75	2												
Diseases of the ears, . . . . .	76	54	1	1	4					1			5	5
Pericarditis, . . . . .	77	15									7		1	1
Acute endocarditis, . . . . .	78	236	10	7	17						7		15	15
Organic diseases of the heart, . . . . .	79	4531	155	93	10	272	13	33	13	13	136	29	277	277
Angina pectoris, . . . . .	80	218	7	4	14		1	2	2	1	10		16	16
Diseases of the arteries, atheroma aneurysm, etc., . . . . .	81	483	11	3	19	1		1		3	18	1	27	27
Embolism and thrombosis, . . . . .	82	120	9	8	1	5	1				3		7	7
Diseases of the veins (varices, hemorrhoids, phlebitis, etc.), . . . . .	83	25	1	1	1						1			
Diseases of the lymphatic system (lymphangitis, etc.), . . . . .	84	13	1	1	2						1		1	1
Hemorrhage; other diseases of the circulatory system, . . . . .	85	7											1	1
Diseases of the nasal fossae, . . . . .	86	4	1	1										
Diseases of the larynx, . . . . .	87	35	1	1	2						1		6	6
Diseases of the thyroid body, . . . . .	88	14			4			1						
Acute bronchitis, . . . . .	89	359	8	4	3	20	1	3	2		9	2	20	20
Chronic bronchitis, . . . . .	90	142	5	4	3	3		1			5		9	9
Bronchopneumonia, . . . . .	91	1778	53	34	6	95	4	9	5	2	47	5	153	153
Pneumonia, . . . . .	92	2781	48	28	3	132	11	5	19	6	70	14	159	159
Pleurisy, . . . . .	93	95	4	2	5						1		2	2
Pulmonary congestion, pulmonary apoplexy, . . . . .	94	91	5	4	1	6			2				4	4
Gangrene of the lung, . . . . .	95	7											1	1
Asthma, . . . . .	96	51			3	1							3	3
Pulmonary emphysema, . . . . .	97	6												
Other diseases of the respiratory system (tuberculosis excepted), . . . . .	98	39	1	1	2						1	1	7	7
Other diseases of the mouth and annexa, . . . . .	99	17											1	1
Diseases of the pharynx, . . . . .	100	69	3	2	4	1					2		1	1
Diseases of the oesophagus, . . . . .	101	5												
Ulcer of the stomach, . . . . .	102	115	3	2	1	8		1	1		3	2	7	7
Other diseases of the stomach (cancer excepted), . . . . .	103	216	16	14	1	7	1				13	5	7	7
Diarrhoea and enteritis (Under 2 years, . . . . .	104	1723	31	14	4	52	2	17	2		58	11	132	132
Diarrhoea and enteritis (2 years and over), . . . . .	105	353	15	11	1	17	1	2	4		3	5	39	39

5,000 POPULATION OR OVER IN 1910, AND CAUSE OF DEATH (DETAILED INTERNATIONAL —Continued.

	Camden City.	Gloucester City.	Cape May County.	Cumberland County.	Bridgeton.	Millville.	Vineland.	Essex County.	Bloomfield.	East Orange.	Irington.	Montclair.	Newark.	Nutley.	Orange.	South Orange.	West Orange.	Gloucester County.	Hudson County.	Bayonne.	Guttenberg.	Harrison.	Hoboken.	Jersey City.	
3	3							27		5	1		16		1	1		2	13	1				8	
1	1	1						8	1	3		1	3					1	5	1				2	
1		1	1	1				2					3		1			1	2					2	
								4					1												
								1					1												
								15					11	1					18	1				3	12
16		1	2					38		2		2	30		2			1	63	8			2	9	33
3		1	3	1				7					6		1				9					2	5
6			5	1				28	1	4		2	19					3	20	1				1	9
94	10	25	84	24	17	14	545	19	37	15	35	323	7	44	7	11	43	458	46	4	10	39	250	250	
3								7					5					1	5						3
3								14					10		1	1		3	15	2				1	7
6		3	7	3	1	1	14		1				24		1	1		1	32	2				5	15
5								5					3					1	12					2	8
2								17					10		3	1			14	2					11
4	1	2	2	2				17	1				10												
1	1		1					12	1	1			10					15	4					5	3
								1					1												
1	1		1	1				14	1	1			12					11	1					1	6
								1					1												
								16		1	1		12	1	1			1	7	1				1	3
4		1						2					2					1	1						
13		4	3	1				6	2	3	3	1	46		1	1	1	2	76	7	2	2	8	39	
173	16	47	126	49	23	15	962	39	55	23	38	656	14	41	6	16	63	878	83	10	19	104	445	445	
6		1	6		2		50	4	10		1	25	3	3	2	2	7	29						7	15
14		2	11	1	2		96	4	18		5	49	3	6		1	5	91	10			1	11	52	
5	1		2	1	1		25	1	5	2	2	12	1				1	18						2	14
								4			1		2			1		3							3
								1										3							2
								2					1	1				1							
								5					4	1				4							2
								5					2					2							
								31	3	4		3	77		4		3	5	91	7			7	7	43
5		3	3	3				3	3	2	4	21	1					7	22	2				1	2
99	18	6	22	4	4	3	298	6	10	9	11	216	2	15	3	5	21	447	62	3	14	30	256	256	
121	7	15	42	14	6	8	593	12	28	19	22	420	4	44	2	8	41	746	70	8	14	93	375	375	
								28	2		3	16						1	24	1					20
4		1	3		3			11		3	1		4		2		1	3	17	1				5	8
																			2	1					1
1								6			3		1					1	9					1	6
								1					1					1							1
6			1					8		1			7					3	3					1	2
1								2	1				1					1	4	1					2
			2	2				19	2	2		2	11		1	1	1	16	6					1	8
								1					1					2							1
4	1	2	2				1	26	1	2			19		2	1		22	5					1	11
6		5	9	4	2	1	16	1					12					38	3					3	22
103	11	5	18	5	5	1	351	7	6	5	5	287	4	14	1	7	20	421	81	3	15	39	221	221	
27	4	4	8		3	1	55	3	2	3			37	1	2		1	11	64	12			1		

TABLE 2.—DEATHS IN THE COUNTIES OF NEW JERSEY AND IN EACH MUNICIPALITY OF LIST): 1919

	Kearny.	Town of Union.	West Hoboken.	West New York.	Hunterdon County.	Mercer County.	Princeton.	Trenton.	Middlesex County.	New Brunswick.	Perth Amboy.	Roosevelt.	South Amboy.	Monmouth County.
Anaemia, chlorosis, . . . . .	54	2			6			5	3		2			3
Other general diseases, . . . . .	55				3			1	1					1
Alcoholism (acute or chronic), . . . . .	56				1	3		3	4	1	1			2
Chronic lead poisoning, . . . . .	57													
Other chronic occupation poisonings, . . . . .	58													
Other chronic poisonings, . . . . .	59													
Encephalitis, . . . . .	60	2			4			3	3	1			1	2
Simple meningitis, . . . . .	61	2	2	2	3	13		10	22	7	9	2		9
Locomotor ataxia, . . . . .	62		1		3			2	6	2				1
Other diseases of the spinal cord, . . . . .	63	2	2	4	4	10		9	6	1				9
Cerebral hemorrhage, apoplexy, . . . . .	64	18	16	26	17	78	138	9	104	109	32	16	2	168
Softening of the brain, . . . . .	65	2			1	1		3	10	4		1		3
Paralysis without specified cause, . . . . .	66	1	2	1	1	9		3	10	4		1		3
General paralysis of the insane, . . . . .	67	2		1	5	12		3	3	1				10
Other forms of mental alienation, . . . . .	68			1	2	1		1						1
Epilepsy, . . . . .	69	1			5	1		3	3		1		1	6
Convulsions (nonpuerperal), . . . . .	70													
Convulsions of infants, . . . . .	71	1	1		1	2		2	8	1	2			2
Chorea, . . . . .	72								1					
Neuralgia and neuritis, . . . . .	73													
Other diseases of the nervous system, . . . . .	74	2			1	2	1	1	7	1	1			1
Other diseases of the eyes and their ad- nexa, . . . . .	75													
Diseases of the ears, . . . . .	76	1		1	1	3		1	5	5				2
Pericarditis, . . . . .	77					1	1	1	1	1	1			1
Acute endocarditis, . . . . .	78	2	2	7	4	15	1	12	15	2	4	2		7
Organic diseases of the heart, . . . . .	79	20	30	53	43	69	214	7	150	166	43	38	2	201
Angina pectoris, . . . . .	80	2	1	2	6	16	1	15	5	1	2	2	13	7
Diseases of the arteries, atheroma aneurysm, etc., . . . . .	81	2	3	2	1	8	44	1	36	20	7	5		32
Embolism and thrombosis, . . . . .	82			1	5	6		4	3	2				8
Diseases of the veins (varices, hemor- rhoids, phlebitis, etc.), . . . . .	83					2		1	3	1				
Diseases of the lymphatic system (lymp- hangitis, etc.), . . . . .	84	1							1		1			
Hemorrhage; other diseases of the cir- culatory system, . . . . .	85					1		1	1	1				
Diseases of the nasal fossae, . . . . .	86													
Diseases of the larynx, . . . . .	87								2	2				2
Diseases of the thyroid body, . . . . .	88					1		1	1					
Acute bronchitis, . . . . .	89	1	1	4	3	2	19	16	20	1	4	3		4
Chronic bronchitis, . . . . .	90	1	1	2	2	7		4	6	1				2
Bronchopneumonia, . . . . .	91	13	13	18	12	23	93	7	71	121	27	39	4	3
Pneumonia, . . . . .	92	35	33	30	18	11	123	4	99	129	20	36	10	67
Pleurisy, . . . . .	93		1		1	4		3	2	1				6
Pulmonary congestion, pulmonary apo- plexy, . . . . .	94			2		2		2	3		2			7
Gangrene of the lung, . . . . .	95					1								
Asthma, . . . . .	96		2	2	4		4	1			1			1
Pulmonary emphysema, . . . . .	97			1										1
Other diseases of the respiratory system (tuberculosis excepted), . . . . .	98					1		1	1	1				2
Other diseases of the mouth and annexe, Diseases of the pharynx, . . . . .	99		1			3		3	1	1				1
Diseases of the oesophagus, . . . . .	100					2		2	2		1			
Ulcer of the stomach, . . . . .	101		2	2	3		2	6	2	2	1	1		5
Other diseases of the stomach (cancer excepted), . . . . .	102	1	6	1	2	12	1	9	19	5	9	2		11
Diarrhoea and enteritis (Under 2 years), Diarrhoea and enteritis (2 years and over), . . . . .	103	8	13	13	7	15	103	2	89	158	16	53	20	34
	104	8	13	13	7	15	103	2	89	158	16	53	20	34
	105	2	2	6	2	5	16	2	12	29	5	11	3	16

5,000 POPULATION OR OVER IN 1910, AND CAUSE OF DEATH (DETAILED INTERNATIONAL  
—Continued.

	Asbury Park.	Long Branch.	Red Bank.	Morris County.	Dover.	Morrisstown.	Ocean County.	Passaic County.	Passaic Cty.	Paterson.	Salem County.	Salem City.	Somerset County.	North Plainfield.	Somerville.	Sussex County.	Union County.	Elizabeth.	Plainfield.	Rahway.	Summit.	Westfield.	Warren County.	Phillipsburg.
1	1	1	1	3	1	1	1	9	1	7	3	2	2	1	1	7	2	1	2	1	2	1	1	1
2	1	1	1	1	1	1	1	4	1	3	1	1	4	1	1	4	3	3	3	1	1	1	1	1
3	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	2	4	2	1	1	1	1	1	1
4	1	1	1	1	1	1	1	28	5	13	1	1	4	2	1	2	4	2	3	1	1	1	1	1
5	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1
6	1	1	1	1	1	1	1	9	2	5	1	1	2	1	1	9	2	3	1	1	1	1	1	1
7	1	1	1	1	1	1	1	24	161	24	111	33	12	53	8	11	32	208	86	34	21	5	21	56
8	1	1	1	1	1	1	1	14	18	16	88	7	15	24	161	24	111	33	12	53	8	11	32	208
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
12	1	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
13	1	1	1	1	1	1	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
14	1	1	1	1	1	1	1	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
15	1	1	1	1	1	1	1	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
16	1	1	1	1	1	1	1	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
17	1	1	1	1	1	1	1	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
18	1	1	1	1	1	1	1	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
19	1	1	1	1	1	1	1	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
20	1	1	1	1	1	1	1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
21	1	1	1	1	1	1	1	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
22	1	1	1	1	1	1	1	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
23	1	1	1	1	1	1	1	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
24	1	1	1	1	1	1	1	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
25	1	1	1	1	1	1	1	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
26	1	1	1	1	1	1	1	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
27	1	1	1	1	1	1	1	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
28	1	1	1	1	1	1	1	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
29	1	1	1	1	1	1	1	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
30	1	1	1	1	1	1	1	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
31	1	1	1	1	1	1	1	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
32	1	1	1	1	1	1	1	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
33	1	1	1	1	1	1	1	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
34	1	1	1	1	1	1	1	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
35	1	1	1	1	1	1	1	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
36	1	1	1	1	1	1	1	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
37	1	1	1	1	1	1	1	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
38	1	1	1	1	1	1	1	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
39	1	1	1	1	1	1	1	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
40	1	1	1	1	1	1	1	32	32															







TABLE 2.—DEATHS IN THE COUNTIES OF NEW JERSEY AND IN EACH MUNICIPALITY OF LIST): 1919

	State Total.	Atlantic County.	Atlantic City.	Hammonton.	Bergen County.	Englewood.	Garfield.	Hackensack.	Ridgewood.	Rutherford.	Burlington County.	Burlington City.	Camden County.
Suicide by poison, .....	155	43	1	1	2	1	1	1	1	1	1	1	5
Suicide by asphyxia, .....	156	99	1	1	2	1	2	1	1	1	2	1	3
Suicide by hanging or strangulation, .....	157	70	1	1	7	1	1	1	1	1	2	1	1
Suicide by drowning, .....	158	19	1	1	1	1	1	1	1	1	3	1	1
Suicide by firearms, .....	159	109	2	1	6	1	1	1	1	1	5	1	5
Suicide by cutting or piercing instruments, .....	160	22	1	1	2	1	1	1	1	1	2	1	1
Suicide by jumping from a high place, .....	161	11	1	1	1	1	1	1	1	1	2	1	1
Suicide by crushing, .....	162	3	1	1	1	1	1	1	1	1	1	1	1
Other suicides, .....	163	1	1	1	1	1	1	1	1	1	1	1	1
Poisoning by food, .....	164	15	2	2	2	1	1	1	1	1	2	1	1
Other acute poisonings, .....	165	66	2	2	3	1	1	1	1	1	2	1	6
Conflagration, .....	166	27	1	1	3	1	1	1	1	1	2	1	1
Burns (conflagration excepted), .....	167	288	6	4	12	2	1	2	1	1	5	2	20
Absorption of deleterious gases (conflagration excepted), .....	168	151	2	2	6	1	1	1	1	1	2	1	2
Accidental drowning, .....	169	262	3	6	1	13	2	1	2	1	9	1	23
Traumatism by firearms, .....	170	28	2	2	1	1	1	1	1	1	4	1	3
Traumatism by cutting or piercing instruments, .....	171	2	1	1	1	1	1	1	1	1	1	1	1
Traumatism by fall, .....	172	332	10	7	7	1	1	1	1	1	8	1	23
Traumatism in mines and quarries, .....	173	9	1	1	1	1	1	1	1	1	1	1	1
Traumatism by machines, .....	174	47	1	1	3	1	1	1	1	1	1	1	4
Traumatism by other crushing (vehicles, railroads, landslides, etc.), .....	175	841	25	16	2	57	8	4	3	3	25	4	71
Injuries by animals, .....	176	14	1	1	1	1	1	1	1	1	1	1	1
Starvation, .....	177	4	1	1	1	1	1	1	1	1	1	1	1
Excessive cold, .....	178	3	1	1	1	1	1	1	1	1	1	1	1
Effects of heat, .....	179	14	1	1	1	1	1	1	1	1	1	1	2
Lightning, .....	180	3	1	1	1	1	1	1	1	1	1	1	1
Electricity (lightning excepted), .....	181	22	1	1	1	1	1	1	1	1	1	1	3
Homicide by firearms, .....	182	81	4	1	1	5	1	1	1	1	1	1	9
Homicide by cutting or piercing instruments, .....	183	19	1	1	1	1	1	1	1	1	1	1	3
Homicide by other means, .....	184	36	2	1	1	4	1	1	1	1	1	1	2
Fractures (cause not specified), .....	185	10	1	1	1	1	1	1	1	1	1	1	1
Other external violence, .....	186	116	2	1	3	1	1	1	1	1	1	1	7
Ill-defined organic disease, .....	187	4	1	1	1	1	1	1	1	1	1	1	1
Sudden death, .....	188	3	1	1	1	1	1	1	1	1	1	1	1
Cause of death not specified or ill-defined, .....	189	52	1	1	6	1	1	1	1	1	1	1	6
<b>Total, .....</b>	<b>39979</b>	<b>1164</b>	<b>735</b>	<b>70</b>	<b>2092</b>	<b>132</b>	<b>144</b>	<b>217</b>	<b>83</b>	<b>87</b>	<b>1205</b>	<b>154</b>	<b>2593</b>

5,000 POPULATION OR OVER IN 1910, AND CAUSE OF DEATH (DETAILED INTERNATIONAL)—Continued.

	Camden City.	Gloucester City.	Cape May County.	Cumberland County.	Bridgeton.	Millville.	Vineland.	Essex County.	Bloomfield.	East Orange.	Irvington.	Montclair.	Newark.	Nutley.	Orange.	South Orange.	West Orange.	Gloucester County.	Hudson County.	Bayonne.	Guttenberg.	Harrison.	Hoboken.	Jersey City.	
4	1	1	1	1	1	1	1	12	1	1	1	1	9	1	1	1	1	1	10	1	1	1	1	1	6
7	1	1	1	1	1	1	1	33	1	3	3	1	21	1	1	1	1	1	12	2	2	1	2	2	6
2	1	1	1	1	1	1	1	12	1	1	1	1	5	1	2	1	1	1	17	2	2	1	4	4	7
1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	2	1	1	1	1	1	1	32	1	4	3	1	18	1	1	1	1	1	15	2	2	1	3	3	4
1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	6	1	1	1	1	1	1
1	1	1	1	1	1	1	1	4	1	1	1	1	2	1	1	1	1	1	3	1	1	1	1	1	1
1	1	1	1	1	1	1	1	3	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	3	1	1	1	1	2	1	1	1	1	1	7	1	1	1	1	1	1
6	1	1	1	1	1	1	1	23	1	1	1	1	18	1	3	1	1	1	1	7	1	1	1	1	4
1	1	1	1	1	1	1	1	6	1	1	1	1	6	1	1	1	1	1	8	1	1	1	1	1	1
18	1	1	1	1	1	1	1	54	2	6	1	5	39	1	1	1	1	2	65	15	1	2	3	3	37
1	1	1	1	1	1	1	1	43	1	1	1	1	39	1	2	1	1	3	39	5	2	2	1	1	18
15	2	3	6	1	2	1	2	20	1	1	1	2	16	1	1	1	1	12	51	8	1	6	6	24	
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	1	1	1	1	1	1
15	2	2	10	1	4	3	75	2	5	1	1	1	52	1	2	4	2	7	69	8	2	2	7	3	37
4	1	1	1	1	1	1	1	8	1	1	1	1	7	1	1	1	1	1	12	1	1	1	1	1	5
48	7	3	8	1	2	1	152	4	4	4	12	114	2	6	4	1	23	157	18	1	1	10	14	76	
1	1	1	1	1	1	1	1	4	1	1	1	1	3	1	1	1	1	3	3	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	14	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	16	1	1	1	1	1	1	1	1	1	1	18	1	2	1	3	3	8
1	2	1	1	1	1	1	1	3	1	1	1	1	3	1	1	1	1	1	2	1	1	1	1	1	1
2	1	1	1	1	1	1	1	10	1	1	1	1	9	1	1	1	1	1	5	1	1	1	2	2	
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
5	1	1	1	1	1	1	1	16	1	1	1	1	12	1	1	1	2	12	1	1	1	1	2	6	
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	2
1	3	1	2	1	1	1	1	4	1	1	1	1	3	1	1	1	1	5	1	1	1	1	1	1	4
<b>1703</b>	<b>165</b>	<b>258</b>	<b>846</b>	<b>253</b>	<b>183</b>	<b>106</b>	<b>8045</b>	<b>254</b>	<b>485</b>	<b>248</b>	<b>325</b>	<b>5489</b>	<b>77</b>	<b>430</b>	<b>89</b>	<b>139</b>	<b>620</b>	<b>8219</b>	<b>950</b>	<b>76</b>	<b>193</b>	<b>877</b>	<b>4289</b>		

TABLE 2.—DEATHS IN THE COUNTIES OF NEW JERSEY AND IN EACH MUNICIPALITY OF LIST: 1919

	Kearny.	Town of Union.	West Hoboken.	West New York.	Hunterdon County.	Mercer County.	Princeton.	Trenton.	Middlesex County.	New Brunswick.	Peth Amboy.	Roosevelt.	South Amboy.	Monmouth County.
Suicide by poison, .....	155			1		2		2	1					
Suicide by asphyxia, .....	156		2			2		7	1					
Suicide by hanging or strangulation, .....	157	1		1	5	2		2	1					3
Suicide by drowning, .....	158				1	4		3	1					3
Suicide by firearms, .....	159	1	1	1	1	6		5	4	3				6
Suicide by cutting or piercing instruments, .....	160			2										2
Suicide by jumping from a high place, .....	161								1	1				
Suicide by crushing, .....	162													
Other suicides, .....	163					1		1						
Poisoning by food, .....	164		1						3	1		1		1
Other acute poisonings, .....	165	1	1		1			2	2	2				3
Conflagration, .....	166				1	1	1		1	1				3
Burns (conflagration excepted), .....	167	2	2	1	1	19		15	22	3	8	2	1	10
Absorption of deleterious gases (conflagration excepted), .....	168	1	3		1	7	1	6	4	3				3
Accidental drowning, .....	169	3		1	5	15		13	27	4	7	2	1	18
Traumatism by firearms, .....	170			1		2		2	2	1		1		1
Traumatism by cutting or piercing instruments, .....	171	1				1		1						
Traumatism by fall, .....	172	1	1	4	1	5	16	11	13	3	5	1		11
Traumatism in mines and quarries, .....	173													
Traumatism by machines, .....	174	1		1	1	1		1	6		2	3	1	
Traumatism by other crushing (vehicles, railroads, landslides, etc.), .....	175	10	8	5	5	6	33	21	67	5	17	2	2	30
Injuries by animals, .....	176							1	1					1
Starvation, .....	177													1
Excessive cold, .....	178													
Effects of heat, .....	179					1								
Lightning, .....	180					1								
Electricity (lightning excepted), .....	181			1		2		1	1			1		1
Homicide by firearms, .....	182													
Homicide by cutting or piercing instruments, .....	183		2			3	1	1	5	1	1	2		2
Homicide by other means, .....	184								1					1
Fractures (cause not specified), .....	185								2					1
Other external violence, .....	186		2	1		1	1		1	1				1
Ill-defined organic disease, .....	187				1	9		8	19	7	2			1
Sudden death, .....	188													
Cause of death not specified or ill-defined, .....	189	1				2		1	6	3				5
<b>Total, .....</b>	<b>286</b>	<b>250</b>	<b>411</b>	<b>282</b>	<b>522</b>	<b>2078</b>	<b>87</b>	<b>1575</b>	<b>2032</b>	<b>458</b>	<b>524</b>	<b>126</b>	<b>83</b>	<b>1487</b>

5,000 POPULATION OR OVER IN 1910, AND CAUSE OF DEATH (DETAILED INTERNATIONAL—Continued.)

Asbury Park.	Long Branch.	Red Bank.	Morris County.	Dover.	Morristown.	Ocean County.	Passaic County.	Passaic City.	Paterson.	Salem County.	Salem City.	Somerset County.	North Plainfield.	Somerville.	Sussex County.	Union County.	Elizabeth.	Plainfield.	Rahway.	Summit.	Westfield.	Warren County.	Phillipsburg.
			1				2		2	1					1								2
1							11	1	7		1					8	5	1					2
	1		2				5	1	4	5	2	2				2	1					1	2
			1				1		1				1										1
			6	2			11	2	4			2	1	2	3	3	1	1		1		3	1
							2	1	1	1						2	1		1			2	1
																1						1	1
							12	11	1	2		1				3			1				
							2			1													
			1	1	1	1	19	8	8	2	5		2	29	15				1	2		3	1
	1						17	3	12	3	1	1	1	1	14	9	2	1				2	2
1	2	1	3			1	18	4	4	2	5	7	11	8						1		5	1
	1		2			2	1						1										
			6	2	2	3	21	2	16	4	5	2	5	22	14	3	2				1	10	3
							4	2					5		3	3						3	
							4	2	2														
2	2	3	21	1		1	79	15	47	3	15	3	10	48	28	2	4	2	2	2	7	5	
							1	1			1			1	2								
							3		3	1													
							1		1	1													
			1	1			2	1	1	3	1												
			1				4	1	2	2	1	1	2	7	2	2	2			1		2	
							4	2	2					1								1	
							6		5	1				2	1							1	
							1		1	1	1												
			9				2	10	3	6	3	2	6	4	1	2				1		3	
																						1	
																						1	
			2	1				5	1	3		1	1	2	4	2			1			1	
<b>182</b>	<b>185</b>	<b>125</b>	<b>1035</b>	<b>114</b>	<b>175</b>	<b>273</b>	<b>2963</b>	<b>662</b>	<b>1717</b>	<b>481</b>	<b>100</b>	<b>605</b>	<b>94</b>	<b>106</b>	<b>425</b>	<b>2430</b>	<b>1196</b>	<b>373</b>	<b>151</b>	<b>125</b>	<b>110</b>	<b>606</b>	<b>186</b>

TABLE 3.—DEATHS BY OCCUPATIONS, AGE GROUPS

	AGRICULTURE, FORESTRY AND ANIMAL HUSBANDRY.											
	Farmers.	Farm laborers.	Fishermen and oystermen.	Gardeners, florists, fruit growers and nurserymen.	Garden, greenhouse, orchard and nursery laborers.	Other agricultural and animal husbandry pursuits.	EXTRACTION OF MINERALS.		Foremen, overseers and inspectors.	Miners.	Quarry operatives.	MANUFACTURING AND MECHANICAL INDUSTRIES.
Tuberculosis of lungs.	10 to 19,		1									
	20 to 29,	1										
	30 to 39,	1										
	40 to 49,	1										
	50 to 59,	1										
	60 to 69,	1										
	70 to 79,	1										
	80 to 89,	1										
	90 and over,	1										
	Totals,	46	13	2	6					3	1	
Cancer and other malignant tumors.	10 to 19,											
	20 to 29,											
	30 to 39,											
	40 to 49,	2	1	1								
	50 to 59,	14	5	2								
	60 to 69,	22	4	2								
	70 to 79,	16	1	1								
	80 to 89,	6	1									
	90 and over,											
	Totals,	60	12	4	15	1	1			1	2	
Diseases of the nervous system and of the organs of sense.	10 to 19,		1									
	20 to 29,		1									
	30 to 39,	1	1									
	40 to 49,	1	1	1								
	50 to 59,	16	2									
	60 to 69,	24	2									
	70 to 79,	53	4	4								
	80 to 89,	45	2	2								
	90 and over,	3										
	Totals,	143	18	7	18	1				1	1	
Diseases of the circulatory system.	10 to 19,	1	1									
	20 to 29,	1	1									
	30 to 39,	2	1									
	40 to 49,	6	1	2								
	50 to 59,	11	3	3								
	60 to 69,	41	4	2								
	70 to 79,	84	6	4								
	80 to 89,	39	1	4								
	90 and over,	3	1									
	Totals,	188	19	11	29		3			4		

AND CERTAIN SELECTED CAUSES, NEW JERSEY, 1919.

	AGRICULTURE, FORESTRY AND ANIMAL HUSBANDRY.											MANUFACTURING AND MECHANICAL INDUSTRIES.																							
	Farmers.	Farm laborers.	Fishermen and oystermen.	Gardeners, florists, fruit growers and nurserymen.	Garden, greenhouse, orchard and nursery laborers.	Other agricultural and animal husbandry pursuits.	EXTRACTION OF MINERALS.		Foremen, overseers and inspectors.	Miners.	Quarry operatives.	Apprentices to building and hand trades.	Bakers.	Blacksmiths, forgemen and hammermen.	Boilermakers.	Brick and stone masons.	Builders and building contractors.	Carpenters, coopers and cabinet makers.	Compositors, lithotypers and typesetters.	Dressmakers and seamstresses (not in factory).	Dyers.	Electricians and electrical engineers.	Engineers (stationary).	Engravers.	Fileers, grinders, buffers and polishers (metal).	Firemen (except locomotive and fire department).	Furnace men, smelter men, heaters, pourers, etc.	Glassblowers.	Jewelers, watchmakers, goldsmiths and silver-smiths.	Laborers (general and not specified laborers).					
Tuberculosis of lungs.	10 to 19,		1																																
	20 to 29,	1																																	
	30 to 39,	1																																	
	40 to 49,	1																																	
	50 to 59,	1																																	
	60 to 69,	1																																	
	70 to 79,	1																																	
	80 to 89,	1																																	
	90 and over,	1																																	
	Totals,	46	13	2	6					3	1		11	7	12	21	6	67	3	12	4	13	9	3	8	16	1	3	11	329					
Cancer and other malignant tumors.	10 to 19,																																		
	20 to 29,																																		
	30 to 39,																																		
	40 to 49,	2	1	1																															
	50 to 59,	14	5	2																															
	60 to 69,	22	4	2																															
	70 to 79,	16	1	1																															
	80 to 89,	6	1																																
	90 and over,																																		
	Totals,	60	12	4	15	1	1			1	2		10	5	3	8	10	45	1	13	8	2	14	2	6		2	9	118						
Diseases of the nervous system and of the organs of sense.	10 to 19,		1																																
	20 to 29,		1																																
	30 to 39,	1	1																																
	40 to 49,	1	1	1																															
	50 to 59,	16	2																																
	60 to 69,	24	2																																
	70 to 79,	53	4	4																															
	80 to 89,	45	2	2																															
	90 and over,	3																																	
	Totals,	143	18	7	18	1				1	1		7	10	3	25	12	72	1	6	8	8	14	2	5	9		1	6	170					
Diseases of the circulatory system.	10 to 19,	1	1																																
	20 to 29,	1	1																																
	30 to 39,	2	1																																
	40 to 49,	6	1	2																															
	50 to 59,	11	3	3																															
	60 to 69,	41	4	2																															
	70 to 79,	84	6	4																															
	80 to 89,	39	1	4																															
	90 and over,	3	1																																
	Totals,	188	19	11	29		3			4			14	19	6	28	27	97	2	17	2	8	21	2	7	8		3	18	258					

TABLE 3.—DEATHS BY OCCUPATIONS, AGE GROUPS AND

	Building and hand trades.	Chemical industries.	Clay, glass and stone industries.	Iron, steel and other metal industries.	Lumber and furniture industries.	Textile industries.	Other industries.	Machinists, millwrights and toolmakers.	Managers, superintendents and foremen (manufacturing).	Manufacturers and officials.	Mechanics (gunsmiths, locksmiths, wheelwrights, etc.).	Millers (grain, flour, feed, etc.).
<b>Tuberculosis of lungs.</b>												
10 to 19, .....	1						2	1	1		1	
20 to 29, .....	2		2	4			15	26			1	
30 to 39, .....	2		1	2			17	29			1	
40 to 49, .....	2		2	3			14	29			1	
50 to 59, .....	2		2	3	1		12	13	3		1	
60 to 69, .....	1		1	2			9	9			1	
70 to 79, .....	1			1			4	4			1	
80 to 89, .....								4			1	
90 and over, .....												
<b>Totals, .....</b>	<b>10</b>	<b>5</b>	<b>5</b>	<b>12</b>	<b>1</b>		<b>59</b>	<b>81</b>	<b>20</b>	<b>4</b>	<b>12</b>	
<b>Cancer and other malignant tumors.</b>												
10 to 19, .....								1	1	1		
20 to 29, .....			1					1	1	1		
30 to 39, .....			1					3	4	4		
40 to 49, .....			1					9	11	11		
50 to 59, .....			5				5	12	12	12		
60 to 69, .....	2						4	11	11	11		
70 to 79, .....	1						2	6	6	6		
80 to 89, .....								4	3	3		
90 and over, .....								4	3	1		
<b>Totals, .....</b>	<b>5</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>11</b>	<b>23</b>	<b>23</b>	<b>20</b>	<b>7</b>			
<b>Diseases of the nervous system and of the organs of sense.</b>												
10 to 19, .....	1							1	1	1		
20 to 29, .....		1						4	4	4		
30 to 39, .....								4	4	4		
40 to 49, .....			1					9	11	11		
50 to 59, .....		1						9	9	9		
60 to 69, .....								10	10	10		
70 to 79, .....								6	6	6		
80 to 89, .....								1	1	1		
90 and over, .....								1	1	1		
<b>Totals, .....</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>14</b>	<b>41</b>	<b>24</b>	<b>19</b>	<b>8</b>	<b>2</b>	
<b>Diseases of the circulatory system.</b>												
10 to 19, .....	1		1				1		1	1		
20 to 29, .....		1					2	4	4	4		
30 to 39, .....	1		1				4	6	6	6		
40 to 49, .....			3				4	9	12	12		
50 to 59, .....	6		5				9	12	12	12		
60 to 69, .....	2		1				14	18	18	18		
70 to 79, .....			1				2	13	13	13		
80 to 89, .....							1	1	1	1		
90 and over, .....								4	4	4		
<b>Totals, .....</b>	<b>11</b>	<b>2</b>	<b>5</b>	<b>9</b>	<b>1</b>	<b>37</b>	<b>43</b>	<b>35</b>	<b>20</b>	<b>11</b>	<b>2</b>	

CERTAIN SELECTED CAUSES, NEW JERSEY, 1919—Continued.

	Milliners and millinery dealers.	Moulders, foundlers and casters.	Painters, glazers, varnishers, enamellers, etc.	Paperhangers.	Pattern and model makers.	Plasterers.	Plumbers and gas and steam fitters.	Pressmen (printing).	Roofers and slaters.	Semi-skilled operatives (factory employees, industry not stated).	Chemical industries.	Cigar and tobacco factories.	Clay, glass and stone industries (excepting potteries).	Clothing industries.	Food industries.	Iron, steel and other metal industries.	Liquor and beverage industries.	Lumber and furniture industries.	Potteries.	
10 to 19, .....																				
20 to 29, .....	1	1	5				5			13		4								1
30 to 39, .....		4	11		1		14			15		4	1							4
40 to 49, .....		2	8	1			6	3		1		1	1							2
50 to 59, .....		2	8	1			6	3		3		1	1							4
60 to 69, .....	1						1						1	3						9
70 to 79, .....							1						1	1						4
80 to 89, .....							1						1	2						1
90 and over, .....							1						1	1						1
<b>Totals, .....</b>	<b>2</b>	<b>15</b>	<b>35</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>32</b>	<b>14</b>	<b>3</b>	<b>32</b>	<b>2</b>	<b>9</b>	<b>3</b>	<b>14</b>	<b>4</b>	<b>27</b>	<b>6</b>	<b>21</b>	<b>21</b>	
10 to 19, .....	1	6	19	4	1	2	9	4		2	2	2	4	6	1	12	2	2	1	
20 to 29, .....			1				1			2			1							
30 to 39, .....			3				3			1			1							
40 to 49, .....			5				3			1			1							
50 to 59, .....			6				3			1			2							
60 to 69, .....			3				1			1			1							
70 to 79, .....			14				4			1			2							
80 to 89, .....			6				1			1			1							
90 and over, .....			3				1			1			1							
<b>Totals, .....</b>	<b>3</b>	<b>32</b>	<b>49</b>	<b>1</b>	<b>7</b>	<b>3</b>	<b>16</b>	<b>6</b>	<b>1</b>	<b>13</b>	<b>2</b>	<b>5</b>	<b>8</b>	<b>11</b>	<b>2</b>	<b>20</b>	<b>2</b>	<b>6</b>	<b>11</b>	

TABLE 3.—DEATHS BY OCCUPATIONS, AGE GROUPS AND

	Rubber industries.	Shoe factories.	Tanneries and other leather industries.	Textile industries.	Other industries.	Shoemakers and cobblers (not in factory).	Stonecutters.	Tailors and tailoresses.	Tinsmiths and coppersmiths.	Upholsterers.	Other manufacturing and mechanical industries.	TRANSPORTATION.
<b>Tuberculosis of lungs.</b>												
10 to 19, . . . . .			1	7	10						6	
20 to 29, . . . . .	1		12	23	19		1	5	1		14	
30 to 39, . . . . .	4	1	9	15	11			2			28	
40 to 49, . . . . .	3		3	7	11		4	3			26	
50 to 59, . . . . .	1		4	4	11		3	1			19	
60 to 69, . . . . .				4	8		1	1			10	
70 to 79, . . . . .			1	1	1		3	1			5	
80 to 89, . . . . .					2							
90 and over, . . . . .					1							
<b>Totals, . . . . .</b>	9	1	6	44	70	5	8	12	4	2	90	
<b>Cancer and other malignant tumors.</b>												
10 to 19, . . . . .				1							1	
20 to 29, . . . . .	1			2	1						4	
30 to 39, . . . . .	1	1	1	2	1				1		3	
40 to 49, . . . . .	1			5	3			1			5	
50 to 59, . . . . .			4	5	1	5	2		1		13	
60 to 69, . . . . .	1		1	5	7	3			1	1	6	
70 to 79, . . . . .		1		4	1			1		1	4	
80 to 89, . . . . .								1			1	
90 and over, . . . . .												
<b>Totals, . . . . .</b>	3	2	6	22	10	9	2	5	2	2	39	
<b>Diseases of the nervous system and of the organs of sense.</b>												
10 to 19, . . . . .				2	2						2	
20 to 29, . . . . .	1			2								
30 to 39, . . . . .				3	2						1	
40 to 49, . . . . .	1			3	3						3	
50 to 59, . . . . .	1	1	1	5	4			5	1		11	
60 to 69, . . . . .	3	1	1	2	1	1		2			13	
70 to 79, . . . . .			3	3	3	1		2			2	
80 to 89, . . . . .				4	3			2			4	
90 and over, . . . . .												
<b>Totals, . . . . .</b>	5	2	5	21	18	15	2	15	7	1	36	
<b>Diseases of the circulatory system.</b>												
10 to 19, . . . . .				2	3						1	
20 to 29, . . . . .	1			4	1						3	
30 to 39, . . . . .				5	4						5	
40 to 49, . . . . .	5		2	10	6	2		3		1	15	
50 to 59, . . . . .				8	6	3		1	2		21	
60 to 69, . . . . .	3		3	7	3	2		5	1	1	14	
70 to 79, . . . . .	1	1	3	1	6	2		5	1	1	18	
80 to 89, . . . . .		1	1	2	7			1			2	
90 and over, . . . . .				1								
<b>Totals, . . . . .</b>	10	1	7	36	34	27	5	16	5	5	79	

CERTAIN SELECTED CAUSES, NEW JERSEY, 1919—Continued.

	Water.	Boatmen, canal men, sailors and deck hands.	Longshoremen and stevedores.	Other pursuits.	Road and street.	Carriage and hack drivers, draymen, teamsters and expressmen.	Chauffeurs.	Contractors and foremen (road building).	Laborers (road building) and street cleaners.	Livery stable keepers and managers, hostlers and stable hands.	Other pursuits.	Railroad.	Baggage men and freight agents.	Brakemen.	Conductors.	Foremen, overseers and inspectors.	Laborers.	Locomotive engineers.	Locomotive firemen.	
10 to 19, . . . . .				1																
20 to 29, . . . . .				1																
30 to 39, . . . . .				2																
40 to 49, . . . . .				2																
50 to 59, . . . . .				4																
60 to 69, . . . . .				5																
70 to 79, . . . . .				4																
80 to 89, . . . . .				1																
90 and over, . . . . .																				
<b>Totals, . . . . .</b>	1	2	4	60	32	1	1	5	1	1	5	1	2	6	12	3	9	1	1	
10 to 19, . . . . .				1	1															
20 to 29, . . . . .				1	1															
30 to 39, . . . . .				3	3															
40 to 49, . . . . .				3	3															
50 to 59, . . . . .				5	5															
60 to 69, . . . . .				4	4															
70 to 79, . . . . .																				
80 to 89, . . . . .																				
90 and over, . . . . .																				
<b>Totals, . . . . .</b>	5	5	7	14	5		2	2	1	2	1	1	2	2	6	5	2	3	1	
10 to 19, . . . . .																				
20 to 29, . . . . .				1	1															
30 to 39, . . . . .				6	6															
40 to 49, . . . . .				3	3															
50 to 59, . . . . .				5	5															
60 to 69, . . . . .				5	5															
70 to 79, . . . . .				3	3															
80 to 89, . . . . .				3	3															
90 and over, . . . . .																				
<b>Totals, . . . . .</b>	4	2	11	22	5	3	1	2	3	2	3		2	3	2	5	6	1		
10 to 19, . . . . .				1	1															
20 to 29, . . . . .				2	2															
30 to 39, . . . . .				4	4															
40 to 49, . . . . .				9	9															
50 to 59, . . . . .				5	5															
60 to 69, . . . . .				5	5															
70 to 79, . . . . .				7	7															
80 to 89, . . . . .				7	7															
90 and over, . . . . .				1	1															
<b>Totals, . . . . .</b>	7	6	23	36	4	10	8	5	1	4	11	1	4	11	2	11	8			

TABLE 3.—DEATHS BY OCCUPATIONS, AGE GROUPS AND

	Motormen.	Officials and superintendents.	Switchmen, firemen and yardmen.	Ticket and station agents.	Other pursuits.	Express, post, telegraph and telephone.	Express messengers and railway mail clerks.	Linemen.	Mail carriers.	Telegraph operators.	Telephone operators.	Other pursuits.
<b>Tuberculosis of lungs.</b>												
10 to 19, . . . . .	1				1						2	2
20 to 29, . . . . .	5				6					1	1	1
30 to 39, . . . . .	1				1						1	
40 to 49, . . . . .	1		1		1						1	
50 to 59, . . . . .			1		2						1	
60 to 69, . . . . .					2			1				
70 to 79, . . . . .			3		1					1		
80 to 89, . . . . .												
90 and over, . . . . .												
<b>Totals, . . . . .</b>	<b>7</b>		<b>2</b>	<b>1</b>	<b>14</b>			<b>1</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>4</b>
<b>Cancer and other malignant tumors.</b>												
10 to 19, . . . . .												
20 to 29, . . . . .	1											
30 to 39, . . . . .												
40 to 49, . . . . .												
50 to 59, . . . . .			3		2							
60 to 69, . . . . .							1			1		
70 to 79, . . . . .			3		1							
80 to 89, . . . . .												
90 and over, . . . . .												
<b>Totals, . . . . .</b>	<b>1</b>		<b>6</b>		<b>5</b>		<b>1</b>			<b>1</b>		
<b>Diseases of the nervous system and of the organs of sense.</b>												
10 to 19, . . . . .												1
20 to 29, . . . . .	1							1				
30 to 39, . . . . .												
40 to 49, . . . . .		1										
50 to 59, . . . . .	1		1		4			1	1			
60 to 69, . . . . .			1		4							
70 to 79, . . . . .			1		3							1
80 to 89, . . . . .							1					
90 and over, . . . . .												
<b>Totals, . . . . .</b>	<b>2</b>	<b>1</b>	<b>6</b>	<b>3</b>	<b>11</b>		<b>2</b>		<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>Diseases of the circulatory system.</b>												
10 to 19, . . . . .											1	1
20 to 29, . . . . .	1											
30 to 39, . . . . .	3				2							
40 to 49, . . . . .	1	1										
50 to 59, . . . . .	1	2	2	2	4				1	2	1	1
60 to 69, . . . . .		2	2	2	4						1	1
70 to 79, . . . . .		2	2	2	3		1	1				
80 to 89, . . . . .		1										
90 and over, . . . . .					1							
<b>Totals, . . . . .</b>	<b>5</b>	<b>3</b>	<b>11</b>	<b>4</b>	<b>17</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>

CERTAIN SELECTED CAUSES, NEW JERSEY, 1919—Continued.

TRADE.	Bankers, brokers and moneylenders.	Clerks in stores.	Commercial travelers.	Deliverymen.	Laborers.	Real estate and insurance agents and officials.	Salesmen and saleswomen.	Undertakers.	Wholesale and retail dealers.	Other pursuits.	PUBLIC SERVICE (NOT ELSEWHERE CLASSIFIED).	Firemen (fire department).	Laborers (public service).	Marshals, sheriffs, detectives, etc.	Officials and inspectors (city, county, state).	Policemen.	Soldiers, sailors and marines.	Other pursuits.
10 to 19, . . . . .									1									
20 to 29, . . . . .	1	4	2	1			13		19	3								9
30 to 39, . . . . .	1	4	1	1		2	6		20	3		1						2
40 to 49, . . . . .		1					1		1									3
50 to 59, . . . . .							6		14	3								5
60 to 69, . . . . .				1		4	1		3	2								2
70 to 79, . . . . .							6		13	1								5
80 to 89, . . . . .							2		11	1								4
90 and over, . . . . .							1		3	1								2
<b>Totals, . . . . .</b>	<b>2</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>10</b>	<b>37</b>	<b>1</b>	<b>66</b>	<b>10</b>		<b>2</b>	<b>2</b>		<b>6</b>	<b>4</b>	<b>14</b>	<b>25</b>
10 to 19, . . . . .																		1
20 to 29, . . . . .	1	1					2		3	1								2
30 to 39, . . . . .							3		6	1								1
40 to 49, . . . . .							5		6									1
50 to 59, . . . . .							7		19	1								5
60 to 69, . . . . .				1			6		19	1								4
70 to 79, . . . . .							4		11	1								2
80 to 89, . . . . .							1		3	1								4
90 and over, . . . . .							1		1	1								2
<b>Totals, . . . . .</b>	<b>7</b>	<b>1</b>		<b>1</b>	<b>14</b>	<b>23</b>	<b>62</b>	<b>3</b>	<b>86</b>	<b>8</b>		<b>5</b>	<b>4</b>		<b>8</b>	<b>6</b>	<b>15</b>	<b>15</b>
10 to 19, . . . . .																		
20 to 29, . . . . .							1		5									3
30 to 39, . . . . .							3		6									1
40 to 49, . . . . .							4		4									1
50 to 59, . . . . .							6		19									6
60 to 69, . . . . .							7		30									16
70 to 79, . . . . .							7		11									11
80 to 89, . . . . .							6		13									11
90 and over, . . . . .							1		25									3
<b>Totals, . . . . .</b>	<b>11</b>	<b>5</b>		<b>2</b>	<b>23</b>	<b>28</b>	<b>86</b>	<b>3</b>	<b>175</b>	<b>6</b>		<b>2</b>	<b>10</b>		<b>5</b>	<b>19</b>	<b>13</b>	<b>48</b>









TABLE 3.—DEATHS BY OCCUPATIONS, AGE GROUPS AND

	Rubber industries.	Shoe factories.	Tanneries and other leather industries.	Textile industries.	Other industries.	Shoemakers and cobblers (not in factory).	Stonecutters.	Tailors and tailoresses.	Tinsmiths and coppersmiths.	Upholsterers.	Other manufacturing and mechanical industries.	TRANSPORTATION.
<b>Pneumonia.</b>												
10 to 19, .....			1	1	2	1		1			6	
20 to 29, .....		1	1	6	5						14	
30 to 39, .....	1		1	2	2	1					14	
40 to 49, .....	1		1	3	2			2			6	
50 to 59, .....			1	4	4			1	1		6	
60 to 69, .....	1	1	1	4	4	1		1			13	
70 to 79, .....			1	1	1			1			6	
80 to 89, .....			1	1	1		1				1	
90 and over, .....			1	1	1			1			1	
<b>Totals, .....</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>13</b>	<b>20</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>1</b>		<b>63</b>	
<b>Diseases of the respiratory system (pneumonia and tuberculosis of lungs excepted).</b>												
10 to 19, .....			1	1	1				1		2	
20 to 29, .....			1	1	2				1		2	
30 to 39, .....	1		1	1	2			1	2		3	
40 to 49, .....			1	1	1			1	1		3	
50 to 59, .....			1	2	2	1			1		3	
60 to 69, .....		1	1	3	3	1			1		1	
70 to 79, .....			1	1	1	1			1		3	
80 to 89, .....			1	1	1	1			1		3	
90 and over, .....			1	1	1	1			1		3	
<b>Totals, .....</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>6</b>	<b>10</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>4</b>		<b>21</b>	
<b>Diseases of the digestive system.</b>												
10 to 19, .....		1			2						6	
20 to 29, .....				1	3			1			6	
30 to 39, .....				2	2						3	
40 to 49, .....			1	4	2			1			6	
50 to 59, .....	1		2	4	1	1		1			12	
60 to 69, .....			1	1	1	1					5	
70 to 79, .....	1		1	1	1	3					3	
80 to 89, .....			1	1	1	1					3	
90 and over, .....						1				1		
<b>Totals, .....</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>10</b>	<b>14</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>		<b>35</b>	
<b>Nonvenereal diseases of the genito-urinary system and annexa.</b>												
10 to 19, .....					3						1	
20 to 29, .....				1	1						2	
30 to 39, .....		1		2	2						2	
40 to 49, .....			1	1	1						2	
50 to 59, .....			1	5	3						5	
60 to 69, .....		1	2	3	3			4			9	
70 to 79, .....		2	1	5	5			2			13	
80 to 89, .....			1	5	5			2			15	
90 and over, .....				1	1			2			3	
<b>Totals, .....</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>24</b>	<b>18</b>	<b>16</b>	<b>1</b>	<b>11</b>	<b>4</b>	<b>2</b>	<b>53</b>	

CERTAIN SELECTED CAUSES, NEW JERSEY, 1919—Continued.

	Water.	Boatmen, canal men, sailors and deck hands.	Longshoremen and stevedores.	Other pursuits.	Road and street.	Carriage and hack drivers, draymen, teamsters and expressmen.	Chauffeurs.	Contractors and foremen (road building).	Laborers (road building) and street cleaners.	Livery stable keepers and managers, hostlers and stable hands.	Other pursuits.	Railroad.	Passengers and freight agents.	Brakemen.	Conductors.	Foremen, overseers and inspectors.	Laborers.	Locomotive engineers.	Locomotive firemen.	
10 to 19, .....		1					1	1										1		
20 to 29, .....							2	4										1		
30 to 39, .....			1				5	6										4		
40 to 49, .....		1					4											2		
50 to 59, .....							2											2		
60 to 69, .....		1					1											2		
70 to 79, .....							2		1	1								1		
80 to 89, .....		1					2											2		
90 and over, .....							1											1		
<b>Totals, .....</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>14</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>		<b>1</b>	<b>7</b>	<b>6</b>	<b>4</b>	<b>13</b>	<b>3</b>	<b>2</b>		
10 to 19, .....							6	1							1					
20 to 29, .....							1	1												
30 to 39, .....							1	1												
40 to 49, .....							1	1												
50 to 59, .....							2	2												
60 to 69, .....							1	1												
70 to 79, .....							4	4												
80 to 89, .....							1	1												
90 and over, .....							1	1												
<b>Totals, .....</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>15</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	
10 to 19, .....							1	2												
20 to 29, .....							1	1												
30 to 39, .....							1	1												
40 to 49, .....							1	1												
50 to 59, .....							2	2												
60 to 69, .....							3	3												
70 to 79, .....							3	3												
80 to 89, .....							3	3												
90 and over, .....							1	1												
<b>Totals, .....</b>	<b>4</b>	<b>6</b>	<b>13</b>	<b>19</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>		<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>7</b>		

TABLE 3.—DEATHS BY OCCUPATIONS, AGE GROUPS AND

	Motormen.	Officials and superintendents.	Switchmen, flagmen and yardmen.	Ticket and station agents.	Other pursuits.	Express, post, telegraph and telephone.	Express messengers and railway mail clerks.	Linenmen.	Mail carriers.	Telegraph operators.	Telephone operators.	Other pursuits.
<b>Pneumonia.</b>												
10 to 19.	1			1							2	
20 to 29.				1							2	
30 to 39.	1		1								2	
40 to 49.											2	
50 to 59.										1		
60 to 69.			2									
70 to 79.			1									
80 to 89.												
90 and over.												
<b>Totals.</b>	2		3	4	2			2	1	1	6	
<b>Diseases of the respiratory system (pneumonia and tuberculosis of lungs excepted).</b>												
10 to 19.												
20 to 29.												
30 to 39.	1		1	1								
40 to 49.	2		1									
50 to 59.												
60 to 69.		1	1									
70 to 79.			1									
80 to 89.												
90 and over.												
<b>Totals.</b>	3	1	4	1	2			2	1			
<b>Diseases of the digestive system.</b>												
10 to 19.												
20 to 29.												
30 to 39.												
40 to 49.												
50 to 59.												
60 to 69.	1	1										
70 to 79.												
80 to 89.												
90 and over.												
<b>Totals.</b>	1	1			5			1			1	1
<b>Nonvenereal diseases of the genito-urinary system and annexa.</b>												
10 to 19.									1			
20 to 29.	1											
30 to 39.			1									
40 to 49.	1	2	1	1								
50 to 59.			3						1	1		
60 to 69.	4		1									
70 to 79.			2									
80 to 89.												
90 and over.												
<b>Totals.</b>	6	2	5	2	13			3	1	1	2	

CERTAIN SELECTED CAUSES, NEW JERSEY, 1919—Continued.

	Bankers, brokers and moneylenders.	Clerks in stores.	Commercial travelers.	Deliverymen.	Laborers.	Real estate and insurance agents and officials.	Salesmen and saleswomen.	Undertakers.	Wholesale and retail dealers.	Other pursuits.	PUBLIC SERVICE (NOT ELSEWHERE CLASSIFIED).	Firemen (fire department).	Laborers (public service).	Marshals, sheriffs, detectives, etc.	Officials and inspectors (city, county, state).	Policemen.	Soldiers, sailors and marines.	Other pursuits.	
10 to 19.																			
20 to 29.	1	2																	
30 to 39.	1	3																	
40 to 49.		1																	
50 to 59.		1																	
60 to 69.		1																	
70 to 79.		1																	
80 to 89.																			
90 and over.																			
<b>Totals.</b>	2	10		1	1	5	22	1	42	13		2	4		3	6	9	15	
10 to 19.							1			1							1		
20 to 29.							2			6							6		
30 to 39.							1			3							1		
40 to 49.							1			3							1		
50 to 59.							1			2							1		
60 to 69.							1			2							2		
70 to 79.							1			2							1		
80 to 89.							1			2							2		
90 and over.							1			2							2		
<b>Totals.</b>	1			2	1	9	5	1	21	3		1	1		1	2	8	8	
10 to 19.							1			2							2		
20 to 29.							6			2							1		
30 to 39.							2			2							1		
40 to 49.							1			1							1		
50 to 59.							1			1							1		
60 to 69.							1			1							1		
70 to 79.							1			1							1		
80 to 89.							1			1							1		
90 and over.							1			1							1		
<b>Totals.</b>	5	1	2		1	6	13	2	32	7		2			2	2	3	10	
10 to 19.										1							2		
20 to 29.							2			2							2		
30 to 39.							2			3							1		
40 to 49.							4			11							3		
50 to 59.							1			25							11		
60 to 69.							2			19							3		
70 to 79.							2			28							2		
80 to 89.							3			5							2		
90 and over.							1			10							2		
<b>Totals.</b>	6	5	3	1	2	15	24	1	98	15		3	1		6	13	8	27	

TABLE 3.—DEATHS BY OCCUPATIONS, AGE GROUPS AND

	PROFESSIONAL SERVICE.	Architects.	Chemists, assayers, etc.	Civil and mining engineers and surveyors.	Clergymen.	Dentists.	Designers, draftsmen and inventors.	Lawyers, judges and justices.	Musicians and teachers of music.	Photographers.	Physicians and surgeons.	Teachers.
Pneumonia.	10 to 19, .....						1			1		4
	20 to 29, .....					1	1					1
	30 to 39, .....		2				1	3	1	1	1	1
	40 to 49, .....						1		1	1		2
	50 to 59, .....			1				1	1	1		1
	60 to 69, .....			1				1	1			3
	70 to 79, .....				2				1		1	1
	80 to 89, .....										2	
	90 and over, .....											
	Totals, .....			2	2	3	2	4	5	3	4	4
Diseases of the respiratory system (pneumonia and tuberculosis of lungs excepted).	10 to 19, .....											5
	20 to 29, .....			2								2
	30 to 39, .....					1			1			2
	40 to 49, .....								1			1
	50 to 59, .....			1								1
	60 to 69, .....			1				1				1
	70 to 79, .....											1
	80 to 89, .....											1
	90 and over, .....											1
	Totals, .....			1	6	1		1	1	1	1	1
Diseases of the digestive system.	10 to 19, .....											2
	20 to 29, .....											2
	30 to 39, .....			1								4
	40 to 49, .....			3								4
	50 to 59, .....			1								2
	60 to 69, .....			1								2
	70 to 79, .....											2
	80 to 89, .....											2
	90 and over, .....											2
	Totals, .....			1	2	5		2	8	4	1	2
Nonvenereal diseases of the genito-urinary system and anæxæ.	10 to 19, .....											2
	20 to 29, .....		1					1				1
	30 to 39, .....					1						1
	40 to 49, .....					1						2
	50 to 59, .....					1						2
	60 to 69, .....	1				1		3	1		2	3
	70 to 79, .....					3		2		3	3	5
	80 to 89, .....			2		1					1	1
	90 and over, .....											1
	Totals, .....	1	1	2	8	1	1	9	1		10	17

CERTAIN SELECTED CAUSES, NEW JERSEY, 1919—Continued.

	Other professional and semi-professional pursuits.	DOMESTIC AND PERSONAL SERVICE.	Barbers, hairdressers and manicurists.	Bartenders.	Hotel keepers and managers.	Housekeepers and stewards.	Janitors and sextons.	Laundriers and laundresses.	Porters (except in stores).	Restaurant, cafe and lunch room keepers.	Saloonkeepers.	Servants.	Walters.	Other pursuits.	CLERICAL OCCUPATIONS.	Agents, canvassers and collectors.	Bookkeepers, cashiers and accountants.	Clerks (except in stores).	Other clerical pursuits.	
10 to 19, .....	1					12						2						1	6	2
20 to 29, .....					1	175		4				5						5	18	5
30 to 39, .....						151	1	1	1			2	3					10	6	6
40 to 49, .....			2	3		85			3			10	2					6	5	1
50 to 59, .....				3		82	1	1	1			4	3					9	2	2
60 to 69, .....	1					70	3		3			4						1	4	1
70 to 79, .....	1					60						1								
80 to 89, .....						20														
90 and over, .....						1														
Totals, .....	3		2	6	3	656	5	8	9		2	28	8	9			16	50	17	
Diseases of the respiratory system (pneumonia and tuberculosis of lungs excepted).	10 to 19, .....					5												1	2	
	20 to 29, .....	1		2		44						3	1					2	2	1
	30 to 39, .....	2		1		53						1	1					5	5	
	40 to 49, .....	1				47						1	2					2	3	
	50 to 59, .....	1				46						4	1					1	1	
	60 to 69, .....	1		1		33				1	1	6	1					1	1	
	70 to 79, .....	1				75				1	1	2	2					1	1	
	80 to 89, .....					41	1					1						1	1	
	90 and over, .....			1		6			1									1	1	
	Totals, .....	7		5	2	1	402	1	1	2	1	1	20	1	8			7	16	1
Diseases of the digestive system.	10 to 19, .....					5												6	6	1
	20 to 29, .....	1		1		39						2						4	6	1
	30 to 39, .....	2		1		71						3	1					4	4	
	40 to 49, .....	1		3		85	1	1	1	1		2	2					5	5	
	50 to 59, .....	1		1		101	1		1	1		2	2					5	5	
	60 to 69, .....			1		92	1					3	3					4	3	
	70 to 79, .....					61		3				1	1					1	1	
	80 to 89, .....					22						2	2					1	1	
	90 and over, .....					4									1			1	1	
	Totals, .....	5		6	6	3	480	6	1	2	3	5	26	2	15		1	4	30	4
Nonvenereal diseases of the genito-urinary system and anæxæ.	10 to 19, .....					4														2
	20 to 29, .....	1				49						2	1					2	6	
	30 to 39, .....	3				101						3	1					2	10	3
	40 to 49, .....	1				195			1	1		6	15	1				2	16	
	50 to 59, .....	4				189			2	2		12	5	3				4	8	
	60 to 69, .....	4				236			2	2		6	12	5				7	13	
	70 to 79, .....	1				198	5		2	2		1	15	2				2	8	
	80 to 89, .....	1				72						1	5	2				2	8	
	90 and over, .....					9						2							1	
	Totals, .....	16		9	8	9	1105	15	6	8	2	12	60	5	21		5	18	61	12





TABLE 3.—DEATHS BY OCCUPATIONS, AGE GROUPS AND

Summary of decedents from all causes.	Summary of decedents from all causes.									
	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 to 89.	90 and over.	Totals.
10 to 19.	1	1	20	28	1	1	9	3	26	46
20 to 29.	4	2	35	68	4	1	9	3	75	16
30 to 39.	11	3	39	37	9	1	8	3	105	46
40 to 49.	15	1	44	36	13	5	16	7	94	221
50 to 59.	3	1	34	32	23	7	17	7	108	255
60 to 69.	9	4	26	31	21	3	18	5	74	103
70 to 79.	2	4	16	14	19	5	18	6	54	24
80 to 89.	1	1	7	8	13	2	10	2	13	92
90 and over.	1	1	7	8	13	2	10	2	13	35
Totals.	46	16	46	221	255	103	24	92	35	14
All other diseases and causes of death.	Summary of decedents from all causes.									
	10 to 19.	1	1	4	6	1	1	1	6	57
20 to 29.	1	1	8	16	1	1	1	1	17	
30 to 39.	2	1	9	18	1	1	1	1	20	
40 to 49.	3	1	12	23	1	1	1	1	10	
50 to 59.	1	1	1	1	1	1	1	1	4	
60 to 69.	1	1	1	1	1	1	1	1	3	
70 to 79.	1	1	1	1	1	1	1	1	3	
80 to 89.	1	1	1	1	1	1	1	1	2	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	5	2	2	13	23	8	6	3	70	
Violent deaths (suicide excepted).	Summary of decedents from all causes.									
	10 to 19.	1	1	3	2	1	1	1	4	12
20 to 29.	1	1	3	9	1	1	1	1	12	
30 to 39.	2	1	3	4	1	1	1	1	16	
40 to 49.	1	1	2	6	1	1	1	1	11	
50 to 59.	1	1	1	1	1	1	1	1	7	
60 to 69.	1	1	1	1	1	1	1	1	4	
70 to 79.	1	1	1	1	1	1	1	1	1	
80 to 89.	1	1	1	1	1	1	1	1	1	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	5	2	2	13	23	8	6	3	57	
Suicide.	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	3
20 to 29.	1	1	1	1	1	1	1	1	2	
30 to 39.	1	1	1	1	1	1	1	1	2	
40 to 49.	1	1	1	1	1	1	1	1	2	
50 to 59.	1	1	1	1	1	1	1	1	2	
60 to 69.	1	1	1	1	1	1	1	1	2	
70 to 79.	1	1	1	1	1	1	1	1	2	
80 to 89.	1	1	1	1	1	1	1	1	2	
90 and over.	1	1	1	1	1	1	1	1	2	
Totals.	1	1	1	6	3	2	4	2	8	
Rubber industries.										
Shoe factories.										
Tanneries and other leather industries.										
Textile industries.										
Other industries.										
Shoemakers and cobblers (not in factory).										
Stonemasons.										
Tailors and tailoresses.										
Thsmiths and coppersmiths.										
Upholsterers.										
Other manufacturing and mechanical industries.										
TRANSPORTATION.										

CERTAIN SELECTED CAUSES, NEW JERSEY, 1919—Continued.

Summary of decedents from all causes.	Summary of decedents from all causes.									
	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 to 89.	90 and over.	Totals.
10 to 19.	1	1	2	1	1	1	1	1	1	8
20 to 29.	1	1	2	1	1	1	1	1	1	8
30 to 39.	1	1	2	1	1	1	1	1	1	8
40 to 49.	1	1	2	1	1	1	1	1	1	8
50 to 59.	1	1	2	1	1	1	1	1	1	8
60 to 69.	1	1	2	1	1	1	1	1	1	8
70 to 79.	1	1	2	1	1	1	1	1	1	8
80 to 89.	1	1	2	1	1	1	1	1	1	8
90 and over.	1	1	2	1	1	1	1	1	1	8
Totals.	5	2	2	13	23	8	6	3	70	
Water.	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	1
20 to 29.	1	1	1	1	1	1	1	1	1	
30 to 39.	1	1	1	1	1	1	1	1	1	
40 to 49.	1	1	1	1	1	1	1	1	1	
50 to 59.	1	1	1	1	1	1	1	1	1	
60 to 69.	1	1	1	1	1	1	1	1	1	
70 to 79.	1	1	1	1	1	1	1	1	1	
80 to 89.	1	1	1	1	1	1	1	1	1	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	1	1	1	1	1	1	1	1	1	
Boatmen, canal men, sailors and deck hands.	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	1
20 to 29.	1	1	1	1	1	1	1	1	1	
30 to 39.	1	1	1	1	1	1	1	1	1	
40 to 49.	1	1	1	1	1	1	1	1	1	
50 to 59.	1	1	1	1	1	1	1	1	1	
60 to 69.	1	1	1	1	1	1	1	1	1	
70 to 79.	1	1	1	1	1	1	1	1	1	
80 to 89.	1	1	1	1	1	1	1	1	1	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	1	1	1	1	1	1	1	1	1	
Longshoremen and stevedores.	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	1
20 to 29.	1	1	1	1	1	1	1	1	1	
30 to 39.	1	1	1	1	1	1	1	1	1	
40 to 49.	1	1	1	1	1	1	1	1	1	
50 to 59.	1	1	1	1	1	1	1	1	1	
60 to 69.	1	1	1	1	1	1	1	1	1	
70 to 79.	1	1	1	1	1	1	1	1	1	
80 to 89.	1	1	1	1	1	1	1	1	1	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	1	1	1	1	1	1	1	1	1	
Other pursuits.	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	1
20 to 29.	1	1	1	1	1	1	1	1	1	
30 to 39.	1	1	1	1	1	1	1	1	1	
40 to 49.	1	1	1	1	1	1	1	1	1	
50 to 59.	1	1	1	1	1	1	1	1	1	
60 to 69.	1	1	1	1	1	1	1	1	1	
70 to 79.	1	1	1	1	1	1	1	1	1	
80 to 89.	1	1	1	1	1	1	1	1	1	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	1	1	1	1	1	1	1	1	1	
Road and street.	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	1
20 to 29.	1	1	1	1	1	1	1	1	1	
30 to 39.	1	1	1	1	1	1	1	1	1	
40 to 49.	1	1	1	1	1	1	1	1	1	
50 to 59.	1	1	1	1	1	1	1	1	1	
60 to 69.	1	1	1	1	1	1	1	1	1	
70 to 79.	1	1	1	1	1	1	1	1	1	
80 to 89.	1	1	1	1	1	1	1	1	1	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	1	1	1	1	1	1	1	1	1	
Carriage and hack drivers, draymen, teamsters and expressmen.	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	1
20 to 29.	1	1	1	1	1	1	1	1	1	
30 to 39.	1	1	1	1	1	1	1	1	1	
40 to 49.	1	1	1	1	1	1	1	1	1	
50 to 59.	1	1	1	1	1	1	1	1	1	
60 to 69.	1	1	1	1	1	1	1	1	1	
70 to 79.	1	1	1	1	1	1	1	1	1	
80 to 89.	1	1	1	1	1	1	1	1	1	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	1	1	1	1	1	1	1	1	1	
Chauffeurs.	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	1
20 to 29.	1	1	1	1	1	1	1	1	1	
30 to 39.	1	1	1	1	1	1	1	1	1	
40 to 49.	1	1	1	1	1	1	1	1	1	
50 to 59.	1	1	1	1	1	1	1	1	1	
60 to 69.	1	1	1	1	1	1	1	1	1	
70 to 79.	1	1	1	1	1	1	1	1	1	
80 to 89.	1	1	1	1	1	1	1	1	1	
90 and over.	1	1	1	1	1	1	1	1	1	
Totals.	1	1	1	1	1	1	1	1	1	
Contractors and foremen (road building).	Summary of decedents from all causes.									
	10 to 19.	1	1	1	1	1	1	1	1	1
20 to 29.	1	1	1	1	1	1	1	1	1	
30 to 39.	1	1	1	1	1	1	1	1	1	
40 to 49.	1	1	1	1	1	1	1	1	1	
50 to 59.	1	1	1	1	1	1	1	1	1	
60 to 69.	1	1	1							







DEPARTMENT OF HEALTH.

TABLE 4.—POPULATION; BIRTHS, MARRIAGES AND DEATHS REPORTED WITH RATES PER 1,000 POPULATION.

YEAR.	Population.*	BIRTHS.		MARRIAGES.		DEATHS.	
		Number of births reported.	Birth rate per 1,000 population.	Number of marriages.	Persons married per 1,000 population.	Number of deaths.	Death rate per 1,000 population.
1879.	1,020,584	23,116	22.65	7,096	13.91	20,440	20.03
1880.	1,136,592	23,680	20.84	7,963	14.08	18,967	16.77
1881.	1,160,275	23,484	20.24	8,109	13.98	20,812	17.94
1882.	1,189,638	23,108	19.42	8,837	14.86	25,959	21.82
1883.	1,209,048	24,430	20.21	9,166	15.16	23,310	19.28
1884.	1,248,224	25,263	20.20	8,968	14.37	21,716	17.40
1885.	1,278,033	24,077	18.84	8,989	14.07	23,807	18.63
1886.	1,310,431	25,497	19.46	12,351	18.85	22,734	17.35
1887.	1,342,829	27,340	20.36	15,416	22.96	24,331	18.12
1888.	1,375,227	28,074	20.41	16,025	23.31	27,173	19.76
1889.	1,407,625	29,099	20.67	15,726	22.34	26,543	18.86
1890.	1,441,017	30,103	20.89	15,564	21.60	28,530	19.80
1891.	1,478,784	28,882	19.53	15,305	20.70	28,840	19.50
1892.	1,511,653	30,627	20.26	16,082	21.28	32,685	21.62
1893.	1,538,790	32,285	20.98	17,178	22.33	30,596	19.88
1894.	1,578,373	33,662	21.33	16,245	20.58	30,004	19.09
1895.	1,672,942	31,742	19.97	15,873	18.98	30,634	18.31
1896.	1,718,543	31,207	18.16	18,370	21.38	30,767	17.90
1897.	1,764,144	31,595	17.91	18,171	20.60	29,822	16.90
1898.	1,810,008	32,515	17.96	18,213	14.59	27,337	15.11
1899.	1,853,872	29,419	15.84	13,336	14.37	30,999	16.70
1900.	1,883,669	32,270	17.13	14,611	15.51	31,474	16.62
1901.	1,923,781	34,812	18.08	16,539	17.18	31,739	16.48
1902.	1,967,893	35,116	17.84	18,150	18.45	31,319	15.91
1903.	2,016,797	37,242	18.47	19,512	19.35	31,820	15.87
1904.	2,078,900	38,751	18.82	18,919	18.83	35,298	17.14
1905.	2,144,143	39,680	18.51	20,572	19.19	33,864	15.79
1906.	2,196,238	42,677	19.43	21,580	19.05	35,670	16.24
1907.	2,248,331	44,651	19.86	23,649	21.04	37,408	16.63
1908.	2,300,427	47,495	20.61	26,155	22.74	35,597	15.47
1909.	2,352,522	47,508	20.19	29,724	25.27	36,359	15.46
1910.	2,397,107	53,942	21.26	27,912	22.00	39,494	15.57
1911.	2,615,772	58,133	22.22	25,014	19.13	38,612	14.76
1912.	2,694,377	60,073	22.30	26,821	19.91	37,772	14.02
1913.	2,772,981	61,432	22.15	27,607	19.98	39,425	14.22
1914.	2,851,586	65,403	22.94	28,528	20.01	39,967	14.02
1915.	2,877,532	66,476	23.10	27,694	19.25	39,435	13.70
1916.	2,948,016	70,211	23.82	31,169	21.15	43,376	14.44
1917.	3,014,193	75,309	24.98	30,060	19.94	43,532	14.44
1918.	3,050,371	74,549	24.20	23,989	15.58	60,852	19.75
1919.	3,146,547	70,935	22.54	29,281	18.61	39,979	12.71

\* Estimated except for census years.

BUREAU OF VITAL STATISTICS.

TABLE 5.—DEATHS IN NEW JERSEY PER 100,000 POPULATION, TOTAL, AND BY WHITE AND COLORED INHABITANTS, 1919.

Abridged International List Number.	CAUSE OF DEATH.	Total deaths per 100,000 population.	White deaths per 100,000 white population.	Colored deaths per 100,000 colored population.
2	Typhus fever, .....			
3	Malaria, .....	.1	.1	
4	Smallpox, .....			
5	Measles, .....	1.8	1.8	2.3
6	Scarlet fever, .....	2.3	2.3	.9
7	Whooping cough, .....	2.9	2.7	8.2
8	Diphtheria and croup, .....	18.1	18.4	9.1
9	Influenza, .....	78.9	77.7	112.9
10	Asiatic cholera, .....			
11	Cholera nostras, .....	.1	.1	.9
12	Other epidemic diseases, .....	4.1	3.9	10.0
13	Tuberculosis of the lungs, .....	111.1	104.7	235.8
14	Tuberculous meningitis, .....	6.3	5.8	19.1
15	Other forms of tuberculosis, .....	6.0	5.4	22.8
16	Cancer and other malignant tumors, .....	85.7	86.3	70.1
17	Simple meningitis, .....	7.7	7.9	2.7
18	Cerebral hemorrhage and softening, .....	90.3	88.8	132.0
19	Organic diseases of the heart, .....	145.6	143.2	210.3
20	Acute bronchitis, .....	11.4	11.2	17.3
21	Chronic bronchitis, .....	4.5	4.3	9.1
22	Pneumonia, .....	88.4	84.5	195.7
23	Other diseases of the respiratory system (tuberculosis excepted), .....	67.4	64.8	137.5
24	Diseases of the stomach (cancer excepted), .....	10.5	10.3	15.5
25	Diarrhoea and enteritis (under 2 years), .....	54.8	53.6	85.6
26	Appendicitis and typhlitis, .....	8.9	8.8	10.9
27	Hernia, intestinal obstruction, .....	6.8	6.6	13.7
28	Cirrhosis of the liver, .....	8.4	8.3	10.9
29	Acute nephritis and Bright's disease, .....	102.6	100.5	158.4
30	Noncancerous tumors and other diseases of the female genital organs, .....	4.4	4.0	16.4
31	Puerperal septicemia (puerperal fever, peritonitis), .....	3.5	3.5	5.5
32	Other puerperal accidents of pregnancy and labor, .....	8.1	7.8	17.3
33	Congenital debility and malformations, .....	67.7	65.8	121.1
34	Senility, .....	7.5	7.5	9.1
35	Suicide, .....	12.0	12.3	3.6
36	Violent deaths (suicide excepted), .....	75.9	75.5	84.7
37	Other diseases, .....	162.1	157.7	282.2
38	Unknown or ill-defined diseases, .....	1.9	1.8	4.6
Total, .....		1270.6	1240.9	2092.0

TABLE 6.—PERCENTAGE OF DEATHS BY CAUSES TO TOTAL DEATHS AND BY SEX TO TOTAL, 1919.

Abridged International List Number.	CAUSE OF DEATH.	Percentage of total.	Percentage of total.	
			Males—	Females—
1	Typhoid fever, .....	.2	56.0	44.0
2	Typhus fever, .....			
3	Malaria, .....		50.0	50.0
4	Smallpox, .....			
5	Measles, .....	.1	38.6	41.4
6	Scarlet fever, .....	.2	45.1	54.9
7	Whooping cough, .....	.2	46.2	53.8
8	Diphtheria and croup, .....	1.4	49.1	50.9
9	Influenza, .....	6.2	48.7	51.3
10	Asiatic cholera, .....			
11	Cholera nostras, .....		33.3	66.7
12	Other epidemic diseases, .....	.3	63.8	36.2
13	Tuberculosis of the lungs, .....	8.7	56.5	43.5
14	Tuberculous meningitis, .....	.5	52.5	47.5
15	Other forms of tuberculosis, .....	.5	54.0	46.0
16	Cancer and other malignant tumors, .....	6.7	39.9	60.1
17	Simple meningitis, .....	.6	35.8	44.2
18	Cerebral hæmorrhage and softening, .....	7.1	44.1	55.9
19	Organic diseases of the heart, .....	11.5	48.6	51.4
20	Acute bronchitis, .....	.9	50.4	49.6
21	Chronic bronchitis, .....	.4	45.8	54.2
22	Pneumonia, .....	7.0	53.5	46.5
23	Other diseases of the respiratory system (tuberculosis excepted), .....	5.3	51.5	48.5
24	Diseases of the stomach (cancer excepted), .....	.8	58.3	41.7
25	Diarrhœa and enteritis (under 2 years), .....	4.3	55.7	44.3
26	Appendicitis and typhlitis, .....	.7	51.4	48.6
27	Hernia, intestinal obstruction, .....	.5	53.7	46.3
28	Cirrhosis of the liver, .....	.7	65.7	34.3
29	Acute nephritis and Bright's disease, .....	8.1	51.5	48.5
30	Noncancerous tumors and other diseases of the female genital organs, .....	.4		100.0
31	Puerperal septicæmia (puerperal fever, peritonitis), .....	.3		100.0
32	Other puerperal accidents of pregnancy and labor, .....	.6		100.0
33	Congenital debility and malformations, .....	5.3	57.0	43.0
34	Senility, .....	.6	42.6	57.4
35	Suicide, .....	1.0	68.7	31.3
36	Violent deaths (suicide excepted), .....	6.0	73.7	26.3
37	Other diseases, .....	12.8	52.6	47.4
38	Unknown or ill-defined diseases, .....	.1	64.4	35.6
	Total, .....	100.0	51.9	48.1

TABLE 7.—DEATHS FROM TUBERCULOSIS OF LUNGS AND ACUTE MILIARY TUBERCULOSIS IN NEW JERSEY—1900 TO 1919.

YEAR.	Population.	Deaths.	Death rate per 100,000 Population.
1900, .....	1,883,669	3,514	186.6
1901, .....	1,925,731	3,257	169.1
1902, .....	1,967,893	3,015	153.2
1903, .....	2,016,797	3,380	167.6
1904, .....	2,058,909	3,670	178.2
1905, .....	2,144,143	3,587	167.3
1906, .....	2,197,238	3,654	166.4
1907, .....	2,248,331	3,749	166.7
1908, .....	2,300,427	3,816	167.2
1909, .....	2,352,522	3,608	153.4
1910, .....	2,537,167	3,902	153.8
1911, .....	2,615,772	3,986	152.4
1912, .....	2,694,377	3,708	137.6
1913, .....	2,772,981	3,683	132.8
1914, .....	2,851,586	3,856	135.2
1915, .....	2,877,532	3,917	136.1
1916, .....	2,948,016	3,844	130.4
1917, .....	3,014,193	4,146	137.5
1918, .....	3,080,371	4,353	141.3
1919, .....	3,146,547	3,495	111.1

TABLE 8.—NUMBER OF DEATHS AT ALL AGES, UNDER ONE YEAR OF AGE AND UNDER FIVE YEARS OF AGE, AND THEIR PERCENTAGE OF THE TOTAL.

CALENDAR YEAR.	Deaths in New Jersey.				
	All Ages.	Under one year.		Under five years.	
		Number.	Percentage of Total.	Number.	Percentage of Total.
1904, .....	35,298	7.472	21.2	10,927	31.0
1905, .....	33,864	6.951	20.5	9,864	29.1
1906, .....	35,670	7.773	21.8	11,246	31.5
1907, .....	37,408	7.732	20.7	10,867	29.0
1908, .....	35,597	7,823	22.0	10,869	30.5
1909, .....	36,359	7,658	21.1	11,137	30.6
1910, .....	39,494	8,352	21.1	11,648	29.5
1911, .....	38,612	7,642	19.8	10,740	27.8
1912, .....	37,772	7,457	19.7	10,809	27.3
1913, .....	39,425	7,542	19.1	10,686	27.1
1914, .....	39,967	7,431	18.6	10,278	25.7
1915, .....	39,435	7,077	17.9	9,823	24.9
1916, .....	43,376	7,348	16.9	11,188	25.8
1917, .....	43,532	7,582	17.4	10,267	23.6
1918, .....	60,852	8,372	13.8	13,709	22.5
1919, .....	39,979	6,111	15.3	8,661	21.7

TABLE 9.—TOTAL DEATHS BY AGE PERIODS SHOWING PERCENTAGE OF TOTAL DEATHS.

Deaths, .....	AGE PERIODS.	
	Deaths	Percentage of total, ..
30,979	6,111	19.7
100.0	100.0	100.0
	Under 1 year.	15.3
	1 year.	3.1
	2 years.	1.4
	3 years.	1.0
	4 years.	.9
	Under 5 years.	21.7
	5 to 9.	2.7
	10 to 19.	3.8
	20 to 29.	8.3
	30 to 39.	9.6
	40 to 49.	10.0
	50 to 59.	11.5
	60 to 69.	13.0
	70 to 79.	12.3
	80 to 89.	6.1
	90 and over.	1.0
	Unknown.	4

TABLE 10.—BIRTHS REPORTED, DEATHS UNDER ONE YEAR AND RATE OF DEATHS UNDER ONE YEAR PER 1,000 BIRTHS (STILL-BIRTHS EXCLUDED), 1919.

	Births Reported.	Deaths Under One Year.	Infant Mortality Rate.
Atlantic County, .....	1,592	134	84.2
Bergen County, .....	4,268	292	68.4
Burlington County, .....	1,532	182	118.8
Camden County, .....	4,223	475	112.5
Cape May County, .....	360	32	88.9
Cumberland County, .....	1,087	105	96.6
Essex County, .....	15,876	1,153	73.6
Gloucester County, .....	1,044	92	88.1
Hudson County, .....	14,344	1,329	92.7
Hunterdon County, .....	606	49	80.9
Mercer County, .....	3,808	392	102.9
Middlesex County, .....	4,875	477	97.8
Monmouth County, .....	1,828	122	66.7
Morris County, .....	1,547	131	84.7
Ocean County, .....	256	22	76.9
Passaic County, .....	5,813	447	76.9
Salem County, .....	834	75	89.9
Somerset County, .....	917	72	78.5
Sussex County, .....	507	58	114.4
Union County, .....	4,951	378	76.3
Warren County, .....	837	94	112.3
State total, .....	70,935	6,111	86.1

TABLE 13.—TOTAL DEATHS IN NEW JERSEY BY MONTHS AND CAUSES OF DEATH, 1918.

Abridged International List No.	CAUSE OF DEATH.	MONTH OF DEATH.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
1	Typhoid fever, . . . . .	91	7	6	7	5	4	5	7	10	11	9	11	9
2	Typhus fever, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Dysentery, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Smallpox, . . . . .	58	5	4	9	13	15	8	9	8	7	5	7	10
5	Scarlet fever, . . . . .	71	5	4	9	13	15	8	9	8	7	5	7	10
6	Whooping cough, . . . . .	598	58	69	49	48	51	27	22	23	37	55	53	65
7	Influenza and croup, . . . . .	2,683	1,111	650	435	128	50	29	11	8	13	22	17	15
8	Asiatic cholera, . . . . .	3	1	1	1	1	1	1	1	1	1	1	1	1
9	Cholera nostras, . . . . .	136	11	6	18	12	9	16	11	15	9	6	8	9
10	Other epidemic diseases, . . . . .	3,485	380	371	306	357	299	278	268	275	210	251	238	215
11	Tuberculosis of the lungs, . . . . .	1,890	166	16	16	20	21	17	17	19	13	14	15	15
12	Other forms of tuberculosis, . . . . .	189	10	16	16	20	21	17	17	19	13	14	15	15
13	Other forms of tuberculosis, . . . . .	189	10	16	16	20	21	17	17	19	13	14	15	15
14	Other forms of tuberculosis, . . . . .	189	10	16	16	20	21	17	17	19	13	14	15	15
15	Other forms of tuberculosis, . . . . .	189	10	16	16	20	21	17	17	19	13	14	15	15
16	Cancer and other malignant tumors, . . . . .	2,957	216	201	228	213	220	201	223	201	223	218	225	215
17	Simple meningitis, . . . . .	2,12	28	24	32	18	17	26	22	12	14	21	10	15
18	Other forms of meningitis, . . . . .	2,812	318	243	294	218	227	225	221	163	204	241	241	241
19	Cerebral hemorrhage and softening, . . . . .	4,820	311	430	406	411	407	375	311	366	298	341	354	428
20	Other diseases of the heart, . . . . .	1,421	21	19	14	11	4	10	3	7	12	10	11	11
21	Acute bronchitis, . . . . .	142	21	19	14	11	4	10	3	7	12	10	11	11
22	Chronic bronchitis, . . . . .	2,781	684	485	450	323	179	74	71	51	88	110	142	212
23	Other diseases of the respiratory system (tuberculosis excepted), . . . . .	2,120	420	323	377	257	139	63	46	61	67	92	134	185
24	Diseases of the stomach (cancer excepted), . . . . .	1,725	95	87	37	57	79	51	21	36	29	22	27	26
25	Diseases of the intestines (cancer excepted), . . . . .	2,196	206	195	159	124	144	211	159	183	251	225	166	115
26	Congenital debility and malformations, . . . . .	2,377	223	201	209	209	151	203	353	339	236	177	201	201
27	Hernia, intestinal obstruction, . . . . .	2,14	16	15	25	5	14	20	24	16	15	26	14	14
28	Other diseases of the digestive system, . . . . .	3,253	251	235	333	241	241	221	221	16	16	24	25	17
29	Measles, . . . . .	3,221	312	321	365	234	127	255	226	269	258	252	201	279
30	Non-cancerous tumors and other diseases of the female genital organs, . . . . .	140	9	13	10	10	28	8	13	7	6	9	12	15
31	Puerperal septicaemia (puerperal fever, pertussis, . . . . .)	111	9	5	15	15	7	10	6	10	9	12	10	15
32	Other diseases of the female genital organs, . . . . .	2,066	166	166	166	166	166	166	166	166	166	166	166	166
33	Accidental deaths of infancy and labor, . . . . .	2,196	206	195	159	124	144	211	159	183	251	225	166	115
34	Accidental debility and malformations, . . . . .	2,377	223	201	209	209	151	203	353	339	236	177	201	201
35	Scalds, . . . . .	377	25	25	33	21	24	23	21	16	16	24	25	17
36	Suicide, . . . . .	2,887	236	190	184	169	211	197	223	222	166	189	187	212
37	Other diseases, . . . . .	5,600	423	374	414	414	414	384	441	467	390	422	458	421
38	Unknown or ill-defined diseases, . . . . .	50	4	4	4	4	4	4	4	4	4	4	4	4
	Total, . . . . .	39,979	5,280	4,908	4,207	3,906	3,078	2,650	2,883	2,751	2,698	2,790	2,850	3,129

TABLE 14.—DEATHS IN NEW JERSEY ACCORDING TO THE ABRIDGED INTERNATIONAL LIST OF CAUSES OF DEATHS BY SUBDIVISION OF DAYS, WEEKS AND MONTHS OF THE FIRST YEAR OF LIFE (STILL-BIRTHS EXCLUDED), 1918.

Abridged International List No.	CAUSE OF DEATH.	AGE, UNDER 1 YEAR, IN COMPLETED DAYS, WEEKS AND MONTHS.												
		DAYS.			WEEKS.			MONTHS.						
		Under 1.	Two.	3 to 6.	Under 1.	One.	Two.	Under 1.	One.	Two.	Three.	4 to 6.		
1	Typhoid fever, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Typhus fever, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Dysentery, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Smallpox, . . . . .	14	14	14	14	14	14	14	14	14	14	14	14	14
5	Scarlet fever, . . . . .	48	48	48	48	48	48	48	48	48	48	48	48	48
6	Whooping cough, . . . . .	154	154	154	154	154	154	154	154	154	154	154	154	154
7	Influenza, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
8	Asiatic cholera, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
9	Cholera nostras, . . . . .	42	42	42	42	42	42	42	42	42	42	42	42	42
10	Other epidemic diseases, . . . . .	537	537	537	537	537	537	537	537	537	537	537	537	537
11	Tuberculosis of the lungs, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
12	Other forms of tuberculosis, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
13	Other forms of tuberculosis, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
14	Other forms of tuberculosis, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
15	Cancer and other malignant tumors, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
16	Simple meningitis, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
17	Other forms of meningitis, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
18	Cerebral hemorrhage and softening, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
19	Other diseases of the heart, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
20	Acute bronchitis, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
21	Chronic bronchitis, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
22	Other diseases of the respiratory system (tuberculosis excepted), . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
23	Diseases of the stomach (cancer excepted), . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
24	Diseases of the intestines (cancer excepted), . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
25	Hernia and enteritis (under 2 years), . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
26	Other diseases of the digestive system, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
27	Measles, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
28	Non-cancerous tumors and other diseases of the female genital organs, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
29	Puerperal septicaemia (puerperal fever, pertussis, . . . . .)	1	1	1	1	1	1	1	1	1	1	1	1	1
30	Other diseases of the female genital organs, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
31	Accidental deaths of infancy and labor, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
32	Accidental debility and malformations, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
33	Scalds, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
34	Suicide, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
35	Other diseases, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
36	Unknown or ill-defined diseases, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
	Total, . . . . .	6,111	886	289	256	398	1,623	354	278	241	2,800	617	409	1,004































TABLE 41.—DEATHS IN NUTLEY TOWN FOR 1919, ACCORDING TO THE ABRIDGED INTERNATIONAL LIST OF CAUSES OF DEATH.

Abridged Interna- tional List No.	CAUSE OF DEATH.	Total	Male	Female.	Color, If other than white.	AGE PERIODS.																
						Under 1 year.	1 year.	2 years.	3 years.	4 years.	Under 5 years.	5 to 9.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 to 89.	90 and over.	Unknown.
1	Typhoid fever, . . . . .																					
2	Typhus fever, . . . . .																					
3	Malaria, . . . . .																					
4	Smallpox, . . . . .																					
5	Measles, . . . . .																					
6	Scarlet fever, . . . . .																					
7	Whooping cough, . . . . .																					
8	Diphtheria and croup, . . . . .																					
9	Influenza, . . . . .																					
10	Asiatic cholera, . . . . .																					
11	Cholera nostras, . . . . .																					
12	Other epidemic diseases, . . . . .																					
13	Tuberculosis of the lungs, . . . . .																					
14	Tuberculous meningitis, . . . . .																					
15	Other forms of tuberculosis, . . . . .																					
16	Cancer and other malignant tumors, . . . . .																					
17	Simple meningitis, . . . . .																					
18	Cerebral hemorrhage and softening, . . . . .																					
19	Organic diseases of the heart, . . . . .																					
20	Acute bronchitis, . . . . .																					
21	Chronic bronchitis, . . . . .																					
22	Pneumonia, . . . . .																					
23	Other diseases of the respiratory system (tuberculosis excepted), . . . . .																					
24	Diseases of the stomach (cancer excepted), . . . . .																					
25	Diarrhea and enteritis (under 2 years), . . . . .																					
26	Appendicitis and typhlitis, . . . . .																					
27	Hernia, intestinal obstruction, . . . . .																					
28	Cirrhosis of the liver, . . . . .																					
29	Acute nephritis and Bright's disease, . . . . .																					
30	Noncancerous tumors and other diseases of the female genital organs, . . . . .																					
31	Puerperal septicaemia (puerperal fever, peri- tonitis), . . . . .																					
32	Other puerperal accidents of pregnancy and labor, . . . . .																					
33	Conjugal debility and malformations, . . . . .																					
34	Senility, . . . . .																					
35	Suicide, . . . . .																					
36	Violent deaths (suicide excepted), . . . . .																					
37	Other diseases, . . . . .																					
38	Unknown or ill-defined diseases, . . . . .																					
	Total, . . . . .	77	37	40	3	12	1															

Estimated population, 8,170.

Total resident deaths, 77.

Rate per 1,000 population, 9.41.

TABLE 42.—DEATHS IN ORANGE CITY FOR 1919, ACCORDING TO THE ABRIDGED INTERNATIONAL LIST OF CAUSES OF DEATH.

Abridged Interna- tional List No.	CAUSE OF DEATH.	Total	Male	Female.	Color, If other than white.	AGE PERIODS.																	
						Under 1 year.	1 year.	2 years.	3 years.	4 years.	Under 5 years.	5 to 9.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 to 89.	90 and over.	Unknown.	
1	Typhoid fever, . . . . .																						
2	Typhus fever, . . . . .																						
3	Malaria, . . . . .																						
4	Smallpox, . . . . .																						
5	Measles, . . . . .																						
6	Scarlet fever, . . . . .																						
7	Whooping cough, . . . . .																						
8	Diphtheria and croup, . . . . .																						
9	Influenza, . . . . .																						
10	Asiatic cholera, . . . . .																						
11	Cholera nostras, . . . . .																						
12	Other epidemic diseases, . . . . .																						
13	Tuberculosis of the lungs, . . . . .																						
14	Tuberculous meningitis, . . . . .																						
15	Other forms of tuberculosis, . . . . .																						
16	Cancer and other malignant tumors, . . . . .																						
17	Simple meningitis, . . . . .																						
18	Cerebral hemorrhage and softening, . . . . .																						
19	Organic diseases of the heart, . . . . .																						
20	Acute bronchitis, . . . . .																						
21	Chronic bronchitis, . . . . .																						
22	Pneumonia, . . . . .																						
23	Other diseases of the respiratory system (tuberculosis excepted), . . . . .																						
24	Diseases of the stomach (cancer excepted), . . . . .																						
25	Diarrhea and enteritis (under 2 years), . . . . .																						
26	Appendicitis and typhlitis, . . . . .																						
27	Hernia, intestinal obstruction, . . . . .																						
28	Cirrhosis of the liver, . . . . .																						
29	Acute nephritis and Bright's disease, . . . . .																						
30	Noncancerous tumors and other diseases of the female genital organs, . . . . .																						
31	Puerperal septicaemia (puerperal fever, peri- tonitis), . . . . .																						
32	Other puerperal accidents of pregnancy and labor, . . . . .																						
33	Conjugal debility and malformations, . . . . .																						
34	Senility, . . . . .																						
35	Suicide, . . . . .																						
36	Violent deaths (suicide excepted), . . . . .																						
37	Other diseases, . . . . .																						
38	Unknown or ill-defined diseases, . . . . .																						
	Total, . . . . .	430	214	216	71	62	11	7	6	1	87	6	19	36	39	42	60	69	48	19	8	2	

Estimated population, 34,748.

Total resident deaths, 430.

Rate per 1,000 population, 12.37.

























TABLE 65.—DEATHS IN MONMOUTH COUNTY FOR 1919, ACCORDING TO THE ABRIDGED INTERNATIONAL LIST OF CAUSES OF DEATH.

Abridged Interna- tional List No.	CAUSE OF DEATH.	Total.	Male.	Female.	Color, if other than white.	AGE PERIODS.										90 and over.	Unknown.								
						Under 1 year.	1 year.	2 years.	3 years.	4 years.	Under 5 years.	5 to 9.	10 to 19.	20 to 29.	30 to 39.			40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 to 89.			
1	Typhoid fever.	14	11	3										6	5	1	1								
2	Lymph fever.																								
3	Malaria.																								
4	Smallpox.																								
5	Measles.																								
6	Scarlet fever.	1	1																						
7	Whooping cough.	5	1	4																					
8	Diphtheria and croup.	10	6	4																					
9	Influenza.	95	45	50																					
10	Asiatic cholera.																								
11	Cholera nostras.	4	3	1																					
12	Other epidemic diseases.	96	40	56																					
13	Tuberculosis of the lungs.	6	3	3																					
14	Tuberculous meningitis.	4	4																						
15	Other forms of tuberculosis.	132	48	84																					
16	Cancer and other malignant tumors.	171	75	96																					
17	Simple meningitis.	4	5	1																					
18	Cerebral hemorrhage and softening.	171	96	75																					
19	Organic diseases of the heart.	201	91	110																					
20	Acute bronchitis.	4	3	1																					
21	Chronic bronchitis.	67	44	23																					
22	Pneumonia.	69	43	26																					
23	Other diseases of the respiratory system (tuberculosis excepted).	46	16	30																					
24	Diseases of the stomach (cancer excepted).	16	7	9																					
25	Diarrhoea and enteritis (under 2 years).	34	15	19																					
26	Appendicitis and typhlitis.	7	3	4																					
27	Hernia, intestinal obstruction.	5	2	3																					
28	Cirrhosis of the liver.	7	5	2																					
29	Acute nephritis and Bright's disease.	137	75	62																					
30	Noncancerous tumors and other diseases of the female genital organs.	9		9																					
31	Puerperal septicæmia (puerperal fever, peri- tonitis).	3		3																					
32	Other puerperal accidents of pregnancy and labor.	41		41																					
33	Congenital debility and malformations.	14	22	8																					
34	Senility.	11	14	3																					
35	Suicide.	85	62	23																					
36	Violent deaths (suicide excepted).	228	111	117																					
37	Other diseases.	5	4	1																					
38	Unknown or ill-defined diseases.																								
	Total.	1487	722	765	171	122	25	10	5	8	170	36	68	96	129	144	175	242	261	142	24				

Estimated population, 106,555.

Total resident deaths, 1,487.

Rate per 1,000 population, 13.96.

TABLE 66.—DEATHS IN ASBURY PARK CITY FOR 1919, ACCORDING TO THE ABRIDGED INTERNATIONAL LIST OF CAUSES OF DEATH.

Abridged Interna- tional List No.	CAUSE OF DEATH.	Total.	Male.	Female.	Color, if other than white.	AGE PERIODS.										90 and over.	Unknown.										
						Under 1 year.	1 year.	2 years.	3 years.	4 years.	Under 5 years.	5 to 9.	10 to 19.	20 to 29.	30 to 39.			40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 to 89.					
1	Typhoid fever.	2	2																								
2	Typhus fever.																										
3	Malaria.																										
4	Smallpox.																										
5	Measles.																										
6	Scarlet fever.																										
7	Whooping cough.	4	3	1																							
8	Diphtheria and croup.	13	4	9																							
9	Influenza.																										
10	Asiatic cholera.																										
11	Cholera nostras.																										
12	Other epidemic diseases.	7	4	3																							
13	Tuberculosis of the lungs.	1	1																								
14	Tuberculous meningitis.	11	3	8																							
15	Other forms of tuberculosis.	14	5	9																							
16	Cancer and other malignant tumors.	31	11	20																							
17	Simple meningitis.																										
18	Cerebral hemorrhage and softening.																										
19	Organic diseases of the heart.																										
20	Acute bronchitis.																										
21	Chronic bronchitis.																										
22	Pneumonia.																										
23	Other diseases of the respiratory system (tuberculosis excepted).																										
24	Diseases of the stomach (cancer excepted).																										
25	Diarrhoea and enteritis (under 2 years).																										
26	Appendicitis and typhlitis.																										
27	Hernia, intestinal obstruction.																										
28	Cirrhosis of the liver.																										
29	Acute nephritis and Bright's disease.																										
30	Noncancerous tumors and other diseases of the female genital organs.																										
31	Puerperal septicæmia (puerperal fever, peri- tonitis).																										
32	Other puerperal accidents of pregnancy and labor.																										
33	Congenital debility and malformations.																										
34	Senility.																										
35	Suicide.																										
36	Violent deaths (suicide excepted).																										
37	Other diseases.																										
38	Unknown or ill-defined diseases.																										
	Total.	182	70	112	50	12	2				14	7	7	14	16	18	23	33	34	13	8						

Estimated population, 15,873.

Total resident deaths, 182.

Rate per 1,000, 11.47.































William Morris.....Roselle Park.  
 Alfred A. Mutter, M. D.....Arlington.  
 Nels A. Nelson.....Long Branch.  
 Marcus W. Newcomb, M. D.....Burlington.  
 Paul F. Nichols.....Jersey City.  
 Stanley H. Nichols, M. D.....Long Branch.  
 Budd H. Obert.....Asbury Park.  
 John O'Brien, Jr.....Montclair.  
 James L. Oliff.....Plainfield.  
 Frank J. Osborne.....Montclair.  
 George T. Palmer.....Trenton.  
 Wm. B. Palmer.....Orange.  
 R. H. Parson, M. D.....Mt. Holly.  
 H. T. Partree, M. D.....Eatontown.  
 Raymond S. Patterson.....New Brunswick.  
 Joseph Payne, M. D.....Midland Park.  
 Roy G. Perham, M. D.....Hasbrouck Heights.  
 Harry H. Pettit, M. D.....Ridgewood.  
 Carl T. Pomeroy.....Plainfield.  
 David N. Rappoport, M. D., Philadelphia, Pa.  
 Talbot Reed, M. D.....Atlantic City.  
 Louis J. Richards.....Elizabeth.  
 W. R. Reick, M. D.....Arlington.  
 Edward B. Rogers, M. D.....Collingswood.  
 John N. Ryan, M. D.....Passaic.  
 Jos. C. Saile.....Bloomfield.  
 Samuel L. Salasin, M. D.....Atlantic City.  
 Ferdinand N. Sauer.....Jersey City.  
 Wm. D. Sayre, M. D.....Red Bank.  
 Wm. G. Schaulfer, M. D.....Lakewood.  
 Wm. Schleur.....Orange.  
 Wm. H. Schmidt, M. D.....Atlantic City.  
 Fred W. Sell, M. D.....Rahway.  
 Maurice Shapiro, M. D.....Bayonne.  
 Lewis L. Sharp, M. D.....Palmyra.  
 J. LeClere Shedaker.....Burlington.  
 Alton S. Sherman, M. D.....West Orange.  
 Wm. H. Shipp, M. D.....Bordentown.  
 Ellen B. Smith, M. D.....Salem.  
 W. Brand Smith.....Belleville.  
 Wm. R. Smith, M. D.....Roselle Park.

## Sanitary Inspectors of the First Class.

Frank Ackley.....Woodbury.  
 William H. Addis.....Plainfield.  
 Thomas Ainge.....Lansing, Mich.  
 Wm. C. Allen.....Trenton.  
 Henry V. Amerman.....Kearny.  
 Fred J. Anderson.....Hoboken.  
 Fritz M. Arnolt.....Albany, N. Y.  
 Nathan Aronson.....Newark.  
 Samuel Bachman.....Newark.  
 Fred S. Ball, M. D.....Lakewood.  
 Joseph R. Bartlett.....Atlantic City.  
 Milton E. Baxter.....Jersey City.  
 John H. Becker, M. D.....Fair Haven.  
 J. Alonzo Beek, M. D.....Gloucester City.  
 John J. Belbey.....Morristown.  
 Charles E. Bellows.....Bridgeton.  
 Alfred C. Benedict, M. D.....South Orange.  
 Chester L. Bennett.....Newark.  
 John K. Bennett, M. D.....Gloucester City.  
 Casper Benz.....Newark.  
 Harry K. Berry.....Paterson.  
 Chas. A. Bettighofer.....Jersey City.  
 Wm. S. Bird.....Summit.  
 Joseph C. Bitler, M. D.....Hammonton.  
 Thomas F. Boles.....Newark.  
 Henry A. Bonyng, M. D.....Ridgewood.  
 Fred S. Bootay, M. D.....Belleville.  
 Lewis E. Boutillier.....Newark.  
 John F. Boylan.....Bayonne.  
 Peter Brancato, M. D.....Wreckoff.  
 Patrick J. Brogan.....Newark.  
 John A. Brown.....Glen Ridge.  
 Harvey S. Brown, M. D.....Freehold.  
 Alonzo Brower.....Freehold.

Milton L. Somers, M. D.....Atlantic City.  
 Henry J. Spalding, M. D.....Union Hill.  
 Gobin Stair.....Jersey City.  
 Fred A. Stetter.....Asbury Park.  
 Ellsmore Stites, M. D.....Bridgeton.  
 Fred H. Stover.....Boston, Mass.  
 Frank H. Streightoff.....Montclair.  
 Eugene H. Sullivan.....Orange.  
 Eugene M. Syrett.....Montclair.  
 George H. Taylor, M. D.....Maplewood.  
 John G. Taylor.....Dover.  
 Walter Taylor, M. D.....Jersey City.  
 Lewis O. Tayntor.....Montclair.  
 Chas. S. Thompson, D. V. S.....Perth Amboy.  
 Leon R. Thurlow.....Plainfield.  
 James A. Tobey.....Summit.  
 George T. Tracey, M. D.....Beverly.  
 John A. C. Tull, M. D.....Ventnor.  
 Wm. Veenstra, M. D.....Paterson.  
 Maria M. Vinton, M. D.....East Orange.  
 Gordon G. Walton, M. D.....Paterson.  
 Jos. Wantoch, M. D.....Carteret.  
 Gertrude Ward, M. D.....Bloomfield.  
 Alex. Weir, Jr.....West Hoboken.  
 Chester H. Wells.....Montclair.  
 Wm. A. Wescott, M. D.....Berlin.  
 Wm. J. Whalen, M. D.....Paterson.  
 John H. Whiticar, M. D.....Ocean City.  
 Arthur G. Wigley.....New Brunswick.  
 Thos. W. Wilhelm.....Perth Amboy.  
 Hiram Williams, M. D.....Passaic.  
 Wm. J. Wilsey.....New Brunswick.  
 John S. Wilson.....Bridgeton.  
 Clarence W. Winchell.....Jersey City.  
 John H. Winslow, M. D.....Vineland.  
 Fred C. Witte, M. D.....Riverton.  
 Wm. C. Woodward, M.D., Washington, D. C.  
 Shirley W. Wynn, M. D.....New York City.  
 Lenore Young, R. N.....Orange.  
 Warren H. Young, M. D.....Little Falls.

Frank Brouwer, M. D.....Toms River.  
 David E. Buckley.....West Orange.  
 Robert A. Buhler.....Belmar.  
 Chauncey V. Bunnell.....Jersey City.  
 S. Alton Burk.....Atlantic City.  
 Stephen Campbell, M. D.....Woodbury.  
 Andrew Carney, Jr.....North Plainfield.  
 Thomas J. Carter.....Newark.  
 Collis H. Case.....Plainfield.  
 John J. Casey.....Plainfield.  
 Mathew P. Casey.....Jersey City.  
 N. J. R. Chandler.....Plainfield.  
 Mabel M. Clarke.....Franklin.  
 Edward A. Cleary.....Newark.  
 Albert N. Cleaver.....Perth Amboy.  
 Michael J. Clery.....Jersey City.  
 Max J. Colton.....New Brunswick.  
 Obadiah S. Cole.....Newark.  
 John H. Concannon.....Woodbridge.  
 Charles F. Conrad.....Newark.  
 Wm. F. Conroy.....Jersey City.  
 John D. Corrigan.....Newark.  
 Irwin C. Dakin.....Newark.  
 Wm. J. Davis.....Newark.  
 Harris Dar, M. D.....Chester.  
 Newton DeBann.....Hackensack.  
 Burdick Decker.....Paterson.  
 Walter E. Delaney.....Jersey City.  
 Frank Denckan.....Plainfield.  
 Henry P. Dengler, M. D.....Springfield.  
 Samuel Denton.....Bayonne.  
 M. J. Derereaux.....Sea Bright.  
 Edward J. Devitt.....Jersey City.  
 C. P. Derooy, M. D.....Ramsey.

Charles E. Divine.....Newark.  
 Andrew J. Dolan, M. D.....Jersey City.  
 John A. Donovan.....Newark.  
 Daniel J. Donohue, M. D.....Jersey City.  
 Roseus I. Downs, M. D.....Riverside.  
 John J. Duff.....Jersey City.  
 Leo G. Duffy.....Newark.  
 Marine Dunn.....Rutherford.  
 Fred J. Dyer.....Grantwood.  
 H. G. Eakin.....Union Hill.  
 Wallace T. Eakins.....New Brunswick.  
 J. I. Ebbels.....Montclair.  
 Adolph O. Elasser.....Newark.  
 Leonard B. Fanquar, M. D.....Jersey City.  
 Charles W. Feeney.....Paterson.  
 Edward F. Flynn.....Newark.  
 Jay G. Foose.....Montclair.  
 Helen E. Forbes, R. N.....Morristown.  
 Frank A. Frederick.....West Hoboken.  
 Richard Frederick.....Jersey City.  
 Gustavus E. Freideman.....Newark.  
 Edward M. French, M. D.....Gibbstown.  
 Charles S. Gall.....Paterson.  
 John W. Garey.....Atlantic City.  
 Bayard T. Garrabrant.....Montclair.  
 Dennis E. Gavin.....North Plainfield.  
 Edward F. Gaynor.....Newark.  
 Albert E. Geissler.....Kearny.  
 Wallace M. Gill.....Perth Amboy.  
 George W. Gilmore.....Newark.  
 William Glueck, Jr.....Newark.  
 A. I. Goehrig.....Trenton.  
 Hyman I. Goldstein, M. D.....Camden.  
 John Greaves.....Jersey City.  
 Louis H. Greenwald.....New Brunswick.  
 A. M. Grier.....Penn's Grove.  
 Lydia B. Grimm.....Newark.  
 Ambrose J. Guiton.....Jersey City.  
 Herbert H. Haines.....Trenton.  
 Earl J. Halligan, M. D.....Jersey City.  
 Robert H. Hall.....Jersey City.  
 Lester J. Hamblet.....Asbury Park.  
 H. L. Harlet, M. D.....Pleasantville.  
 John C. Harnett.....Jersey City.  
 Charles W. Harrays, M. D.....Ridgewood.  
 Frank S. Harris.....Salem.  
 Fred C. Harris.....Jersey City.  
 Wm. H. Harrison.....Paterson.  
 H. W. Hartman, M. D.....Keyport.  
 Eugene G. Hebener, M. D.....Lakewood.  
 William W. Heberton, M. D.....South Orange.  
 Carl Hegstrom.....Perth Amboy.  
 Wm. H. Helm, Jr.....Belmar.  
 Patrick J. Hennessy.....Jersey City.  
 Fred W. Hering.....Jersey City.  
 Alex. M. Heron, M. D.....Lakewood.  
 A. Gertrude Hines.....Franklin.  
 Harry M. Hitchner.....Salem.  
 Adolph E. Hoernig.....Newark.  
 James A. Howard.....Trenton.  
 Howard H. Huffert.....Newark.  
 Martha I. Hunt.....Newark.  
 J. H. C. Hunter.....Dover.  
 Ralph L. Huttenloch.....Montclair.  
 Harry R. Ingalls.....Asbury Park.  
 H. Wesley Jack.....Collingswood.  
 Richard Jackson.....Newark.  
 Wm. A. Keane.....Newark.  
 William F. Kearney.....Paterson.  
 Charles A. Keating, M. D.....Paterson.  
 Gerald J. Keating.....Jersey City.  
 Leavett F. Kelley.....Newark.  
 John E. Kelly.....Jersey City.  
 John A. Kelly.....Newark.  
 Robert J. Kelly.....Jersey City.  
 Stewart Kidd.....Paterson.  
 John F. Kilkenny.....Morristown.  
 Jay E. Kilpatrick.....Montclair.  
 Julia E. Kirk.....Newark.  
 Tunis Kivett.....Paterson.  
 H. J. Klein.....Wood Ridge.

Henry F. Kneller.....Newark.  
 John H. Kohler.....Tuckerton.  
 William C. Kraemer.....Linden.  
 Henry A. Kuhmann.....Newark.  
 Clarence A. Lamont.....Asbury Park.  
 Bertram S. Lambertson.....Newark.  
 Patrick J. Lang.....Jersey City.  
 George W. Langdon.....Jersey City.  
 John A. Larkin.....Jersey City.  
 W. H. Lauer, Jr.....Red Bank.  
 Sadie H. Layton.....Asbury Park.  
 Gilbert C. Leigh.....Asbury Park.  
 John Levine.....Newark.  
 Jos. F. Linhart.....South Orange.  
 Hilliard L. Lockwood, M. D.....Jersey City.  
 George C. Losey.....Washington.  
 William H. Lowe, D. V. S.....Paterson.  
 John L. Lund, M. D.....Perth Amboy.  
 Abram A. Lydecker, M. D.....Haledon.  
 John J. Magner, M. D.....Jersey City.  
 Frank W. Mallalieu, M. D.....Jersey City.  
 John A. Manson.....Dover.  
 Timothy U. Margerum.....Princeton.  
 Irwin Markowitz, M. D.....Jersey City.  
 Charles F. Martin.....Newark.  
 Cullen B. Maxson, M. D.....Jersey City.  
 Henry S. McAuley.....Atlantic City.  
 James J. McCarron.....Newark.  
 John T. McClure.....Harrison.  
 John T. McClure, Jr.....Harrison.  
 Jas. L. McEaney.....Jersey City.  
 Thorn J. McEaney, M. D.....Jersey City.  
 Felix McGee.....Millburn.  
 Edward McGiverin, M. D.....Jersey City.  
 Richard J. McGrath.....Jersey City.  
 William McKeon.....Paterson.  
 Edward F. McLarney.....Jersey City.  
 Frank J. McLaughlin, M. D.....Jersey City.  
 Chas. H. McLoughlin.....Newark.  
 Jeremiah J. McMahon, Jr.....Jersey City.  
 Charles McNabb.....Bound Brook.  
 James P. McNair.....Paterson.  
 Claudis E. McNeeney, M. D.....Jersey City.  
 Robert W. Meeker.....Plainfield.  
 Chas. E. Messerschmidt.....Newark.  
 H. Garrett Miller, M. D.....Millville.  
 Harry P. Moffet.....Newark.  
 John Morlot.....Paterson.  
 Phillip Morris, C. E.....Passaic.  
 William Morris.....Roselle Park.  
 R. E. Mosedale.....Bernardsville.  
 Elmer M. Mount, Jr., M. D.....Jersey City.  
 Edward Mulvaney, M. D.....Jersey City.  
 Daniel J. Murphy.....Newark.  
 Abraham J. Newman, M. D.....Jersey City.  
 Frederick W. Nichols.....Newark.  
 George C. Nicol.....Jersey City.  
 A. C. Obergfell.....Atlantic City.  
 M. William O'Gorman, M. D.....Jersey City.  
 Bernard F. O'Hara.....Jersey City.  
 James L. Oliff.....Plainfield.  
 John H. O'Neill, M. D.....Jersey City.  
 John O'Neill.....Trenton.  
 Russell Burton Opitz, Ph.D., New York City.  
 Eric Ordell.....Newark.  
 Cedric H. Ostrom.....Plainfield.  
 Jos. G. O'Sullivan.....Newark.  
 Richard H. L. Osthoff.....Bugota.  
 Clarence I. Palmer.....Newark.  
 William B. Palmer.....Orange.  
 William D. Pelan.....Trenton.  
 Christian Petry.....Jersey City.  
 Peter Pirola.....Trenton.  
 James J. Pray.....Jersey City.  
 Elmer D. Erickett, M. D.....Mt. Holly.  
 J. J. Reason, M. D.....Carteret.  
 Edward M. Reilly.....Montclair.  
 Thomas E. Reynolds.....Atlantic City.  
 James E. Rich.....Trenton.  
 Fred C. Robertson, M. D.....Jersey City.  
 Edward S. Rogers.....Trenton.

Albert H. Rose .....Trenton.  
 Mary A. Ross .....Newark.  
 John E. Rowe, D. V. S. ....Summit.  
 John H. Rowland .....New Brunswick.  
 Edward A. Ryan .....Newark.  
 Joseph C. Saille .....Bloomfield.  
 Garrett E. St. John .....Newark.  
 Edward H. Salmon, M. D. ....Jersey City.  
 Richard Savage .....Orange.  
 George Seales .....Rahway.  
 Wm. C. Schirmer .....Jersey City.  
 Elvia Scott .....South Orange.  
 Paul Scott .....Penn's Grove.  
 Timothy J. Scott .....Summit.  
 B. F. Seaman, M. D. ....Raritan.  
 W. J. E. Seider .....Newark.  
 Myron J. Seely .....Montclair.  
 George R. Sees .....Atlantic City.  
 Leon A. Sever .....Beverly.  
 Henry J. Seymour .....Roselle Park.  
 George F. Shafer .....Hackensack.  
 J. LeClere Shedaker .....Burlington.  
 Geo. W. Shinn .....Burlington.  
 Ruth S. Sickler .....Salem.  
 Percy W. Sipp .....Newark.  
 C. C. Slessman .....Bayonne.  
 George N. Smith, M. D. ....Roselle Park.  
 Wm. R. Smith .....Roselle Park.  
 F. Wm. Stahuber .....Trenton.  
 Thomas J. Steele .....Jersey City.  
 Louis D. Stern .....Hoboken.  
 Frederick A. Stetter .....Asbury Park.  
 Herbert A. Stine .....Plainfield.  
 Andrew F. Stoveken .....Jersey City.  
 John P. Stout, M. D. ....Jersey City.  
 Daniel B. Street, M. D. ....Jersey City.  
 Lester H. Stryker, D. V. S. ....Red Bank.  
 Dennis J. Sullivan, Jr. ....Jersey City.  
 J. Frank Summers .....Salem.  
 Eugene M. Syrett .....Montclair.  
 Edwin E. Taber .....Long Branch.

#### Sanitary Inspectors of the Second Class.

Robert Ballagh .....Hackensack.  
 John M. Bensel .....Pleasantville.  
 Frank Been .....Carteret.  
 John C. Clayton, M. D. ....Freehold.  
 Joseph J. Clickenger .....Irvington.  
 Charles Cunningham, M. D. ....Hammonton.

#### Sanitary Inspectors of the Third Class.

John J. Bennett .....Belleville.  
 Charles Butcher, M. D. ....Heislerville.  
 Joseph G. Coleman, M. D. ....Hamburg.  
 Charles Covert .....Leesburg.  
 Ellis W. Crater, M. D. ....Oceanport.  
 William B. Davis .....Morris Plains.  
 Robert Dickson .....Fair Haven.  
 George W. Earl .....Mt. Tabor.  
 Wm. Everhart .....South Plainfield.  
 J. N. Fowler .....Port Norris.

#### Meat Inspectors.

Samuel Bruce, D. V. S. ....Philadelphia, Pa.  
 Willet H. Cooper, D. V. S. ....Trenton.  
 Chas. Edelhauser .....Newark.

#### Milk and Dairy Inspectors.

Herman C. Alberts .....Jersey City.  
 Matthew P. Casey .....Jersey City.  
 Emmet E. Fergerson .....Sussex.  
 Richard Jackson .....Newark.  
 Herbert H. Haines .....Trenton.  
 W. Wesley Hibbard .....Jersey City.  
 Henry F. Kneller .....Newark.  
 J. Wesley Maple .....Trenton.  
 Arthur McRoberts .....Jersey City.  
 David E. Morgan .....Newark.

John G. Taylor .....Dover.  
 Joseph Ten Broeck .....Asbury Park.  
 David R. Thompson .....Delaware City, Del.  
 Ella Tilton .....Newark.  
 Edward L. Titus .....Trenton.  
 Wm. Tompkins, M. D. ....Ridgewood.  
 Thomas A. Tonge .....Paterson.  
 J. F. Travers .....New Brunswick.  
 Emil J. Tschupp .....West Hoboken.  
 Lynford E. Tuttle, M. D. V. ....Bernardsville.  
 Sylvester Utter, M. D. ....Paterson.  
 Albert Van Eerde, M. D. ....Hawthorne.  
 Alfred J. Van Horn .....Paterson.  
 William Van Loo .....Paterson.  
 Lloyd M. Van Ness .....New Brunswick.  
 C. H. W. Van Selver .....Burlington.  
 Charles S. Voorhis .....Palmyra.  
 Burt F. Walsu .....Jersey City.  
 Thomas P. Walsh .....Newark.  
 Michael Warshawsky .....Bayonne.  
 James J. Waters .....Newark.  
 Harry E. Watt .....New Brunswick.  
 James Weldon .....Jersey City.  
 William A. Weber .....Orange.  
 George A. West .....Raritan.  
 Joseph Whalley .....Passaic.  
 Thomas D. Wilhelm .....Perth Amboy.  
 Frank V. Wilkinson .....Newark.  
 Fred M. Williams .....Rahway.  
 Stanley S. Williams .....Newark.  
 John H. Winslow, M. D. ....Vineland.  
 Frederick E. Wilson .....Bayonne.  
 H. S. Winterhalter .....Bayonne.  
 John Wodder .....Perth Amboy.  
 Thomas Wood .....Pompton.  
 James A. Woods .....Atlantic City.  
 Katherine E. Yellon .....Newark.  
 James A. Young, Jr. ....Paterson.  
 John S. Young, M. D. ....Rahway.  
 Sara D. Yard .....Trenton.

Frederick J. Dyer .....Grantwood.  
 George S. Everitt .....Linden.  
 J. C. Shinn, M. D. ....Jamesburg.  
 Franklin P. Vanlier .....Woodstown.  
 George Wildman .....Belmar.

Robert A. Hirner .....Woodbridge.  
 Adrian Hommel .....Asbury Park.  
 Emerson Hornstra .....Clifton.  
 Fred D. Hurley .....Asbury Park.  
 David Jamieson .....Gloucester City.  
 T. Nelson Lillagore .....Ocean Grove.  
 Stanley H. Lyon .....Morris Plains.  
 Henry Moser .....North Bergen.  
 Lewis E. Potter .....Woodbridge.  
 William B. Smith .....Belleville.

G. F. Harker, D. V. S. ....Trenton.  
 Richard W. Hewitt, D. V. S. ....Camden.  
 Albert T. Sellers, D. V. S. ....Camden.

Herman H. North .....Jersey City.  
 Ansel D. Parker .....Delaware, N. J.  
 Clarence H. Rider .....Jersey City.  
 Edward S. Rogers .....Trenton.  
 Samuel J. Shultis, Jr. ....New Brunswick.  
 Harold E. Stearns, D. V. S. ....Kearny.  
 Thomas J. Steele .....Jersey City.  
 Thos. A. Tonge .....Paterson.  
 George D. White, Jr. ....Newark.

#### Milk and Food Inspectors.

Harry P. Cassidy .....Philadelphia, Pa.  
 Louis J. Levy .....Hoboken.  
 Harold Mellen .....Hoboken.  
 Abe L. Teifeld .....Hoboken.

#### Food and Drug Inspectors.

Louis G. Abell .....Elizabeth.  
 Chester L. Bennet .....Newark.  
 Lillian G. Blumenau .....Newark.  
 James E. Connolly .....Newark.  
 John J. Coughlin .....Elizabeth.  
 James W. Culbert .....Newark.  
 Adolph O. Elsassner .....Newark.  
 Abe Hallperin .....Newark.  
 Adolph E. Hoering .....Newark.  
 Jerome Kahn .....New Brunswick.  
 Edwin J. Kaiser .....Newark.  
 Henry F. Kneller .....Newark.  
 John C. Prosch, Ph.D. ....Newark.  
 Max H. Siegel .....Newark.  
 Albert Spies .....Newark.

#### Plumbing Inspectors.

R. C. Adamson, Jr. ....Long Branch.  
 Vincent Ablemeyer .....Jersey City.  
 Gustave A. Albiez .....Newark.  
 Henry J. Babcock .....Caldwell.  
 Richard T. Bagg .....Vineland.  
 Wm. F. Balley .....Jersey City.  
 G. E. Bangs .....West Hoboken.  
 Wm. C. Banta .....Ridgewood.  
 James Barnard .....Trenton.  
 Lewis Barnett .....Millville.  
 Wm. C. Beucler .....Bergenfield.  
 Hugo W. Bobertz .....Elizabeth.  
 P. W. Borrowes .....Ridgefield Park.  
 Thos. W. Bradley .....Edgewater.  
 William F. Brode .....Atlantic City.  
 Herbert A. Buzzard .....Audubon.  
 John Campbell .....Paterson.  
 John L. Campbell .....Hammonton.  
 Cornelius V. Carty .....East Rutherford.  
 Anthony P. Ciardi .....Nutley.  
 Thomas D. Clark .....Woodbury.  
 Joseph P. Coclaran .....Ventnor.  
 Benjamin M. Cohen .....Newark.  
 George M. Crawley, Jr. ....Newark.  
 Sidney S. Craythorn .....Newark.  
 Francis Cumiskey .....Guttenberg.  
 Newton DeBaun .....Hackensack.  
 Peter A. Degnan .....Newark.  
 Irving J. Demarest .....Westwood.  
 Herbert L. de Nourie .....East Orange.  
 J. Elmer Deppa .....Newark.  
 Conrad Deuchler .....Newark.  
 Luke J. Devine .....Elizabeth.  
 Charles J. Dignum .....West Orange.  
 Walldburg C. Dobbins .....Belmar.  
 Edward F. Doran .....Jersey City.  
 William J. Dorney .....Newark.  
 Thomas J. Dowling .....Orange.  
 Martin V. Driscoll .....Jersey City.  
 Edward A. Dugan .....Gloucester City.  
 Marine Dunn .....Rutherford.  
 Frederick J. Dyer .....Grantwood.  
 Marcus L. Eisele .....Newark.  
 David M. Elin .....Newark.  
 Charles R. Ellis .....Rutherford.  
 Alfred T. England .....Haddonfield.  
 David Entwistle .....Jersey City.  
 Robert Ewans .....Guttenberg.  
 Robert J. Fair .....Gloucester City.  
 Charles W. Fenny .....Paterson.  
 Hubbard Ferguson .....Ridgewood.  
 Frank H. Fitzgeorge .....Trenton.  
 Joseph Fleming .....West Orange.  
 Henry B. Francis .....Camden.  
 Howard Frey .....Red Bank.  
 Bayard T. Garrabrant .....Montclair.  
 Napoleon Gomm .....Englewood.  
 Walter B. Graham .....Vineland.  
 George T. Haines .....Ventnor.  
 Adam J. Hammer .....Elizabeth.  
 James T. G. Hand .....Ventnor.  
 August Handley .....West Hoboken.  
 Bernard M. Hanley .....Jersey City.  
 Thomas F. Harris .....Orange.  
 Michael H. Healey .....Lyndhurst.  
 Thomas P. Healy .....Verona.  
 James F. Hefferty .....New Brunswick.  
 Wm. H. Helm, Jr. ....Belmar.  
 George Helmer .....Rutherford.  
 Patrick J. Hennessy .....Jersey City.  
 Fred Henniger .....Jersey City.  
 Henry Herman .....Passaic.  
 Thos. V. Higgins .....Jersey City.  
 Conrad C. Hoffmeier .....West Hoboken.  
 Joseph F. Hourigan .....Hoboken.  
 Maurice Huckman .....Newark.  
 Arthur A. Hulse .....South Amboy.  
 Joseph A. Hurley .....Guttenberg.  
 A. E. Irwin .....Atlantic Highlands.  
 John E. Joyce .....Newark.  
 James A. Judge .....Jersey City.  
 Archibald A. Kafar, Jr. ....Bordentown.  
 Martin D. Karl .....Garfield.  
 Joseph E. Keeton .....East Orange.  
 Edward J. Kelly .....Jersey City.  
 Leavett F. Kelly .....Newark.  
 Wm. J. Kelton .....Audubon.  
 John H. Kerr .....Perth Amboy.  
 James H. Kiernan .....Jersey City.  
 Frank S. Kivitt .....Passaic.  
 John F. Kilkenny .....Morristown.  
 John N. Krauss .....Leonia.  
 August C. Krieger .....Town of Union.  
 Jacob Kull .....Newark.  
 Charles Kunz .....West Orange.  
 W. George Lambert .....Riverside.  
 George W. Lang .....East Orange.  
 Eugene Lau .....Newark.  
 W. J. Large .....Vineland.  
 Joseph P. Lee .....Jersey City.  
 Joseph Lender .....West New York.  
 Tunis Lool .....Lodi.  
 Joseph M. Loeffler .....Newark.  
 Warren Mack .....East Orange.  
 William Maloney .....Jersey City.  
 Louis Marengli .....Roselle Park.  
 James A. Marnell .....Hoboken.  
 Howard H. Martindell .....Trenton.  
 Herbert J. Mason .....Vineland.  
 Henry F. Metzger .....Jersey City.  
 Andrew McGoekin, Jr. ....Newark.  
 Robert A. McGuire .....Perth Amboy.  
 George F. McIntyre .....Hammonton.  
 Harry L. McIntyre .....Hammonton.

James McTague .....	Jersey City.	R. LeRoy Skillman.....	Newark.
Frank Miller .....	Newark.	Clarence B. Slack.....	Trenton.
Patrick J. Monaghan.....	Newark.	Henry A. W. Smith.....	Ocean City.
William S. Mooney.....	Jersey City.	Harold L. Snyder.....	Camden.
Robert F. Morgan, Jr.....	Newark.	Joseph Sonnenberg.....	Irrington.
George M. Mortenson.....	South Amboy.	John Specht .....	Newark.
James F. Mulhall.....	East Orange.	William F. Specht, Jr.....	Atlantic City.
Charles Munzing.....	Jersey City.	B. H. Sooy.....	Atlantic City.
Edward F. Murphy.....	North Bergen.	Charles Steller.....	Town of Union.
Robert B. Murphy.....	Ridgewood.	G. H. Soult.....	Ridgewood.
Frederick W. Nichols.....	Newark.	Andrew F. Stoveken.....	Jersey City.
John Nolan.....	Bayonne.	Edward A. Sullivan.....	Newark.
George H. Northam.....	Long Branch.	Fred. Taylor.....	East Rutherford.
Joseph J. Norton.....	East Orange.	Charles Turkowsky.....	West New York.
Richard J. O'Crowley, Jr.....	Newark.	Thomas Vall.....	South Amboy.
John O'Shea.....	West New York.	Wm. P. VanKirk.....	Beverly.
Richard W. L. Osthoff.....	Bogota.	Geo. W. VanVarick.....	Clifton.
Hugh F. Parle.....	Jersey City.	Oscar J. Verhoek.....	Irvington.
Raymond W. Pettibone.....	Island Heights.	Frank Vermilye.....	Bound Brook.
Samuel Powell.....	Roselle Park.	Robert J. Walker, Jr.....	Atlantic City.
Charles Reeve.....	Long Branch.	Thomas Walton.....	Camden.
Arthur G. Reeves.....	Cape May City.	Michael Warrhawsky.....	Bayonne.
John B. Reeves.....	Haddon Heights.	John J. Waters.....	Jersey City.
Bernards B. Relley.....	New Brunswick.	George S. Webb.....	Wildwood.
Rudolph Riemenschneider.....	Town of Union.	James C. Wegham.....	Wildwood.
Edward A. Rogers.....	Trenton.	Alex. Weir, Jr.....	West Hoboken.
Alfred B. Rooney.....	Jersey City.	C. H. Weller.....	Hightstown.
Anthony S. Ruddy.....	East Orange.	Charles F. West.....	Gloucester City.
Patrick J. Ryan.....	Wallington.	Joseph Whalley.....	Passaic.
Anthony H. Sachs.....	Carlstadt.	Charles M. Whelan.....	Trenton.
Michael Saul.....	Newark.	Jason H. Wildrick.....	Washington.
Edgar A. Scurman.....	Perth Amboy.	Leslie H. Williams.....	East Orange.
George J. Scheurle.....	Weehawken.	Charles S. Wilmot.....	Haddon Heights.
Wm. A. Sehner.....	Palisades Park.	John Wodder.....	Perth Amboy.
George F. Shafer.....	Hackensack.	Harry A. Wilkins.....	Newark.
Michael A. Shanahan.....	Jersey City.	Louis V. Ziegler.....	Ridgefield Park.
Charles F. Shaw.....	Collingswood.	William G. Ziegler.....	West Hoboken.
John H. Simmerman.....	Pitman.		

#### Sewage Plant Operators.

Reinhold W. Daust.....	Highlands.	John W. Norton.....	Maywood.
Richard H. L. Osthoff.....	Bogota.	G. Cleveland Stanton.....	Avon.
Henry Young.....	River Edge.	Harry Stark.....	Leonia.

#### Water Plant Operators.

Edwin F. Langford.....	Paterson.	John L. Radcliffe.....	Elizabeth.
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## List of Sanitary Districts.

### CITIES.

- Absecon**, Atlantic county. E. H. Madden, President; Samuel Johnson, Secretary.
- Asbury Park**, Monmouth county. Howard D. Le Roy, Director of Public Safety; B. H. Obert, Health Officer and Registrar; Fred Stetter, Inspector.
- Atlantic City**, Atlantic county. Dr. S. I. Salasin, Acting Health Officer; Harry C. Beck, Inspector.
- Bayonne**, Hudson county. Pierre P. Garven, President; Morris Brodman, Secretary; W. W. Brooks, M. D., Health Officer.
- Beverly**, Burlington county. Jos. E. Hammell, Secretary; A. V. Woolston, Secretary and Registrar; W. P. Van Kirk, Inspector.
- Bordentown**, Burlington county. Jos. R. Malone, Secretary; C. D. Mendenhall, Health Officer; A. P. Thorne, Inspector.
- Bridgeton**, Cumberland county. Enos Paullin, President; Sidney O. Williams, Secretary; Chas. E. Bellows, Inspector.
- Burlington**, Burlington county. Dr. J. B. Cassady, President; Walter W. Marrs, Secretary; J. Le Clerc Shedaker, Health Officer.
- Camden**, Camden county. Harry F. Bushey, M. D., President; Eugene B. Roberts, Secretary; John F. Leavitt, M. D., Health Officer.
- Cape May City**, Cape May county. John T. Hewitt, President; Wm. Paster, Secretary; J. M. D. Marcy, Health Officer; Arthur C. Reeves, Inspector.
- Clifton City**, Passaic county. Richard Lavell, President; Wm. A. Miller, Secretary; Jeremiah P. Quilan, Health Officer.
- East Orange**, Essex county. Dr. C. P. Moulton, President; T. Dudley Ballinger, Secretary and Health Officer.
- Egg Harbor City**, Atlantic county. Henry M. Cressman, President; Wm. Morganweck, Secretary.
- Elizabeth**, Union county. Emil Stein, M. D., President; Louis J. Richards, Health Officer.
- Englewood**, Bergen county. Walter Phillips, President; John D. Collins, Secretary; John A. Mason, Inspector.
- Gloucester City**, Camden county. Harlin S. Miner, President; H. M. Black, Secretary; Dr. J. A. Beek, Health Officer and Inspector.
- Hoboken**, Hudson county. Patrick R. Griffin, President; John Berocclo, Clerk and Registrar.
- Jersey City**, Hudson county. Frank Hague, Director; James J. Hagen, Health Officer; J. J. Craven, Medical Health Officer; John Harnett, Inspector.
- Lambertville**, Hunterdon county. Charles Mathews, President; Samuel A. Finger, Clerk and Registrar; C. C. B. John, Inspector.
- Long Branch**, Monmouth county. Charles Rosencrans, President; R. C. Erickson, Health Officer; James Milmore, Inspector.
- Margate City**, Atlantic county. Anthony Gertzen, Jr., Secretary.
- Millville**, Cumberland county. Dr. F. V. Ware, President; H. L. Thomas, Secretary; Frank Bullock, Health Officer and Registrar.
- Newark**, Essex county. Robert F. Morgan, Jr. Clerk; Chas. V. Craster, Health Officer.
- New Brunswick**, Middlesex county. Wm. C. Jacques, Commissioner; E. I. Cronk, M. D., Health Officer; J. McLaughlin, Registrar.
- Northfield City**, Atlantic county. Wm. Oxley, President; A. R. Vickers, Secretary.
- Orange**, Essex county. John O'Brien, Health Officer; Richard Savage, Inspector.
- Passaic**, Passaic county. John H. McGuire, President; Virginia Hand, Secretary; John N. Ryan, M. D., Health Officer.
- Paterson**, Passaic county. Frank M. Barr, President; Tunis Kivett, Secretary; O. R. Hagen, Health Officer.
- Perth Amboy**, Middlesex county. Dr. M. F. Urbanski, President; Anna Burkard, Clerk; Dr. C. S. Thompson, Health Officer.
- Plainfield**, Union county. Dr. Wm. H. Murray, President; Dr. Frank C. Ard, Secretary; Harriet O. Mattison, Reporting Officer and Registrar; N. J. Randolph Chandler, Health Officer.

Port Republic City, Atlantic county. John W. Barton, President; G. H. Champin, Secretary; Harry Brand, Inspector.

Rahway, Union county. Wm. H. Randolph, President; Fred M. Williams, Secretary and Health Officer.

Salem, Salem county. Chas. E. Markley, President; Geo. Kirk, Secretary; Harry M. Hitchner, Reporting Officer.

Sea Isle City, Cape May county. William J. Shellen, President; Claude J. Town, Secretary.

Somer's Point, Atlantic county. Geo. Goll, President; Walter A. Smith, Secretary.

South Amboy, Middlesex county. Thomas Lcoley, President; John S. Tomaszewski, Secretary; William J. Nagle, Registrar; Nicholas Hawley, Inspector.

Summit, Union county. Burton L. Boye, President; Wm. S. Bird, Secretary.

Trenton, Mercer county. A. S. Fell, M. D., Health Officer; Howard H. Ely, Registrar; Wm. C. Allen, Inspector.

Ventnor City, Atlantic county. Dr. Thomas Youngman, President; James G. Scull, Secretary; Walter A. Rulon, Health Officer.

Wildwood City, Cape May county. Benj. C. Ingersoll, Acting Health Officer.

Woodbury, Gloucester county. Frank Braun, President; W. E. Keat, Secretary; Frank Ackley, Sanitary Inspector.

#### BOROUGHS.

Allendale, Bergen county. G. M. Parkhurst, M. D., President; C. S. Roswell, Secretary.

Allenhurst, Monmouth county. T. C. Cottrell, President; Chas. E. King, Secretary and Registrar.

Allentown, Monmouth county. Chas. A. Spaulding, President; M. H. Buckalew, Secretary; Harry Disbrow, Registrar; Geo. Wilbur, Inspector.

Alpha, Warren county. Dr. Wm. H. Albright, President; William T. Wagner, Secretary.

Alpine, Bergen county. Joseph M. Garvey, President; Robert H. Monroe, Secretary.

Andover, Sussex county. S. S. Wills, President; Wm. E. Wilson, Secretary.

Atlantic Highlands, Monmouth county. Patrick Halleran, President; Edgar C. Cook, Secretary.

Audubon, Camden county. Dr. Lloyd E. Strohm, President; Wm. Sands, Clerk; Wm. J. Kelton, Health Officer.

Avalon, Cape May county. Geo. H. Jackson, Clerk and Registrar.

Avon, Monmouth county. John Thomson, President; G. C. Stanton, Clerk.

Barnegat City, Ocean county. William H. Bailey, Secretary.

Barrington, Camden county. Raymond Evaul, President; Herbert H. Ball, Secretary and Registrar.

Bay Head, Ocean county. R. H. Metcalf, President; Julius Foster, Jr., Secretary.

Beach Haven, Ocean county. Walter C. Sharp, President; Dr. Herbert Willis, Clerk and Health Officer.

Belmar, Monmouth county. Chas. F. Goff, President; Fred V. Thompson, M. D., Clerk and Registrar.

Bergenfield, Bergen county. Frank Riehl, President; Henry J. Brock, Secretary; W. Regan, Registrar.

Bloomingdale, Passaic county. William Tice, President; James L. Close, Secretary.

Bloomsbury, Hunterdon county. Cline Petty, President; C. P. Bassett, Clerk and Registrar.

Bogota, Bergen county. Thomas B. Ryan, President; John F. Hill, Secretary and Registrar.

Bound Brook, Somerset county. H. S. Smalley, Jr., President; John W. Reed, Secretary; Chas. McNabb, Health Officer and Registrar.

Bradley Beach, Monmouth county. Fred Reichy, Registrar; Geo. C. Bostick, Health Inspector.

Branchville, Sussex county. John A. McCarrick, Clerk and Registrar.

Brielle, Monmouth county. H. N. Folk, Secretary.

Butler, Morris county. E. P. Smithyman, President; Allen Looker, Secretary.

Caldwell, Essex county. Richard J. Waugh, President; A. E. Broadbent, Secretary; Wilson Husk, Assistant Health Officer.

Califon, Hunterdon county. Lester M. Apgar, President; John W. Beaty, Clerk and Registrar; Dr. Thomas R. Adams, Sanitary Inspector.

Cape May Point, Cape May county. Washington Le Noir, President; John T. Huff, Health Officer.

Carlstadt, Bergen county. W. Lehman, President; Oscar M. Macher, Secretary; Anthony Sachs, Inspector.

Chatham, Morris county. Dr. Walter A. Jaquith, President; J. Thomas Scott, Secretary; Geo. L. Kelley, Inspector.

Chesilhurst, Camden county. J. T. Humphries, Clerk.

Clayton, Gloucester county. Dr. G. C. Brown, President; C. F. Fidler, M. D., Secretary.

Cliffside Park, Bergen county. Robert Cadieu, President; O. R. McElwain, Secretary.

Clinton, Hunterdon county. H. S. Leatherman, President; Geo. S. Hall, Clerk and Reporting Officer.

Closter, Bergen county. J. M. Haring, President; Alfred Anderson, Secretary and Registrar.

Collingswood, Camden county. Geo. B. Whidder, President; C. C. Powell, Secretary and Registrar.

Cresskill, Bergen county. John F. Meyer, President; H. R. Le Manquais, Secretary and Registrar.

Deal, Monmouth county. Robert Offenbach, President; Michael F. Weir, Secretary.

Delford, Bergen county. J. D. Hoffmire, President; G. R. Spalding, Secretary; J. S. Voorhees, Registrar.

Demarest, Bergen county. Watson J. Mosier, President; Geo. V. Morten, Secretary and Registrar.

Dumont, Bergen county. F. W. Patterson, President; Henry J. Bersch, Secretary and Registrar; Geo. F. Shafer, Inspector.

Dunellen, Middlesex county. Albert J. Meyers, President; Alfred W. Day, Secretary.

East Atlantic City, Atlantic county. E. R. Smith, Registrar.

East Newark, Hudson county. William B. McGlennon, President; Jos. A. McDonald, Secretary; Frank Smith, Registrar; William Gilchrist, Health Officer; John Keenan, Inspector.

East Paterson, Bergen county. John Cooper, President; Wm. S. Childs, Secretary and Registrar; Dr. John J. Ritter, Health Officer.

East Rutherford, Bergen county. Oscar Fortenback, President; Wm. Eigenrauch, Secretary and Registrar; Dr. C. D. Brooks, Health Officer; Fred Taylor, Inspector.

Edgewater, Bergen county. Louis J. Scheld, President; Arthur J. Carleton, Secretary and Registrar; Geo. W. Allison, Health Officer.

Elmer, Salem county. H. J. Conover, President; Irvine R. Wentzell, Secretary and Reporting Officer.

Emerson, Bergen county. Chas. P. Hopper, President; Arthur J. Sharpe, Secretary; George Schaffer, Inspector.

Englewood Cliffs, Bergen county. Dr. Christian E. G. Porst, President; William Hamilton, Secretary and Registrar; G. F. Shafer, Inspector.

Englishtown, Monmouth county. J. A. Lambert, President; S. H. Mount, Secretary; S. B. Ely, Registrar; W. E. Anderson, M. D., Health Officer.

Essex Fells, Essex county. E. F. Coombs, Acting President; Earle L. Legg, Secretary and Registrar.

Fair Haven, Monmouth county. Tunis V. V. Kendrick, President; Arthur B. Sickles, Secretary; William Churchin, Reporting Officer; John H. Becker, M. D., Inspector.

Fairview, Bergen county. Ruiggiero Frugali, President; E. R. Greenhalgh, Secretary and Registrar; Fred Dyer, Inspector.

Fanwood, Union county. Dr. F. W. Wescott, President; Edith M. Lidgate, Secretary.

Farmingdale, Monmouth county. John Cook, President; Harry Hulsart, Secretary; Dr. John B. Boyd, Inspector.

Fieldsboro, Burlington county. Frank Ferry, President; W. H. Erickson, Secretary and Registrar.

Flemington, Hunterdon county. Geo. Webster, President; Barclay S. Fuhrman, Secretary.

Florham Park, Morris county. Chas. H. Gerring, President; Wm. V. Tunis, Secretary and Registrar.

Folsom, Atlantic county. Louis Schulze, Secretary; Dr. Chas. Cunningham, Health Officer.

Fort Lee, Bergen county. Dr. Eugene Lanz, President; Joseph Cook, Secretary.

Franklin, Sussex county. Dr. C. M. Denning, President; James R. Stephens, Secretary and Registrar; Mabel M. Clarke (Mrs.), Inspector.

Frenchtown, Hunterdon county. Chas. Williamson, President; E. J. Stryker, Secretary; Hugh M. Sinclair, Health Officer.

Garfield, Bergen county. Andrew Mastare, President; Louis Heinzman, Secretary; Dr. Chas. B. Bleasby, Health Officer.

Garwood, Union county. Louis M. Wenezel, President; William T. Froat, Secretary and Registrar; William Morris, Inspector.

Glassboro, Gloucester county. Robert Mead, President; J. O. Wilnot, Secretary; Braz. Westcott, Sr., Inspector.

Glen Gardner, Hunterdon county. David Crampton, President; Frank C. Neiman, Secretary and Registrar.

Glen Ridge, Essex county. W. Wallace Schouler, President; John A. Brown, Secretary and Registrar.

Glen Rock, Bergen county. Dr. Irwin H. Beach, President; G. H. Lane, Clerk; Dr. Joseph Payne, Health Officer.



Haddonfield, Camden county. Allen Clymer, Secretary.  
 Haddon Heights, Camden county. Edw. Jenks, Secretary; A. T. Eaton, M. D., Medical Inspector.  
 Haledon, Passaic county. John W. Grimshaw, President; Theo. B. Kegelman, Clerk and Registrar; A. A. Lydecker, Health Officer.  
 Hamburg, Sussex county.  
 Hampton, Hunterdon county. Lloyd D. Bawby, President; H. J. Dalrymple, Secretary.  
 Harrington Park, Bergen county. Gustave Frank, President; C. H. Odell, Secretary and Registrar; Dr. Chas. A. Richardson, Inspector.  
 Harvey Cedars, Ocean county. Louise H. Kinzie, Clerk.  
 Hasbrouck Heights, Bergen county. Martin H. Jackson, President; Wm. J. Schweickert, Secretary and Registrar; Roy G. Perham, M. D., Health Officer; D. M. Davidson, Inspector.  
 Haworth, Bergen county. Charles G. Forbes, President; I. M. Clark, Secretary and Registrar.  
 Hawthorne, Passaic county. P. A. Wieland, President; Jos. Jowett, Reporting Officer.  
 Helmetta, Middlesex county. Clinton M. Clemons, President; Carl B. Johnson, Secretary.  
 High Bridge, Hunterdon county. W. H. Hendrickson, President; R. Somerville, Secretary; C. A. Longley, Registrar; Dr. Rufe, Medical Examiner.  
 Highland Park, Middlesex county. A. P. Daire, President; D. H. McCann, Secretary.  
 Highlands, Monmouth county. Chas. Greenfield, President; W. M. Hennessey, Secretary and Registrar; Wm. H. Belge, Inspector.  
 Hightstown, Mercer county. C. H. Weller, President; C. Allen Ely, Secretary; Dr. Wm. L. Wilbur, Reporting Officer.  
 Hohokus, Bergen county. F. H. Haviland, President; J. B. Harmon, Secretary; Wm. Tompkins, Inspector.  
 Hopatcong, Bergen county. Richard Voorhees, President; Alva Nelson, Secretary and Registrar; Chas. Lewis, Inspector.  
 Hopewell, Mercer county. Dr. Robt. P. Miller, President; Fred I. Sutphen, Secretary and Registrar.  
 Island Heights, Ocean county. Wm. T. McKaig, Clerk and Registrar.  
 Jamesburg, Middlesex county. J. B. Pownall, President; J. A. Thompson, Secretary; J. L. Suydam, M. D., Inspector.  
 Keansburg, Monmouth county. Dr. Chas. Palmer, President; Edward T. Compton, Clerk and Registrar.  
 Kenilworth, Union county. H. Gillings, President; Paul H. Van Der Zee, Kenilworth, Reporting Officer and Inspector.  
 Keyport, Monmouth county. Chas. F. Tuthill, Secretary and Registrar; S. H. Cassidy, Reporting Officer and Inspector.  
 Laurel Springs, Camden county. Dr. Chester Bradley, President; M. A. Wetherill, Secretary; C. J. Clark, Registrar.  
 Lavalette, Ocean county. Geo. W. Johnson, Member of Board.  
 Leonia, Bergen county. Geo. W. Findley, President; C. J. Kirkland, Secretary and Registrar; Dr. Francis Bartlett Tyson, Health Officer.  
 Linden, Union county. J. L. Neubaum, President; J. M. Capraun, Secretary and Registrar.  
 Linwood, Atlantic county. Henry S. Scull, President; Daniel L. Sutton, Secretary and Reporting Officer.  
 Little Ferry, Bergen county. Henry Bergman, Sr., President; Emil Dannacher, Secretary; Carl Lamker, Registrar and Inspector.  
 Lodi, Bergen county. John W. Lane, President; Wm. Jos. Patterson, Secretary and Registrar; Dr. H. H. Brevoort, Inspector.  
 Longport, Atlantic county. William S. Gilmore, Clerk and Registrar.  
 Madison, Morris county. A. C. Puddington, President; G. K. Heyer, Secretary; S. Fred Burnet, Registrar.  
 Magnolia, Camden county. Arthur Loomis, President; Alex. Montgomery, Secretary and Registrar.  
 Manasquan, Monmouth county. Harry D. Newman, President; Robert M. Marks, Secretary and Registrar; Alonzo Mount, Inspector.  
 Mantoloking, Ocean county. J. R. Such, President; S. C. Shadinger, Secretary and Reporting Officer.  
 Matawan, Monmouth county. Dr. Cyrus Knecht, President; Wm. H. Rodgers, Secretary.  
 Maywood, Bergen county. Henry Heck, President; G. M. Fetzer, Secretary and Registrar; R. H. L. Osthoff, Inspector.  
 Mendham, Morris county. G. S. De Groot, M. D., President; Geo. S. Thompson, Secretary and Registrar.  
 Merchantville, Camden county. Joseph D. Lawrence, M. D., President; John W. Mickle, Secretary and Registrar; Wm. H. Linderman, Health Officer and Inspector.

Metuchen, Middlesex county. H. F. Smith, President; Chas. P. Hull, Secretary and Registrar.  
 Middlesex, Middlesex county. Henry J. Oesterling, President; Arthur S. Moore, Secretary and Registrar.  
 Midland Park, Bergen county. Henry G. Rohrs, President; Jacob H. Olthius, Secretary and Registrar; Joseph Payne, M. D., Inspector.  
 Milford, Hunterdon county. A. D. Spoor, President; Frank P. Vanderbilt, Secretary; A. Arling Hill, Inspector.  
 Millstone, Somerset county. John W. Hutchinson, President; E. M. Davis, Clerk.  
 Milltown, Middlesex county. C. W. Waddington, President; J. Milton Brindle, Secretary; R. A. Harkins, Registrar.  
 Monmouth Beach, Monmouth county. Jacob S. Manahan, President; Joel R. Wooley, Secretary.  
 Montvale, Bergen county. August F. Girard, President; Walter Wellman, Secretary and Registrar; Geo. F. Shafer, Inspector.  
 Moonachie, Bergen county. Henry Veitbeer, President; Bernard A. Love, Secretary and Registrar.  
 Mountainside, Union county. T. J. Ketts, Secretary.  
 Mount Arlington, Morris county. R. F. Chaplin, President; T. L. Schafer, Secretary; F. H. Tappen, Inspector.  
 Mount Tabor, Morris county. A. O. Fitzgerald, President; R. A. Lawless, Secretary; John H. Ward, Registrar; Geo. W. Earl, Reporting Officer and Inspector.  
 National Park, Gloucester county. Jacob Bentz, President; Wm. E. Beers, Secretary.  
 Neptune City, Monmouth county. Frank Larrison, President; Sharon F. Smith, Secretary; R. F. D. No. 2, Asbury Park; Daniel Gouldy, Inspector.  
 Netcong, Morris county. T. H. Mahany, President; J. P. Meade, Secretary.  
 New Providence, Union county. William J. Kaufman, President; William Woodruff, Clerk and Registrar; Horace B. Guerin, Inspector.  
 North Arlington, Bergen county. Frank Stumpf, President; John H. Shields, Clerk; Joseph Klitch, Health Officer.  
 North Caldwell, Essex county. W. B. McCall, President; Frank Francisco, Secretary.  
 North Haledon, Passaic county. Wm. G. Ellis, President; Joseph Graham, Secretary; Dr. A. A. Lydecker, Reporting Officer.  
 North Plainfield, Somerset county. James L. Love, President; Jas. L. Ollif, Health Officer; Dr. A. H. Dundon, Reporting Officer and Registrar.  
 Northvale, Bergen county. Joseph Argenti, President; Jacob Scharer, Clerk and Registrar; Dr. Chas. A. Richardson, Inspector.  
 North Wildwood, Cape May county. Dr. Margaret Mace, President; Chas. F. Sanders, Secretary.  
 Norwood, Bergen county. Clifton Demarest, Secretary and Registrar.  
 Oakland, Bergen county. John McNaughton, President; John Eve, Secretary; E. W. Hamilton, M. D., Inspector.  
 Oaklyn, Camden county. John Beasley, President; Richard D. Early, Clerk and Registrar.  
 Ocean City, Cape May county. T. Lee Adams, Health Officer.  
 Ocean Grove, Monmouth county.  
 Ogdensburg, Sussex county. Wm. S. Percy, Secretary.  
 Old Tappan, Bergen county. J. Z. Bogart, President; Chas. De Wolf, Clerk and Registrar.  
 Palisade Park, Bergen county. Louis Quad, President; W. G. Stevens, Secretary and Registrar.  
 Park Ridge, Bergen county. Dr. S. Alexander, President; T. G. Forbes, Clerk and Registrar; Geo. F. Shafer, Inspector.  
 Paulsboro, Gloucester county. Frank Richards, President; S. Walter Loucks, Secretary and Registrar.  
 Peapack, Somerset county. W. D. Vanderbeck, President; F. H. Ludlow, Clerk and Reporting Officer.  
 Pemberton, Burlington county. A. I. Davis, President; Wm. A. Southwick, Secretary.  
 Pennington, Mercer county. Dr. I. F. P. Turner, President; Chas. M. Titus, Clerk; Frank A. Blackwell, Inspector.  
 Penn's Grove, Salem county. Edward S. Harris, President; Wm. F. Yeager, Secretary and Registrar.  
 Pitman, Gloucester county. David H. Schock, President; Albert V. Peterson, Secretary and Registrar; L. N. Slaughter, Health Officer.  
 Pleasantville, Atlantic county. R. A. Cole, President; Jesse Bowen, Secretary; Neil D. Campbell, Reporting Officer; Dr. W. J. Hudson, Inspector.  
 Point Pleasant Beach, Ocean county. Chas. W. Dampman, President; H. O. Shoemaker, Jr., Secretary and Registrar; Joseph Elberson, Inspector.  
 Point Pleasant, Ocean county.

Pompton Lakes, Passaic county. H. Seymore Smith, President; Henry C. Hershfield, Secretary; Thomas Wood, Registrar.

Princeton, Mercer county. Ulric Dahlgren, President; W. B. Howe, Secretary; William C. Blake, Registrar and Health Officer.

Prospect Park, Passaic county. William Vander Slik, President; Lambertus Toun, Clerk; Abraham A. Lydecker, Registrar and Health Officer.

Ramsey, Passaic county. F. Wm. Gertzen, President; H. P. Parvin, Clerk.

Red Bank, Monmouth county. Dr. W. A. Rullman, President; Willis Clayton, Secretary.

Ridgefield, Bergen county. Chas. H. Ahearns, Jr., President; Victor Ansel, Secretary.

Ringwood, Passaic county. Eric Lamburg, President; John Stephens, Secretary.

Riverside, Bergen county. Homer Hasbrouck, President; W. L. Reihl, Secretary; G. F. Shafer, Inspector.

Riverton, Burlington county. Edward C. Stoughton, President; Samuel W. Collin, Secretary; Fred C. Witte, Reporting Officer and Inspector; Chas. G. Davis, Registrar.

Rockaway, Morris county. Wm. A. Parlman, Clerk and Reporting Officer; John H. Rogers, Inspector.

Rocky Hill, Somerset county. E. S. Voorhees, President; Randall Wilson, Secretary.

Roosevelt, Middlesex county. Edward J. Heil, President; R. Joseph Murphy, Clerk; C. C. Sheridan, Registrar; Frank Born, Reporting Officer.

Roseland, Essex county. H. G. Rinkie, President; E. A. Williams, Secretary and Registrar.

Roselle, Union county. Wm. P. Howe, President; M. Stevenson, Secretary; Wm. Morris, Health Officer.

Roselle Park, Union county. Chas. Fitchen, President; Chas. E. Benton, Secretary; Dr. Wm. R. Smith, Health Officer.

Rumson, Monmouth county. Geo. H. Churchill, President; V. A. Ligier, Secretary; De-witt Scott, Inspector.

Rutherford, Bergen county. G. L. Barrows, President; Chas. C. Sutphin, Secretary; Marine Dunn, Reporting Officer.

Saddle River, Bergen county. J. C. Ware, President; Russell G. Ackerman, Clerk.

Sayreville, Middlesex county. Edward E. Clark, President; P. F. McCutchen, Clerk and Registrar.

Sea Bright, Monmouth county. F. P. Beadle, President; M. J. Devereaux, Secretary and Registrar; Abram Embly, Inspector.

Seaside Heights, Ocean county. Daniel Allen, President; N. E. Rex, Secretary.

Seaside Park, Ocean county. Frank Brockaway, Secretary.

Secaucus, Hudson county. Thomas Sprouls, President; Gerson Lowenstein, Clerk; Wm. Casper, Inspector.

Sea Girt, Monmouth county. Dr. C. A. Morris, President; Ezilphia Cranmer, Secretary.

Somerville, Somerset county. Thomas H. Flynn, President; Wm. R. Sutphin, Secretary; Geo. D. Fatten, Inspector.

South Bound Brook, Somerset county. Dr. J. T. Robinson, President; T. L. Walters, Secretary.

South Cape May, Cape May county. Isaac H. Days, President; E. B. Martin, Clerk.

South River, Middlesex county. Ralph J. Davenport, President; Wm. H. Kline, Clerk; John W. Ledwon, Reporting Officer and Registrar; Wm. R. Peterson, Inspector.

Spotswood, Middlesex county. James Beebee, President; Phineas M. Bowne, Secretary, Registrar and Health Officer.

Spring Lake, Monmouth county. Dr. S. R. Knight, President; D. H. Hills, Secretary.

Stanhope, Sussex county. Peter J. Kelly, President; J. J. Shaw, Secretary.

Stockton, Hunterdon county. Col. H. M. Reading, President; Wm. P. Mason, Secretary.

Stone Harbor, Cape May county. Edw. T. Frier, Clerk.

Surf City, Ocean county. H. L. Lukens, Borough Clerk.

Sussex, Sussex county. Dr. H. D. Gaasbeck, President; F. B. Ewald, Secretary; L. J. Fuller, Inspector.

Swedesboro, Gloucester county. Dr. J. G. Halsey, President; W. H. Rieger, Secretary and Registrar; Dr. V. E. De Groft, Inspector.

Tenaft, Bergen county. Dr. J. B. Lansing, President; Herman D. Hensel, Secretary.

Totowa, Passaic county. John Duffghe, President; W. E. Pattberg, Secretary and Registrar; Dr. Veestra, Health Officer.

Tuckerton, Ocean county. James E. Otis, President; John H. Kohler, Secretary and Reporting Officer.

Upper Saddle River, Bergen county. James D. Carlough, President; August Weiss, Secretary and Inspector.

Verona, Essex county. Judson W. Parker, President; Louis C. Miller, Secretary and Reporting Officer; T. Brooks, Registrar.

Vineland, Cumberland county. Louis Basso, President; Fred Koetz, Secretary and Registrar; John H. Winslow, Health Officer; Walter B. Graham, Inspector.

Waldwick, Bergen county. L. M. Terhune, President; D. W. Bush, Secretary; D. W. Keefe, Jr., Reporting Officer and Registrar.

Wallington, Bergen county. Edward Taylor, President; James J. Brennan, Secretary and Registrar; Dr. D. W. Sullivan, Health Officer; P. J. Ryan, Inspector.

Wanaque, Passaic county. Dr. D. N. Sheppee, President and Inspector; Joseph G. Beam, Secretary.

Washington, Warren county. F. J. La Riew, M. D., President; R. B. Groat, Secretary and Registrar; Geo. G. Losey, Reporting Officer and Inspector.

Wenonah, Gloucester county. Joseph E. Troncker, President; Jesse W. English, Secretary and Registrar; Harry G. Scheisser, Health Officer; Dr. Harry A. Stout, Inspector.

West Caldwell, Essex county. Peter S. Johnson, President; Herbert Francisco, Secretary.

West Cape May, Cape May county. W. H. Smith, President; F. R. Hughes, Secretary and Reporting Officer.

West Long Branch, Monmouth county. Chas. Stillwagon, President; Frank A. Poole, Secretary and Registrar.

West Paterson, Passaic county. Harry Acton, President; Reuben H. Reiffin, Clerk and Registrar.

Westville, Gloucester county. J. D. Haines, President; W. B. Atkinson, Secretary and Registrar.

West Wildwood, Cape May county.

Westwood, Bergen county. James Musson, Jr., President; James E. Ackerman, Secretary and Registrar; Irving J. Demerest, Inspector.

Wharton, Morris county. James Williams, President; W. C. Myers, Secretary and Registrar.

Wildwood Crest, Cape May county. R. Scampton, President; E. B. Fagan, Clerk and Registrar.

Woodbine, Cape May county. Dr. J. Joffe, President; May Cytron, Secretary; R. Zeller-meyer, Inspector.

Woodbury Heights, Gloucester county. H. C. Brose, President; H. L. Nace, Secretary and Registrar.

Woodcliff Lake, Bergen county. H. W. Fish, President; N. B. Ackerman, Secretary and Registrar.

Woodlynn, Camden county. Willard Riggs, President; Christian Dupont, Secretary and Reporting Officer.

Wood Ridge, Bergen county. F. W. Lehman, President; Jos. F. Beck, Secretary and Registrar.

Woodstown, Salem county. H. V. Foster, President; Wm. B. Foster, Secretary and Registrar.

Wrightstown, Burlington county. P. Carbine, President; Charles Remline, Secretary; Edgar West, Inspector.

## TOWNS.

Belleville, Essex county. Henry J. Mason, President; J. F. Flanagan, Secretary; W. Brand Smith, Health Officer.

Belvidere, Warren county. Dr. Frank R. Lefferts, President; Geo. H. Weaver, Secretary.

Bloomfield, Essex county. Jacob S. Wolfe, M. D., President; Joseph C. Saffle, Secretary and Registrar.

Boonton, Morris county. Byron E. Coleman, President; Frank Banta, Secretary; Fred B. Workman, Inspector.

Dover, Morris county. Geo. F. Steffany, President; William H. Tonking, Secretary and Reporting Officer; William G. Hummel, Registrar; John G. Taylor, Health Officer.

Freehold, Monmouth county. C. J. Strahan, President; Harvey S. Brown, Secretary and Registrar.

Guttenberg, Hudson county. Chas. Yeager, President; Jacob Saredy, Clerk and Reporting Officer.

Hackensack, Bergen county. Rev. A. Von Schlieder, President; E. A. Goodheart, Secretary; Richard H. L. Osthoff, Registrar and Reporting Officer.

Hackettstown, Warren county. James Tamblin, President; A. G. Boettiger, Secretary and Reporting Officer; R. G. Clark, Inspector.

Hammononton, Atlantic county. E. H. White, President; Wayland De Puy, Secretary and Registrar.

Harrison, Hudson county. John T. Malone, President; Eugene A. Riordan, Secretary; John T. McClure, Reporting Officer and Health Officer.

Irrington, Essex county. Francis S. Green, President; Jas. K. Clickinger, Reporting Officer and Inspector.

Kearny, Hudson county. Dr. A. A. Mutter, President; A. B. Anderson, Secretary; H. V. Ammerman, Inspector.

**Montclair, Essex county.** John S. Brown, President, H. B. Larner, Reporting Officer and Health Officer.

**Morristown, Morris county.** Dr. G. A. Becker, President; James D. Ball, Secretary and Registrar.

**Newton Town, Sussex county.** Dr. Warren H. Smith, President; A. V. B. Mackerley, Secretary; Rose McPeck, Reporting Officer and Inspector.

**Nutley, Essex county.** Ernest P. Cook, Commissioner; Eugene H. Sullivan, Health Officer.

**Phillipsburg, Warren county.** John Houser, President; J. C. Perdoe, Clerk and Registrar; Dr. Milliston, Reporting Officer and Health Officer.

**Town of Union, Hudson county.** James J. Vervoort, President; Laurence Feldhaus, Secretary; Joseph Traut, Health Officer; August C. Krieger, Inspector.

**Westfield, Union county.** Dr. R. G. Savoye, President; C. W. Harden, Clerk and Registrar.

**West Hoboken, Hudson county.** Thomas H. McCann, President; Frank A. Frederick, Clerk and Health Officer.

**West New York, Hudson county.** A. C. Einbeck, President; Edward D. Dilworth, Secretary; August Goetz, Reporting Officer and Inspector.

**West Orange, Essex county.** Alfred N. Pierson, President; D. E. Buckley, Secretary and Registrar.

#### VILLAGES.

**Ridgefield Park, Bergen county.** Frank A. Lloyd, President; Howard B. Ficken, Secretary and Registrar.

**Ridgewood, Bergen county.** R. W. Muns, President; E. L. Zabriskie, Secretary; Dr. H. H. Pettit, Reporting Officer and Health Officer; R. B. Murphy, Inspector.

**South Orange, Essex county.** D. D. Freeman, M. D., President; E. C. Stout, Secretary; A. C. Benedict, Reporting Officer and Inspector.

#### TOWNSHIPS.

**Alexandria, Hunterdon county.** George B. Wolfe, President; William B. Wean, Clerk; Dr. F. S. Grim, Inspector, both R. F. D., Milford.

**Allamuchy, Warren county.** Wm. Grover, President; Geo. Hartman, Clerk and Registrar, Allamuchy.

**Alloway, Salem county.** John Crawley, President, Alloway; H. M. Loveland, Secretary and Reporting Officer, Bridgeton, R. F. D. No. 8.

**Andover, Sussex county.** S. S. Wills, President; Wm. E. Wilson, Clerk and Reporting Officer, both of Andover.

**Atlantic, Monmouth county.** Frank E. Heyer, Clerk and Reporting Officer, Colts Neck.

**Bass River, Burlington county.** William T. Cramer, President; C. S. Cramer, Secretary and Registrar, New Gretna.

**Bedminster, Somerset county.** Richard Whitney, President, Far Hills; H. McMurtry, Secretary and Registrar, R. F. D. No. 8, Somerville.

**Berkeley, Ocean county.** Benjamin F. Butler, President, Bayville; Newell R. Harker, Secretary; Dr. Frank Brouwer, Inspector, both of Toms River.

**Berlin, Camden county.** Dr. Raughley, President; X. F. Ottiger, Secretary and Reporting Officer; Dr. F. O. Stern, Inspector, all of Berlin.

**Bernards, Somerset county.** Lewis Barkman, President; Jos. B. Kronenberg, Secretary and Reporting Officer; Dr. R. E. Mosedale, Health Officer and Inspector, all of Bernardsville.

**Bethlehem, Hunterdon county.** Joseph Wieller, President, Bloomsbury; Hurvey Pittinger, Secretary and Reporting Officer, West Portal.

**Beverly, Burlington county.** Paul H. Burk, President; Riverside, R. F. D.; Jos. B. Carter, Secretary, Delanco.

**Blairstown, Warren county.** Read Pullis, President, Blairstown; Jos. A. Dugan, Clerk, Vail; Dr. H. O. Carhart, Inspector, Blairstown.

**Boonton, Morris county.** John Bott, Jr., President, R. F. D., Boonton; Edmund H. Stickle, Clerk and Registrar, Boonton, R. F. D. No. 2.

**Bordentown, Burlington county.** Dr. C. D. Mendenhall, President; Samuel Johnson, Secretary; J. H. Colkitt, Registrar; Dr. Hugh Le Jambro, Inspector, all of Bordentown.

**Branchburg, Somerset county.** David H. Conover, President, Neshanic Station; Wm. H. Higgins, Secretary, North Branch.

**Brick, Ocean county.** Geo. B. Johnson, President; John A. Dorsett, Secretary and Reporting Officer, both of West Point Pleasant.

**Bridgewater, Somerset county.** Chas. Wiedemere, President, Somerville; John Slattery, Clerk and Registrar; Geo. W. Hope, of Raritan.

**Buena Vista, Atlantic county.** Orville E. Searls, President; Douglas Reed, Secretary, both of Vineland.

**Burlington, Burlington county.** Thomas P. Birkett, President; Thomas B. Gandy, Secretary, both of Burlington.

**Byram, Sussex county.** Walter Burdge, President, Waterloo; Chas. B. Carter, Secretary and Reporting Officer, Andover.

**Caldwell, Essex county.** John R. Courter, Chairman; C. Dey, Jr., Secretary, both of Caldwell.

**Cedar Grove, Essex county.** Lewis G. Bowden, President; H. B. Whitehorne, Secretary and Reporting Officer; A. A. Pretz, Registrar; C. H. Wells, Inspector, all of Verona.

**Centre, Camden county.** John H. Bowers, Jr., President; Wm. F. Miller, Secretary and Registrar, both of Collingswood, R. F. D. No. 2.

**Chatham, Morris county.** Edward Littlejohn, President, Chatham; J. Herbert Bebout, Secretary and Registrar, R. F. D. No. 2, Chatham.

**Chester, Burlington county.** Theodore C. Saussein, President, Maple Shade; Dr. F. G. Stroud, Secretary and Health Officer, Moorestown.

**Chester, Morris county.** Geo. W. Howell, President; J. Cecil Hoffman, Secretary and Registrar, both of Chester.

**Chesterfield, Burlington county.** C. M. Bunting, President; Wm. Wallace, Clerk and Registrar, both of Crosswicks.

**Cinnaminson, Burlington county.** Howard H. Taylor, President; Geo. C. Frank, Secretary and Reporting Officer; Chas. B. Jessup, Registrar, all of Riverton.

**Clark, Union county.** Henry T. Schire, President; Chas. H. Brewer, Secretary and Reporting Officer, both of Rahway, R. F. D. No. 2.

**Clementon, Camden county.** I. N. Higgins, President; Geo. W. Evans, Secretary, both of Lindenwold; Dr. Wm. C. Raughley, Inspector, Berlin.

**Clinton, Hunterdon county.** M. J. Wiggins, President; Howard Biggs, Secretary and Registrar; Dr. C. G. Boyer, Health Officer and Inspector, all of Annandale.

**Commercial, Cumberland county.** Ogden Shropshire, President; Walter Sharp, Secretary; Joseph N. Fowler, Inspector, all of Port Norris.

**Cranbury, Middlesex county.** Jos. Chamberlain, President; C. Raymond Wicoff, Secretary, Cranbury.

**Cranford, Union county.** John G. Rouch, President; Alfred H. Miller, Secretary and Inspector, Cranford.

**Deerfield, Cumberland county.** E. R. Parvin, President and Inspector; James McNab, Secretary, Bridgeton, R. F. D. No. 5.

**Delaware, Camden county.** W. B. Groff, President; W. B. Jennings, M. D., Secretary, Registrar and Health Officer, both of Haddonfield.

**Delaware, Hunterdon county.** John S. Cray, President, Stockton; N. V. Myers, Secretary, Sergeantsville.

**Delran, Burlington county.** William F. Karderer, Chairman; Rodman P. Gaskill, Secretary, Bridgeboro.

**Dennis, Cape May county.** R. B. Mason, President, Belleplain; A. E. Holmes, Secretary; Eugene May, Inspector, both of Dennisville.

**Denville, Morris county.** Calvin L. Lawrence, President, Dover; Joseph Ellsworth, Clerk and Registrar, Denville; Geo. H. Foster, Inspector, Rockaway.

**Deptford, Gloucester county.** Alfred Jaggard, Chairman; E. K. Turner, Secretary, both of Sewell.

**Dover, Ocean county.** Lucien Gravatt, President; Theodore Fischer, Clerk and Reporting Officer; Dr. Frank Brouwer, Inspector, all of Toms River.

**Downe, Cumberland county.** Harry E. Love, President; Sheppard Campbell, Clerk and Registrar, both of Newport.

**Eagleswood, Ocean county.** Ezra P. Brown, President; Robert F. Rutter, Secretary and Registrar, both of West Creek.

**Eastampton, Burlington county.** Samuel J. Crammer, President, Smithville; Phillip Croshaw, Secretary and Reporting Officer, Mt. Holly, R. F. D.

**East Amwell, Hunterdon county.** Ira M. Snook, President, Three Bridges; John J. Horn, Secretary and Reporting Officer, Hopewell; Dr. P. C. Young, Inspector, Ringoes.

**East Brunswick, Middlesex county.** William Green, Chairman, Old Bridge; R. B. Herbert, Secretary and Reporting Officer, New Brunswick, R. F. D. No. 3; Dr. I. Crandall, Inspector, Old Bridge.

**East Greenwich, Gloucester county.** Amos G. Haines, Clarksboro; J. C. Dauson, Clerk and Registrar, Mickleton.

**East Windsor, Mercer county.** Charles Probasco, President, Cranbury, R. F. D.; Wm. Kirby, Secretary and Registrar, Etra; John T. Hutchinson, Health Officer, Hightstown.

**Eatontown, Monmouth county.** William Carlile, President, Eatontown; Perry B. Cook, Secretary, Ellis W. Carter, M. D., Reporting Officer and Inspector, Oceanport.

**Egg Harbor, Atlantic county.** John J. Blackman, President, Motor Route B, Atlantic City; Chas. L. Smith, Secretary, Mays Landing; Wm. Hauenstein, Registrar, Motor Route A, Atlantic City; Woodman Hudson, Inspector, Pleasantville.

Elk, Gloucester county. Warren Garrison, President, Monroeville; H. E. Mayhew, Secretary, Aura.

Elsinboro, Salem county. J. Lin Smith, President and Reporting Officer; David B. Fox, Clerk, Elsinboro, R. F. D.

Evesham, Burlington county. J. Orville Evans, President; Benjamin K. Brick, Secretary, Marlton.

Ewing, Mercer county. Wm. S. Morris, Chairman, R. F. D. No. 6, Trenton; Wm. G. F. Haas, Secretary, R. F. D. No. 1, Trenton; Dr. F. S. Watson, Health Officer, 811 Stuyvesant Ave., Trenton, N. J.

Fairfield, Cumberland county. James B. Mulford, President, Fairton; W. Mulford Johnson, Secretary, Bridgeton, R. F. D. No. 7.

Florence, Burlington county. Richard Hamilton, Jr., President; Byron Carty, Secretary, both of Florence.

Frankford, Sussex county. Dr. A. A. Ransom, President, Branchville; Geo. W. Smith, Secretary and Registrar, R. F. D., Augusta.

Franklin, Bergen county. Peter Quackenbush, Chairman, Campgaw; C. H. Bush, Secretary; Dr. Peter Brancato, Inspector, both of Crystal Lake.

Franklin, Gloucester county. Henry Finger, Jr., President, Franklinville; Chas. H. Lincoln, Clerk and Reporting Officer, Vineland, R. F. D.

Franklin Hunterdon county. James Allen, President, Clinton; A. E. Robeson, Secretary, Pittstown.

Franklin, Somerset county. Van N. Voorhees, President, Bound Brock, R. F. D.; John L. Totten, Secretary, New Brunswick, R. F. D. No. 5; J. H. Cooper, M. D., Inspector, East Millstone.

Franklin, Warren county. John A. Hulsizer, Chairman; C. H. Hoagland, Secretary and Registrar, both of Asbury.

Frederon, Sussex county. Jos. E. Grover, President; W. N. Westbrook, Secretary and Reporting Officer, Newton, R. F. D. No. 2.

Freehold, Monmouth county. John H. Sheppard, President; Tunis D. Smith, Secretary and Reporting Officer, both of Freehold, R. F. D.

Frelinghuysen, Warren county. James Toomath, Chairman; Newton, R. F. D.; Wm. E. Engle, Secretary and Registrar, Blairstown, R. F. D.

Galloway, Atlantic county. Chas. F. Stuckel, Secretary, Egg Harbor, N. J.

Gloucester, Camden county. Joseph R. Powell, Clerk; J. Ansen, Smith, M. D., Health Officer, both of Slickerville.

Green, Sussex county. D. H. Longcor, President, Newton, R. F. D.; I. L. La Bar, Secretary and Registrar, Tranquility.

Greenwich, Cumberland county. Ethan P. Glaspey, Secretary, 433 Irving Ave., Bridgeton.

Greenwich, Gloucester county. James Devault, President, Paulsboro; Jacob Allen, Secretary and Registrar, Gibbstown.

Greenwich, Warren county. Fred Gerry, President, Stewartsville; Wm. Sherrer, Clerk and Reporting Officer, Bloomsbury; Dr. F. A. Curtis, Inspector, Stewartsville.

Haddon, Camden county. Alfred M. Mathews, President; J. M. Ackley, Clerk and Registrar, Westmont.

Hamilton, Atlantic county. C. Hazelton, President; Thompson Hoover, Secretary and Reporting Officer; N. C. James, Health Officer, all of Mays Landing.

Hamilton, Mercer county. Dr. F. B. Zandt, President, Hamilton Square; W. C. Rockhill Hart, Secretary, 409 Johnston Ave., Trenton; James N. Reed, Reporting Officer, 148 E. Washington St., Trenton; John M. Anderson, Registrar, Mercerville.

Hampton, Sussex county. W. A. Yetter, President, Halsey; J. W. Thompson, Clerk and Reporting Officer, Newton.

Hanover, Morris county. Dr. R. V. D. Totten, President; Stanley H. Lyon, Secretary and Registrar, both of Morris Plains.

Hardwick, Warren county. Harry Messler, President, Blairstown, R. F. D.; A. R. Mott, Clerk and Reporting Officer, Marksboro.

Hardyston, Sussex county. G. L. Lawrence, President; Nicholas Farber, Secretary and Registrar, both of Hamburg.

Harmony, Warren county. Dr. H. B. Bossard, President and Inspector, R. F. D. No. 2, Phillipsburg; — Schuler, Secretary and Reporting Officer, Phillipsburg, R. F. D. No. 1.

Harrison, Gloucester county. William Skinner, President, Richwood; W. A. Jones, Secretary, Mullica Hill.

Hillsboro, Somerset county. J. D. Quick, President, South Branch; J. E. Anderson, Secretary, Neshanic; Walter French, Reporting Officer and Inspector, Millstone.

Hillsdale, Bergen county. James O'Brien, President; Howard C. Holdridge, Secretary and Registrar, both of Hillsdale.

Hillside, Union county. J. Frederick Chapman, President, Hillside; John Leyser, Secretary and Reporting Officer; A. J. Thomas, Health Officer, both of Lyons Farms.

Hohokus, Bergen county. C. D. Vanderbeck, President, Ramsey; Albert Winter, Secretary and Reporting Officer, Mahwah.

Holland, Hunterdon county. Willis D. Hawk, President; Frank S. Huff, Secretary, both of Millford.

Holmdel, Monmouth county. Jacob Wyckoff, President, Keyport, R. F. D.; Alex. L. McCles, Secretary and Registrar, Holmdel.

Hope, Warren county. Geo. A. Henry, President, Great Meadows; C. R. Westbrooke, Secretary and Registrar, Dr. Walter Storm, Inspector, both of Hope.

Hopewell, Cumberland county. Wm. C. Harman, President; C. E. Bowen, Secretary and Registrar, both of Shiloh.

Hopewell, Mercer county. T. Quick Phillips, President, Titusville; Jos. R. Burroughs, Secretary and Registrar, Glen Moore; Dr. J. W. Richards, Inspector, Pennington.

Howell, Monmouth county. Elmer C. Hall, Secretary and Reporting Officer, Freehold.

Hudson county. James L. Lynch, Secretary, Jersey City.

Independence, Warren county. A. B. Leigh, President; F. W. Haggerty, M. D., Secretary, Vienna.

Jackson, Ocean county. W. V. Horner, President, Vanhiseville; W. S. Hendrickson, Secretary, Lakewood, R. F. D. No. 3.

Jefferson, Morris county. Chas. Headley, Chairman, Oak Ridge; B. W. Bright, Secretary and Registrar, Wharton.

Kingwood, Hunterdon county. R. N. Van Horn, President, Stockton, R. F. D.; Wm. H. Kugler, Secretary and Registrar, Raven Rock; F. S. Gunn, Inspector, Freichtown.

Knowlton, Warren county. Robert Kitchen, Chairman, Columbia; John M. Young, Clerk and Reporting Officer, Columbia, R. F. D. No. 1.

Lacey, Ocean county. Joseph M. Peekworth, President; William V. Wilbert, Secretary, Forked River.

Lafayette, Sussex county. Nicholas Kramer, President; William S. Vought, Secretary, Lafayette.

Lakewood, Ocean county. Geo. Garin, Clerk; I. Scudder Fisher, Reporting Officer; Dr. E. G. Herbener, Health Officer, all of Lakewood.

Landis, Cumberland county. Dr. L. F. Hatch, President; Ernest E. Howe, Clerk and Reporting Officer; H. J. Mason, Inspector, all of Vineland, R. F. D. No. 3.

Lawrence, Cumberland county. Morgan B. Husted, Chairman; A. Addison Sever, Clerk, both of Cedarville.

Lawrence, Mercer county. Thomas R. Stevens, President, Trenton, R. F. D. No. 4; Frank Pierson, Secretary and Reporting Officer, Lawrenceville.

Lebanon, Hunterdon county. Andrew B. Castner, Secretary, Glen Gardner.

Linden, Union county. Frank R. Anderson, Secretary and Registrar, Linden.

Little Egg Harbor, Ocean county. Eugene Cummings, President; Wm. Cummings, Jr., Secretary and Registrar, both of Parkertown.

Little Falls, Passaic county. John Hamill, Chairman; B. S. Briggs, Clerk; James Steel, Reporting Officer; W. H. Young, M. D., Health Officer, Little Falls.

Livingston, Essex county. A. P. Squire, President, Chatham; A. Ross Force, Secretary; Wm. Rathbun, Reporting Officer and Registrar, both of Livingston.

Lodi, Bergen county. John Nordyke, President, Garfield Park; Albert Hollander, Secretary and Registrar, Sub Station No. 2, Hackensack.

Logan, Gloucester county. Chas. Lamson, President, Swedesboro; S. B. Platt, Secretary and Registrar, Bridgeport.

Long Beach, Ocean county. Henry B. McLaughlin, President; Chas. H. Eckman, Secretary; Dr. H. Willis, Reporting Officer and Registrar, Beach Haven.

Lopatcong, Warren county. H. O. Phillips, President, Stanley Drake, Secretary and Reporting Officer, Phillipsburg, R. F. D.

Lower, Cape May county. J. D. Hoffman, President; Aaron Woolston, Secretary; Dr. W. A. Lake, Reporting Officer and Health Officer, both of Cape May City, R. F. D. No. 1.

Lower Alloways Creek, Salem county. Jediah A. Plummer, President, Quinton; Edward Hancock, Secretary and Reporting Officer, Hancock Bridge.

Lower Penns Neck, Salem county. Chas. Humphreys, President, Penns Grove, R. F. D. No. 1; Chas. Casperson, Clerk and Registrar, Pennsville.

Lumberton, Burlington county. Howard D. Haines, President, Mount Holly, R. F. D.; Frank M. Cotton, Secretary, Lumberton.

Lyndhurst, Bergen county. Anthony W. Sticht, President; Fred P. Wagner, Jr., Secretary and Reporting Officer, Lyndhurst.

Madison, Middlesex county. William Ortel, President, Old Bridge; Ebenezer Bowne, Secretary, Matawan.

Manalapan, Monmouth county. Edward Hendrickson, President; G. B. Conover, Clerk and Reporting Officer, both of Englishtown.

Manchester, Ocean county. Job Ireland, President; Dr. Harold Pittis, Clerk and Reporting Officer, Lakehurst.

Mannington, Salem county. Chas. F. Hackett, President, Sharptown; Elmer Griscom, Clerk and Registrar, Salem.

Mansfield Burlington county. John A. Hancock, President; Jos. H. Armstrong, Clerk and Registrar, both of Columbus.

**Mansfield, Warren county.** Jacob Thomas, President; John C. Beaty, Clerk and Registrar. Port Murray.

**Mantua, Gloucester county.** Edward Taylor, President; Richard Kincaid, Secretary and Reporting Officer; Dr. E. Z. Hillegass, Inspector, all of Mantua.

**Marlboro, Monmouth county.** Chas. F. Conover, Clerk, Englishtown.

**Matawan, Monmouth county.** Lewis H. Stemler, President; Stephen J. Sullivan, Secretary; Dr. Nathan Ervin, Inspector, all of Matawan.

**Maurice River, Cumberland county.** Levi Sharp, President, Heislerville; Henry Reeves, Jr., Clerk and Registrar, Leesburg.

**Medford, Burlington county.** Chas. P. Kirkbride, President; William M. Potts, Secretary and Reporting Officer, Medford.

**Mendham, Morris county.** H. M. Babbitt, President; Wm. C. Thomas, Secretary; Geo. W. Savadge, Reporting Officer and Registrar, all of Irvington.

**Middle, Cape May county.** V. N. Erricson, Secretary, Dias Creek; P. C. Washburn, Reporting Officer, Cape May Court House.

**Middleton, Monmouth county.** Isaac Morris, President, Middletown; Howard W. Roberts, Secretary and Reporting Officer, New Monmouth; Dr. O. W. Budlong, Inspector, Belford.

**Midland, Bergen county.** Otto Welsgerber, Chairman, Ridgewood; Thomas Barry, Clerk, Rochelle Park; T. L. Hallett, M. D., Inspector, Hackensack.

**Millburn, Essex county.** Walter Hine, President, Short Hills; Chas. R. Reeve, Secretary and Reporting Officer, Millburn; Dr. Wellington Campbell, Health Officer Short Hills.

**Millstone, Monmouth county.** A. E. Chamberlin, President, Perrineville; E. L. G. Ely, Secretary, Robbinsville; Geo. J. Ely, Registrar, Cranbury; Geo. M. Davison, Health Officer, Imlaystown.

**Monroe, Gloucester county.** William C. McIlvain, President; John W. McClure, Secretary and Registrar, Williamstown.

**Monroe, Middlesex county.** John D. Butcher, President, Cranbury, R. F. D. No. 4; Robt. R. Vandenberg, Clerk and Registrar, Prospect Plains.

**Montague, Sussex county.** Geo. V. Westbrook, President; Geo. McCarty, Clerk and Registrar; G. Otto Pobe, Health Officer, all of Port Jervis, N. Y., R. F. D. No. 1.

**Montgomery, Somerset county.** E. L. Van Zandt, Chairman, Blawenburg; W. M. Vreeland, Secretary and Reporting Officer, Skillman.

**Montville, Morris county.** Ward Witty, Committeeman; Fred Van Duyn, Clerk, both of Towaco.

**Morris, Morris county.** Thomas T. Sands, President; J. Paul Jamieson, Clerk; Thomas T. Sands, Reporting Officer, all of Morristown.

**Mount Laurel, Burlington county.** L. W. Wells, President; W. Clifford Godfrey, Clerk, both of Moorestown.

**Mount Olive, Morris county.** John E. Smith, Chairman, Hackettstown; Hez. Smith, Secretary and Reporting Officer, Flanders.

**Mullica, Atlantic county.** A. J. McKeene, President, Hammonton; Henry Tappen, Secretary, Egg Harbor; Dr. Chas. Cunningham, Inspector, Hammonton.

**Neptune, Monmouth county.** Andrew Van Cleve, Chairman; Wm. Blair, Clerk, both of Ocean Grove; F. A. Stetter, Reporting Officer and Health Officer, Asbury Park; Harry Shreve, Registrar, Ocean Grove.

**New Hanover, Burlington county.** John Nash, President; E. J. Bunting, Secretary, both of Wrightstown; Frank Danley, Inspector, Pointville.

**New Providence, Union county.** Percy G. Honeyman, President, Chatham, R. F. D. No. 2; David Hardy, Clerk and Reporting Officer; Geo. Wahl, Inspector, both of Scotch Plains.

**Northampton, Burlington county.** C. C. Cowperthwait, President; John D. Mason, Secretary and Reporting Officer; Elmer D. Prickett, M. D., Health Officer, all of Mount Holly.

**North Bergen, Hudson county.** Jas. Nolan, Chairman; Fred Sternkopf, Clerk and Reporting Officer; Thos. Dubelbeiss, Secretary, all of North Bergen.

**North Brunswick, Middlesex county.** A. Yorstein, President; E. Irving Meseroll, Secretary, both of New Brunswick, R. F. D. No. 4.

**North Hanover, Burlington county.** Richard Rahily, President, Wrightstown; Harry Borden, Secretary and Reporting Officer, Jacobstown.

**North Plainfield, Somerset county.** H. B. MacDonald, Chairman; Francis E. Bodin, Secretary; Fred Ivaney, Inspector, all of Watchung.

**Ocean, Monmouth county.** John Wooley, President; H. G. Van Note, Clerk and Registrar, Oakhurst.

**Ocean, Ocean county.** H. S. Brown, President; W. B. Wilkins, Clerk and Reporting Officer, both of Waretown; Dr. F. M. Bunnell, Health Officer, Barnegat.

**Oldmans, Salem county.** Harvey Gaventa, President; David G. Henderson, Secretary, both of Pedricktown.

**Oxford, Warren county.** Dr. L. E. Hoagland, President; Geo. Docker, Jr., Secretary and Registrar, Oxford, R. F. D. No. 2.

**Pahaquarry, Warren county.** Isaac E. Wildrick, Clerk and Registrar, Mill Brook.

**Palisade, Bergen county.** Thomas A. Yearsley, President, River Edge; Geo. Gengenagel, Clerk and Registrar, Peetzburg; Chester A. King, Health Officer, Oradell.

**Palmyra, Burlington county.** John M. Davis, President, John W. Shade, Clerk and Registrar; Frederick Blackburn, Reporting Officer, all of Palmyra.

**Passaic, Morris county.** Charles Castle, Chairman, Gillette; Wm. H. Holcombe, Secretary, Stirling.

**Pemberton, Burlington county.** Thos. G. Shreve, President; Barclay Seeds, Secretary and Registrar; Dr. E. Hollingshead, Inspector, Pemberton.

**Pensauken, Camden county.** John B. Stow, President; Albert E. Schefin, Clerk and Registrar, both of Pensauken.

**Peguannock, Morris county.** Harry Comly, President, Lincoln Park; A. Gilland, Clerk and Registrar, Pompton Plains.

**Pilesgrove, Salem county.** Warren C. Richman, President; M. W. Buzby, Clerk and Registrar, both of Woodstown.

**Piscataway, Middlesex county.** Harry J. Manning, President, South Plainfield; Geo. W. Coriell, Clerk, New Market; Cornelius J. McCarthy, Inspector, South Plainfield.

**Pittsgrove, Salem county.** Raymond Garrison, President, Centreton; Arthur Schallick, Clerk, Centreton.

**Plainsboro, Middlesex county.** Nathaniel Britton, Chairman, Cranbury, R. F. D.; Raymond D. Britton, Clerk, Plainsboro.

**Plumstead, Ocean county.** Richard Francis, President; Geo. Hartshorn, Clerk; Dr. William McMillan, Inspector, all of New Egypt.

**Pohatcong, Warren county.** W. I. Jacoby, Secretary and Registrar, Finesville.

**Princeton, Mercer county.** Wm. E. Dempsey, President, 177 Harrison St., Princeton; J. H. Warren, Secretary and Registrar, 195 Harrison St.; Price S. Henderson, Reporting Officer, Mountain Ave.

**Quinton, Salem county.** Wm. R. Lawrence, President; Bridgeton; C. A. Miller, Secretary and Reporting Officer, Quinton; W. T. Good, M. D., Inspector, Alloway.

**Randolph, Morris county.** William Basset, President; Geo. R. Coslett, Secretary and Registrar, both of Dover, R. F. D. No. 2.

**Raritan, Hunterdon county.** Theodore H. Dilts, Secretary and Registrar, Three Bridges.

**Raritan, Middlesex county.** Wm. T. Woerner, Clerk and Registrar, Perth Amboy, R. F. D. No. 2.

**Raritan, Monmouth county.** Ira Carhart, President; Dr. William T. Walling, Clerk and Inspector, both of Keyport.

**Readington, Hunterdon county.** D. L. Lare, President, White House; Geo. W. Anderson, Clerk; Dr. F. L. Johnson, Inspector, both of Stanton.

**Riverside, Burlington county.** John Seaman, President; Charles Heiss, Secretary; Dr. R. I. Downs, Inspector, all of Riverside.

**Rivervale, Bergen county.** Chas. A. Burnet, Clerk, Westwood, R. F. D. No. 1.

**Rockaway, Morris county.** Dr. F. W. Flogge, President, Rockaway; William Winters, Clerk and Registrar, Hibernia.

**Roxbury, Morris county.** E. W. Kilpatrick, Secretary and Registrar, Succasunna.

**Saddle River, Bergen county.** Isaac A. Hopper, Clerk, Fair Lawn.

**Sandston, Sussex county.** Dr. Martin Coie, Secretary, Layton.

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