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SMALLPOX AND VACCINATION.

For some time certain States have been reporting the vaccination status of persons developing smallpox within their respective jurisdictions. A compilation of these reports relating to over 20,000 smallpox cases and showing whether or not the patients had been vaccinated and, if vaccinated, how long before, will be found on page 2662 of this issue.

PUBLIC HEALTH ADMINISTRATION IN MINNESOTA.

By CARROLL FOX, Surgeon, United States Public Health Service.

Following the publication of the report on the study of the State Health Department of Maryland, a request was received from the State of Minnesota to carry on a similar study of its State board of health. This study was started about June 1, 1914, and continued throughout a period of three months. It has been gratifying to the investigator to observe the modern and scientific methods used in the control of communicable diseases in Minnesota.

The State board of health was organized in 1872. Since that time its duties and work have steadily increased until it is now worthy of the title and the position of a State department of health. Its present name is a misnomer as it implies a board of health only, whereas in reality the board is but the controlling head of a number of divisions which are as follows: The executive office, the division of preventable diseases, the division of sanitation, the extension division, the division of vital statistics, and the clerical division. Some of these divisions are further subdivided, as will be pointed out later.

The headquarters of the State board of health and some of its divisions are located in the State capitol building in St. Paul, whereas the divisions of preventable diseases and of sanitation are located on the University campus in Minneapolis. This is a very inconvenient arrangement for administrative reasons, but, on account of

the rivalry between the cities of St. Paul and Minneapolis, any change tending to locate all of the divisions of the board in one place might not meet with public approval. A healthy rivalry between cities is no doubt to be commended, but it should not be permitted to stand in the way of ease and effective administration of any unit of a State government.

STATE BOARD OF HEALTH.

Membership and tenure of office.—The State board of health is composed of nine members appointed by the governor. Their term of office is three years. Three members are appointed each year. They are required to be “learned in sanitary science.”

Meetings.—The board meets annually on the second Tuesday in January and elects a president from among its members. Other meetings are held regularly on the second Tuesday of April, July, and October. Thus they have only four regular meetings during the year, but the law permits them to hold special meetings, which may be called by the secretary or any two members of the board upon three days' notice. A majority constitutes a quorum.

The president presides at the meetings and in the absence of the secretary performs his duties, in which event he receives the same pay as the secretary. He may, however, appoint a secretary pro tempore to keep the minutes.

Salary and expenses.—The members of the board do not receive any salary or per diem, but are allowed necessary traveling expenses.

Powers and duties.—The powers and duties of the board are as follows:

1. To exercise general supervision over all health officers and boards.
2. To take cognizance of the interests of health and life among the people.
3. To investigate sanitary conditions.
4. To learn the cause and source of disease and epidemics.
5. To observe the effect upon human health of localities and employments.
6. To gather and diffuse proper information upon all subjects to which its duties relate.
7. To gather, collate, and publish medical and vital statistics of general value.
8. To advise all State officials and boards in hygienic and medical matters, especially those involved in the proper location, construction, sewerage, and administration of prisons, hospitals, asylums, and other public institutions.
9. To report its doings and discoveries to the legislature at each regular session thereof, with such information and recommendations as it shall deem useful.
10. To adopt, alter, and enforce reasonable regulations to apply to the whole or any part of the State, and to be permanent or applicable only for a specified period. These regulations must be approved by the attorney general, and must be published, if of general application, for three weeks at the seat of government. If of local application, they must be published as near the locality

as practicable. Special rules applicable to particular cases may be posted in a conspicuous place upon or near the premises affected. Any person violating any such regulation is guilty of a misdemeanor and is liable to a fine of not more than \$1,000 or by imprisonment in the county jail for not more than one year, or both. Fines collected for violation of State regulations are paid into the State treasury; for violation of regulations of local boards of health, into the county treasury. Regulations issued by the State board of health have the effect of law, when properly approved and published, except in so far as they may conflict with existing law or charter or ordinance of a city of the first class.

The law specifies the subjects on which the State board of health may make regulations, which at times may limit its authority and prevent it from taking action on certain important public-health matters. Regulations may be issued covering the following subjects:

1. The manufacture into articles of commerce, other than food, of diseased, tainted, or decayed animal or vegetable matter.
2. The business of scavenging and the disposal of sewage.
3. The location of mortuaries and cemeteries and the removal and burial of the dead.
4. The management of lying-in houses and boarding places for infants, and the treatment of infants therein.
5. The pollution of streams and other waters and the distribution of water by private persons for drinking or domestic use.
6. The construction and equipment, in respect to sanitary conditions, of schools, hospitals, almshouses, prisons, and other public institutions, and of lodging houses and other public sleeping places kept for gain.
7. The treatment, in hospitals and elsewhere, of persons suffering from communicable disease, the disinfection and quarantine of persons and places in case of such disease, and the reporting of sickness and deaths therefrom.
8. The furnishing of vaccine matter; the assembling during epidemics of smallpox, with other persons not vaccinated. A provision of this paragraph prevents the State board of health from carrying out any very extensive vaccination as it prohibits them from excluding children from school except during epidemics. This subject will be taken up later on.
9. The accumulation of filthy and unwholesome matter to the injury of the public health, and the removal thereof.
10. The collection, recording, and reporting of vital statistics by public officers, and the furnishing of information to such officers, by physicians, undertakers, and others, of births, deaths, causes of deaths, and other pertinent facts.

The board is also authorized to establish and enforce a system of quarantine against the introduction into the State of communicable diseases by common carriers.

All of the members of the board of health are practicing physicians, not in politics, and in sympathy with public-health work. Their meetings are businesslike and to the point. Since their secretary is a specialist in public-health matters, on duty every day, and thoroughly familiar with administrative details, while they meet but once in three months they almost invariably support his actions.

In order that the business of the board may be transacted with greater facility there is an executive committee, composed of five

members of the board, appointed by the president. Previous to a regular board meeting this committee meets with the secretary and business to be brought before the board is discussed and recommendations are decided upon. These recommendations are nearly always in line with the ideas of the secretary and are usually promptly approved by the board.

In view of the dependence necessarily placed on the executive officer the question arises whether nine men are really necessary to support his actions. By reason of the method of appointment of members of the board it is, of course, not likely to be political, but five members, or, at most, seven would appear to be sufficient. Furthermore it would appear that this board should be advisory and not executive, and the executive officer who is to assume the responsibility during lengthy intervals between meetings of the board should have direct authority to do so.

THE EXECUTIVE OFFICE.

The executive office is the administrative office of the State board of health and is in charge of the secretary and executive officer of the board. He receives \$4,500 per year. He is appointed by the board of health, but does not become a member, having no vote in its proceedings.

Duties of the secretary.—The duties of the secretary, under the law, are as follows:

1. To act as executive officer of the board.
2. To keep a record of the proceedings.
3. To see that all rules and regulations of the board and all duties laid upon it by law are enforced and performed.
4. To see that every law enacted in the interests of human health is obeyed.
5. To be custodian of the official records and documents of the board.
6. To act as State registrar of vital statistics.

The present incumbent has held his office for 17 years. Like the secretary of the State department of health of Maryland, he is one of the not too many all-time State health officers.

In 1911, after 14 years of continuous service to the State, the legislature cut the salary of the secretary from \$5,000 to \$4,000. A vote of thanks from the legislators and a substantial increase of appropriations for public-health work would have been a just reward, and an inspiration to the entire force engaged in conserving the public health. The board recognized that the reduction in salary relieved the secretary from giving his whole time to the board's work; a relief of which he did not, however, take advantage.

In 1913 the legislature partly made amends for its previous action, by changing the maximum salary of \$4,000 for the secretary to \$4,500.

Attorneys of the State Board of Health.

The State board of health is not authorized to employ attorneys. All legal advice is secured from the office of the attorney general, one of the assistants being detailed to attend especially to the legal work of the State board of health. Not only may advice be obtained, but the assistance of this attorney may be secured in prosecuting cases in court. If his services, for any reason, are not available, the attorney general may authorize the State board of health to employ a lawyer. This seems to be a satisfactory arrangement.

Office Hours.

The office hours of the different divisions of the State board of health are from 9 a. m. to 5 p. m., with an hour for lunch, making a working day of seven hours. On Saturday the hours are from 9 a. m. to 12 noon.

In the bacteriological laboratory there are two employees—a clerk and a laboratory boy—on duty Saturday afternoon and one-half of Sunday and holidays, receiving for such overtime 25 cents an hour in an amount not to exceed \$1. There is some one on duty in the bacteriological laboratory at all times of the day and night to receive cultures and place them in the incubator if necessary. Such night duty is performed by the night watchman employed by the university, and therefore does not count as overtime.

Other clerks employed in overtime receive their regular pay plus 5 cents per hour for stenographic work, provided the maximum pay per hour does not exceed 50 cents, and 25 cents per hour for ordinary copying.

An annual vacation of two weeks is allowed each employee.

The officials under the State board of health are all-time men, with the exception of the director of the division of sanitation, the consulting engineer, and the assistant director of the extension division. The two former are on the staff of the University of Minnesota and give part of their time to, and receive part of their salaries from, that institution. Such an arrangement is neither to the best interests of the State board of health nor to the university. A man can not serve two masters and serve them both well. He should look to either one or the other for his pay and authority, especially when both employers are State institutions. Perfect cooperation requires that the services of employees shall be loaned for short periods from one department to another if such services are needed, but reimbursement to the individual should come from one source only. This applies especially to directors of divisions, whose whole time should be given to their divisions.

THE DIVISION OF PREVENTABLE DISEASES.

At the meeting of the board of health held April 14, 1914, the board decided upon a reorganization of its divisions. Previous to this there had been a division of engineering, a division of epidemiology, and a laboratory division, which latter comprised the bacteriological laboratories (main and branch), the clinical laboratory in which the sewage and water work was done, and the Pasteur institute. The change consisted in separating the sewage and water work and placing it in a division of sanitation, and combining the bacteriological laboratory and Pasteur institute with the then existing division of epidemiology, thus making a new division, called the division of preventable diseases. This reorganization was a wise procedure, as it placed all the work in connection with the immediate control of preventable diseases under one head.

The division of preventable diseases is further subdivided, according to the nature of the work performed, into a subdivision of epidemiology, a subdivision of bacteriology, and a Pasteur institute.

The personnel of the division and their salaries at present are as follows:

SUBDIVISION OF EPIDEMIOLOGY.

1 director of division.....	\$3,500
2 epidemiologists, at \$2,400.....	4,800
1 stenographer.....	1,020
1 stenographer.....	780
1 typist.....	690
1 typist.....	525

SUBDIVISION OF BACTERIOLOGY.

1 chief, main laboratory.....	2,800
1 stenographer.....	1,030
1 clerk.....	540
1 head attendant.....	1,140
1 attendant.....	840
1 attendant.....	510
1 attendant.....	480
1 bacteriologist in charge, Duluth and St. Louis County branch laboratory.....	1,700
1 laboratory assistant and clerk.....	720
1 bacteriologist in charge, Mankato branch laboratory.....	1,000

PASTEUR INSTITUTE.

1 chief of Pasteur institute.....	3,000
1 attendant.....	600
1 caretaker, animal house.....	720

Duties of the division.—The subdivision of epidemiology has under its charge the epidemiological work, including the collection and disposition of morbidity reports and the study and control of preventable diseases.

The subdivision of bacteriology or main laboratory is concerned with the examination of cultures, blood specimens, etc., as an aid in the diagnosis of diseases and to determine the period at which quarantine or observation may be safely terminated. This subdivision is also responsible for the manufacture and issue of antityphoid vaccine, and has general supervision over the work of the branch laboratories.

The Pasteur institute is responsible for the manufacture of anti-rabic virus, the administration of antirabic treatment, and the laboratory diagnosis of rabies.

The activities of the division of preventable diseases will be taken up under the following headings: Notification of preventable diseases, control of preventable diseases, bacteriological work, and the Pasteur laboratory.

Notification of Preventable Diseases.

Requirements of law.—The law giving the authority to the State board to require the notification of preventable diseases is summarized as follows:

The board is required to gather, collate, and publish medical and vital statistics of general value.

It may adopt, alter, and enforce reasonable regulations relating to the reporting of sickness and deaths from communicable diseases.

Tuberculosis.—In addition there is a specific law requiring the reporting of tuberculosis which states that physicians must report to the State board of health on blanks furnished by the board full particulars of every person under their treatment suffering with tuberculosis within one week after the diagnosis has been made. Where local ordinance or regulations specify, the physician is required to report tuberculosis to the local health officer who then reports to the State board of health once a month.

Occupational diseases.—In addition to the above there is a law requiring the reporting of occupational diseases. This law depends upon the bureau of labor for its enforcement and reports are required to be made to the commissioner of labor. It is summarized as follows:

Physicians are required to report patients believed to be suffering from poisoning from lead, phosphorus, arsenic, mercury, or their compounds, or from anthrax, or from compressed-air illness contracted as the result of the nature of the patient's employment. The report must contain the name, address, and place of employment of the patient, the nature of the disease and any other information that may be required by the commissioner of labor. The commissioner of labor is empowered to call upon State or local boards of health for

assistance. Upon failure to report on the part of the physician there is provided a fine of not more than \$10 or imprisonment for not to exceed 10 days.

Requirements of regulations.—For the purpose of notification, diseases have been placed in two groups, the first group containing those which are rarely found within the State, and the second group those which are more or less common.

In the first group are:

Actinomycosis.	Paratyphoid fever.
Anthrax.	Pellagra.
Asiatic cholera.	Plague.
Dengue.	Rabies (human cases and exposed persons).
Dysentery (a) amebic, (b) bacillary.	Rocky Mountain spotted or tick fever.
Glanders.	Trichinosis.
Hookworm disease.	Typhus fever.
Leprosy.	Yellow fever.
Malaria.	
Paragonimiasis.	

A case, or suspected case of, or death from, any of these diseases must be reported immediately by telegram or telephone to the division of preventable diseases; and it is the aim of this division to investigate in each instance and then issue the necessary instructions to local health officers.

In the second group are placed:

Anterior poliomyelitis.	Rabies (person exposed to, etc.).
Cerebrospinal meningitis.	Scarlet fever (scarlatina, scarlet rash).
Chicken-pox.	Smallpox.
Diphtheria (laryngeal croup; membranous croup).	Trachoma.
Erysipelas.	Tuberculosis.
Measles.	Typhoid fever.
Ophthalmia neonatorum.	Whooping cough.

A case, or suspected case of, or death from, any of these diseases must be reported on a regular reporting post card by the attending physician or other person to the local health officer or to the chairman of the board of supervisors, as the case may be. Specific regulations for the control of these diseases have been promulgated by the State board of health to be enforced by the local health officer.

All communicable diseases occurring among inmates or employees in State institutions must be reported by the superintendent to the division of preventable diseases as well as to the local health officer within 24 hours after the disease is discovered.

Collection and disposition of morbidity reports.—The local health officers always forward original reports to the division of preventable diseases and keep a transcript in the local health office. This is the proper way. The procedure is not required by either law or regulation, but rather by instruction and custom.

There are but two cards used in the notification of diseases—one for smallpox and one for all other diseases. In addition data report cards accompanying specimens submitted for bacteriological exami-

nation are of post-card stock and contain all necessary information and are accepted and filed in lieu of original morbidity reports.

The epidemiologists of the division see promptly all morbidity report cards that they may familiarize themselves with new foci of infection and study the progress of the disease in any locality.

As soon as the morbidity reports are received in the division, a clerk stamps them with the date of receipt and examines them to determine if any are duplicates. If so, and if there is any additional information on the duplicate, it is entered on the original and the duplicate destroyed. At the same time certain information is taken from the completed morbidity report for future statistical purposes, monthly report, etc., as follows:

All reports of notifiable diseases are entered in a loose-leaf ledger showing each disease by month, county, and sanitary district. This serves as a monthly report for the secretary of the State board of health, and a copy of it goes to the newspapers of the larger cities of the State. Every county auditor receives that part of the report which refers to his county. The report is accompanied by a summary of all diseases occurring in the State, and a circular letter commenting on the incidence of disease within the State, the methods of transmission, and the precautions to be taken to prevent their spread. This letter is written for laymen and serves in part as a popular bulletin.

All diseases are classified for the month on county sheets, according to age groups and sex. In addition to these county sheets cases of anterior poliomyelitis, cerebrospinal meningitis, and typhoid fever are also classified on separate monthly sheets according to sanitary districts and sex and age groups. Similarly cases of scarlet fever, diphtheria, and tuberculosis are classified, but only those occurring in sanitary districts having a population of 1,000 or over. Cases of smallpox are classified according to sanitary district, age, sex, and vaccination status.

Reports are transmitted monthly to the Surgeon General of the United States Public Health Service giving the information agreed upon by the conference of State and Territorial health officers with the Public Health Service.

When all of the information has been entered on the above sheets, the card is checked and placed in a temporary or permanent file, depending upon whether or not it is to be used later in the "follow-up" system.

The vital statistics division forwards a report of each death due to a notifiable disease (except tuberculosis), and if the morbidity files contain no previous report of the case it is followed up and full particulars are obtained. The slips filled out by attending phy-

sicians using antitoxin, issued through the State board of health, are returned and similarly checked up, as are also unofficial notices of cases of sickness, such as newspaper clipping, etc.

It is of interest to estimate the completeness with which cases of the notifiable diseases occurring within the State are reported. A seemingly unusually high case-fatality rate probably in most instances indicates an incomplete reporting of cases.

For the year 1913 there were reported to the State board of health 3,073 cases of diphtheria with 211 deaths, giving a fatality or case-mortality rate of 6.8 per hundred cases. From this figure it is fair to assume that most, if not all, of the diphtheria was reported, as this is a low fatality rate, especially when it is remembered that many of the cases occurred in rural communities where prompt treatment can not always be administered, and that the poor who can not always afford antitoxin probably had their usual share of the disease. It should be pointed out here that diphtheria antitoxin should be made freely available throughout the State, and the necessary funds for this purpose should be supplied by the State in the interest of the public health.

There were also reported in 1913, 3,487 cases of scarlet fever with 174 deaths, or a case-fatality rate of 5 per 100 cases, and 5,869 cases of measles with 192 deaths, or a case-mortality rate of 3.2.

Every health authority knows full well that a proportion of the cases of scarlet fever and measles are usually not reported for several reasons, among these reasons being that in very mild attacks a physician is not called in, or a correct diagnosis frequently not made; again, the physician may be called in for the first case and subsequent cases in the household treated without his knowledge. It not infrequently happens also that physicians consider they have done their duty when they have reported the first case in a family, regardless of any other cases that may subsequently develop. At any rate the case-mortality rates given above are probably too high, and should not be over 3 per cent for scarlet fever and 1 per cent for measles, which would mean that there probably occurred in Minnesota in 1913, approximately 5,803 cases of scarlet fever and 19,200 cases of measles, assuming that the death records show the number of deaths from these diseases.

In the same year there were 1,297 cases of typhoid fever reported with 227 deaths, or a case-mortality rate of 17.5 per cent. The true case mortality from typhoid is probably not greater than 4 per cent and so, basing the calculation on this figure, there should have been about 5,675 cases reported to the health department.

Likewise, many cases of tuberculosis were obviously not reported, as there were 2,516 cases with 2,227 deaths occurring in 1913, or a case mortality of 88 per cent. While a regulation requiring the reporting

of tuberculosis has been in existence since 1904, the specific law on the subject was not passed until 1913. Before the law was passed the State board had no adequate facilities for handling the disease even when it was reported, but with the new law, which carries with it a provision requiring under certain conditions that counties build and maintain sanatoria, energetic efforts will be made to have all cases properly reported.

There were 2,866 cases of smallpox with 7 deaths, giving a case-mortality rate of 0.24 per cent, or 1 death in 409 cases. It would be interesting to carry on a series of experiments in cross immunity to determine the identity of this mild infection with the virulent types of smallpox occurring in the United States.

The Control of Preventable Diseases.

In studying the activities of the division of preventable diseases in the control of disease it will be necessary to divide them into two general heads—the office work and the field work. Under the former is included a description of the important “follow-up” system which the chief of the division has devised to keep better track of certain of the diseases, especially those which are quarantinable under the regulations. Inasmuch as the division conducts important field operations and has made many valuable investigations and studies, these will be given special consideration.

Requirements of law.—The law bearing on the control of disease is summarized as follows:

The State board of health has the power to adopt, alter, and enforce reasonable regulations relating to the treatment in hospitals and elsewhere of persons suffering from communicable disease and the disinfection and quarantine of persons and places in case of such disease.

The board is empowered to establish and enforce quarantine against the introduction into the State of any communicable disease by common carriers.

Members, officials, and employees of the State and local boards of health have the right to enter into all places in the performance of their duty. Any person who attempts to prevent such entry or in any way willfully interferes with the health officer in the discharge of his duties is guilty of a misdemeanor.

The suppression of disease is a function of the local board of health and the expense is to be borne by the locality. If the local board refuses to perform its duties the State board of health may take the necessary action and charge it against the locality.

The law requires that the expense of caring for a person suffering with a communicable disease, the isolation and the disinfection are chargeable against the family in which the case occurred, and may be collected either by the person performing the work or by the county, town, or municipality. The law specifies the procedure to be used in collecting such expense.

It is prohibited for any person willfully to expose himself or another affected with a communicable disease in any public place or thoroughfare.

If a communicable disease appears in any jail, the warden, with the approval of the board of health, may remove the prisoners who are sick, to prevent the spread of the disease.

The use of common drinking cups in public places, public conveyances, and public buildings is prohibited. For violation there is provided a fine not exceeding \$25.

Requirements of regulations.—The regulations for the control of communicable diseases have been divided into general and specific regulations, the first applying more or less to all of the communicable diseases and the second referring to certain specific diseases only.

A summary of the general regulations is as follows:

Health officers suspecting the presence of any communicable disease must investigate immediately and take all necessary measures. They must report the case, the measures taken, and the date of quarantine release to the division of preventable diseases.

It is prohibited to alter, deface, destroy, etc., any notice relating to a communicable disease. The occupant or person in control of a building upon which such notice is posted is held responsible and must report within 24 hours any destruction or unauthorized removal of this notice.

If a case of diphtheria, scarlet fever, smallpox, trachoma, tuberculosis, or typhoid fever occurs in a common lodging house or hotel, it must be removed by the local health officer, if necessary, to a suitable hospital or place of quarantine. If for any reason the case can not be removed, other persons in the house may be removed after the necessary disinfection has taken place.

No house, building, vessel, vehicle, or article that has been occupied or used by a person ill with a communicable disease can be occupied or used again until thoroughly cleansed.

When infected articles can not be disinfected they may be destroyed at the expense of the sanitary district.

When any order of the local health officer relating to disinfection or cleansing is not complied with, the apartment or premises must be placarded to the effect that they have harbored a communicable disease; that they may be infected; and that they can not be occupied until cleansed and disinfected.

Library books which have been used in a house where there is diphtheria, scarlet fever, smallpox, typhoid fever, or pulmonary or glandular tuberculosis in the infectious stage must be destroyed at the termination of the disease, and it is not permitted to loan library or school books to persons residing in a house where such disease exists.

Bodily discharges must be disposed of without causing offense or danger to others. It is the duty of a person affected with a communicable disease or having charge of a patient so affected to disinfect bodily discharges, to properly screen from flies or other vermin, and to destroy flies or other insects discovered in the sick room. Dogs, cats, or other household pets must be kept out of rooms where communicable diseases are being treated.

Dairy or food products which may be eaten uncooked must not be sold or given to any person from a house where diphtheria, scarlet fever, typhoid fever, or smallpox exists, nor may any person resident in such house handle any of these products offered for sale. If the disease occurs on a farm the sale of its products is forbidden except when those having to handle the food sleep away

from the infected house and have no connection with any person coming from that house.

It is the duty of the local health officer to see that the above regulations are carried out.

Bodies dead of communicable disease must be prepared for burial by a licensed embalmer only.

A person having a communicable disease or residing in a house where such disease exists or has recently existed must not attend any school until permission is received from the local health officer. Parents or guardians must prohibit children under their charge from attending school under these conditions. A schoolhouse wherein a case of smallpox, scarlet fever, or diphtheria has been present must be closed and not opened again until thoroughly cleansed under the supervision of the local health officer.

The above regulations apply in a general way to all the communicable diseases. The special regulations are summarized as follows:

In the case of anterior poliomyelitis, cerebrospinal meningitis, and whooping cough, the patient must be isolated for at least two weeks after the first symptoms appear. The room must be screened against flies or other insects during the course of the disease and convalescence.

In the case of anterior poliomyelitis, cerebrospinal meningitis, diphtheria, measles, scarlet fever, smallpox, tuberculosis, typhoid fever, and whooping cough the nose, throat, and mouth discharges must be received on cloths and burned at once. Bowel and bladder discharges must be disinfected before being discharged in a sewer or cesspool. If no sewer or cesspool exists, the discharges must be disinfected and buried, so as to prevent the access of flies. All articles exposed to possible infection must be properly disinfected.

In the case of death from anterior poliomyelitis, cerebrospinal meningitis, diphtheria, scarlet fever, and smallpox the funeral must be strictly private.

In the case of anterior poliomyelitis, cerebrospinal meningitis, and whooping cough children in the house and persons associated with the patients must be kept under observation for two weeks after last exposure, and during that period must not attend any school or public or private gathering.

Anterior poliomyelitis.—The house must be placarded with the statement that anterior poliomyelitis exists on the premises.

Cerebrospinal meningitis.—The house must be placarded with the statement that cerebrospinal meningitis exists on the premises.

All doubtful cases of cerebrospinal meningitis must be classed as epidemic in form.

Chicken-pox.—The house must be placarded with the statement that chicken-pox exists on the premises. Cases of chicken-pox in persons of 16 years or over must be examined by the local health officer, who must record whether the patient has been successfully vaccinated against smallpox.

Contacts who have had chicken-pox may attend school with the permission of the health officer. Contacts who have not had chicken-pox are not permitted to return to school until two weeks after the disease has disappeared.

Diphtheria.—The house must be placarded with the statement that diphtheria exists on the premises and forbidding people to go into or leave the house without permission. Laryngeal croup and membranous croup must be classed and quarantined as diphtheria.

In suspected cases only the placard shall have the word "Suspected" over the word "diphtheria." Health officers or attending physicians must take nose

and throat cultures and submit them to the division of preventable diseases. If the laboratory reports "Reserved; send another specimen," the house shall remain placarded. If the laboratory reports "Diphtheria," the word "Suspected" alone may be removed from the placard. If the laboratory reports "No diphtheria bacilli found," and the clinical symptoms are not those of diphtheria, the placard may be removed.

Before quarantine may be released two successive negative nose and throat cultures are required. If the patient lives more than 2 miles from a city or village, quarantine may be removed three weeks after all clinical symptoms have disappeared, or earlier if the two successive negative cultures are obtained. No case can be held in quarantine more than six weeks after all clinical symptoms have disappeared.

Contacts must be quarantined unless the case is adequately isolated.

When properly isolated and negative cultures are obtained from contacts, they may carry on their occupations provided they do not come in contact with the patient, the room, etc.

Patients released from quarantine will not be permitted to attend school or other public gathering until two successive negative cultures have been reported.

Contacts wishing to leave premises before quarantine is raised may do so if the cultures from their nose and throat are negative and if they take the proper precautions as to disinfection, etc.

After fatal cases members of the household can not be released from quarantine until the above measures have been taken.

The control of diphtheria in public institutions is governed entirely by laboratory examinations. Persons showing diphtheria bacilli must be quarantined. When one negative culture is obtained they must be disinfected and removed from quarantine, but placed in detention quarters. When two more successive negative reports are obtained they may be released.

Cultures for release must be taken with at least 24 hours intervening.

Findings must be made by the division of preventable diseases or a laboratory having the official indorsement of the State board of health.

Erysipelas.—The house must be placarded with the statement that erysipelas exists on the premises. Cases must be isolated; articles exposed to infection disinfected; discharges from the mucous membranes of the patient received on cloths and burned.

Midwives coming in contact with erysipelas are prohibited from attending a case of confinement, from caring for young children, or handling dairy products, until two weeks have elapsed.

Measles.—The house must be placarded with the statement that measles exists on the premises.

Children are forbidden to leave the premises without the permission of the health officer.

The placard must be kept on the house for 10 days after the disappearance of the disease.

Ophthalmia neonatorum.—When the eyes of an infant become inflamed, reddened, or diseased at any time within two weeks after birth, it is the duty of the midwife, nurse, parent, etc., to report the facts to the local health officer. It is the duty of the local health officer to investigate, and unless the case is under the care of a physician he must give the instructions for treatment and the precautions to be taken to prevent the spread.

Rabies.—When any person is attacked by a rabid animal, or an animal supposed to be rabid, the fact should be reported to the State board of health, which

will determine the advisability of giving the person so bitten the Pasteur treatment.

Scarlet fever.—The house must be placarded with the statement that scarlet fever exists on the premises and that persons are forbidden to leave or go into the house without permission.

In suspicious cases the placard is to contain the word "Suspected" above the words "Scarlet Fever." If the case prove to be scarlet fever the word "Suspected" is removed. If the case prove not to be scarlet fever quarantine is removed.

Unless death occurs earlier, quarantine is never to be less than three weeks from the date of appearance of first symptoms, and may be longer if the condition of the nose, throat, or ears is not normal.

No patient may attend school after quarantine is released until a second examination shows that the nose, throat, and ears are still in normal condition. If an ear discharge exists the patient shall report weekly for examination.

All contacts must be quarantined unless the patient is well isolated. Members of the household may then carry on their occupations except those whose work brings them in contact with children. Contacts under quarantine may be released before the quarantine is removed if they are found to be free of symptoms and not likely to develop the same, provided they agree to report immediately to the health officer should any symptoms develop within 10 days after their release. Clothing must be disinfected.

Trachoma.—School teachers, employers, superintendents, foremen, etc., must report any person having inflamed eyes or who complains of sore or roughened lids. It is the duty of the health officer to investigate such report, and if he finds trachoma or suspected trachoma he must give written directions for the treatment and the precautions to be taken to prevent the spread of the disease. If the circumstances warrant it, the case must be removed to a hospital or other suitable place, quarantined, and treated during the active period.

No person affected with trachoma or suspected trachoma is permitted to attend school without a written permit from the health officer.

Typhoid fever.—The house must be placarded to the effect that typhoid fever exists on the premises.

The patient's room must be screened.

Convalescents must not handle any dairy products or other food products liable to be eaten raw if offered for sale until authority to do so is received from the local health officer.

When typhoid fever prevails in a locality the local board of health is required to appoint immediately an inspector or inspectors who shall report to the local board of health all closets that are not fly proof and vaults and cesspools that are not water-tight and fly proof. Drinking water which is considered a possible source of infection must be condemned.

Whooping cough.—The house is to be placarded to the effect that whooping cough exists on the premises.

Smallpox and vaccination.—The law on the subject of smallpox and vaccination is very meager and is a handicap rather than an assistance to the State board of health, as it distinctly limits their actions in the enforcement of vaccination.

The following is a summary of the law relating to vaccination:

Requirements of the law.—The State board of health may furnish vaccine matter and must prohibit the assembling during epidemics of smallpox of persons not vaccinated. The board, however, can not compel the vaccination

of a child, or exclude such unvaccinated child from school except during epidemics of smallpox and when approved by the local board of education. A person may select any physician he may wish to perform the vaccination.

The power which is given to the board of health seems to depend on whether smallpox is epidemic. In other words, it is necessary to wait until the whole town is afire before the fire department can act. In order to handle the question, certain regulations had to be made which would in part answer the purpose and at the same time not conflict with the law.

While the law interferes with the board of health in its vaccination campaign among school children, it does not prohibit the closure of schools in case of the appearance of smallpox. This has been taken advantage of in the regulations by requiring that unless the necessary vaccination has been made among the pupils schools must be closed.

Requirements of regulations.—The following is a summary of the regulations:

All officials and employees of State institutions whose duties bring them into contact with the wards of the institution are required to be successfully vaccinated.

If smallpox prevails in a community or appears in a school, all unvaccinated teachers and pupils must be excluded for a period of three weeks unless vaccinated within three days of first exposure. Failing to comply with this, the school must be closed for a period of three weeks.

If smallpox appears in any class in any college in Minnesota, all unvaccinated teachers and students in the class must be excluded for a period of three weeks unless vaccinated within three days of first exposure. Failing to comply, the class must be discontinued for a period of three weeks.

The house must be placarded to the effect that smallpox exists on the premises. Patients must not leave the house until the card is removed.

Contacts who can not show evidence of recent successful vaccination, or of having had an attack of smallpox, must either be vaccinated within three days of first exposure or isolated 21 days after last exposure.

Only persons protected by vaccination are allowed to go into or leave the house.

All of this information is contained on the placard.

Tuberculosis.—In 1913 a law was passed adding to the laws already enacted for the control of tuberculosis. A very important provision of this law empowered the counties to erect and maintain county sanatoria for the treatment of tuberculosis, especially the advanced cases.

Requirements of law.—The laws relating to tuberculosis are summarized as follows:

County commissioners of any county have the power, with the approval of the advisory commission of the State sanatorium for consumptives, to establish and maintain sanatoria. These county sanatoria are controlled by a county sanatorium commission, composed of three members appointed by the county commissioners. One of these members must be a physician approved by the

State board of health. Several counties may unite in providing one sanatorium. The plans for such sanatoria must be approved by the State board of health as to the sanitary provisions.

Under the provisions of the law the State is empowered to furnish one half of the expense of construction and equipment, provided that such sum does not exceed \$50,000, and for the maintenance of each free patient treated in a county sanatorium the State is authorized to pay \$5 per week to the county. To cover these expenses the State appropriated \$250,000. The law goes into detail as to the methods to be pursued in carrying out its provisions.

In penal and charitable institutions tuberculosis patients must be treated in separate wards or rooms.

The health officer has the right to report to the board of county commissioners that any case of tuberculosis is a menace to the public, and such board has the right to order the patient removed to a hospital for treating the disease, where he must remain until properly discharged.

Teachers afflicted with pulmonary tuberculosis are prohibited from attending school unless they have a certificate from the health officer that they are in no danger of spreading the disease. This applies to pupils as well.

Where tuberculosis patients have ceased to occupy any apartment by reason of death or removal, the health officer must be notified, when the apartment must be disinfected and renovated before it can be used again.

Where the requirements of the regulations are not carried out by the owner or occupants of the apartments, a placard must be posted stating that tuberculosis is a communicable disease, and that the apartments can not be occupied until disinfected or renovated.

It is unlawful for any person having pulmonary tuberculosis to dispose of the sputum, saliva, or other secretions or excretions so as to cause offense or danger to another person. A person violating this law is guilty of a misdemeanor.

Active tuberculosis or other communicable disease is sufficient cause, under the law, for the suspension of the certificate of any teacher.

Requirements of regulations.—A summary of the regulations for the control of tuberculosis is as follows:

Where the patient is not taking the proper precautions the house must be placarded to the effect that tuberculosis exists.

No person affected with pulmonary or glandular tuberculosis in the infectious stage is permitted to handle any dairy products or other food products likely to be eaten raw if such foods are offered for sale.

The infectious stage is, according to the regulations, the period or periods, following the positive clinical diagnosis of tuberculosis or the demonstration of tubercle bacilli in the sputum or other discharge, during which there is coughing with expectoration or during which there is a discharge through the mouth or from infected glands.

The law authorizing the establishment of sanatoria should be of great aid to the State in combating tuberculosis, as these sanatoria may be utilized for advanced cases which are a menace to the community. It is to be hoped that all counties will see the necessity for them and will construct them as soon as possible. It seems to be true that little effect is produced on the incidence of the disease when the cases are permitted to remain at home, for even those who are

most careful will almost certainly, without knowing it, disseminate tubercle bacilli. The county commissioners have the power to commit any patient to a sanatorium for tuberculosis who does not or can not take the proper precautions to prevent the spread of the disease. This is a wise provision.

The State board of health has recently outlined a comprehensive campaign against tuberculosis which will shortly be put into operation. It will include a survey of a county, instructions to all cases and isolation of open cases of the disease, and the hospitalization of patients who can not be adequately isolated at home. In lieu of a hospital for the purpose it will be necessary for the locality to employ a nurse in indigent cases. A strong effort will be made to induce the county commissioners to erect a sanatorium. In fact, it is to the financial as well as the health interests of the people of a county to have such a place in which to isolate tuberculosis patients, as they will then receive State aid, the expense being borne one-half by the county and one-half by the State. Otherwise the expense must be borne one-half by the county and one-half by the township.

It should be mentioned here that the antisputting ordinances of the State can be enforced only against those having tuberculosis.

"Follow-up" system.—The "follow-up." system as used in the division is applied to anterior poliomyelitis, cerebrospinal meningitis, typhoid fever, tuberculosis, and especially diphtheria and scarlet fever.

As the report received, notifying the division of any one of the first four diseases, does not contain all of the information necessary for thorough study, unless an epidemiologist of the division personally investigates the case, a supplemental report blank is sent to the physician requesting further information. Until the supplemental report is returned, properly filled out, the original report card is placed in a temporary or "daily reminder" file. When returned, the supplemental is attached to the original report, which is placed in a permanent file after all necessary action has been taken. Poliomyelitis and cerebrospinal meningitis are seen by an epidemiologist if one is available.

Circulars of information and instruction to physicians, patients, and contacts are sent out to the attending physician immediately upon the receipt of a report of tuberculosis or of typhoid fever. In each case the present circulars are to be revised, making them of uniform size and incorporating the information in one circular instead of several circulars, as at present.

No supplemental information is required for tuberculosis at present, but there is about to be put into effect a system whereby certain cases will be followed up. All institutions will be required to report the admission and discharge of patients suffering from tuberculosis.

Upon admission, if the case has not been reported previously, the health officer will be communicated with and instructed to visit the family from which the patient came, to determine if there are any other cases of the disease present in the same household. The health officer will also be notified upon the discharge of a patient, so that he may be able to maintain proper supervision over such case. Whenever a physician reports a case of tuberculosis, if no sputum examination has been made by him within the year, he will be sent a sputum outfit so that he may submit samples for examination, and a circular letter of instructions will be sent direct to the patient instead of to the physician.

The "follow up" system as regards scarlet fever and diphtheria, two quarantinable diseases, is more intricate. A careful record is kept of the periods of quarantine and the time of release of patients.

In working out periods of quarantine a date-calculating machine devised by the chief of the division is employed. It consists of a dial about 16 inches in diameter with its circumference divided into 365 equal segments representing the days of the year and into 12 sectors representing the months of the year. Each sector representing a month includes as many of the segments as there are days in the months. A T-shaped arm pivoted at the middle of the disk moves around the circumference, covering about 44 day segments at one time. In it are cut 4 slits each the size of a segment, the first near the left edge and the others 21, 28, and 42 segments from the first. In using this machine the first slit is placed over the date of first appearance of symptoms, and the second, third, and fourth slits will then be over the date at which a three weeks, four weeks, or six weeks' quarantine would expire.

In scarlet fever the minimum period of quarantine of premises is three weeks after the date of appearance of first symptoms of the last case in the house.

All original reports of this disease are placed in a temporary file until the quarantine is raised, and the raising of quarantine must be reported by the local health officer upon a regular form known as the "quarantine release" card. Upon receipt this card is attached to the original report. The reports are gone through daily and periods of quarantine checked. If quarantine has been raised too soon, a letter is addressed to the health officer requesting information as to why the regulations were not followed. If the period of quarantine has expired and the health officer has sent in no "release card," a form letter is addressed to him requesting him to insert the necessary information as to the release of the patient. A stamped envelope accompanies this request, and upon its return properly made out it is filed with the original report in lieu of a regular "quarantine release" card.

In diphtheria the minimum period of quarantine without cultures is three weeks after the date of disappearance of all symptoms, which would mean, assuming that the case has received antitoxin, that the average time would be about four weeks from the appearance of first symptoms. No case may be kept in quarantine longer than six weeks after disappearance of symptoms.

For purposes of control, diphtheria patients have been divided into those living in cities and villages or within 2 miles of cities or villages, and those living outside of this limit. This distinction has been made because it is difficult for health officers to properly supervise patients too far removed from urban communities.

In the first instance patients must remain in quarantine for the maximum period unless two successive negative cultures from the throat and nose, taken not less than 24 hours apart, are obtained.

In the second instance, patients may be released from quarantine at the end of the minimum period of three weeks without the submission of cultures.

In either instance the finding of two successive negative cultures permits the release of the patient in less than the minimum period, and such negative cultures are always required before a patient, either pupil or teacher, may return to school.

No primary cultures are required except where the clinical diagnosis is in doubt. Physicians should, however, send specimens as a matter of routine not only to confirm their clinical diagnosis, but as a matter of self-protection against suits for having used antitoxin unnecessarily.

Upon the receipt of the notification of a case of diphtheria, either by a morbidity report card or through the laboratory, a letter is addressed to the physician, pointing out the regulations of the State board of health in the care of diphtheria. If the relation of a township case to the 2-mile limit or to school attendance is not given, a card is addressed to the health officer requesting this information.

Where the report of the release of the patient has not been received as required by regulation, a letter is addressed to the health officer requesting the information. The reply when received is filed with the original report in lieu of a proper "quarantine release" card.

Upon the finding of two negative cultures in cases outside of the 2-mile limit, a card known as "Health officer's certificate" is sent to the health officer authorizing the readmission of the patient to school if a pupil or teacher.

The management of diphtheria in public institutions is based entirely upon results of laboratory examinations. Cultures are taken from all persons presumably exposed to infection in the institution. Those having diphtheria, or being bacillus carriers, are rigidly quarantined. Upon obtaining the first negative culture they are released

from quarantine but segregated from the other inmates. Upon the obtaining of two more successive negative cultures, they are relieved from all quarantine restrictions.

A virulence test is always made where bacilli persist in the throat or nose for 30 days or longer. If the organisms are nonvirulent no further precautions are taken. If they are virulent, the carrier is prohibited from attending school or business. This virulence test is made as a routine matter in the case of all cultures taken after 30 days have elapsed from the date of appearance of first symptoms.

In outbreaks of diphtheria in a school, the method of handling is based to a large extent on the results of examinations of nose and throat cultures of all pupils and teachers in the institution. All those having the bacilli in nose or throat, and all contacts which can not be adequately protected by isolation of patients in the home, are excluded from school and carefully watched. Others are permitted to attend school.

The reports of findings of the laboratory are filed in the laboratory, notations being made on the original report card filed in the subdivision of epidemiology. When a case has been satisfactorily disposed of the original report, with the report of quarantine release, is taken from the running file and placed in a permanent file by county and disease.

All cards used in the division are of uniform size for convenience in filing.

Branch laboratories transmit daily the reports of all specimens examined by them and the cases are followed up as when reported by practicing physicians.

In connection with epidemiological studies information is always obtained as to the number of people who have developed the disease and left the locality for other parts of the State or for other States, and immediate notice is sent to the interested health officers, so that they can take the proper action without delay. This reciprocal notification is very important, especially to the health department of the locality to which the case went. On account of the efficient reporting of diseases, the follow-up system and prompt field investigations, the State of Minnesota is in especially good position to furnish this information.

Since the inauguration of the follow-up system a marked increase has taken place in the number of cases of diseases notified to the health department. In the biennial period of August 1, 1910, to August 1, 1912, before the system was in use, there were 16,436 cases of disease reported, while during the single year ended July 31, 1914, there were 20,292 cases reported.

Field investigations.—There are two epidemiologists engaged in field work, and they are kept busy all of the time. In addition, another epidemiologist has been provided for. The director of the division, who is himself an expert in epidemiology as well as bacteriology, and a special agent also carry on a certain amount of investigation in the field. Much of the director's time, however, is necessarily consumed in office work. During the year ended July 31, 1914, there were 250 investigations of this kind made in 63 counties. The investigations included studies of outbreaks of typhoid fever, scarlet fever, measles, smallpox, chicken-pox, diphtheria, poliomyelitis, and other diseases.

In reporting results of routine investigations an effort is made to be as brief as possible, and the report is always confined to one type-written page. A set form is followed, starting with a summary, then the authority, the reason for the investigation, the history of the outbreak, the activities of the inspector, the results of the investigation, and the time taken to complete it. Names are considered as confidential information, entered on a separate confidential sheet, and referred to in the report by initials only. A report can thus be published without mentioning any particular person. Any other information of a confidential nature is treated in the same way.

In addition to routine investigations, special studies have been carried on in the field relative to tuberculosis.

Two series of such studies were made, one by a special epidemiologist and one by a special agent. The epidemiologist was a physician, and the investigations were made from the standpoint of the physician, even to the use of the von Pirquet reaction for determining the presence of the disease in children. The special agent was not a physician, but was familiar with antituberculosis work from the standpoint of a layman. While he was unable to make the diagnosis in all suspected cases, he submitted samples of sputum from patients for examination in the laboratory. In both instances the results were somewhat similar. These investigations covered a territory comprising eight counties.

More recently, since the passage of the law providing for county tuberculosis sanatoria, a survey for tuberculosis was made in Blue Earth County, including the city of Mankato. The investigation in the rural communities is not quite completed. All families were visited who had had a death from tuberculosis in the last four years, or in which tuberculosis had been reported by a physician.

A summary of the results of the survey in Mankato City only is as follows:

Twenty-one families could not be located.

The number of families examined was 49, in 22 of which no further cases of tuberculosis were found. However, the deaths reported in 7 of these 22 fami-

lies were due to meningeal or peritoneal tuberculosis, not dangerous from the standpoint of communicability as compared with pulmonary tuberculosis.

In 27 families, representing a total of 96 persons, there were 54 who showed evidence of pulmonary tuberculosis, 33 of whom were advanced cases, 14 moderately advanced, and 7 incipient. The diagnosis depended on physical examination. The von Pirquet reaction was not utilized.

In following up information given by the families examined, 27 unreported cases were discovered, 17 of which were open cases, and only 2 of these patients were taking precautions to prevent the spread of the disease.

Most of the families in which tuberculosis was present were unable financially to provide suitable treatment or isolation for the patients.

Bacteriological Work.

As previously stated, the bacteriological laboratories (main and branch) of the State board of health form a subdivision of the division of preventable diseases.

Duties of the bacteriological laboratory.—The laboratory, like other laboratories of its kind, assists the health officers in the diagnosis of communicable disease by the examination of culture materials and the like. It is also concerned with the manufacture and disbursement of antityphoid vaccine and the issuance of mailing outfits to physicians in order that they may submit specimens for examination. In the diagnosis of diseases the work is confined almost entirely to diphtheria, typhoid fever, and tuberculosis. Antitoxin for diphtheria is not issued by the State free of charge, and, although vaccine against smallpox may be so furnished, there is practically no demand for it, and it is therefore not kept in stock. Local authorities are expected to furnish it when necessary.

Mailing outfits.—There are four mailing outfits issued from the laboratory. The one for diphtheria consists of two tubes of Loeffler's blood serum, plugged with cotton and capped with a rubber cap. One of the tubes is intended for the nose and one for the throat swabbings. There is also a tube containing two sterile swabs. These are securely packed in cotton and inclosed in an approved mailing outfit, with instructions to the physician for taking swabbings, and with a card to be filled out with full data on the case. Experiments carried on by the laboratory have demonstrated that the use of swabs, as practiced in some States, is not productive of the best and most accurate results. In Minnesota it has been found that far better results are obtained from the use of blood serum inoculated at the bedside than by the inoculation of blood serum in the laboratory from nose and throat swabbings sent in from a distance. The results depend mainly upon the amount of drying which has taken place, and the swab, after inoculation, will dry out much quicker than the inoculated culture media. The uninoculated tubes of culture media are good for one year and will, in fact, stay in moist condition longer unless the rubber cap is broken.

The outfit used for sputum consists of a wide-mouthed bottle containing a small amount of 5 per cent carbolic-acid solution and stoppered with a cork. This is also placed in an approved mailing outfit with necessary instructions to the physician and the patient relating to the collection of sputum for examination. There is also inclosed a card to be filled in by the physician giving full data on the case.

The mailing outfit for specimens of dried blood for Widal reactions consists of an envelope inclosing an aluminum foil, necessary directions for the collection of the sample, and a card to be filled in with full data on the case. All data cards are of the same size as the morbidity report card, contain full information, and may be filed in lieu of an original morbidity report.

The outfit used in the case of cerebrospinal meningitis consists of a bottle with a rubber stopper, the stopper having two perforations. Through one perforation passes a glass tube, open at both ends, to the upper end of which is attached a rubber tube. Through the other hole passes a small glass tube closed at its upper end and perforated at its side by a small hole. This is merely for the purpose of permitting air to escape as the cerebrospinal fluid runs into the bottle, and when collected the small tube is pushed in, thus sealing the hole. The entire outfit is sterilized and protected by a cloth covering. When material is to be collected the cloth covering is removed, an aspirating needle is inserted into the spinal canal, and then attached to the end of the rubber tubing, and the outfit is ready for use.

Methods of procedure.—When specimens are received at the laboratory the culture tube or other container is stamped with a number, and a corresponding number placed on the data card. There is also made out a report blank, the clerk filling in the necessary information to identify the specimen and the bacteriologist inserting the diagnosis in writing over his signature after the examination is completed. The card, with its specimen, is then placed in a tumbler, and in the case of diphtheria the whole is put into the incubator. Ordinarily these cultures go into the incubator about 3 o'clock in the afternoon and are examined the next morning about 8. In examining them a long glass slide is used and a number of different specimens stained on the same slide, each being allotted its corresponding number. The type of organism is always specified.

Reports are made in triplicate, the original being filed in the laboratory, the duplicate going to the physician, and the triplicate to the health officer. If the report is on a culture submitted for release of quarantine, under remarks is placed either "First negative. Keep in quarantine," "First negative. Repeat test," "Final negative.

Patient may be released by health officer," or "Final negative. Issue health officer's certificate," depending on the circumstances.

In addition to the examination of cultures for *B. diphtheriae*, the organism is as a matter of routine tested as to virulence when it persists in the throat or nose 30 days or longer. Guinea pigs are used for the test.

All results of examinations of specimens from the same case are placed in a filing envelope, on the outside of which is all the necessary data for identification. Files are kept according to disease, county, and township, with names of patients in alphabetical order.

In the case of tuberculosis, after the specimen is stamped, it is taken immediately to the desk where the examinations are made by the bacteriologist. The modified method is not used, i. e., antiformin and legroin, it having been found in the laboratory that the benefits derived from this method are so very slight that they do not compensate for the extra work.

Blood specimens for Widal reaction are likewise taken immediately to the desk where the Widal reaction is determined, and the report and file are kept as in the case of other diseases.

Many routine investigations of stools are also made to determine the presence of "typhoid carriers," especially in institutional outbreaks.

Daily reports are kept, showing each specimen examined and the results.

It is suggested that all reports relating to the same case might well be filed together, these to include the original morbidity report as well as all laboratory reports.

The laboratory furnishes the media and sterilizes the glassware used in the division of sanitation in water, milk, and sewage analysis.

The laboratory is well equipped for any work that it may be called upon to do.

The routine work has greatly increased in the last year or two, and most of it is performed by the chief of the laboratory. There is sufficient work to occupy two additional bacteriologists.

Branch laboratories.—For the convenience of physicians and health officers, and at their request, branch laboratories have been established by the State board of health at Mankato and Duluth. The branch laboratories are also of great utility to the division of sanitation, in that they make examinations of water in the locality, such examinations being made under the general supervision of the division of sanitation.

The bacteriologist in charge of the branch laboratory at Mankato, who also acts as health officer for that city, receives a salary from the State board of health, a small salary from the city, and addi-

tional income from the practicing physicians for examining specimens from their private cases.

The bacteriologist in charge of the branch laboratory at Duluth receives a salary from the State board of health and a small salary from the city, although he is not under the control of the local health department. The State board of health is reimbursed for a part of its expense by receiving \$600 from the county, \$300 from the city health department, and \$300 from the city water and light commission.

Both laboratories are equipped and maintained by the State and come under the supervision of the director of the division of preventable diseases. Culture material is made in the main laboratory and sent to them from time to time.

These branch laboratories are a great convenience to the health officers in making it possible to secure prompt assistance in the diagnosis of communicable diseases and to practicing physicians in other diseases where laboratory investigations are necessary. They are of special assistance to physicians and health officers when they are established in communities located some distance away from the main laboratory.

The board at present has under consideration the establishment of a laboratory in Winona.

The forms used in the branch laboratories are practically the same as those used in the main laboratory. Reports on examinations of specimens from communicable diseases within the city in which the branch laboratory is located are made for the information of the local health officer and are therefore filed in the branch laboratory. Reports on cases outside of the city are forwarded to the division of preventable diseases.

Pasteur Institute.

Duties of the division.—The division is engaged in the preparation and administration of antirabic treatment and the diagnosis of rabies in animals.

Methods of procedure.—As the methods are highly technical, only a brief description would be proper in a report of this kind.

The virus used is a seven-day virus. Two rabbits are inoculated each day. A subdural inoculation is made, the scalpel being used both to make the incision through the skin and the puncture through the skull. The cord is removed, with its membranes, after performing laminectomy. It is cut into two parts and hung in jars containing potassium hydrate. A broth culture is made of each half from the substance and the surface of the cord. A cord is cut as needed and emulsified in salt solution before administering treatment.

Treatments are given according to the following scheme:

- First day, 12 and 11 day cord.
- Second day, 10 and 9 day cord.
- Third day, 8 and 7 day cord.
- Fourth and fifth day, 6-day cord.
- Sixth day, 5-day cord.
- Seventh day, 4-day cord.
- Eighth day, 3-day cord.

Further treatments are given up to 21 days, using alternately 5, 4, and 3 day cords.

Cords are not preserved in glycerin. When a cord has dried for the maximum period, if not completely used, it is discarded. The jars containing the drying cord are placed in an incubator, which is cooled by circulating water at ordinary temperature.

In making diagnoses, smears of the hippocampus are stained with eosin and Unna's methylene blue. Sections are made and stained after hardening in Zenker's fluid.

When inoculations for diagnosis are necessary, rabbits are generally used, unless there happens to be a shortage of those animals, when guinea pigs are substituted.

This Pasteur Institute has been in existence since August 1, 1907, and has administered treatment to 1,258 persons, and in only 3 instances have untoward results followed: One, a case of general paralysis, one a case of general weakness amounting almost to paralysis, and one, an acute anaphylactic reaction coming on just after an inoculation had been given. All recovered. There have also been four cases of human rabies develop in spite of Pasteur treatment.

The local reaction following an inoculation is usually noticeable about the fifth to the seventh day.

The institute is adequately equipped for carrying on the work.

All residents of the State are entitled to free treatment. Others are required to pay into the State treasury a fee of \$100.

Animal house.—In connection with the Pasteur Institute there is maintained a separate brick building in which are kept all laboratory animals used either in the Pasteur Institute or in the main or bacteriological laboratory. It is a good sized two-story building, containing large and small rooms equipped where necessary with animal cages. It has recently been made rat proof by taking out all double walls, floors, ceilings, etc., and by the free use of plaster or cement where needed. In the basement there is a large incinerator used for burning carcasses of dead animals.

Discussion.—The activities that are being carried on by the division of preventable diseases are deserving of the greatest praise and encouragement both as to their scope and the methods pursued. It is

work of this kind, indicating an active health department, that will eventually succeed in eradicating the preventable diseases. This success would come quicker if the cooperation of the people and the legislators could be secured, for without their cooperation the epidemiologist has a difficult task. However, education will, in time, be the means of gaining this much-needed assistance.

The division is badly in need of additional funds and a larger field force, especially an adequate and capable district organization, each district to have a full-time district medical officer, paid by the State, who would have immediate supervision over local health authorities. He should have the necessary assistants. It would be his duty to supervise the work of the local authorities, to inspect the schools and pupils in rural districts, to follow up and take the necessary measures to control communicable diseases, to make epidemiological investigations and studies relating to child welfare, to require the reporting of diseases, births, and deaths, etc. It is the representative in the field that a health department must depend upon to enforce its regulations, and when such representatives are permanently located throughout the State by districts the work is done more promptly, more economically, and with the assurance that quicker results will be obtained.

Tabulation of the activities of the division of preventable diseases for the year ended July 31, 1914.

Number of investigations for—

Typhoid fever.....	61
Dysentery.....	3
Scarlet fever.....	54
Measles.....	2
Smallpox.....	34
Chicken-pox.....	3
Tuberculosis.....	28
Diphtheria.....	26
Poliomyelitis.....	15
Other diseases.....	24

Total..... 250

Number of counties comprised in the investigation..... 63

Number of days in the field..... 418

Total mileage traveled, exclusive of team or automobile..... 36, 843

Total number of cases of disease reported..... 20, 292

Number of diphtheria cultures examined:

Main laboratory.....	15, 238
Branch laboratories.....	9, 251

Total..... 24, 589

Number of virulence tests made, main laboratory..... 180

Number of Widal tests for diagnosis :	
Main laboratory-----	2,145
Branch laboratories-----	852
Total-----	2,997
Number of Widal tests following vaccination, main laboratory-----	8,006
Number of sputum examinations :	
Main laboratory-----	1,791
Branch laboratories-----	1,094
Total-----	2,885
Number of sputum inoculations for diagnosis of tuberculosis, main laboratory-----	35
Number of spinal fluid examinations, main laboratory-----	30
Number of cubic centimeters typhoid vaccine made and issued, main laboratory-----	17,300
Number of units typhoid vaccine purchased and issued, main laboratory-----	523,000
Number of animals used in diagnostic tests, main laboratory-----	453
Number of persons given Pasteur treatment-----	99
Number of examinations made for rabies-----	61
Number of rabbits used for treatments-----	730
Number of animals used for diagnostic and experimental work :	
Rabbits-----	118
Guinea pigs-----	40
Total-----	158

DIVISION OF SANITATION.

At the meeting of the State board of health held April 14, 1914, it was decided to separate the water and sewage work from other laboratory work and combine it with the work conducted in what was then known as the engineering division, thereby creating a division to be known as the division of sanitation. This was a wise rearrangement, as it places the work of the analytical chemist and the sanitary engineer under the control of one head. It would seem, however, that a more dignified and comprehensive name for the division might be the division of sanitary engineering, such name indicating activities involving larger engineering problems in which the division is engaged.

The personnel of the division and their respective salaries at present are as follows:

1 director of division (part time)-----	\$1,700
1 assistant director of division-----	3,000
1 chemist-----	2,100
1 laboratory aid-----	900
1 consulting engineer (part time)-----	2,800
1 sanitary engineer-----	2,100
1 clerk and stenographer-----	960
1 stenographer-----	720

Duties of the division.—The division has under its charge the enforcement of laws and regulations relating to the control of water supplies and the disposal of sewage, garbage, and trade wastes, including the abatement of nuisances. In addition to this, it has been delegated to enforce the regulations which the State board of health has promulgated relating to the milk supply. Its duties are both analytical and constructive; i. e., those of the laboratory worker and the engineer.

Requirements of law.—The following is a summary of the law giving authority to the board of health to make regulations covering the subjects relating to the work of the division of sanitation.

The State board of health may adopt, alter, and enforce reasonable regulations relating to—

The business of scavengering.

The disposal of sewage.

The pollution of streams and other waters and the distribution of water by private persons for drinking or domestic use.

The accumulation of filthy and unwholesome matter to the injury of public health, and the removal thereof; and

The construction and equipment, in respect to sanitary conditions, of schools, hospitals, almshouses, prisons, and other public institutions, and of lodging house and other public sleeping place kept for gain.

The regulations that have been promulgated under the above authority and that are at present in force, together with any further law on the specified subjects, will be summarized and the activities of the division discussed under the following headings: Control of water supplies, disposal of sewage, trades wastes, offensive trades and nuisances, disposal of garbage, construction and equipment of public institutions, and industrial hygiene.

Control of Water Supplies.

Requirements of law.—The following is a summary of the laws enacted to maintain the purity of water used for domestic purposes:

No sewage or other matter dangerous to health may be deposited where it is likely to contaminate the water of any pond or stream used for domestic purposes. The State board of health has general charge of all water so used, and must take the necessary steps to prevent its pollution, and has the power, without a hearing, to require that its orders be obeyed.

The person so ordered, however, may appeal to the district court within five days after the order has been given. Pending the decision of the appeal the act causing the pollution must be discontinued, and if the order is not obeyed under these circumstances the appeal is forthwith dismissed.

Every owner, agent, etc., of any waterworks furnishing water for public or private use is prohibited from permitting the appliances of the same to become in a filthy condition or in any condition liable to impair the health of the consumers of the water. There is provided a penalty of imprisonment in the State prison for not more than 10 years.

Requirements of regulations.—The following is a summary of the only regulation bearing on the subject of water:

When a drinking water supply is shown to be a positive or probable source of typhoid fever or other disease, it must be condemned either by the local board or the State board of health, and can not be used again until declared safe by the condemning party.

Methods of operation.—The division has been very actively engaged in a study of the water supplied to different communities within the State. Most of the studies have been carried on at the request of the locality. Investigations are made, expert advice is given, and assistance is rendered in the maintenance of water-supply systems.

A very excellent and extensive piece of work that has just been accomplished was the examination of the water supplies used by the different railroads in the State, the results of which appeared in the Public Health Reports of May 15, 1914. This investigation not only gave the division an opportunity to study water used by the railroads, but, inasmuch as many of them used the city water, it gave them an opportunity to study municipal water supplies as well. (Apparently Minnesota has been the only State to carry on such an extensive study both from the practical and the scientific point of view, and other States have lost an opportunity in not taking advantage of the regulations promulgated by the Federal Government requiring that railroads furnish a pure water supply to their patrons.)

In studying water, a sanitary survey, including the collection of samples, is made by trained men of the division, who begin the examination of the samples in the field before shipping them to the laboratory, where the analysis is completed. The laboratory men are trained not only in the chemistry but in the bacteriology and biology of water, so that all the analytical work is done in one division. This is probably the best arrangement, as the one who is responsible for the interpretation of results has all of the work under his immediate supervision. The division of preventable diseases, however, furnishes the media used in water analysis, for which it is reimbursed by the division of sanitation.

Opinions are given relative to any water only after a study of both analytical and field investigations. No analysis will be made unless the field investigation, including the collection of the sample, is conducted by an expert of the division.

The division has under supervision a number of municipal water supplies which have been installed upon its recommendation. Such supervision involves especially the efficiency of filtration and hypochlorite plants.

In many cases the hypochlorite plant has been installed as a temporary expedient only. When subsoil waters are used this is usually a simple matter, but the division aims to render the water perma-

nently safe by a proper construction of the well and the maintenance of cleanliness of the appliances and surroundings. When surface water is used it is recognized that filtration is usually necessary, with subsequent treatment by hypochlorite or liquid chlorine. However, after the installation of a hypochlorite plant in emergencies the results are so satisfactory and the expense is so small that communities are loath to go to further expense.

In the case of surface waters there is such a great variation in the amount of organic matter that it requires a more or less constantly varying amount of hypochlorite to produce satisfactory results. To provide for this variation a skilled operator is necessary at all times, and such a person a municipality will rarely employ. The supervision of hypochlorite plants by the division includes, therefore, the determination in the laboratory of the average chlorine in samples of hypochlorite to be used in any plant, as well as a periodic test at the plant as to the efficiency of the treatment.

Ice is occasionally examined, but, as in the case of water, only after a sanitary survey has been made and the sample collected by an expert of the division.

To test the chemical phases of the hypochlorite treatment a compact outfit¹ has been devised for use in the field. It consists of a case containing the necessary chemicals, burette, pipettes, flasks, etc. This outfit is of great practical utility, and its use can be recommended elsewhere where similar work is being performed.

The assistant director of the division has devised an emergency hypochlorite plant, compact, and therefore easy to ship and accurate in its results for use when it is necessary to immediately sterilize a water supply, as, for instance, in a water-borne typhoid fever epidemic. The mixing and two distributing barrels are obtained in the locality. The mechanical part consists of a mixing fan, with the necessary handle and gearing, which clamps to the top of the mixing barrel. The mechanism which controls the flow of solution is the unique portion of the apparatus. It consists of a small tank in which the solution coming from the distributing reservoir is kept at a constant level by means of a float and valve similar to that used in the flushing tank of a modern flush toilet. Through the bottom of this tank passes a tube containing a narrow slot, the opening of which can be controlled by a sliding valve arrangement operated by a thumbscrew at the top. The turning of this screw also operates a dial which indicates the degree of opening or, strictly speaking, the amount of hypochlorite solution which is passing out. The slot is self-cleaning, and is therefore in little danger of clogging. All valves are lined with hard rubber and other parts coming in con-

¹H. A. Whittaker, American Journal of Public Health, vol. 2, No. 12.

tact with the solution are painted. The entire apparatus is packed in a small trunk made for the purpose, which also contains a can of hypochlorite and tools for installing the plant. It can be put into operation within an hour. A description of this device will appear in a technical journal, and it has been suggested to the inventor that a brief description might also be submitted for publication in the Public Health Reports.

For field work several other compact outfits have been devised. One is a traveling laboratory for waterwork. This has been described in an article appearing in the Public Health Reports for May 15, 1914. Agar plates for bacterial counts are made in the field and kept for four days at room temperature. This gives plenty of time for transportation to the laboratory. An agar shake of 1 cubic centimeter of the water is obtained, which, after it reaches the laboratory, is planted in fermentation tubes to show gas formation in 1 cubic centimeter of water. In addition a 100 cubic-centimeter sample of the water is collected, enriched, and a portion finally planted in a fermentation tube. This is to show any gas formation in 100 cubic centimeters of the water. If there is gas formation, a portion is plated on lactose litmus agar and acid-producing colonies are run through the common media before pronouncing *B. coli* present. Tests are also made as to motility, morphology, etc. Synthetic milk medium¹ is used instead of the ordinary medium and gives very satisfactory results in waterwork. This same medium is also used in the bacteriological laboratory of the division of preventable diseases with good results.

Another field outfit consists of an incubator heated by a kerosene lamp, the degree of heat being regulated by a thermo-regulator of the ether type. This operates on a small door, which opens or closes as the temperature falls or rises, and permits the heat either to pass into a radiating chamber or out through the chimney. It is of great utility in the field in making rapid determinations as to the presence of *B. coli* in water under investigation. The presumptive test only is made use of in this case. The incubator is also large enough to hold plates if necessary.²

An additional field outfit consists of a box containing two glass-stoppered bottles for collecting samples of water for chemical examination only.

Disposal of Sewage.

Requirements of regulations.—The following is a summary of the regulations relating to sewage disposal.

¹ H. A. Whittaker, American Journal of Public Health, March, 1912.

² H. A. Whittaker, American Journal of Public Health, vol. 2, No. 12.

When typhoid fever is present in a community, the local board of health must appoint such inspectors as are necessary to patrol the locality and report all water-closets and privies which are not fly proof, and all vaults and cesspools which are not water-tight, dark, and fly proof. Local boards of health must then issue the necessary orders to remedy conditions.

Human excreta in cities and villages must be deposited in sewers, cesspools, or vaults. The cesspools and vaults must be made water-tight and fly proof.

They must be cleaned out at least once a year and at such other times as may be deemed necessary by the local health officer.

It is prohibited to use any abandoned well or deep well as a receptacle for sewage or household waste.

Methods of operation.—In regard to sewage disposal, the division of sanitation does not usually take the initiative, but acts only upon the request of a municipality, unless the matter is brought to its attention through the contamination of a water supply or by reason of the creation of a nuisance. Under any of these circumstances the division undertakes to make a thorough study of the situation and give the necessary advice, after which it expects prompt action on the part of local authorities.

It is not permitted to discharge sewage into streams too small to properly dilute it without previous treatment. The Imhoff tank, with or without preliminary or subsequent treatment, is generally recommended for this purpose. When the volume of water is sufficiently large to insure adequate dilution, the division recognizes the fact that it is more satisfactory and economical to treat the water before it is consumed than to treat the sewage before it is discharged.

When sewage is discharged into small streams which are sufficiently large to carry away the sewage without offense, but the said streams pass through pasture land used for grazing milch cows, which may result in the contamination of the milk by cows wading in the water, the State board of health urges the installation of a disinfection plant.

All available plans of sewerage system are filed in the division.

There is about to be started an analytical investigation of the comparative efficiency of sewage purification plants in the State.

Trades Wastes, Offensive Trades and Nuisances.

Requirements of laws.—The following is a summary of the laws bearing on the subject:

A nuisance is defined as anything which is injurious to health or indecent or offensive to the senses or an obstruction to the free use of property so as to interfere with the comfortable enjoyment of life or property.

A public nuisance is defined as a crime against the order and economy of the State and consists in unlawfully doing an act or omitting to perform a duty, which act or omission annoys, injures, or endangers the safety, health,

comfort, or repose of any considerable number of persons; likewise, other things which have no bearing on public health and which will not be mentioned.

Anyone who commits or maintains a public nuisance, refusing to remove the nuisance or permitting the use of a building for committing or maintaining a nuisance, is guilty of a misdemeanor.

No person is permitted to deposit unwholesome substances, dead animals, or offal on or near highways and public routes of travel on land or water, or establish offensive trades in such places, a fine of \$100 or imprisonment in the county jail for not less than three nor more than four months being provided for violations of the law.

Where any person engages in any trade or employment which is dangerous to the health of the community, or injurious to neighboring property, without a permit from the local board of health, or in any place prohibited by law, the State board of health, upon written complaint, is authorized to give the necessary hearing and order the exercise of the employment stopped. There is provided a fine of \$100 for each day that the employment is continued after the order has been given.

The person against whom the order is issued has the right of appeal. Pending the appeal the employment must not be carried on. If it is, the appeal is forthwith dismissed.

Requirements of regulations.—The following is a summary of the regulations:

Those engaging in any of the businesses mentioned below must secure a permit from the local board before they can be carried on, and the permit must state the location where the business may be operated. Dairies, slaughterhouses, butcher shops, creameries, feeding yards for stock, livery or boarding stables, rendering establishments, and other offensive trades or businesses are included in the provision.

Creamery wastes or washings must not be discharged upon the surface of the ground or upon low places or into bodies of standing or stagnant water.

The manufacture into any article of commerce from any part of an animal's carcass slaughtered when not in good health, or from butchers' offal, or from any unwholesome or decaying animal matter is prohibited. Butchers' offal is defined as any meat, tallow, fat, fish, scraps, bones, etc., which have become decayed or which have been put into unclean receptacles.

Any person wishing to manufacture material of this kind into an article of commerce other than food must apply to the State board of health for a license, stating the location of his proposed place of business, the articles he proposes to produce, and the animal material he intends to use. Upon such application the State board of health must inspect the location and, if properly located and equipped, in a room or building where no article of human food is produced, such license may be granted upon the payment of a fee of \$10. The license expires on the 1st day of July and may be renewed upon the payment of a fee of \$5. It holds good for one year.

Slaughterhouses must have an abundant supply of pure water; the floors must be water-tight and washed every day after slaughtering is completed; the walls and exposed places inside must be cleaned by washing or scraping as often as necessary. Painted walls must be repainted at least once a year, otherwise they must be whitewashed or calcimined at least once a month. Refuse must be removed from the slaughterhouse on the day of slaughtering and properly disposed of.

Feeding of hogs or other animals with offal is absolutely prohibited. Animals in the yard of the slaughterhouse must be treated humanely and, if kept over 12 hours, must be properly fed and watered.

Pens and inclosures must be kept in a sanitary condition.

The slaughtering of animals can not be done except in buildings designed or suitable for the purpose, nor can animals be slaughtered outside of any building except in rural districts and for private consumption.

Cooling and storage rooms for meat must be properly ventilated.

Carcasses of dead animals must not be left unburied nor thrown into any stream, lake, pond, etc. Carcasses must be buried by the owner and covered with at least three feet of earth. Burial shall take place within 24 hours after death. If death is caused by some communicable disease, the body must be surrounded with quicklime. At municipal dumping grounds provision must be made for the immediate burial of dead animals, or in lieu of this they may be burned.

Methods of procedure.—In Minnesota the industrial waste which requires special supervision by the State board of health is that from creameries, which if not controlled gives rise to great nuisance and furnishes a breeding place for flies. The methods of control are not entirely satisfactory, and the Division of Sanitation is now engaged in a study looking toward a satisfactory solution of the problem. Experiments have been made with a tank of the Imhoff type somewhat modified to fit the conditions. The results indicate that better results can be obtained with this type than with the ordinary septic tank. Plans of a creamery tank of this type have been prepared for distribution upon application. These plans are accompanied by a letter of instructions.

Nuisances in general are not unlikely to become a greater nuisance to the health department before they are abated than they are to the individual who claims that his peace of mind and even his health are jeopardized. They have little or no bearing on the causation of disease, except indirectly in furnishing a breeding place for flies or mosquitoes or in harboring rats, and ordinarily should be handled by the local police department. In the abatement of a nuisance coming under the jurisdiction of the State board of health, where no technical problems are involved and only administrative action is necessary, the duty devolves upon the secretary; otherwise it is referred to the Division of Sanitation for action.

Disposal of Garbage.

Requirements of regulations.—The following is a summary of the regulations bearing on the subject of garbage:

Garbage is defined as the accumulation of animal or vegetable matter from kitchens, pantries, dining rooms, or other parts of hotels, restaurants, boarding houses, tenement houses, dwelling houses, public institutions, market houses, fruit and vegetable stores, commission houses, and grocery stores.

Garbage must be collected in cities and villages in water-tight receptacles with closed tops. When the city or village collects the garbage the householder must provide a suitable container of convenient size to be handled by one man.

Where garbage is used in feeding hogs or other animals it must not be more than 48 hours old at the time of feeding. If used for feeding, it must be kept in water-tight boxes or cans under cover. The containers must be scalded at least twice a week between April 1 and October 1 and once a week during the rest of the year.

Garbage must be fed on or over water-tight floors at least 1 foot from the ground, with water-tight sides to the height of 1 foot above the floor. Pens and floors so constructed must be approved by the local health officer or by the State board of health.

Methods of operation.—While there are certain regulations on the subject of feeding garbage to hogs and the type of container to be used, no effort has been made to require municipalities to provide for an adequate system of garbage collection and disposal. It is thought that the State could be of great assistance to localities desirous of installing such a system by studying the question as applied to the State of Minnesota, and having on hand plans, figures of cost, and the like that they could use as a basis for giving expert advice.

Construction and Equipment of Public Institutions, Lodging Houses, Etc.

Requirements of regulations.—The regulation requiring that plans for public buildings must be approved by the State board of health, as well as those promulgated to regulate the construction and equipment of lodging houses, is as follows:

All plans and specifications for proposed school buildings, hospitals, almshouses, prisons, or other public institutions, must be submitted for approval and filed with the State board of health. No such building can be constructed until the sanitary arrangements have been approved by the board.

A lodging house is defined as any house or building or portion thereof provided with sleeping quarters arranged on the cubicle plan, i. e., with dividing partitions that do not extend to the ceiling, or with sleeping quarters arranged on the dormitory plan, and in which persons are lodged for hire.

All buildings used for this purpose after May 1, 1910, must receive a license from the local health officer.

The application for such license must contain the name and address of the proprietor, the location of the lodging house, and what portion of the house it is intended to use for the purpose.

With this application must be filed a certificate from the local authorities governing the construction of the building, and from the fire department.

After application, the proposed lodging house must be inspected within 10 days, and a report made as to the character of the building, water service, sewerage system, number, location and dimensions of sleeping rooms, outside windows, number of water-closets, wash basins, etc.

For the issue of a license there is required a fee of \$2 for a lodging house containing not to exceed 10 beds, with 10 cents extra for each additional bed.

Annually thereafter there must be paid a similar fee for renewal of the license, provided the proprietor has complied with the regulations.

Such lodging house must be examined two weeks after the issuance of a license and at least once a month thereafter.

This license must be displayed within the lodging house.

It is valid only for the premises and for the period stated in the license.

It is unlawful to put more than the permitted number of lodgers in any room.

Sleeping rooms must be adequately ventilated in such a manner as to be beyond the control of the lodgers.

The minimum floor area required for a sleeping room is 60 square feet, and there must be not less than 400 cubic feet of air space per bed.

Beds must be at least 2 feet apart, with free circulation between them.

After May 1, 1910, it is not permitted to place beds or bunks one above the other.

From 10 a. m. to 2 p. m. all windows must be kept open 1 foot from top and 1 foot from bottom, except in extremely cold weather.

Beds must be turned over and exposed to the air daily for four hours.

To accommodate lodgers working at night special beds or rooms must be set apart. They must be treated the same as other beds.

For each lodger there must be provided a separate bed, bedding, etc. Mattresses must be provided with water-proof covering. Beds, bed clothing, etc., must be kept free from vermin. Clean sheets and pillow cases must be furnished at least once a week and as often as a new lodger occupies the bed.

Frames of beds must be of metal.

Partitions of cubicles must not extend higher than 7 feet above the floor nor less than 1 foot from the ceiling, with a space of least 6 inches between the partition and the floor.

There must be at least one water-closet on each floor in the proportion of 1 seat to every 15 beds or less. Water-closets must be adequately ventilated and have self-closing doors and no odors allowed to escape, nor shall such compartment be used as a sleeping room.

There must be at least one wash room on each floor, in which there are basins with running water, in the proportion of 1 to every 10 beds or less.

There must be shower baths in the proportion of at least 1 to every 50 beds or tub baths in the proportion of 1 to every 25 beds or less.

Baths must be provided with hot and cold water accessible for use of the lodgers free of charge.

There must always be provided an adequate supply of water and clean towels.

The walls of water-closet compartments, wash rooms, etc., must be constructed of waterproof material at least 4 feet above the floor.

Lodging houses must be kept free from filth, dirt, vermin, garbage, etc.

Closets, basins, fixtures, etc., must be kept thoroughly clean.

Floors, ceilings, etc., must be kept in good repair and scrubbed or wet swept at least once daily.

If walls and ceilings are painted, they must be thoroughly washed with soap and water at least twice yearly.

An adequate number of cuspidors must be provided. Spitting is forbidden except in the proper receptacle. A sign to this effect must be hung on the wall. Cuspidors must be made of durable material, cleaned, and disinfected at least once daily, and must contain disinfecting solution.

Sleeping rooms and lodging houses must be fumigated at least once every two weeks to the satisfaction of the local health authorities. Disinfection of premises, furniture, etc., must follow the death of a lodger from a communicable disease.

Illness must be reported to the health authorities.

Except in lodging houses where there are rooms for the separation of the sexes, no woman or girl shall be lodged, nor any boy under the age of 16 unless accompanied by his father or guardian.

A separate room must be kept for lodgers who may become ill.

It is the duty of any person having knowledge that a lodging house is not being kept in conformity with the regulations to report the facts to the local health authorities.

If the requirements of the regulations are not being carried out, the local health authorities must notify the proper person and direct that the defects be remedied within a period not to exceed 30 days.

Failure to comply is sufficient cause for revocation of the license.

Methods of operation.—The law and regulation requiring the submission of plans of public institutions for approval is generally ignored by the board of control, a body appointed by the governor to supervise the construction of State buildings. Advice regarding the disposal of sewage is occasionally asked and sometimes followed.

With reference to the approval of plans for school buildings, the authority of the State board of health is limited to the character of toilets, the water supply, and the method of disposal of sewage. Otherwise, the matter is entirely in the hands of the school authorities. Here, again, the law is generally ignored and plans are rarely submitted.

This indicates a lack of interdepartmental cooperation which could be readily adjusted by the proper authorities. Plans of county tuberculosis sanatoria are always submitted for approval, there being a specific provision for this in the law authorizing the construction of county sanatoria.

The regulations governing lodging houses were promulgated by the State board of health for the benefit of municipalities of 10,000 population or over. They must be enforced by local authorities or used as a standard by municipalities desirous of making their own regulations.

Control of Milk Supply.

The enforcement of laws and regulations relating to food, including milk and creamery products, has been placed under the control of the State dairy and food department. As these laws and regulations do not contain any provision for certified and inspected milk, the State board of health promulgated a regulation setting forth a standard which, with the regulations relating to the sale of milk from places where communicable diseases exist, is summarized as follows:

Dairy or food products which may be eaten uncooked must not be sold or given to any person from a house where diphtheria, scarlet fever, typhoid fever, or smallpox exists, nor may any person resident in such house handle any of these products to be offered for sale. If the disease occurs on a farm the sale of its products is forbidden except when those having to handle the food sleep

away from the infected house and have no connection with any person coming from that house.

A regulation of the State board of health states that certified milk must be free from pus and injurious bacteria; must not contain more than 10,000 bacteria of any kind to the cubic centimeter at the time of delivery to consumers; must have a specific gravity ranging from 1.029 to 1.034; must be neutral, or at most but faintly acid in reaction; must contain not less nor more than 3.5 to 4.5 per cent proteids, from 3.5 to 4.5 per cent butter fat, and from 4 to 5 per cent sugar. It must be free from all contaminating foreign matter or chemical substances added for preservative or coloring and must be cooled immediately after milking and kept at a temperature of less than 50° F. until delivered to consumers.

Cows from which certified milk is obtained must be under rigid veterinary supervision and must be free from tuberculosis or other diseases.

All persons concerned in handling certified milk must be free from any communicable disease.

Inspected milk is defined as milk having not more than 100,000 bacteria per cubic centimeter at the time of delivery and conforming in all other respects to the requirements for certified milk.

The power to enforce the above regulations was vested in the laboratory division before the reorganization took place, and has been retained in the division of sanitation since that reorganization. While it makes little difference what particular division exercises the function of control, as long as this is done properly, it would seem to be more logically a duty of the division of epidemiology.

It is perhaps as well that the State board of health is not encumbered with the enforcement of the pure food law. Pure milk, however, is so essential in preserving the health of infants, as well as adults, that it would seem that the power of enforcement of all laws relating to milk would logically belong to that board. However, the State dairy and food commission has taken up the question actively, not only from the standpoint of public health, but from the standpoint of improvement in the quality and cleanliness of creamery products, which is the economic point involved. This commissioner has \$60,000 a year to spend in the enforcement of the food law, and, for this reason, is at present in a better position to supervise the milk supply than would be the State board of health, which receives but \$66,500 a year, only a small part of which could be devoted to that purpose.

That part of the food law which refers to milk is summarized as follows:

No person shall sell or knowingly buy unwholesome or adulterated cream. Milk and cream are held to be unwholesome or adulterated if they have not been well cooled and aerated; if preservatives have been added; if the milk has been drawn from cows kept in overcrowded places or places not well ventilated or lighted, filthy, or insanitary; if from unclean or diseased cows or those fed with distillery wastes, brewers' grain, etc., garbage or decayed substances, except ensilage from properly managed silos; if the milk is obtained from cows within 15 days before or 5 days after parturition; if kept in or near

stables where any animal is housed, or a building attached to a stable where bad air exists.

The standard for cream is as follows:

It must be obtained from wholesome and unadulterated milk. The water and milk solids (other than butter fat) must not contain more than eight-tenths of 1 per cent of acid, and must contain 20 per cent or more of butter fat and no foreign thickening or coloring matter.

The standard for milk is as follows:

No normal ingredient must be removed nor any abnormal substance added, and it must not contain more than 87 per cent of water or less than 13 per cent of total milk solids, and not less than 3.25 per cent of butter fat.

It is prohibited to manufacture any food from unwholesome or adulterated milk or cream. A person producing milk or cream for market or exchange, etc., must not feed milch cattle with distillery waste or brewers' grains, etc.

Skimmed milk may be sold to makers of skim cheese or by a licensed dealer, if properly labeled "skimmed milk." It is prohibited to furnish skimmed or separated milk to patrons of a creamery who furnish milk thereto unless such skimmed milk or the whey from cheese factories is first pasteurized at a temperature of at least 180° F.

Every person selling milk or cream to be used in any municipal corporation, except for the purpose of supplying the same to a butter or cheese factory, must secure a license from the State dairy and food commissioner. The fee for such license is \$1 for each place or vehicle from which milk is sold. The license is good for one year, expiring on May 1.

This license may be withheld or may be revoked by the commissioner for refusal or failure to obey any lawful request or direction.

Every person delivering milk, cream, or ice cream in cans or other vessels must keep such vessels clean, and the person to whom sold must thoroughly clean the can before returning same. It is also unlawful to sell sour milk or cream unless it is properly labeled.

Inspectors of the dairy and food department are authorized to visit all places where dairy products are made, stored, etc., or where cows are kept by persons engaged in the sale of milk and cream, and may require the correction of all insanitary conditions and practices found. Any person refusing to obey a lawful order is deemed guilty of a misdemeanor.

Local authorities are authorized to appoint inspectors for the purpose of maintaining the purity of a milk supply.

Adulterated ice cream is ice cream which is made from impure milk or cream, or to which any unwholesome substance, coal-tar dye, or saccharin has been added, or which contains less than 12 per cent by weight of butter fat, or colored, powdered, or damaged in any way to conceal inferiority.

A creamery which is equipped with machinery and appliances for pasteurizing, wishing to pasteurize milk and cream used to manufacture their products, must apply to the State dairy and food commissioner for a certificate. This is granted after an inspection. Milk and cream must be so pasteurized at a minimum temperature of 180° F. for intermittent or 140° F. for continuous pasteurization and the products may be labeled "products from pasteurized milk and cream."

The shipment of cream for distances of more than 65 miles on any railroad except when made in a refrigerator car, unless previously pasteurized, is prohibited.

Standards are also given for evaporated milk, condensed, skimmed milk, and sweetened condensed milk.

Industrial Hygiene.

By industrial hygiene is meant the maintenance of sanitation in places where labor is employed and the prevention of diseases among industrial workers.

In Minnesota, as in Maryland, the sanitary inspection and control of places of employment is in the hands of officials having no connection with the State board of health. This is certainly a mistake. A health department is concerned with the eradication of the preventable diseases which include communicable diseases, occupational diseases, and all maladies resulting from faulty environment. An investigation looking toward the improvement of the health and surroundings of industrial workers and which is confined to the factory alone would be most incomplete. To be of value it would require also studies outside the factories and in those fields in which public-health officials are already active.

Positive results can be expected only when all matters relating to the health of human beings are placed under the control of one body, namely, the department of health.

Records and reports.—The authority for making an investigation comes from the executive officer of the board, usually upon the request of the local authorities. The letter containing the request is forwarded to the division of sanitation with the authority.

Upon the completion of any field work a report is prepared which contains all of the essential information, including recommendations. Copies of this report are sent to the executive officer, with a memorandum of transmittal which contains the names of local authorities or other persons to whom copies of the report should be sent. The original is bound in permanent book form by subject, with a copy of the memorandum of transmittal and a summary of the results of any analyses that may have been made in the case. In addition, a copy of the report, together with the correspondence and results of analyses, is filed chronologically in a loose-leaf follow-up file.

At the end of 30 days a follow-up letter is sent to the local authorities, asking what has been done in following out the recommendations made in the report. If no satisfactory answer is received, a second follow-up letter is sent, and if this does not produce results the matter is referred to the executive officer for action.

When the necessary work has been performed as recommended and the subject is closed, the report, with its correspondence, is taken out of the follow-up file and placed in a permanent loose-leaf file. There are two permanent loose-leaf files, in one of which are placed all reports and correspondence relating to water, sewage, trades wastes, garbage, etc., and in the other reports and correspondence

on general subjects. The reports in both instances are filed by locality.

When further investigations are necessary, previous reports are consulted and copies taken from the loose-leaf file for reference. A receipt is given for them, and upon their return they are replaced in the file. Correspondence is never removed from the office.

When a report is completed a filing card is filled in. The information noted on this card includes a summary of the report, a number by which it can be identified in the permanent or loose-leaf file, a number of any plats, plans, drawings, etc., that may relate to the report which are filed in the plan file, the date on which the follow-up letter is to be sent, etc. This card is filed by county and sanitary district.

A letterpress copy is made of correspondence sent out by the division.

While there is no law or regulation requiring that plans and specifications of proposed installations must be submitted for approval, they are frequently furnished by the local authorities for the information of the division when it has been requested to make a study or investigation. Plans are filed separately and identified with reports on the same subject by number and letter. A separate filing card is made out for plans.

Results of the laboratory determinations are made on special forms, one containing full information on the results of the bacteriological examination of water and another full information on the results of the chemical examination of water or sewage. These are filed separately from the reports and are so numbered as to identify them with reports of field investigations on the same subject. In addition there is a complete summary of results made out on a special form, which is filed both with the bound copy of the report and in the loose-leaf file of reports.

For all samples of water and sewage collected for examination and examined either in the field or at the laboratory there is a special data card filled in, giving all essential information.

The results of analysis of embalming fluids or calcium hypochlorite, with full information relative to the source of the specimen, etc., are kept on separate cards and filed by number.

For the information of the director of the division there has been devised a filing-card system which is in the nature of an invoice of property and enables the one responsible to determine exactly what articles there are on hand in the division, their cost, etc. In addition to this a careful record is kept, on special forms, of all outfits delivered to field workers. Also a record is kept of apparatus or media furnished to the division by the division of preventable diseases.

Discussion.—The division is in need of either more comprehensive regulations or a law providing for the adequate control of water supplies and the disposal of sewage and garbage. This control should include the approval of all plans for proposed installations, the power to require necessary changes in existing installations, to require that such be maintained in a proper condition, and to compel a locality to provide for an adequate system when such does not already exist.

The existing law, which gives the State board of health the power to make regulations, specifically mentions the “business of scavengering” and the “disposal of sewage,” and it is believed that there is here granted as much authority to promulgate regulations covering these subjects as there is to make regulations on the subject of quarantine and disinfection. The latter regulations are very comprehensive and have been upheld by the courts. It is therefore suggested that similar regulations be made with reference to garbage and sewage.

The same law also permits the State board of health to make regulations to prevent the pollution of water supplies and to supervise the distribution of water by private persons for drinking or domestic use. In accordance with a ruling of the Supreme Court of Minnesota, this latter provision of law would probably include municipalities furnishing water for drinking or domestic purposes, as a municipality engaging in such business is carrying out a private or corporate function and not a governmental function.¹

In any event, it would be advisable for a city or village, before installing a water supply, to consult the State board of health for expert advice, for the following reason: Not long since the city of Mankato had a widespread typhoid outbreak. Two widows sued the city for the death of their husbands, due to typhoid fever. It was proved that the epidemic was caused by the polluted water furnished by the city. From a study of a previous extensive outbreak of dysentery, the State board of health was cognizant of the polluted condition of the water and was, in a way, expecting a typhoid outbreak to follow. They had, however, no direct power to compel an immediate change in the water-supply system. The city argued that they could not be sued. The supreme court, however, ruled against the city, and while the cases were dropped, they were dropped only after a settlement had been made out of court.¹

If it is true that it is only necessary to prove that typhoid was contracted from the public water supply to make a city liable for loss of time or death resulting from the disease contracted in that way, it is of the greatest importance for local authorities to know

¹ Minnesota Reports, vol. 113, p. 55, *Delia Keever v. City of Mankato*, etc.

that they are furnishing pure water so that they can not be implicated in court proceedings of this kind.

Trade wastes are important to the health department chiefly because they may become a nuisance. They can not of themselves be the cause of disease, although indirectly, by furnishing a breeding place for flies, they may be instrumental in carrying disease. The State board has ample powers, under the law, to prevent nuisances, and therefore can make regulations to govern the disposal of trade wastes.

If such regulations, promulgated under existing law, are not sustained by the courts, it is time to ask for more law on the subject.

During the year 1914 there were made 231 field investigations. Practically every problem on which the division is engaged requires field as well as analytical studies. There are four men engaged in field work, i. e., the assistant director of the division, the consulting engineer, the sanitary engineer, and the chemist.

The division is growing daily in scope and importance, and is now taxed beyond its capacity to carry on even the routine work requested by local authorities. The results obtained are lasting and of inestimable value to the citizens of the State in the prevention of typhoid fever alone. The work necessary to produce these results is being carried on with energy, and, like the work of the division of preventable diseases, is worthy of praise and encouragement, a larger force, and more money.

Minnesota State board of health, division of sanitation.

[Aug. 1, 1913-July 31, 1914.]

Subject.	Investigations.		Analyses.		
	Localities.	Total.	Bio-logical.	Bacte-riological.	Chem-ical.
Water.....	112	171	10	1,187	198
Recommendations made to.....	82				
Recommendations already complied with.....	26				
Sewage.....	42	54		15	20
Recommendations made to.....	35				
Recommendations acted upon favorably or already complied with.....	16				
Ice.....	4	4		10	5
Milk.....	2	2		480	
Plans, public buildings.....	58	64			
Hypochlorite samples.....					19
Embalming fluids.....					10

Total number of miles traveled by field investigators, 31,992.

DIVISION OF VITAL STATISTICS.

The registration of births and deaths is under the supervision of an organized force of the State board of health, known as the division of vital statistics. At present its personnel and their respective salaries are as follows.

1 assistant registrar-----	\$1,800
1 stenographer-----	900
1 clerk-----	1,080
1 clerk-----	840
2 clerks, at \$780-----	1,560
1 clerk-----	420
<hr/>	
7	6,600

Duties of the division.—The division of vital statistics is responsible for collecting, recording, compiling, and tabulating correct reports of births and deaths occurring in the State of Minnesota. It is also concerned with the enforcement of laws or regulations relating to the disposition of dead bodies and the practice of undertaking or embalming.

The Registration of Births and Deaths.

Requirements of law.—The vital statistics act of the State of Minnesota is patterned after the model law proposed by the Bureau of the Census and follows it very closely except in a few instances where it was necessary to make changes on account of local conditions. The following is a summary:

The State board of health has general supervision and charge of the registration of births and deaths and is empowered to make and enforce the necessary regulations.

The secretary of the State board of health is the State registrar of vital statistics. Each township, village, and city comprises a registration district. The clerk of a village or township and the health officer of a city are in each case, *ex officio*, the local registrars of vital statistics.

Each local registrar may appoint a deputy local registrar, for whose action he is responsible.

The State board of health may remove for cause any local registrar and appoint another in his place.

The State board of health may appoint, and remove for cause, subregistrars, to receive certificates of births and deaths and issue burial permits in a designated territory. They must note on each certificate the date of its filing with them, sign it and forward it to the local registrar of the proper district within five days after its receipt.

The subregistrars must also make monthly reports to the State registrar of all deaths where they have had charge of the remains or sold the casket.

The birth certificate is required to be filed with the local registrar within 10 days after the birth of the child by a physician or midwife, or the father or mother in the absence of an attending physician or midwife.

The law specifies fully the information which must be contained in the birth certificate.

In the case of plural births a separate certificate must be made for each child.

When a birth occurs in any institution, public or private, without the attendance of a physician, the person in charge must make and file the certificate. When the birth occurs in any hotel, rooming or boarding house, etc., without the services of a physician, the keeper or occupant is required to notify the local registrar, who then procures the necessary information.

When the child is not named a supplemental report must be left with the parents by the physician or the local registrar (as the case may be) to be filled in later. This report is required to be submitted within 30 days from the date of birth.

The undertaker or person acting as such must obtain and file with the local registrar a certificate of death.

The law specifies fully the information which must be contained in the death certificate.

The death certificate must be signed by the physician in attendance unless it is a case investigated by the coroner, when it is signed by him.

If death occurs without medical attendance, the health officer, the local registrar, or subregistrar signs the certificate, if able to determine the cause of death, and if not the certificate is referred to a physician or the coroner for certification. This provision includes stillbirths.

The death certificate must also be signed by the undertaker, giving the place and date of burial.

When the death occurs in a hospital or other institution the length of time at the place of death, length of time in the State, usual place of residence, and where the disease was contracted must be stated.

For stillbirths two certificates are required, a death certificate giving the cause of death as "stillborn," and a birth certificate with the word "still-birth" inserted in place of the name, whether premature, and period of uterogestation. Such certificates are required only for a child that has advanced beyond the fifth month of uterogestation.

The local registrar notes on each certificate filed with him the number of his district, the serial number of the certificate (beginning with No. 1 for the first of each calendar year), the date when filed, post-office address, and signature. The certificates are recorded in a book kept by him and are then transmitted to the State registrar on or before the 10th day of the following month. If no births or deaths have occurred he forwards that statement to the State registrar.

The burial permit is issued upon the presentation of a properly filled out certificate of death. It is delivered to the undertaker, who in turn delivers it to the person in charge of the place of burial, or if the body is to be transported, to the person accompanying it. If the body comes from without the State the transit permit of that State may be accepted by a local registrar in place of a certificate of death and a burial permit issued.

All persons in charge of lying-in or other hospitals or institutions, public or private, must keep a record of the inmates, containing all information required, in filling out a birth or death certificate; and if admitted for medical treatment such information must include the nature of the disease and where it was contracted.

The State board of health is required to furnish free of charge all necessary blanks, forms, and books, except the books of record for the local registrars, which are furnished by the State but paid for by the city, village, or township comprising the registration district. The index book kept by the county clerk is also furnished at the expense of the county.

The State registrar is required to preserve all certificates and furnish all necessary instructions so that the recording of births and deaths can take place in a systematic and accurate manner.

Where any official or other person fails or refuses to furnish information, the State board of health may obtain the same and charge the expense of collection to the city, village, or township where the expense was incurred.

The local registrar receives for each birth and each death certificate the sum of 25 cents.

He receives for a card reporting no births or deaths the same fee, providing such card is received before the 15th of the following month and providing that no regular report is received later for the month to which the card applies.

Annually, on or before the 1st day of March, the State registrar transmits to the clerks of court of the different counties transcripts of all death and birth certificates received during the year from the county. The clerk files and indexes these certificates. The receipt of these certificates is authority for the county to reimburse the local registrar the amount due him. Except where the clerk is on a salary basis, he receives 5 cents for each certificate indexed.

All fees in connection with the collection of birth and death certificates are paid by the county.

The State and local registrars are authorized to issue certified copies of birth and death certificates and are entitled to a fee of 50 cents, to be paid by the applicant. A record of these fees is kept by the State registrar and they are paid over to the State treasurer.

For violation of any provision of the act relating to the registration of births and deaths there is provided a fee of not more than \$100 or imprisonment in the county jail for not more than 90 days.

County attorneys are required to make complaint and prosecute any person charged with the violation of the vital statistics act when the facts are brought to their attention by the State or any local registrar.

Every cemetery is required to have an actuary, who must keep a register of burials, containing necessary information, obtained from friends, physicians, undertakers, or public officials.

No dead body can be interred, removed from one district to another, or held for more than 72 hours after death unless and until a death certificate has been filed and a burial permit issued. No sexton may permit a burial or other disposition until a burial permit is received by him. The sexton must keep the necessary record of interment.

Requirements of regulations.—Certain regulations have been issued by the State board of health in order to make more explicit the requirements of the law and the procedure necessary to comply with it. They comprise the time for transmitting certificates, the signing of certificates, reports to be made, etc., and regulations for the transportation of dead bodies, which are taken up somewhat in detail as follows:

A transit permit in duplicate, containing information as to the name, sex, color, age, etc., terminal point and date and route of shipment, with date of issuance, is required for all dead bodies to be transported by common carriers. It must be signed by the undertaker and the official issuing the permit and contain the name of the escort or consignee. The original permit is fastened to the end of the coffin; the duplicate is sent to the official in charge of the baggage department and by him forwarded to the secretary of the State board of health. If the body is sent by express the original permit is attached to and accompanies the waybill and is delivered to the consignee. The duplicate is forwarded by the express agent to the State board of health.

Ticket agents before selling tickets are required to carefully examine the transit permit, note the name of the passenger in charge, and see if necessary precautions have been taken to prevent the spread of disease. Where bodies have died of communicable diseases the health officer or other competent authority at destination must be notified by telegraph.

Before shipment, bodies dead of smallpox, plague, Asiatic cholera, typhus fever, diphtheria, and scarlet fever must be embalmed with an approved disinfectant. The orifices of the body must be plugged, the surface washed with disinfectant, and the body enveloped in a sheet saturated with disinfectant and placed at once in a coffin. Either it or the outside case must be of metal or lined with metal and hermetically sealed.

For bodies dead of diseases other than these mentioned, a distinction is made depending upon whether they can reach their destination within 24 hours or longer. In the first instance the regulation describes the method of making the coffin and closing it, but does not require embalming. In the second instance the body must be embalmed.

The regulation prohibits the transportation of disinterred bodies without approval of the health authorities at the place of disinterment. A transit permit is required. Disinterred bodies must be inclosed in a metal-lined box and hermetically sealed.

Bodies in receiving vaults properly prepared by licensed embalmers are not to be regarded as disinterred bodies until after the expiration of 30 days.

No outside case is required when the coffin is transported in a hearse or undertaker's wagon.

Each outside case must have from four to six handles, depending on the size.

Collection and disposition of reports.—Local registrars and sub-registrars are authorized to accept birth and death certificates and issue burial permits. The local registrars are the town clerks, the village recorders, or the health officers, depending upon whether the registration district comprises a township, a village, or a city. The State board of health has nothing to do with the appointment of such officials, but may for cause remove them as local registrars and appoint substitutes. The subregistrars are, with few exceptions, the licensed embalmers. They are appointed by the State board of health. While all licensed embalmers have been asked to accept the position of subregistrar, a few have refused to act as such.

A local registrar may, with the approval of the State board of health, appoint a deputy to represent him, and a card indicating that a deputy has been so appointed must be filed with the State registrar. In this case the State registrar deals directly with the deputy.

Each local registrar transmits his certificates for the month direct to the State board of health on or before the 10th day of the following month. The subregistrar transmits his certificates to the local registrar of the district within five days after their receipt, and he is required to submit a monthly report to the State registrar giving the name, place of death, etc., of persons whose bodies he has buried and persons to whom he has sold a coffin. This enables the State board of health to keep a check on unreported deaths by comparing the names on these reports with the certificates of death that have been received from local registrars.

When no certificates have been received by the local registrar, he reports by postal to that effect, and if this postal reaches the board

before the 15th of the month he is entitled to a fee of 25 cents unless he should afterwards send in certificates of births or deaths for that month. The "no report card" is then canceled. All such fees are paid by the county. The local registrars of St. Paul and Minneapolis, however, do not receive reimbursement.

All certificates are paid for in full, even though they are incomplete, incorrect, or belated. By reason of the large foreign population of the State of Minnesota, some of whom speak and understand little or no English, it is difficult to secure all of the necessary information without great effort on the part of the local registrars. It is therefore deemed unfair to withhold full payment for such certificates, as to secure accurate data at all times the registrars would have to perform an amount of work in excess of the fee to which they are entitled and, if they were paid but one-half for incorrect or belated certificates, it is probable that their work would not be improved but that they would only be discouraged. No fees are paid to subregistrars.

Upon the receipt of a birth or death certificate in the vital statistics division it is stamped with the date of receipt, and if the death has occurred in a child under 1 year of age or is a stillbirth it is noted, that the records may be searched to determine whether the birth has been reported. At the same time it is also noted whether the locality has been correctly stated. The certificates of births and deaths are then pinned together and filed temporarily according to counties.

After the period has elapsed in which all certificates should be in, i. e., by the 15th of the following month, they are gone over carefully to discover missing or inaccurate statements and filed according to counties, one file being used for births and one for deaths. Those requiring further information are filed separately. A record of the total number of certificates received from each registrar is entered monthly in a book containing the name of the registration district and the name of the local registrar. The entry is made for the month in which the death or birth occurred, regardless of the date of receipt of the certificates in the division. Cards reporting no births or deaths are also recorded in this way. A separate column is used for belated reports that should have come in the previous year or in former years. This record enables the division to determine with little effort whether the local registrar has made his reports for the month. If delinquent, he is notified accordingly. This record also makes it possible to quickly compile the registrations for any period during the year or the total registrations at the end of the year, for each registration area. Each certificate and "no report" card is checked when it has been accounted for in this book.

In requesting missing or obscure information a duplicate certificate is made out and blue penciled in the space where the information should be given. Upon the return of this duplicate the required information is entered on the original in red ink.

A number of form letters are in use which take up the particular items which are most often omitted or reported erroneously. In addition to this there are a great number of letters dictated covering more fully these points or others which are not mentioned in the form letters.

All letters of this kind are first addressed to the local registrar. If he is unable to supply the information a letter is addressed to the informant whose name appears on the certificate. When the information required relates to the cause of death the letter is addressed to the attending physician and a stamped envelope inclosed for reply.

When a form letter is used, its number and the date on which it is sent are stamped on both the original and duplicate certificate, so that it will be easy to locate the original when the duplicate is returned corrected. If the letter is dictated, a copy is attached to the original certificate and the original and duplicate are stamped with the date in a certain space on the certificate, indicating, when the duplicate is returned, that a special letter was sent out with it.

Certificates awaiting correction, and related correspondence, are filed in a "daily reminder" file arranged in alphabetical order by counties. All correspondence relating to vital statistics requiring further attention is also placed in this file. If at the end of the month there are matters in this file still needing attention further correspondence is carried on.

Correct returns and "no report" cards are filed in alphabetical order by registration districts and counties.

At times, physicians and embalmers, not knowing the name of the local registrar, send certificates direct to the State registrar. In this case a duplicate is sent to the local registrar requesting him to record, number, sign, and return it. The original is then placed to his credit.

In the past it has been customary, on or before March 1, to transmit on special forms a transcript of the certificates for the county received during the year to each clerk of a district court, together with an abstract of the number of certificates and "no report" cards received from each registrar. This transcribing has been the cause of a great deal of unnecessary work and was somewhat of a concession made to the clerks of court when the new vital statistics law was passed. Before 1908 all of the original certificates were filed with them. The new law requires that all original certificates shall be filed with the State board of health, but in order that the clerk of court might retain some of the fees which had previously been al-

lowed, it also requires that transcripts shall be made and sent to him, allowing him 5 cents for each one he indexes in a county record kept for that purpose.

An effort is going to be made to stop this procedure. Since the law allows the fee to be paid only to clerks on a fee basis, and as most of the clerks are at present on a salary basis, it is thought there will be little opposition to the change.

A full record of certificates is kept by local registrars in a book. Transcripts are not made by them. A duplicate in the shape of a stub for each burial permit issued is retained.

The death certificate is similar to that used in other States and cities within the registration area.

The birth certificate conforms to that specified in the model law for the registration of births and deaths. If it happens that the child has not been named before the birth certificate is sent in, a supplemental report is left with the parents to be filled out with the name of the child when a name is decided upon and returned to the State board of health within 30 days.

Deaths are indexed according to name of deceased, age, date of death, registration district, and the number of the certificate.

Births are indexed according to name of child, father and mother, date of birth, registration district, and number of certificate.

Birth and death certificates are bound and numbered separately at the end of the year in volumes of 500 certificates each. They are numbered serially, beginning with No. 1 at the beginning of the calendar year. In binding they are grouped alphabetically according to counties and registration districts, and date of birth or death.

The State and local registrars are authorized to issue certified copies of birth and death certificates, for which there is charged a fee of 50 cents each, which goes into the State treasury. Clerks of courts, by reason of their official position, are also empowered to issue certified copies of birth or death certificates.

Transit permits can be issued by only licensed embalmers. They are similar to those used by the State of Maryland, and consist of a physician's or coroner's certificate, a permit of the local board of health, and an undertaker's certificate, all in duplicate. The duplicates are presented to the transportation company and by them are transmitted to the State board of health. The originals are attached to the coffin. Regulations and instructions for the transportation of the dead are printed on the back of the originals. The blank permits are numbered serially and issued to licensed embalmers by the State board of health, and a record is kept of the serial numbers of the permits issued to each embalmer. This enables the State board, upon the receipt of a duplicate permit from a railroad

company, to determine whether a death certificate has been received, and if not, to communicate with the embalmer who prepared and shipped the body.

With respect to the registration of births and deaths the same procedure is followed in the larger cities, such as St. Paul, Minneapolis, and Duluth, as in other parts of the State. This is very desirable, but differs from the procedure in many other States where the large city is permitted to do largely as it pleases, as if it really were independent of State authority. By handling the certificates from large cities the work required of the State vital statistics force is increased two or three fold.

All registrars are encouraged to report irregularities in the registration of births and deaths, failures to report on the part of physicians, illegal burials, etc. Most of the burden, however, of securing accurate certificates falls upon the division of vital statistics. In fact, in order that the local registrar may not incur the enmity of any individual in his district which would impair his usefulness as a registrar, the division of vital statistics, under certain conditions, prefers to take up matters with the individual without mentioning the name of the registrar.

There are 2,532 registration districts in the State, each in charge of a local registrar. In addition, there are 46 deputies and 115 sub-registrars. In consequence the amount of correspondence carried on is very extensive. In the year 1913 there were 77,161 certificates and 7,097 "no report" cards, including those that were canceled, handled in the division, and the present study shows that the force of seven employees is not large enough to do the work expeditiously. In Maryland, where there are employed in the bureau of vital statistics seven persons, there were handled during the year 1913, 27,592 certificates, and this latter force even with the lesser number of certificates is kept continually busy.

Information.—For the information of local and subregistrars, manuals of instructions have been issued; also pamphlets containing the act relating to the registration of births and deaths.

For the information of the people a notice in English calling attention to the necessity for registering births and deaths has been printed as a poster. This would probably be of more value if it were printed in several languages.

For the information of the division a record is kept of all cemeteries, with name and address of persons in charge of same.

A record is also kept of the names of all persons comprising local boards of health, including local health officers.

After each township election a card is addressed to the town clerk, requesting him to inform the State board of health of the personnel of the township board of supervisors. In questions on vital sta-

tistics the State board of health deals with the town clerk, while in public-health matters it deals with the chairman of the board of supervisors, so that this information is essential.

A monthly record of deaths from the communicable diseases is furnished to the division of preventable diseases for its information.

Statistics.—The division of vital statistics makes use of the punch cards in compiling statistics, but for lack of funds has not been able to rent the sorting and counting machines, and, therefore, tabulations have to be made entirely by hand, which is a very tedious proceeding and liable to error.

Statistics of deaths from communicable diseases and accidental deaths are compiled monthly for cities of a population of one thousand or more, State institutions, and the rest of the State. These are published in the *Journal Lancet* of the State Medical Society. For the annual report much more detailed information is tabulated.

Unreported births and deaths.—The great majority of deaths in the State appear to be reported as required by law, but one can be fairly certain that a similar statement concerning births would not be true. Investigations in the field from time to time, including perusal of local papers, examinations of baptismal and hospital records, etc., nearly always discloses a number of unreported births. In many, if not the majority of instances, the physician is at fault, due too often to a lack of appreciation of the value of the birth record to the child and to the State.

Graduates of medicine before being granted a license to practice should be made to take affidavit that they will faithfully report all births, deaths, and diseases as required by law, and it should be with that understanding that the right to practice medicine is granted.

Table of information relating to birth and death registration in the counties of Minnesota, year ended December 31, 1913.

Counties.	County number.	Registration districts.	Districts numbered from—	Birth certificates.	Death certificates.	Cards reporting no births or deaths.	Total births, deaths, and cards.	Amount expended in birth and death certificates.	Licensed embalmers. ¹
Aitkin.....	1	51	1 to 51	329	89	176	594	\$148.50	4
Anoka.....	2	17	1 to 17	254	154	26	434	108.50	4
Becker.....	3	38	1 to 38	575	209	66	850	212.50	2
Beltrami.....	4	65	1 to 65	627	265	259	1,151	287.75	7
Benton.....	5	18	1 to 18	336	102	44	482	120.50	2
Big Stone.....	6	21	1 to 21	216	84	26	326	81.50	8
Blue Earth.....	7	32	1 to 32	706	390	44	1,140	285.00	13
Brown.....	8	23	1 to 23	550	210	29	789	197.25	8
Carlton.....	9	26	1 to 26	520	179	52	751	187.75	5,
Carver.....	10	24	1 to 24	377	189	36	602	150.50	6
Cass.....	11	46	1 to 46	299	162	166	627	156.75	1
Chippewa.....	12	22	1 to 22	391	150	27	568	142.00	7
Chicago.....	13	19	1 to 19	295	163	31	489	122.25	6
Clay.....	14	38	1 to 38	490	218	71	779	194.75	5
Clearwater.....	15	21	1 to 21	177	51	72	300	75.00	0
Cook.....	16	9	1 to 9	32	8	36	76	19.00	0
Cottonwood.....	17	24	1 to 24	378	108	32	518	129.50	3
Crow Wing.....	18	41	1 to 41	617	239	133	989	247.25	5
Dakota.....	19	32	1 to 32	648	333	46	1,027	256.75	11

¹ Licensed physicians, 2,252. Registered midwives, about 300.

Table of information relating to birth and death registration in the counties of Minnesota, year ended December 31, 1913—Continued.

Counties.	County number.	Registration districts.	Districts numbered from—	Birth certificates.	Death certificates.	Cards reporting no births or deaths.	Total births, deaths, and cards.	Amount expended in birth and death certificates.	Licensed embalmers.
Dodge.....	20	18	1 to 18	269	111	27	407	101.75	4
Douglas.....	21	30	1 to 30	386	170	49	605	151.25	2
Faribault.....	22	31	1 to 31	437	173	36	646	161.50	11
Fillmore.....	23	36	1 to 36	533	286	46	855	213.75	19
Freeborn.....	24	26	1 to 26	507	215	30	752	183.00	11
Goodhue.....	25	30	1 to 30	596	334	37	967	241.75	15
Grant.....	26	23	1 to 23	213	70	55	338	84.50	3
Hennepin, exclusive of Minneapolis.....	27	39	1 to 39	642	313	53	1,008	252.00	98
Houston.....	28	23	1 to 23	292	156	28	476	119.00	6
Hubbard.....	29	31	1 to 31	261	116	110	487	121.75	6
Isanti.....	30	16	1 to 16	307	145	12	464	116.00	4
Itasca.....	31	48	1 to 48	617	202	162	981	245.25	11
Jackson.....	32	25	1 to 25	354	148	34	536	134.00	5
Kanabec.....	33	16	1 to 16	197	55	34	286	71.50	4
Kandiyohi.....	34	31	1 to 31	491	202	41	734	183.50	4
Kittson.....	35	34	1 to 34	243	78	114	435	108.75	2
Koochiching.....	36	40	1 to 40	256	130	157	543	135.75	4
Lac qui Parle.....	37	30	1 to 30	435	155	49	639	159.75	6
Lake.....	38	9	1 to 9	233	111	19	363	90.75	2
Le Sueur.....	39	24	1 to 24	348	185	27	560	140.00	11
Lincoln.....	40	20	1 to 20	279	90	31	400	100.00	3
Lyon.....	41	28	1 to 28	414	174	37	625	156.25	12
McLeod.....	42	22	1 to 22	455	170	17	642	160.50	11
Mahnomen.....	43	14	1 to 14	96	39	37	172	43.00	1
Marshall.....	44	55	1 to 55	518	183	171	872	218.00	1
Martin.....	45	30	1 to 30	484	144	40	668	167.00	11
Meeker.....	46	22	1 to 22	391	207	25	623	155.75	5
Miller.....	47	20	1 to 20	252	106	34	392	98.00	2
Morrison.....	48	40	1 to 40	593	214	95	902	225.50	5
Mower.....	49	32	1 to 32	541	249	48	838	209.50	14
Murray.....	50	28	1 to 28	355	109	49	513	128.25	4
Nicollet.....	51	18	1 to 18	289	213	24	526	131.50	2
Nobles.....	52	31	1 to 31	480	149	53	682	170.50	11
Norman.....	53	31	1 to 31	306	106	77	489	122.25	0
Olmsted.....	54	25	1 to 25	484	624	29	1,137	284.25	15
Ottertail.....	55	81	1 to 81	1,151	647	124	1,922	480.50	13
Pennington.....	56	23	1 to 23	303	103	63	469	117.25	4
Pine.....	57	41	1 to 41	434	158	121	713	178.25	4
Pipestone.....	58	19	1 to 19	259	87	33	379	94.75	2
Polk.....	59	70	1 to 70	781	357	186	1,324	331.00	10
Pope.....	60	27	1 to 27	304	135	52	491	122.75	1
Ramsey, exclusive of St. Paul.....	61	8	1 to 8	185	80	2	267	66.75	65
Red Lake.....	62	16	1 to 16	197	61	34	292	73.00	2
Redwood.....	63	42	1 to 42	508	150	90	748	187.00	6
Renville.....	64	37	1 to 37	604	200	43	847	211.75	6
Rice.....	65	22	1 to 22	480	363	22	865	216.25	7
Rock.....	66	18	1 to 18	306	105	24	435	108.75	6
Roseau.....	67	42	1 to 42	367	116	119	602	150.50	0
St. Louis.....	68	84	1 to 84	5,268	2,256	181	7,705	1,926.25	42
Scott.....	69	20	1 to 20	272	134	34	440	110.00	5
Sherburne.....	70	17	1 to 17	193	86	21	300	75.00	2
Sibley.....	71	24	1 to 24	370	148	26	544	136.00	10
Stearns.....	72	62	1 to 62	1,381	488	64	1,933	483.25	19
Steele.....	73	16	1 to 16	397	152	17	566	141.50	6
Stevens.....	74	21	1 to 21	230	78	48	356	89.00	5
Swift.....	75	29	1 to 29	383	135	59	573	143.25	10
Todd.....	76	39	1 to 39	613	227	55	895	223.75	9
Traverse.....	77	19	1 to 19	219	62	39	320	80.00	2
Wabasha.....	78	27	1 to 27	400	205	33	638	159.50	14
Wadena.....	79	19	1 to 19	230	100	45	375	93.75	1
Waseca.....	80	15	1 to 15	268	132	7	407	101.75	12
Washington.....	81	22	1 to 22	377	292	22	691	172.75	7
Watsonwan.....	82	19	1 to 19	312	109	26	447	111.75	5
Wilkin.....	83	31	1 to 31	279	101	82	462	115.50	2
Winona.....	84	28	1 to 28	742	443	59	1,244	311.00	8
Wright.....	85	36	1 to 36	622	315	36	973	243.25	18
Yellow Medicine.....	86	29	1 to 29	454	145	32	631	157.75	5
Total.....	86	2,546	.....	40,250	17,605	5,054	62,909	15,727.25	730
Minneapolis ¹.....	.....	.....	.....	7,450	4,135	.....	.....	.....	.....
St. Paul ¹.....	.....	.....	.....	4,970	2,751	.....	.....	.....	.....
Grand total.....	.....	.....	.....	52,670	24,491	.....	.....	.....	.....

¹ Certificates from Minneapolis and St. Paul are not paid for.

The Practice of Undertaking.

The licensing of embalmers was, from its inception, placed under the control of the State board of health. This provision, together with the methods of carrying it out, has enabled the State registrar to secure the cooperation of the licensed embalmers with regard to the reporting of deaths, and even births.

When licensed embalmers are appointed as subregistrars they are given a good deal of power, in that they may issue burial permits for bodies in their charge. If the State department of health did not have supervision over the licensing, this might result in a situation difficult to control. For instance, in certain epidemics it is advisable to inspect all dead bodies before they are buried or even embalmed for the purpose of detecting unreported cases. In order to see every dead body, it is necessary to withhold the burial permit until passed by the inspecting officer, and where the burial permit is granted by the undertaker it might be difficult to carry out such a procedure.

Requirements of law.—The following is a summary of the law relating to embalmers:

Every person or firm selling a casket is required to keep a record showing the name of the person to whom sold, his post-office address, name of deceased, date of death, and place of death. On the first day of each month a report of the sales for the previous month must be made to the State registrar, except where such sale is made to a dealer or undertaker, or where the person or firm is in charge of the disposition of the body.

If the person or firm selling the casket at retail is not in charge of the disposition of the body, there must be inclosed in the coffin a blank death certificate, copies of rules and regulations of the State board of health, etc.

No person is permitted to embalm a dead body without a license from the State board of health, and only a licensed embalmer may take charge of a body dead of a communicable disease. The license is obtained, after the necessary examination, upon the payment of a fee of \$5. The applicant must be at least 21 years of age, of good moral character, and with one year's practical experience in embalming. The license expires on the 31st day of July, and may be renewed for two years upon the payment of a fee of \$1.

The State board of health may, for cause, revoke or refuse to grant or renew any license.

Any person who embalms a body or claims to be an embalmer, without the required license, is liable to a fine of not less than \$25 or more than \$100, or imprisonment for a period of not to exceed three months.

Requirements of regulations.—Regulations have been promulgated by the State board of health stating explicitly the requirements to become a licensed embalmer and giving in detail the examination which the applicant is required to pass.

It further specifies that no railroad in the State can receive for shipment any dead body unless it has been prepared by a licensed embalmer.

A regulation of the State board of health also requires that for embalming a body for shipment there must be used not less than 8 parts by weight of embalming fluid to 150 parts of body weight.

In addition to this, where the persons have died from a communicable disease the surface of the body must be washed and the orifices plugged. The thorax and abdomen must be injected with the embalming fluid. Cancerous or other eroded surfaces must be bandaged and dressed.

Every embalming fluid must contain 5 per cent by weight of formaldehyde gas in every 100 parts by volume of the embalming fluid.

No chloral, arsenic, mercury, zinc, or other mineral poison is permitted in embalming fluids.

A list of the ingredients of every embalming fluid sold in the State must be filed in the office of the State board of health.

Methods of operation.—The State board of health appoints a board composed of five members, taken from names submitted by the State funeral directors association. A new member is appointed each year. When the time arrives to hold an examination of applicants for license, the president of the State embalmers association is requested to submit questions and from these the secretary of the State board of health selects those which he considers most suitable, or he may add questions to this list.

The examinations are held by the secretary of the State board of health, assisted by the board of embalmers. The examination is divided into three parts—a written examination of not less than 50 questions on the anatomy of the human body, technical subjects, transportation rules, disinfection, etc.; an oral examination on embalming, communicable diseases, and disinfection; and a practical examination upon the cadaver, which latter is held under the supervision of an official of the State university.

If the applicant passes the examination he is given a license by the State board and offered the position of subregistrar. He is under no obligation to accept this position if he does not care to.

The University of Minnesota has recently inaugurated a six weeks' course in embalming, which places the matter on a better and more scientific basis, and which might well be copied by other State universities. For this reason, after July 1, 1914, the State board of health will permit the university to assume entire charge of the examinations. In order to encourage those contemplating a study of embalming to take the university course, its graduates are given a license without additional examination, and \$5 of the fee of \$50 which students must pay for the course will be set aside by the university to pay for the license.

EXTENSION DIVISION.

The extension division is a newly organized division of the State board of health. Its director is the secretary of the board, and he has as his assistants a special agent, and the executive secretary of the Minnesota Public Health Association, whose duties in that associa-

tion are closely allied to the work of the new division. The salaries are as follows:

1 assistant director of the division (part time)-----	\$1,000
1 special agent-----	1,800

Duties of the division.—The duties of the division are educational in nature and devoted to the dissemination of popular information relating to public health, through circulars, bulletins, newspaper articles, lectures, and exhibits.

While the educational function of a health organization is most important, it has not been exercised as energetically and as extensively in Minnesota as the importance of the subject demands.

Requirements of law.—The law bearing on the duties of the extension division is as follows:

The board of health is empowered to “gather and diffuse proper information upon all subjects to which its duties relate.” It is also empowered “to gather, collate, and publish medical and vital statistics of general value.”

Bulletins, circulars, etc.—Except for the circular letter that accompanies the monthly morbidity reports sent to county auditors and to newspapers of the larger cities, no popular bulletin is issued by the State board of health. It was thought that by sending the report to county auditors the local newspapers would secure and publish the pertinent data. This did not work out as expected, so that at present this information appears only in the newspapers of the larger cities.

Formerly an arrangement was had with certain of the newspapers throughout the State whereby they would publish free of charge material furnished by the State board of health. This would seem to be a good idea, but has fallen into disuse.

The advisability of publishing a semimonthly bulletin to be issued to pupils of the public schools of the State and used as a text for their instruction should be carefully considered. Each bulletin should be a chapter, so that the year’s bulletins, when bound together, would form a primer on public health worthy of the name.

It is unfortunate that many teachers are as much in need of public-health instruction as are their pupils. This indicates a weakness in the curriculum of the normal schools and universities which should be corrected.

Circulars on tuberculosis and typhoid fever for the information and instruction of physicians, patients, and contacts are in use by the division of preventable diseases, and circulars on other diseases are in course of preparation. In addition, the division of sanitation has in press bulletins comprising the subjects of farm water supplies and the disposal of sewage in rural communities.

Lectures and exhibits.—In the past popular lectures have been given from time to time by members of the different divisions of the

State board of health, but until 1913 no organized movement had been made in this direction except during the time the exhibit was on the road. During that year a course of lectures in public health was offered by the State board of health to the medical and the educational school of the University of Minnesota and to one of the normal schools. The university accepted the offer, but the normal school rejected it on the ground that their course of study was already decided upon and their available hours for lecturing were already filled. The secretary, the chief of the division of preventable diseases, and members of the staff of the division of sanitation gave these lectures at the university.

The exhibit was first shown in 1907 as an antituberculosis exhibit, but has been added to in recent years until it has become more of a general public-health exhibit and therefore of more general interest and value to the public.

The exhibit is made in the less populous cities and villages in a public building or other suitable place, an effort being made by interested local people to arouse enthusiasm among the citizens before the exhibit arrives. It consists mainly of charts and diagrams, but few models being used. Lectures with stereopticon views are given at each place by the official accompanying the exhibit, other officials of the State board of health, local doctors, or other persons of prominence. At each meeting the program usually includes some musical feature in order to make it more popular. Moving pictures are not utilized, due mainly to the fact that many of the smaller places visited are without electricity, and the cinematograph picture is unsatisfactory when illuminated by any light other than electricity.

All charts and diagrams are of uniform size, so that they may be conveniently packed in trunks specially made for the purpose. The frame on which the exhibit is hung is so constructed that it may be readily taken apart and packed. The exhibit is carried as excess baggage. The stereopticon, with its oxyhydrogen apparatus, is transported by express.

During the year 1913 no regular exhibit was given, although it was occasionally sent out at the request of a locality and the expenses borne by that locality. The expense of regular exhibits is borne by the State board of health.

Minnesota Public Health Association.—There has recently been formed out of the previously existing State Association for the Prevention and Relief of Tuberculosis an organization known as the Minnesota Public Health Association, which has for its object an educational campaign, including the dissemination of popular information relating to public health and sanitation. The society has secured as its secretary an expert on public health, who is also as-

sistant director of the extension division of the State board of health. Under these circumstances the activities of the society should be productive of great good.

Personally, I can not but think that the efforts of most societies of this kind are misdirected. The actual work in connection with the eradication of disease is a legitimate function of the State, but to accomplish results it must have the cooperation of every citizen. A society composed of public-spirited citizens can best give this necessary cooperation by having for its sole object the determination to secure needed legislation and money for the State health department, thus strengthening a valuable and permanent organization. The officials of the State board of health of Minnesota are continually handicapped in their work by having too few employees, little law, and less money.

School Hygiene and Child Welfare.

School hygiene.—Formerly the State board of health had a number of excellent regulations covering the subject of school hygiene. In 1913, the State educational authorities secured the passage of a bill taking away from the State board of health the authority to make such regulations, except as to standards for toilets, water supply, and the disposal of sewage, and vesting the authority in the superintendent of education. The regulations of the State board of health were, however, used as a basis for formulating others. The only regulations relating to schools which are at present in force therefore are those directed against the spread of the communicable diseases, and have already been mentioned.

Except in a few isolated instances, the State board of health has recently taken little action toward establishing any system of school medical inspection. This appears to be due to a deficiency in the size of the field force and funds with which to carry on the work.

There seems to be at present a controversy as to what branch of a State or local government should have charge of school hygiene, the health department or the school department. It is certainly the proper function of a health department to eradicate the preventable diseases. Any disease which can be controlled by a proper supervision of individuals, occupations, or environment is a preventable disease.

It is a duty of the health department to study infant or child welfare, including prenatal care of mothers, and to institute measures to conserve human life and health during the earlier periods of existence.

It is equally true that the duty of preventing both communicable and industrial diseases among the adult population also devolves

upon the health department. If the medical inspection of schools is placed in the hands of school authorities there is lost to the health department a most valuable period, namely, during the school age of the child, in which to carry on valuable studies and follow up the previous work in infant welfare. In addition, the work of the school nurse, not only in but out of school, furnishes much information, which can be of value to the health department only when she works in close cooperation with it.

It is frequently said that the average health department is neither sufficiently well endowed nor organized to properly carry on this work. This, however, is no argument against the plan. On the contrary, it is an excellent reason why such department should be so strengthened as to enable it to do the work and do it well.

In cities the medical inspection should be carried on by the local health department. In rural communities the same work should be done by the State health department.

It is pertinent here to point out the great discrepancy existing between the appropriations for health work and for school work in the State of Minnesota.

The State board of health will receive during the year 1915, \$67,000, a wholly inadequate amount to enable it to carry on the work necessary. On the other hand, the State aid to public schools for 1915 will amount to \$4,300,000, and this figure does not include the expense of maintaining the State university nor the State normal schools. If health is equal only in importance to education, it is a sufficient reason why a more equitable distribution of the State's funds should be made.

Formerly the State board of health had a division of school hygiene, under a director whose duty it was to guide and assist local health or educational authorities in instituting and maintaining an adequate system of school medical inspection. On account of lack of funds the work of this division had to be discontinued and the division abolished. Since then the State board of health has practically done nothing except through one county health officer, who is a full-time man, receiving part of his salary from the State. His duties include the medical supervision of school children in the city of Rochester and the county of Olmsted. This work is also about to be discontinued on account of the resignation of the health officer and the probability is that his place will not be filled, at least for some time.

A method of taking a disease census among school children has been devised by the director of the division of preventable diseases, to be put into operation in such places within the State as have efficient local medical supervision of school children. It has for its object the recording of every communicable disease a child may

have had or that may be contracted by it while attending school. Such knowledge is valuable in determining the immune children during any epidemic or as an aid in differential diagnosis, thus greatly assisting the epidemiologist in his studies and methods pursued in limiting the outbreak.

A special form card is sent to the parent containing spaces for supplying the following information: Name of child, school address, home address, date of birth, place of birth, and dates of residence outside of Minnesota. On the reverse side of the card are spaces to be filled in by the mother, giving the age when the child had the diseases specified on the card, and the age at which it was vaccinated. These cards are filed by the teachers, a notation being made by them as to school and grade, date of record, sex and age of child. If a pupil is absent on account of a communicable disease, the teacher notes such absence on the card, and upon the convening of school she notes also any communicable diseases contracted during vacation. A special form is used to summarize this information, which is then forwarded to the division of preventable diseases. A card index is kept in the division of preventable diseases of the number of pupils in each school, and maps showing the location of schools throughout the State.

Child welfare.—Formerly the State board of health took an active interest in child welfare, and, in connection with school hygiene, commenced a study with the intention of taking the necessary steps to conserve child life. This, with the school work, had to be discontinued for lack of funds. It is a subject of such vast importance that it is to be hoped the coming legislature will appropriate sufficient money to continue this and similar work.

In connection with child welfare, the State board of health is empowered to promulgate regulations providing for the "management of lying-in houses and boarding places for infants and the treatment of infants therein." Local authorities are required to enforce regulations that have been made under this authority. They are summarized as follows:

All lying-in houses and boarding places for infants are required to obtain a license from the local health officer. After the necessary inspection, he issues such license, and is entitled to a fee of \$2 for the same. The license expires on the 1st day of January, and may be renewed upon the payment of a fee of \$2. A copy of the license must be filed with the State board of health within 10 days after its issuance, and must contain a certificate of the health officer to the effect that the applicant is of good moral character. It must also contain a description of the premises, number of children that may be received in the institution, etc. Before a license is issued, the premises and furnishings must be in good sanitary condition.

Local physicians and midwives may be granted a license to operate a lying-in hospital.

All births in such institutions must be reported within three days to the local health officer by the person in charge. The name and age of any child taken into a boarding house for infants, with the place of residence of the person placing the child in the institution, must be reported to the local health officer within three days.

All health officers are authorized to visit and inspect such institutions, and may revoke the license for cause. The officers of any incorporated society for the prevention of cruelty to children are also authorized to inspect such premises. The secretary of the Minnesota State board of health, or other representative of the State board, is also authorized to enter and inspect such premises, and has authority to inspect children as to their physical condition.

It is prohibited for any person to offer, either by advertisement or in any other way, to dispose of the child of another, or to place a child in a boarding house of the type and character described as an inducement for anyone to come to their premises during confinement.

CLERICAL DIVISION.

The clerical division is in charge of the assistant secretary, who, in the absence of the secretary, performs his administrative duties. The assistant secretary is not a physician. Although the law does not require that the secretary shall be a physician, he needs to have the qualifications of a physician in order to properly carry out all of his duties. In the absence of the secretary the logical head would be the director of the division of preventable diseases, but on account of the different divisions of the State board being located in different places this is not entirely practicable. The present assistant secretary would be more properly termed the chief clerk, or assistant to the secretary, and, on account of his thorough familiarity with the details of the administrative work of the State board of health, he is essentially capable of filling such an important position.

The personnel of the division and their respective salaries at present are as follows:

1 assistant secretary-----	\$2,400
1 clerk and stenographer-----	780
1 stenographer-----	1,080
1 messenger-----	270
4-----	<u>4,530</u>

Duties of the division.—The clerical division is concerned with the filing of all correspondence of the executive office, and copies of letters and reports sent out by other divisions of the State board. It is also concerned with keeping accounts of expenditures, the issuance of licenses to embalmers and rendering establishments, the issuance of blank forms, etc., to local authorities, the compiling of statistical information for the division of vital statistics, and numerous other miscellaneous duties. In addition, the assistant secretary is not infrequently called upon to make inspections in different parts of the

State relative to nuisances and prepares material for the health exhibit.

Records and reports.—Two records are kept of expenditures, one of which is required by the State auditor and one by the public examiner. Neither one of these records is of any great utility to the State board of health.

Expendable and nonexpendable property is purchased by the directors of the different divisions on special order forms without specific authority from the secretary unless of an extraordinary nature, when the previous approval of the secretary must be obtained. Vouchers are made out in the division for which the article is purchased. These are "O. K'd" by the director of the division, showing that the materials have been furnished, and then transmitted in duplicate to the assistant secretary.

A monthly abstract accompanied by the original vouchers is transmitted to the State auditor, and a copy of the same abstract is sent to the State treasurer.

The bills are numbered serially for each fund from which they are to be paid, and the duplicates are bound and kept in the files of the State board of health.

All checks for reimbursement are issued by the State treasurer after the bills have been approved by the auditor, and are forwarded to the secretary of the State board of health, from whose office they are transmitted to the proper person.

The account required by the auditor consists of a semimonthly statement to be kept in a ledger showing the total expenses charged against each fund, and a record of receipts either from the sale of licenses or for reimbursement for work done by the State board. In the first case, money received must go into the State treasury; in the second instance, it is available to the State board for its maintenance.

The public examiner requires that the expenses for each month shall be segregated and accounted for in a ledger under certain designated headings for each fund, as follows:

Salaries.	Post office and express.
Railroad fares.	Supplies.
Hotel.	Miscellaneous.
Livery.	Laboratory supplies.
Telephone and telegraph.	Betterments.

A card index is kept by name of employee or firm name of all expenditures incurred by the State board of health, each card containing the number of the voucher, the date on which the expense was incurred, and the amount.

A record is kept of the blank forms, etc., issued to local authorities.

A very simple filing system for letters and reports is maintained. There are two files, one of which is kept by locality; letters on subjects relating to the public health being filed in the file of the particular locality. Another file is kept by subjects, all matters relating to that subject being placed in the file. A cross index is not kept.

Expenses.

In order that the State board of health may be able to determine at any time the exact cost of any division, subdivision, or piece of work, a system of accounts should be kept similar to that which was recommended for the State department of health of Maryland and in accordance with the statement of expenditures which is appended herewith. This statement was gotten up only after much labor, but is approximately correct. A change in the system of bookkeeping would make it a very easy matter to prepare such a tabulation. A system like that recommended enables the different officials to learn at a moment's notice the financial standing of their divisions and to determine accurately the cost of carrying on their activities. It is also valuable in making a comparison of the cost of work in the different health departments.

The present order blank could be modified so that it should serve both as an order and a requisition, and as soon as articles are ordered a copy should be furnished to the assistant secretary.

In the interests of labor saving it might seem reasonable for the auditor and State examiner to devise a system of bookkeeping satisfactory to both.

The tabulation shows that the expenses for the year ended July 31, 1914 (the fiscal year adopted by the State), amount to \$72,013.31. The total appropriations for that year were \$66,500, which, plus the balance available at the end of the previous year—namely, \$5,054.29—amounted to \$72,554.29. This represents a deficit for the year of \$459.02.

Appropriations.

The appropriations for the State board of health are divided into certain funds, as follows:

General.....	\$14, 500
Communicable diseases.....	15, 000
Vital statistics.....	5, 000
Sanitary engineering.....	7, 000
Laboratory.....	18, 000
Pasteur institute.....	7, 000
Total.....	66, 500

The total amount appropriated, namely \$66,500, for 1915, represents but 0.0034 per cent of the total revenue of the State, based on the figures for 1912. The amount is not sufficient to carry on the

activities of the health department. Because of a lack of money, the State board of health has been compelled to discontinue some very important work, and is prevented from developing as it should. It is continually hampered in carrying out even the routine work which is required of it and which must be done expeditiously in order to get results. In fact, the amount granted is not commensurate with the importance of the work done. For instance, the dairy and food commission receives \$66,300; there was appropriated for hog cholera serum \$25,000; there has been appropriated \$25,000 for the payment of agricultural agents to be stationed in the different counties; and the State aid to public schools amounts to over \$4,300,000.

It has been pointed out in a former report that a State should appropriate a minimum of 2 per cent of its total revenues to the health department. The total revenues of the State of Minnesota in 1912 were \$19,313,793.96. Two per cent of this amount would be \$386,275.86, and for a State of the size and importance of Minnesota, this amount would not be too much to carry on the necessary health activities. If the members of the State legislature would make a study of their State board of health's activities, such as has been made the subject of this report, they would come to the conclusion that money so appropriated was money well spent.

At its last session the legislature of the State of Maryland doubled the appropriations of the State department of health. In other words, this department was given \$145,000, instead of \$75,000, to defray the expenses of its activities, including the maintenance of a district health organization. Maryland is about one-eighth the size of Minnesota, having an area of 9,941 square miles, as compared with 80,858 square miles in Minnesota; also the population in Minnesota is greater by 872,844 people; and Minnesota is at least equal to Maryland in the importance of its industries. To properly supervise the health work in such a large territory and among such a population, would require at least twice the number of district health officers as were provided for Maryland, or not less than 20.

Statement of expenditures of the State board of health for the fiscal year ending July 31, 1914.

	Executive office.	Vital statistics.	Division of sanitation.	
			Engineering.	Water and sewage laboratory.
Binding birth and death certificates.....		\$54.72		
Blue prints.....			\$2.70	
Books and subscriptions.....	\$509.86			
Boxes and crates.....			7.50	\$7.00
Cameras and supplies.....			10.12	
Chemicals.....				39.87
Chemical apparatus.....			7.00	
Cost of prosecutions.....	40.67	127.46		
Drinking water, cups, etc.....		30.00		
Dues, conferences and associations.....	25.00			
Expense of licensing embalmers.....		90.96		
Express, freight, and drayage.....	10.87	26.85	3.50	193.64
Filing cabinets and supplies.....		20.00	10.15	

Statement of expenditures of the State board of health for the fiscal year ending July 31, 1914—Continued.

	Executive office.	Vital statistics.	Division of sanitation.	
			Engineering.	Water and sewage laboratory.
Furniture.....	\$104.69			
Laboratory supplies.....				\$354.80
Maps, charts, pictures, etc.....				1.55
Messenger service.....		\$2.20	\$2.30	
Multigraph and adding machine supplies.....		1.50		
Office supplies.....		321.53	41.23	
Plumbing and repairs.....			26.78	
Postage.....		523.55	50.00	
Printing.....		259.68	2.10	4.75
Punch machine and cards.....		182.37		
Salaries.....	4,500.00	6,508.31	6,019.13	6,330.84
Scientific instruments and apparatus.....				36.67
Technical supplies, engineering.....			59.83	
Telephone and telegrams.....	31.66		84.00	27.10
Towel service.....		23.66		
Traveling expenses.....	799.40	3.39	626.31	1,183.64
Traveling, members of board.....	180.29			
Typewriter and supplies.....		11.50	2.75	
Total.....	6,202.44	8,187.68	6,955.40	8,179.86

	Division of preventable diseases.			Extension division.	Clerical division.	Total.
	Epidemiology.	Bacteriological laboratory.	Pasteur Institute.			
Binding birth and death certificates.....						\$54.72
Blue prints.....						2.70
Books and subscriptions.....						509.86
Boxes and crates.....				\$2.58		17.09
Cameras and supplies.....	\$61.79					71.91
Chemicals.....		\$176.50	\$19.33			235.70
Chemical apparatus.....						7.00
Coal, gas, and electricity.....	6.95	34.64	39.50			81.09
Cost of prosecutions.....	43.81					211.94
Diagnostic apparatus.....	21.25					21.25
Drinking water, cups, etc.....						30.00
Dues, conferences and associations.....	3.00	71.39				99.39
Expense of licensing embalmers.....						90.96
Express, freight, and drayage.....	9.78		22.91	22.43	\$22.36	312.34
Filing cabinets and supplies.....	64.46	83.12	3.75		89.05	270.63
Furniture.....	55.16	106.00	63.25		34.90	364.00
Laboratory supplies.....		604.26	2,052.21			3,011.27
Lantern and supplies.....				60.86		60.86
Mailing cases.....		218.64				218.64
Maps, charts, pictures, etc.....	58.92			57.00		117.47
Messenger service.....		38.55		.90	26.98	70.06
Multigraph and adding machine supplies.....	3.30					4.80
Office supplies.....	287.56	148.45	8.80	7.09	155.03	969.69
Plumbing and repairs.....						26.78
Postage.....	251.98	353.85	100.00		407.89	1,687.27
Press clippings.....	80.00					80.00
Printing.....	366.75	34.40		20.28	31.00	718.96
Punch machine and cards.....						182.37
Repairs to laboratory buildings.....	25.68		773.91			799.59
Rent.....		336.00				336.00
Salaries.....	10,512.19	10,923.63	4,254.32	1,675.00	4,233.50	54,966.92
Scientific instruments and apparatus.....		89.19	20.06			145.92
Technical supplies, engineering.....						59.83
Telephone and telegrams.....	163.38	171.51	20.00		205.21	702.86
Towel service.....		50.51	14.94			80.11
Traveling expenses.....	2,270.80	72.90	63.55	42.04		5,062.03
Traveling, members of board.....						180.29
Typewriter and supplies.....	29.40	76.25			31.35	151.25
Total.....	14,316.16	13,589.79	7,456.53	1,888.18	5,237.27	72,013.31

Total expenses.....	\$72,013.31
Appropriations, 1914.....	\$66,500.00
Balance, August 1, 1913.....	5,054.29
Deficit.....	71,554.29
	459.03

FIELD FORCES, ACTIVE AND POTENTIAL.

The field activities and the officials of the State board of health engaged therein have already been mentioned under the designation of the different divisions in which they are employed. The question of local authorities, however, has not been mentioned and remains to be considered.

Local Authorities.

Requirements of law.—The State laws relating to the organization of local health boards and the duties and powers of local health officers are summarized as follows:

A county board of health is formed of two county commissioners and one physician resident in the locality. It has jurisdiction over unorganized territory only. The township board of health consists of the township board of supervisors. It has jurisdiction over every village in the township where no organized board of health exists. Every village may have and every city must provide by ordinance for the establishment of a board of health. Failing to so provide, the State board of health may appoint three or more persons to act until the local board is established, in which case the State may fix the salary which must be paid by the city. At least one member of every local board must be a physician. His duties are to act as local health officer and executive of the board. If no member of the town board is a physician, it must appoint one as health officer for the town. Compensation is fixed by the local board and must be paid by the county or municipality.

Under the law, the State board of health is given supervision over local boards.

It is the duty of the local boards of health and health officers to make necessary investigations and reports and obey such directions concerning communicable diseases as the State board of health may require or give, and, under the general supervision of the State board of health, must cause the enforcement of all laws and regulations relating to public health. If any health officer refuses to perform any duty required of him, he is deemed guilty of a misdemeanor.

In the performance of their duties, all employees in local health organizations have the right of entry to any building, conveyance, or place. Anyone who obstructs such entry or otherwise interferes is guilty of a misdemeanor.

All local boards of health must employ at the cost of the township, county, or place, as the case may be, all help necessary for the suppression of communicable diseases or the enforcement of the laws and regulations of the State board of health. For failing to do so, the State board may employ such assistance and charge it to the locality.

Local health officers have the right to order the abatement of any nuisance, allowing not more than 10 days for such abatement, and if the order is not obeyed, the locality may have the work done and charge the expense against the offender, provided that the total cost is not more than \$25.

The law also places the collection and disposal of night soil from privy vaults and the contents of cesspools, in places having a population of over 50,000 inhabitants, in the hands of the local authorities.

The method for abating any nuisance by the city and charging the expense against the offender is specified in detail in the law.

The council of every city having 10,000 inhabitants or less may provide for the inspection of milk sold within its limits, and the dairies and dairy herds from which the milk comes.

The council may appoint a competent licensed veterinarian as city dairy inspector, who must make an inspection once a year of dairies and dairy herds. He is entitled to a fee of 25 cents for each animal inspected. This fee is paid by the owner. The inspector is appointed at the first meeting of the city council after the election and holds office until his successor is appointed. When he finds that dairies and herds are in a sanitary and wholesome condition he issues a certificate setting forth the facts. This certificate is good for one year.

Anyone who sells milk without such a certificate is guilty of a misdemeanor.

Local health officers are required to inspect the jails once a year with reference to sanitary conditions, and make the necessary report to the board of control, and are entitled to a fee of \$2, paid by the locality. If the report of the local health officer indicates that the jail is in a condition dangerous to the life or health of the inmates, the board of control has the power to condemn the building.

It is prohibited for anyone to engage in a trade or employment which is dangerous to the health of the community or injurious to neighboring property without a written permit of the board of health of the town, village, or city. For violation there is provided a penalty of \$50 for each day on which the trade is exercised.

Local boards may designate places wherein such trades or employments may be carried on and may revoke any license granted.

Any person carrying on the business after 24 hours after the permit is revoked is liable to a fine of \$100 for each day.

A person has the right to appeal to the district court within five days after the revocation of his permit. Details relating to the process of appeal are given in the law.

Requirements of regulations.—The following regulations have been promulgated by the State board of health for the guidance of county health officers and local health officers. These regulations give the county health officer the duties of an investigator, requiring him to keep in touch with certain sanitary matters within his county, but do not give him any powers of control. In fact, according to the law, his powers of control are effective only in unorganized territory. As a matter of fact, the county health officer is of very little utility to the State.

County health officers are required to make quarterly reports to the Minnesota State board of health, relative to general sanitary conditions and communicable diseases, special attention being given to reporting rabies and glanders.

They must keep a close watch over apparent epidemic or endemic diseases, and if any question arises as to the proper care, must notify the secretary of the State board of health, so that an investigation may be made.

The county health officer is required to report to the State board if he believes that returns of births and deaths are not being made as required by law.

He must note the conditions of slaughterhouses, rendering establishments, etc., and report to the secretary of the State board of health as may be necessary.

He must bring to the attention of the secretary of the State board of health any conditions which may be in need of sanitary regulation.

County health officers are required to assemble at the call of the State board of health once a year to discuss general sanitary problems.

They must obey any directions relating to sanitary problems received from the State board of health.

Upon application of not less than five county health officers, the State board of health must call a special conference to discuss special or local sanitary problems.

The health officer of every city and village is required to make a sanitary inspection of his municipality in the month of May. A written report, with recommendations, must be made to the council, on or before the 1st day of June in the year in which the inspection is made. A copy is submitted by the health officer to the State board of health before the 1st of July. Other inspections may be made as necessary.

Preceding such inspection, an order must be published in the local papers to clean all yards, vaults, and cesspools; also all sheds or barns containing manure, before a given date. If upon such second inspection this general order is not obeyed, individual notices must be served.

A study which was made of local health organizations disclosed the fact that the local health officers are generally rather enthusiastic and more or less energetic in the performance of their duties.

There are a few localities in the State which employ full-time health officers, but the great majority employ, at small salaries, practicing physicians, who are required to give but a small part of their time to the health department. Such a system is bad. The practicing physician can not afford to devote the proper amount of time to public-health work, and if he performs his duties properly he will incur the enmity of people upon whom he is depending for his private practice and therefore his living.

In Minnesota the county health officer plays little part in public-health matters, for the law gives him jurisdiction over unorganized territory only.

In townships the board of supervisors acts as the board of health, and they are required to appoint a health officer, although he may be so appointed to meet an emergency only. A village may, and a city must, appoint a health officer. If the city does not provide for a health officer the State board of health may appoint one and name his salary. The law already provides for the proper supervision of local boards by the State board of health.

There is great need for the State to have more representatives in the field who can be in close touch with local authorities. For this reason 20 district health officers should be appointed and receive their salaries from the State. They should be the State's direct representatives in the field, have supervision of local authorities, and perform all the duties required of any health officer.

There is held, annually a conference of local health authorities with the State authorities. Unfortunately the law does not permit the payment of traveling expenses of the local authorities. They must, therefore, come at their own expense. For this reason the conferences are not productive of as much good as they should be.

In general, localities in the State of Minnesota may be divided into those situated in the agricultural districts and those on the Iron Range. The latter derive their revenue, in large part, from the iron mines, and have plenty of means. The former have much less income and apparently less appreciation of public-health needs.

The municipalities on the Iron Range should be put in the front rank as far as public-health activities are concerned. For instance, the village of Chisholm, with a population of about 8,000, treats its water by filtration and with hypochlorite. It is sewerred, and is building a modern sewage-disposal plant. It is contemplating the purchase of an incinerator for garbage. It has a modern communicable-disease hospital, to accommodate 20 patients. Its schools are of the most recent type, and there is a well-organized system of medical inspection, with an efficient all-time school medical inspector and a nurse. The system even includes a dental chair in the school. The health officer, however, is only a part-time man, and the organization in the health department could be improved.

The mining companies are greatly interested in the improvement of health conditions, not only in the cities located on the range, but in their own mines and in the settlements of their own employees. They have introduced safety devices throughout all of their operations, and are, no doubt, to a large extent instrumental in causing municipal authorities to improve and maintain sanitary conditions. The alleys of the different municipalities are as clean as the streets, and every house has a covered garbage tin raised on a platform about 4 feet from the ground. There are bubbling fountains located on the streets and in public buildings. One of the towns has an all-time health officer and maintains a bacteriological laboratory.

The city of Duluth has a specially maintained dispensary with visiting nurses for tuberculosis, and it aims to have every patient placed in a hospital. Even the incipient cases are sent to a sanatorium, so that they may receive instruction in what precautions to take to prevent the spread of the disease.

Duluth has been endeavoring to secure a pure milk supply for the last 10 years, and the educational work has succeeded in getting the cooperation of producers within the city limits, so that much of the milk sold to consumers is within the limits of a certified milk. Some of the milk is produced outside of the city. This is not of such a good grade, but is pasteurized before being sold.

The city of Winona, situated in an agricultural district, has secured the services of an energetic veterinarian who, in the last year, has succeeded in getting the cooperation of the producers sending milk to the city, as well as of the distributors. The dairy farms are good examples of what can be done without the expenditure of a great deal of money. Cleanliness is maintained, and simple devices,

such as the use of the small-top milk pail, have been introduced, with a general renovation of the barns, giving better light, ventilation, and drainage, and the testing of herds for tuberculosis. Practically all of this has been accomplished in the last year, and the analysis of the milk shows it to be of an excellent quality.

In New Ulm there is an example of what can be done in the construction of a slaughterhouse for a small municipality. The building is of rat-proof material, is well drained and ventilated, and has an ample water supply, etc.

Other examples of modern public-health methods might be quoted, but in every case it would have to be said for the municipality that its health department lacked organization.

The State of Minnesota is very large and rich, and contains many prosperous communities, and it is thought that there is hardly a single locality that could not afford to appropriate sufficient money to increase the efficiency of its health department.

OFFICERS OF THE STATE BOARD OF HEALTH.

State Board of Health.

Dr. W. A. Jones, president.

Dr. B. J. Merrill, vice president.

Dr. Egl Boeckmann, Dr. Frank Burton, Dr. Winslow C. Chambers, Dr. Christopher Graham, Dr. C. L. Greene, Dr. O. J. Hagen, Dr. C. W. More, members.

EXECUTIVE OFFICE.

Dr. H. M. Bracken, secretary and executive officer.

DIVISION OF PREVENTABLE DISEASES.

Dr. A. J. Chesley, director.

Miss E. M. Wade, assistant director, chief of bacteriological laboratory.

Dr. O. McDaniel, chief of Pasteur Institute.

DIVISION OF SANITATION.

Dr. R. H. Mullin, director.

Mr. H. A. Whittaker, assistant director.

Prof. Frederic Bass, consulting engineer.

DIVISION OF VITAL STATISTICS.

Dr. H. M. Bracken, State registrar of vital statistics.

Mrs. Gerda C. Pierson, assistant State registrar of vital statistics.

EXTENSION DIVISION.

Dr. H. M. Bracken, director.

Dr. H. W. Hill, assistant director.

CLERICAL DIVISION.

Mr. O. C. Pierson, assistant secretary.

HEALTH ACTIVITIES CARRIED ON BY OTHER AGENCIES.

Certain activities relating more or less directly to a department of health are carried on by State boards or commissions entirely distinct from the State board of health.

Activities.	Board or commission.
Licensing of barbers.....	State board of examiners of barbers.
Enforcement of pure food law, including milk.	State dairy and food department.
Inspection of factories.....	Bureau of labor.
Control of insane and insane asylums.....	State board of control.
Regulation of practice of dentistry.....	State board of dental examiners.
Regulation of practice of pharmacy.....	State board of pharmacy.
Control of sanatoria for the tuberculous....	{ County sanatorium commissions. { Advisory commission, Minnesota State Sanatorium.
Registration of nurses.....	State board of examiners of nurses.
Enforcement of drug law.....	State board of pharmacy.
Regulation of practice of medicine.....	State board of medical examiners.

RECOMMENDATIONS.

As a result of a careful study of public health administration in Minnesota, continued over several months, certain definite conclusions have been reached and are made the basis of recommendations as follows:

1. That the designation of the State board of health and its status in the State government be changed to that of a State department of health.
2. That all of the different subdivisions of the State department of health be located in the same building.
3. That an assistant director and two additional bacteriologists be appointed in the division of preventable diseases.
4. That the State be divided into not less than 20 health districts, each district to be composed of one or more counties, at the discretion of the State department of health.
5. That a physician trained in sanitary science be placed in each district, and that he be given an office and an adequate number of assistants, including inspectors, nurses, and a clerk.
6. That he hold office during efficiency and good behavior; that he be given an adequate salary from the State; and that he be prohibited from practicing medicine or engaging in any private business that would interfere with his official duties; that he be allowed traveling expenses when traveling on account of official business; and that he be given, as he proves himself capable, a regular yearly increase in salary until he has reached a maximum which, in the

judgment of the board of health, is sufficient; that he first receive a probationary appointment to determine his qualifications in the field; and that no one be appointed until he has passed an examination before the board or the secretary or has otherwise proved himself capable of filling the position.

7. That he be made responsible to the State department of health for the conditions in his district and that he be given full power to enforce laws and regulations within his jurisdiction and authority over all county, city, or town health officials.

8. That his powers and duties be well defined by law and include the enforcement of the law regarding the notification of cases of disease; inspection of dairies, canneries, and all places of business or manufacture within his jurisdiction; the inspection of county schools and school children; the investigation of cases of sickness and the institution of measures for the control of disease; the investigation of nuisances and abatement of same; the keeping of complete records of transactions and forwarding all necessary reports to the State department of health; the delivery of public lectures throughout his district; the collection of samples for analysis; the enforcement of the laws relating to the registration of births and deaths; and the performance of all other duties that may be required of him by the State department of health.

9. That the field organization be mobile so that a force of health officers or assistants can be concentrated in any part of the State or in any city within the State.

10. That the number of employees in the division of sanitation be increased by at least five men, four of whom shall have received training in sanitary engineering and one of whom shall be an expert in analyses of water and sewage.

11. That the State be divided into four districts in each of which shall be placed one of the men above mentioned as having received training in sanitary engineering, this field force to come under the supervision of the division of sanitation.

12. That comprehensive regulations be promulgated relative to water supplies and the disposal of sewage and refuse throughout the State.

13. That hereafter all plans of public buildings be submitted to the State board of health for approval as to the sanitary arrangements, as already provided by law.

14. That a law be enacted requiring the reporting of all marriages and divorces to the State department of health.

15. That tabulating machines be installed in the division of vital statistics.

16. That the prevention of occupational diseases and the maintenance of sanitation in places employing labor be placed under the control of the State department of health, and that legislation be enacted to give it all necessary power to act.

17. That the work relative to school hygiene and child welfare, previously discontinued by the State on account of lack of funds, be resumed.

18. That provision be made for the distribution of free antitoxin throughout the State where necessary.

19. That a popular bulletin be issued monthly, and especially used for instructing children of the public schools.

20. That the expenses of district health officers attending the annual conference with the State be allowed.

21. That all of the officials of the State department of health be made full-time men.

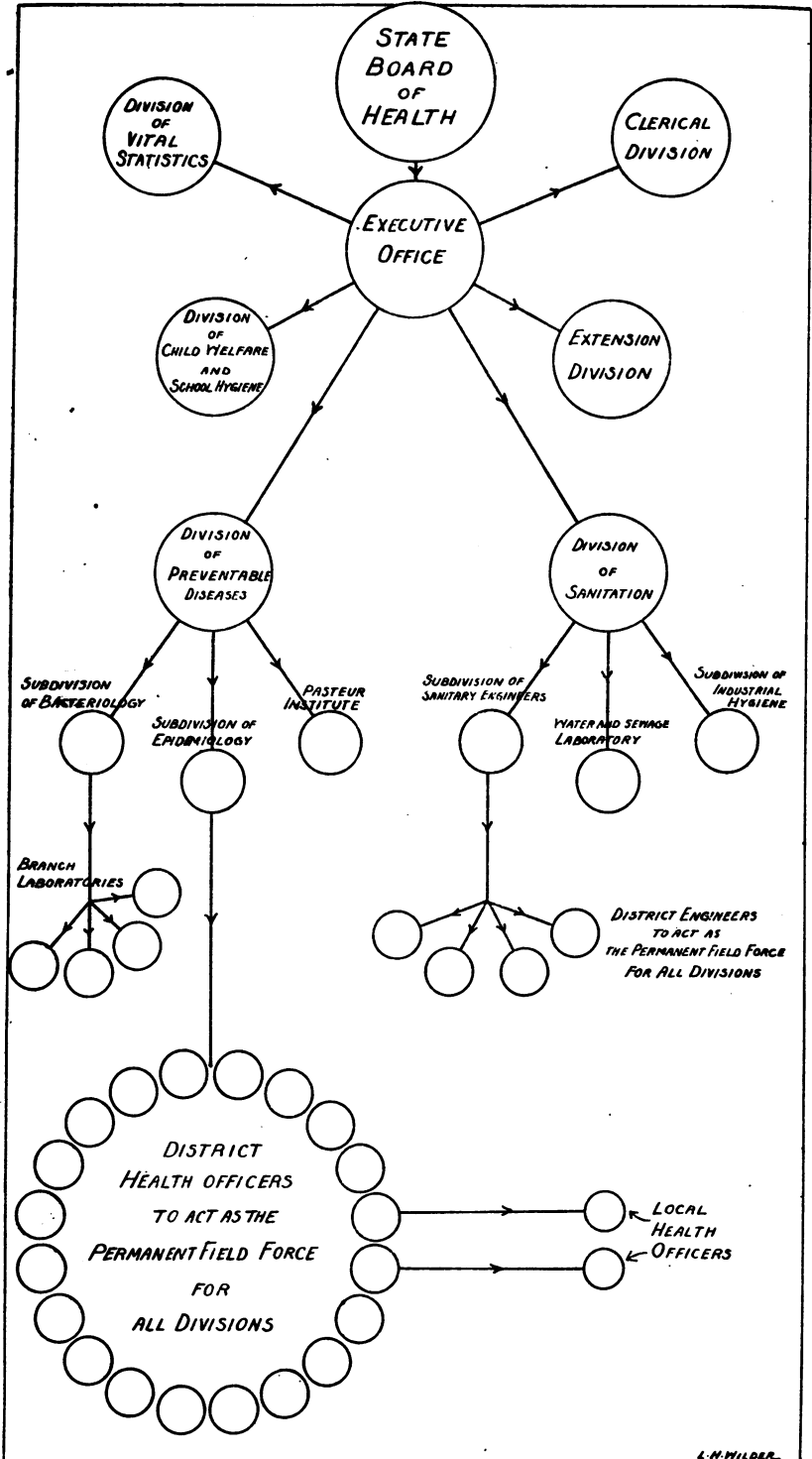
22. That the method of keeping accounts be so changed that it will enable one to determine quickly and accurately the exact cost of any division or subdivision or piece of work at any time.

23. That to properly care for the work required by the increasing activities of the State department of health more clerks and technical assistants be employed in its different subdivisions.

24. That not less than \$270,000 be appropriated to the State department of health to be allotted by the State board as may be necessary for the following purposes:

General	\$20, 500
Preventable diseases	25, 000
Special tuberculosis	17, 000
Laboratory (relating to preventable disease)	28, 000
Pasteur Institute	10, 000
Free antitoxin	10, 000
Vital statistics	10, 000
Child welfare and school hygiene	10, 000
Control of water and sewage	30, 000
Industrial hygiene	10, 000
District health organization	100, 000

270, 500



L. H. WILDER.

SCHEME OF ORGANIZATION SUGGESTED FOR THE STATE BOARD OF HEALTH OF MINNESOTA.

HOOKWORM DISEASE.

THE USE OF OIL OF CHENOPODIUM IN ITS TREATMENT.

By MURRAY GALT MOTTER, Technical Assistant, Hygienic Laboratory, United States Public Health Service.

Among the inconveniences entailed by the European wars is the failure of the supplies of thymol, used so largely in the southern hookworm campaign. As a substitute for this drug, now almost unobtainable, American wormseed oil (*Oleum Chenopodii* U. S. P.) has been suggested.

As indicated by the name, wormseed has long had a reputation as an anthelmintic. The plant from which the oil is distilled grows "in waste places from New England to Florida and westward to California." It has, however, been cultivated particularly in Maryland, and the oil has been known as Baltimore oil, in contradistinction to the western oil, which is no longer much of a commercial factor. While the oil is almost wholly a Maryland product, it is said that the seed is harvested in considerable quantities in Florida, where the plant is one of the most pestiferous of the weeds.

Renewed interest in the possibilities of American wormseed oil, especially against round worms, seems to date from the publications of Brüning, in 1906, who, with Gockel, Kobert, Linke, Schmitz, Thelen, and others, has investigated the pharmacology of the oil. The chemistry of oil of chenopodium has been studied in Germany by Wallach and others and in this country by Kremers and Nelson, of the Department of Agriculture.

Clinically, its value, especially for the treatment of round worms, was well established. In 1912, Schüffner and Vervoort presented to the Fifteenth International Congress on Hygiene and Demography a paper in which they sought to demonstrate the superior advantages of oil of chenopodium in the treatment of hookworm disease as compared with other vermifuges. These authors, in the course of eight months, had given oil of chenopodium in 1,457 cases. Giving eucalyptus oil a coefficient of 38, naphthol 68, and thymol 83, oil of chenopodium surpassed them all with a coefficient of 91.

Toxicologically, a search of the Index Catalogue and the Index Medicus revealed but 12 published cases of poisoning by wormseed oil in something over 50 years, the first having been published in 1852 and the last in 1903. Of these cases 8 were fatal. The report of one of the fatal cases is cited by Wood, with the added comment: "It is plain that the wormseed was not the direct immediate cause of all these symptoms or of the fatal result." All of the reported cases, however, show a certain general similarity, indicating that the toxic action is exerted particularly upon the central nervous system. Salant, in a preliminary report of his studies on the pharmacology of this oil, notes the possibility of cumulative action, indicated by the

fact that nontoxic doses, when repeated in a day or two, were fatal in the rabbit. In the reported cases of poisoning the dose appears to have been excessive and, in some cases, repeated. Brüning asserts that when properly used this remedy does not cause any unpleasant secondary actions, an experience confirmed by that of subsequent workers.

It is to be noted that oil of chenopodium is a paralyzant, rather than a parasiticide. It narcotizes the parasite, which must then be got rid of by free purgation. Moreover, and here it differs radically from aspidium and thymol, it is probably best administered with castor oil. In the case of aspidium and thymol the coincident or subsequent use of any oil is to be avoided, because, their constituents being soluble in oils, they are thereby rendered more toxic to the human subject. With reference to chenopodium, which in itself appears to be constipating, the castor oil does not add to its toxicity, but offers a ready method of ridding the host both of the parasites and the drug.

Schüffner and Vervoort administered 16 drops of oil of chenopodium with sugar every two hours for three doses. Two hours thereafter they gave a tablespoonful of castor oil with a teaspoonful of chloroform. Gockel gives the single dose as 8 to 16 drops, according to age—6 to 8 years, 8 drops; 9 to 10 years, 10 drops; 11 to 16 years, 12 drops; over 16 years, 12 to 16 drops. Should untoward symptoms arise, particularly inordinate sleepiness or depression, the chenopodium should be withdrawn at once, active purgation induced, and stimulation begun with strong hot coffee by the mouth or by the rectum.

Owing to its increased vogue in continental medicine, the demand for this product has increased in the past few years. Schimmel reports that the acreage put to wormseed increased from about 90 acres in 1910 to perhaps 225 acres in 1912, while the yield rose from 2,800 pounds in the former to 6,700 pounds in the latter year. In view of the fact that October is the time of harvest and that, with the diminished or disappearing supply of thymol, the demand will probably be still further increased, every effort should be made not only to husband this year's crop to the best advantage, but to provide for a largely increased seeding next spring.

Physicians having hookworm cases under their care should give this remedy a thorough trial and report promptly their results in the medical journals. Case notes should be accompanied by information as to the sources of the oil used and, if possible, as to the method of its distillation; it has been alleged that chenopodium grown in different localities, and oils distilled by different processes have shown varying degrees of efficacy. For use in the South, where the plant grows as a weed, the possible efficacy of a decoction, made by boiling

1 ounce of the fresh plant in a pint of milk or water, administered in wineglassful doses, should be remembered and tried under careful supervision. Data of this kind should aid in rehabilitating a truly American remedy, said to have been used by the Indians as a vermifuge before the landing of Columbus, and in helping the American profession to do without some of the products which, hitherto, have been almost wholly "made in Germany."

PLAGUE-ERADICATIVE WORK.

CALIFORNIA.

The following report of plague-eradication work in California for the week ended September 12, 1914, has been received from Surg. Long, of the United States Public Health Service, in charge of the work:

SAN FRANCISCO, CAL.		RATS IDENTIFIED—continued.	
Premises inspected.....	1,095	Mus rattus.....	53
Premises destroyed.....	12	Steamers <i>Hilonton</i> and <i>China</i> fumigated and searched for dead rats. None found.	
Nuisances abated.....	165		
Poisons placed.....	13,200		
Average number of traps set daily.....	1,734		
RATS COLLECTED AND EXAMINED FOR PLAGUE.		PORT COSTA, CAL.	
Collected.....*	372	Rats trapped in warehouses.....	22
Found dead.....	1	Rats trapped on water front.....	7
Examined.....	241	Rats trapped in sugar refinery.....	9
Found infected.....	None.	Poisons placed in warehouses.....	4,300
		Poisons placed in sugar refinery.....	2,500
		Rats examined.....	30
RATS IDENTIFIED.		RATS IDENTIFIED.	
Mus norvegicus.....	200	Mus norvegicus.....	16
Mus musculus.....	59	Mus musculus.....	3
Mus alexandrinus.....	60	Mus alexandrinus.....	14
		Mus rattus.....	8

Record of plague infection.

Places in California.	Date of last case of human plague.	Date of last case of rat plague.	Date of last case of squirrel plague.	Total number rodents found infected since May, 1907.
Cities:				
San Francisco.....	Jan. 30, 1908	Oct. 23, 1908	None.....	398 rats.
Oakland.....	Aug. 9, 1911	Dec. 1, 1908	.....do.....	126 rats.
Berkeley.....	Aug. 28, 1907	None.....	.....do.....	None.
Los Angeles.....	Aug. 11, 1908	.....do.....	Aug. 21, 1908	1 squirrel.
Counties:				
Alameda (exclusive of Oakland and Berkeley).	Sept. 24, 1909	Oct. 17, 1909, wood rat.	Aug. 7, 1914	286 squirrels, 1 wood rat.
Contra Costa.....	May 17, 1914	None.....	Aug. 25, 1914	1,563 squirrels.
Fresno.....	None.....	.....do.....	Oct. 27, 1911	1 squirrel.
Merced.....	.....do.....	.....do.....	July 12, 1911	5 squirrels.
Monterey.....	.....do.....	.....do.....	Apr. 10, 1914	6 squirrels.
San Benito.....	June 4, 1913	.....do.....	July 3, 1914	35 squirrels.
San Joaquin.....	Sept. 18, 1911	.....do.....	Aug. 26, 1911	18 squirrels.
San Luis Obispo.....	None.....	.....do.....	Jan. 29, 1910	1 squirrel.
Santa Clara.....	Aug. 31, 1910	.....do.....	July 23, 1913	25 squirrels.
Santa Cruz.....	None.....	.....do.....	May 17, 1910	3 squirrels.
Stanislaus.....	.....do.....	.....do.....	June 2, 1911	13 squirrels.

PLAGUE-INFECTED SQUIRREL.

Contra Costa County, Aug. 25, 1914, Moraga grant, Moraga, sec. 12, T. 1 S., R. 3 W., 1 squirrel.

Squirrels collected and examined for plague.

County.	Shot.	Exam-ined.	Found infected.
Alameda.....	73	73	None.
Contra Costa.....	196	196	1
San Benito.....	61	61	None.
Santa Clara.....	20	20	None.
Total.....	350	350	1

Ranches inspected and hunted over.

Alameda County.....	10
Contra Costa County.....	30
San Benito County.....	9
Santa Clara County.....	3
Total.....	49

Operations on water front.

Vessels inspected for rat guards.....	23
Reinspections made on vessels.....	48
New rat guards procured.....	18
Defective rat guards repaired.....	41
Vessels on which cargo is inspected.....	3

	Condition.	Rat evi- dence.
Steamers Admiral Watson, Congress, and Queen, from Seattle:		
8 bales old rags.....	O. K.....	None.
24 boxes household goods.....	O. K.....	None.
36 bundles empty sacks.....	O. K.....	None.
170 cases merchandise.....	O. K.....	None.
56 rolls paper.....	O. K.....	None.
650 sacks flour and bran.....	O. K.....	None.

Rats trapped on wharves and water front....	18	Poisons placed on water front (pieces).....	7,200
Rats trapped on vessels.....	11	Bait used on water front and vessels, bacon (pounds).....	6
Traps set on wharves and water front.....	196	Amount of bread used in poisoning water front (loaves).....	26
Traps set on vessels.....	132	Poison used on water front (pounds).....	14
Vessels trapped on.....	15		
Vessels searched for dead rats after fumiga- tion.....	2		

Operations are being carried on under Federal supervision on the following-named properties, labor and material being furnished by owners:

Poisoned grain and destructors.

Names.	Location.	Acres treated.		Holes treated.
		Pumps.	Grain.	
Moraga Co.....	Contra Costa County.....		499.24	
Hooper Co.....	do.....		1,023.41	
Peoples Water Co.....	do.....		1,500.00	
Walnut Creek Park.....	do.....		144.00	
Brookwood Acres.....	do.....		1,199.00	
Planada Development Co.....	Merced County.....		1,280.00	
Morse Realty Co.....	do.....		240.00	
Southern Pacific Co.....	Madera County.....	136		1,555

Thirty-six acres of land and 6 miles of railroad right of way inspected.

The work is being carried on in the following-named counties: San Francisco, Alameda, Santa Clara, Contra Costa, San Joaquin, Merced, Stanislaus, San Benito, Santa Cruz, and Monterey.

LOUISIANA—NEW ORLEANS.

The following report of plague-eradivative work in New Orleans for the week ended September 19, 1914, has been received from Asst. Surg. Gen. Rucker, of the United States Public Health Service, in charge of the work:

OUTGOING QUARANTINE.		DESTINATION OF RAILROAD CARS INSPECTED WEEK ENDED SEPTEMBER 19—continued.	
Vessels fumigated with sulphur.....	79	Nevada.....	1
Vessels fumigated with carbon monoxide..	10	New Mexico.....	2
Sulphur burned (pounds).....	6,331	Oklahoma.....	9
Coke consumed in carbon-monoxide fumi- gation (pounds).....	25,700	Rhode Island.....	2
Outgoing freight inspected (tons).....	8,991	Utah.....	2
Total packages freight inspected.....	125,950	West Virginia.....	5
Clean bills of health issued.....	30	Mexico.....	4
Foul bills of health issued.....	2	Arkansas.....	73
		Carolina, South.....	13
		Dakota, North.....	1
		Florida.....	5
		Illinois.....	474
		Kansas.....	8
		Minnesota.....	9
		New York.....	13
		Tennessee.....	88
		Washington.....	4
		District of Columbia.....	1
OVERLAND FREIGHT INSPECTION.		FIELD OPERATIONS.	
Cars inspected.....	3,785	Rats trapped.....	8,852
Cars rat proofed.....	2,081	Premises fumigated.....	12
Cars condemned.....	6	Premises disinfected.....	100
		Premises inspected.....	6,493
		Polsons placed.....	371,662
		Notices served.....	2,741
		Buildings rat-proofed during week ended Sept. 19.....	425
		Buildings rat-proofed to date.....	1,101
		Abatements, week ended Sept. 19.....	1,185
		Abatements to date.....	6,398
		Dead inspected.....	118
		LABORATORY OPERATIONS.	
		Rats examined.....	5,712
		Mus norvegicus.....	5,562
		Mus alexandrinus.....	94
		Mus rattus.....	63
		Mus musculus.....	2,883
		Unclassified, putrid.....	192
		Total rodents received at laboratory.....	8,782
		Number of suspicious rats.....	17
		Plague rats confirmed.....	35
DESTINATION OF RAILROAD CARS INSPECTED WEEK ENDED SEPTEMBER 19.			
Alabama.....	130		
California.....	13		
Colorado.....	16		
Dakota, South.....	4		
Georgia.....	74		
Indiana.....	24		
Kentucky.....	44		
Massachusetts.....	2		
Mississippi.....	619		
Nebraska.....	4		
New Jersey.....	8		
Ohio.....	37		
Pennsylvania.....	16		
Texas.....	192		
Virginia.....	3		
Wisconsin.....	8		
Canada.....	6		
Arizona.....	4		
Carolina, North.....	12		
Connecticut.....	4		
Delaware.....	6		
Idaho.....	4		
Iowa.....	28		
Louisiana.....	976		
Michigan.....	15		
Missouri.....	56		

Plague rats.

Case No.	Address.	Captured.	Diagnosis confirmed.	Treatment of premises.
93	1936 Eighth Street.....	Sept. 2	Sept. 13	Fumigated; disinfected; rat-proofing initiated; intensive trapping and poisoning.
94	606 Montegut.....	Sept. 14	Sept. 14	Fumigation; rat-proofing initiated; intensive trapping and poisoning.
95	Celeste Street Wharf.....	Sept. 4	Sept. 15	Intensive trapping and poisoning.
96	Found dead in street, Terpsichore and Baronne.	Sept. 9	...do....	Do.
97	2773 Tchoupitoulas.....	...do....	Sept. 16	Fumigation; intensive trapping and poisoning.
98	Sewer, corner Arts and North Roman.	Sept. 3	...do....	Intensive trapping and poisoning.
99	160 South Rampart Street.....	Sept. 16	...do....	Summary destruction of rat harborage.
100	1017 Common Street.....	...do....	...do....	Summary destruction of rat harborage; disinfection; fumigation.
101-113	160 South Rampart Street.....	...do....	Sept. 17	Captured as result of summary destruction of rat harborage. See case 99.
114	Found dead in street, 830 Bourbon.	Sept. 17	...do....	Intensive trapping and poisoning.
115-121	1017 Common Street.....	Sept. 18	Sept. 18	See cases 99 and 100.
122	1938 Eighth Street.....	...do....	...do....	See case 93.
123, 124	160 South Rampart.....	...do....	...do....	See case 101.
125	2773 Tchoupitoulas.....	Sept. 12	Sept. 19	See case 97.
126, 127	1017 Common Street.....	Sept. 19	...do....	See case 100.

Summary.

Necropsies.....	2
Total rodents captured to Sept. 19.....	88, 395
Total rodents examined to Sept. 19.....	74, 307
Rodent cases to Sept. 19 by species:	
<i>Mus rattus</i>	5
<i>Mus alexandrinus</i>	3
<i>Mus norvegicus</i>	119
Total rodent cases to Sept. 19.....	127

WASHINGTON—SEATTLE.

The following reports of plague-eradivative work in Seattle have been received from Surg. Lloyd, of the United States Public Health Service, in charge of the work:

Week Ended September 5, 1914.

BAT PROOFING.		WATER FRONT—continued.	
New buildings inspected.....	62	Sulphur used.....pounds..	2,700
Basements concreted, new buildings (12)		New rat guards installed.....	26
.....square feet..	11,542	Port sanitary statements issued.....	48
Floors concreted, new buildings (22)		LABORATORY AND RODENT OPERATIONS.	
.....square feet..	61,200	Dead rodents received.....	12
Yards concreted, new buildings (4)		Rodents trapped and killed.....	380
.....square feet..	3,280		
Sidewalks concreted.....square feet..	8,250	Total.....	392
Total concrete laid, new buildings		Rodents examined for plague infection.....	321
.....square feet..	84,272	Rodents proven plague infected.....	None.
New buildings elevated.....	8	Number pounds poison distributed.....	14
Old buildings inspected.....	1	CLASSIFICATION OF RODENTS.	
Premises rat-proofed.....	34	<i>Mus rattus</i>	6
Buildings razed.....	5	<i>Mus alexandrinus</i>	52
WATER FRONT.		<i>Mus norvegicus</i>	279
Vessels inspected and histories recorded....	4	<i>Mus musculus</i>	35
Vessels fumigated.....	2		

The usual day and night patrol was maintained to enforce fending and rat guarding.

Week Ended September 12, 1914.

RAT PROOFING.		WATER FRONT—continued.	
New buildings inspected.....	68	Sulphur used.....pounds..	125
Basements concreted, new buildings (26), sq. ft.....	53,528	New rat guards installed.....	45
Floors concreted, new buildings (14).sq. ft..	51,854	Port sanitary statements issued.....	55
Yards, etc., concreted, new buildings (4), sq. ft.....	2,460	LABORATORY AND RODENT OPERATIONS.	
Skidwalks concreted.....sq. ft..	1,856	Dead rodents received.....	12
Total concrete laid, new buildings, sq. ft.....	109,698	Rodents trapped and killed.....	422
New buildings elevated.....	6	Total.....	434
Old buildings inspected.....	2	Rodents examined for plague infection....	361
Premises rat-proofed.....	39	Rodents proven plague infected.....	None.
Wire screening used.....sq. ft..	450	Poison distributed.....pounds..	2
Buildings razed.....	3	CLASSIFICATION OF RODENTS.	
WATER FRONT.		Mus rattus.....	8
Vessels inspected and histories recorded...	11	Mus alexandrinus.....	111
Vessels fumigated.....	1	Mus norvegicus.....	258
		Mus musculus.....	57

The usual day and night patrol was maintained to enforce fending and rat guarding.

HAWAII.

The following reports of plague-eradivative work in Hawaii have been received from Surg. Trotter, of the United States Public Health Service:

Honolulu.

WEEK ENDED SEPT. 5, 1914.

Total rats and mongoose taken.....	428	Classification of rats trapped:	
Rats trapped.....	411	Mus alexandrinus.....	184
Mongoose trapped.....	17	Mus musculus.....	148
Rats found dead.....	0	Mus norvegicus.....	68
Examined microscopically.....	256	Mus rattus.....	11
Under examination.....	0	Average number of traps set daily.....	1,085
Showing plague infection.....	0	Cost per rat destroyed.....cents..	20½

WEEK ENDED SEPT. 12, 1914.

Total rats and mongoose taken.....	402	Average number of traps set daily.....	1,085
Rats trapped.....	386	Cost per rat destroyed.....cents..	21½
Mongoose trapped.....	16	Last case rat plague, Aiea, 9 miles from Honolulu, Apr. 12, 1910.	
Rats found dead.....	0	Last case human plague, Honolulu, July 12, 1910.	
Examined microscopically.....	312	Last case rat plague, Kalopa stable, Paauhau, Hawaii, Aug. 29, 1914.	
Under examination.....	0	Last case human plague, Paauhau Landing, Hawaii, Aug. 17, 1914.	
Showing plague infection.....	0		
Classification of rats trapped:			
Mus alexandrinus.....	192		
Mus musculus.....	120		
Mus norvegicus.....	58		
Mus rattus.....	16		

Hilo.

WEEK ENDED AUG. 29, 1914.

Rats and mongoose taken	2,011	Rats and mongoose examined bacteriologically.....	1
Rats trapped.....	1,994	Rat found plague infected.....	1
Rats found dead.....	1	Classification of rats trapped and found dead:	
Mongoose taken.....	16	Mus norvegicus.....	448
Rats and mongoose examined macroscopically.....	2,011	Mus alexandrinus.....	292
Rats and mongoose examined microscopically.....	1	Mus rattus.....	644
		Mus musculus.....	611

WEEK ENDED SEPT. 5, 1914.

Rats and mongoose taken	1,769	Rats and mongoose plague infected (Aug. 29).....	1
Rats trapped.....	1,747	Classification of rats trapped and found dead:	
Rats found dead.....	0	Mus norvegicus.....	383
Mongoose taken.....	22	Mus alexandrinus.....	216
Rats and mongoose examined macroscopically.....	1,769	Mus rattus.....	539
Rats and mongoose examined microscopically.....	1	Mus musculus.....	609
Rats and mongoose examined bacteriologically.....	1	Last case of rat plague, Paauhau Sugar Co., Aug. 29, 1914.	
		Last case of human plague, Paauhau Sugar Co., Aug. 16, 1914.	

PREVALENCE OF DISEASE.

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.

IN CERTAIN STATES AND CITIES.

CEREBROSPINAL MENINGITIS.

State Reports for August, 1914.

Places.	New cases reported.	Places.	New cases reported.
Indiana:		Mississippi:	
Marion County.....	3	Tate County.....	1
Ripley County.....	1	Washington County.....	1
Total.....	4	Total.....	2
Iowa:		Ohio:	
Lyon County.....	1	Belmont County—	
Massachusetts:		Bellare.....	1
Bristol County—		Cuyahoga County—	
Fall River.....	1	Cleveland.....	1
New Bedford.....	1	Delaware County.....	1
Taunton.....	1	Hamilton County.....	4
Suffolk County—		Hardin County.....	1
Boston.....	1	Harrison County.....	1
Winthrop.....	1	Mahoning County—	
Worcester County—		Youngstown.....	1
Berlin.....	1	Washington County.....	1
Clinton.....	1	Total.....	11
Leominster.....	1		
Total.....	8		

New York Report for July, 1914.

Places.	New cases reported.	Places.	New cases reported.
New York:		New York—Continued.	
Albany County.....	1	Tioga County.....	1
Broome County.....	1	New York City.....	26
Delaware County.....	1	Total.....	31
Schenectady County.....	1		

City Reports for Week Ended Sept. 12, 1914.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Boston, Mass.....		1	Newark, N. J.....	1	
Columbus, Ohio.....		1	New York, N. Y.....	6	6
Lexington, Ky.....	1		Philadelphia, Pa.....	1	
Lowell, Mass.....		1	Schenectady, N. Y.....	1	
Nashville, Tenn.....		1			

DIPHThERIA.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2670.

ERYSIPELAS.

City Reports for Week Ended Sept. 12, 1914.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Brockton, Mass.....	1	.....	Norristown, Pa.....	1	.....
Buffalo, N. Y.....	1	.....	Oakland, Cal.....	2	.....
Cleveland, Ohio.....	1	1	Passaic, N. J.....	.....	1
Duluth, Minn.....	1	.....	Philadelphia, Pa.....	4	1
Los Angeles, Cal.....	2	.....	Pittsburgh, Pa.....	1	.....
Montclair, N. J.....	1	.....	St. Louis, Mo.....	1	1
Newark, N. J.....	.....	1	Wheeling, W. Va.....	1	.....
New York, N. Y.....	.....	3			

LEPROSY.

Mississippi—Benton County.

The State Board of Health of Mississippi reported that during the month of August, 1914, a case of leprosy had been notified in Benton County, Miss.

MEASLES.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2670.

PELLAGRA.

City Reports for Week Ended Sept. 12, 1914.

During the week ended September 12, 1914, pellagra was notified by cities as follows: Austin, Tex., 1 death; Charleston, S. C., 1 death; Los Angeles, Cal., 1 case with 1 death; Wilmington, N. C., 1 death.

PNEUMONIA.

City Reports for Week Ended Sept. 12, 1914.

Places:	Cases.	Deaths.	Places.	Cases.	Deaths.
Ann Arbor, Mich.....	4	.....	Manchester, N. H.....	3	3
Berkeley, Cal.....	1	.....	Philadelphia, Pa.....	11	17
Brad dock, Pa.....	1	.....	Pittsburgh, Pa.....	6	6
Chicopee, Mass.....	1	.....	Rochester, N. Y.....	1	4
Cleveland, Ohio.....	9	7	Schenectady, N. Y.....	1	1
Los Angeles, Cal.....	6	5	Springfield, Ill.....	1	1

POLIOMYELITIS (INFANTILE PARALYSIS).

State Reports for August, 1914.

Places.	New cases reported.	Places.	New cases reported.
California:		California—Continued.	
Alameda County—		San Luis Obispo County—	
Alameda.....	2	Arroyo Grande.....	1
Oakland.....	1	Tulare County—	
Los Angeles County—		Porterville.....	1
Los Angeles.....	1	Total.....	10
Riverside County—			
Riverside.....	1		
San Francisco County—			
San Francisco.....	3		

POLIOMYELITIS (INFANTILE PARALYSIS)—Continued.

State Reports for August, 1914—Continued.

Places.	New cases reported.	Places.	New cases reported.
Indiana:		Mississippi:	
Elkhart County.....	1	Carroll County.....	1
Gibson County.....	1	Smith County.....	2
Huntington County.....	2	Tippah County.....	1
Vanderburg County.....	1	Yazoo County.....	9
St. Joseph County.....	4	Total.....	13
Total.....	9	Ohio:	
Massachusetts:		Darke County.....	1
Barnstable County—		Lawrence County.....	1
Bourne.....	1	Putnam County.....	1
Berkshire County—		Total.....	3
Pittsfield.....	2	Vermont:	
Bristol County—		Addison County.....	7
New Bedford.....	1	Caledonia County.....	2
Taunton.....	1	Chittenden County.....	10
Essex County—		Franklin County.....	3
Beverly.....	1	Grand Isle County.....	1
Haverhill.....	3	Lamoille County.....	5
Lynn.....	1	Orleans County.....	34
Middlesex County—		Washington County.....	4
Arlington.....	1	Windsor County.....	2
Frammingham.....	1	Total.....	68
Melrose.....	1		
Norfolk County—			
Braintree.....	1		
Plymouth County—			
Rockland.....	2		
Suffolk County—			
Boston.....	2		
Worcester County—			
Worcester.....	1		
Total.....	19		

New York Report for July, 1914.

Places.	New cases reported.
New York:	
Broome County.....	3
Franklin County.....	1
Westchester County.....	1
New York City.....	4
Total.....	9

City Reports for Week Ended Sept. 12, 1914.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Baltimore, Md.....		1	Pittsburgh, Pa.....	1	
Boston, Mass.....	1		Providence, R. I.....	1	
Lowell, Mass.....	1		Washington, D. C.....	1	
Philadelphia, Pa.....	1				

SCARLET FEVER.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2670.

SMALLPOX.

Reported Cases in Which Vaccination Histories of Patients Have Been Given.

Pursuant to resolutions adopted by the conference of State and Territorial health authorities with the Public Health Service in June, 1912, certain States began reporting the vaccination histories of persons developing smallpox in their respective jurisdictions. Minnesota began with the month of June, 1912, Massachusetts and New York with the month of October, 1912, and other States began at various dates thereafter.

The following table is a compilation of the reports to and including June 30, 1914. It will be noted that some of the States were much more successful than others in obtaining definite information as to whether the patients had or had not been vaccinated.

State and year.	Cases reported.	Vaccination history of cases.				Remarks.
		Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.	
1912.						
Massachusetts.....	37	1	1	23	12	October, November, December.
Minnesota.....	1,066	25	76	775	190	7 months, June to December.
Montana.....	20			4	16	November only.
New York.....	372		29	204	139	October, November, December.
1913.						
California.....	662	24	36	419	183	10 months, March to December.
Maryland (exclusive of Baltimore).....	103		6	97		Except May and July.
Massachusetts.....	152	23	16	76	37	Except July.
Michigan.....	1,478	15	55	1,114	294	
Minnesota.....	2,861	47	201	2,255	358	
New York.....	737	22	94	432	189	Except June.
Ohio.....	1,782	10	21	763	988	Except February, March, April, and May.
Vermont.....	34		1	9	24	January only.
Wisconsin.....	2,054	160	195	520	1,179	
1914 (to June 30).						
California.....	537	14	39	293	191	
District of Columbia.....	27	4	3	20		March only.
Maryland (exclusive of Baltimore).....	190		2	188		
Massachusetts.....	25	1	4	19	1	
Michigan.....	928	3	31	768	126	
Minnesota.....	1,246	13	77	895	261	
New York.....	721	38	32	548	103	
Ohio.....	3,462	8	40	1,183	2,126	
Wisconsin.....	2,341	132	145	631	1,433	
Total.....	20,835	540	1,104	11,236	7,955	

SMALLPOX—Continued.

State Reports for August, 1914.

Places.	New cases reported.	Deaths.	Vaccination history of cases.			
			Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.
California:						
Alameda County.....	1					1
Humboldt County.....	1					1
Eureka.....	14				4	10
Ferndale.....	1			1		
Imperial County.....	2				2	
Calexico.....	1				1	
Holtville.....	1					1
Los Angeles County.....	9				6	3
Los Angeles.....	2			1		1
San Gabriel.....	7				7	
Sacramento County— Sacramento.....	1				1	
Santa Barbara County— Santa Barbara.....	1				1	
Santa Clara County— San Jose.....	1					1
Tehama County— Red Bluff.....	1					1
Siskiyou County.....	1					1
Total.....	44			2	22	20
Ohio:						
Ashtabula County— Ashtabula.....	1					1
Clark County— Springfield.....	1			1		
Crawford County.....	7				2	5
Cuyahoga County— Cleveland.....	2				2	
Defiance County— Defiance.....	2					2
Erie County— Sandusky.....	5				5	
Hamilton County.....	8				1	2
Hardin County.....	8					8
Holmes County.....	2					2
Jackson County.....	5					5
Lake County.....	2					2
Lucas County.....	19				16	3
Marion County.....	7				6	1
Muskingum County.....	6			1	4	1
Paulding County.....	1				1	
Sandusky County— Fremont.....	1					1
Scioto County— Portsmouth.....	2					2
Stark County.....	15					15
Summit County— Akron.....	3					3
Tuscarawas County.....	2					2
Vinton County.....	1				1	
Washington County.....	1					1
Wood County.....	3				1	2
Total.....	99			2	39	58

SMALLPOX—Continued.

New York Report for July, 1914.

Places.	New cases reported.	Deaths.	Vaccination history of cases.			
			Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.
New York:						
Orleans County.....	1				1	
New York City.....	2					2
Total.....	3				1	2

Miscellaneous State Reports.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Indiana (Aug. 1-31):			Massachusetts (Aug. 1-31). ¹		
Counties—			Mississippi (Aug. 1-31):		
Adams.....	1		Counties—		
Cass.....	1		Chickasaw.....	4	
Clark.....	9		Jones.....	1	
Delaware.....	2		Lauderdale.....	8	
Floyd.....	5		Lee.....	3	
Fountain.....	1		Leflore.....	1	
Franklin.....	1		Monroe.....	1	
Jay.....	3		Rankin.....	10	
Jefferson.....	10		Sunflower.....	1	
Johnson.....	9	1	Washington.....	3	
Knox.....	16		Total.....	32	
Madison.....	2		New York (July 1-31). ¹		
Marion.....	5		North Dakota (Aug. 1-31):		
Newton.....	1		Counties—		
Pike.....	4		Burton.....	1	
Shelby.....	5		Norton.....	3	
Steuben.....	1		Ramsey.....	1	
Vanderburgh.....	7		Walsh.....	1	
Vigo.....	2		Total.....	6	
Total.....	85	1	Ohio (Aug. 1-31). ¹		
Iowa (Aug. 1-31):			Vermont (Aug 1-31). ¹		
Counties—					
Des Moines.....	1				
Hardin.....	1				
Ida.....	1				
Linn.....	2				
Polk.....	4				
Warren.....	1				
Total.....	10				

¹ No case.

City Reports for Week Ended Sept. 12, 1914.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Butte, Mont.....	2		Duluth, Minn.....	1	
Chicago, Ill.....	1		Kansas City, Mo.....	2	
Detroit, Mich.....	2		Milwaukee, Wis.....	3	

TETANUS.**City Reports for Week Ended Sept. 12, 1914.**

During the week ended September 12, 1914, tetanus was notified by cities as follows: Cleveland, Ohio, 1 death; Detroit, Mich., 1 death; Mobile, Ala., 1 death; New York, N. Y., 1 case and 2 deaths.

TRACHOMA.**Kentucky.**

Surg. John McMullen, of the Public Health Service, reports that during the last week in August an inspection of certain schools in Wolfe, Morgan, and Magoffin Counties, Ky., was made, to ascertain the prevalence of trachoma. Eleven schools were visited, and 448 pupils were examined. Of this number 97, or 21.6 per cent, of the pupils were found to be affected with trachoma.

In Wolfe County the one school examined had 45 pupils and 11 of them had trachoma—24.44 per cent.

One school in Morgan County had 36 pupils and 7 cases of trachoma—19.4 per cent.

In Magoffin County nine schools were visited, 367 pupils examined, and 79, or 21.5 per cent, found to be suffering with trachoma.

It is interesting to note that the schools in Salyersville, the county seat of Magoffin County, has 18 cases of trachoma among the 103 pupils present and examined on that date. It is unusual to find trachoma so prevalent in a town school, as it is usually more prevalent in the rural districts. Besides the pupils of the school a large number of the citizens of the town were present, and a number of cases of trachoma were found among them.

TUBERCULOSIS.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2670.

TYPHOID FEVER.**Maine—Portland.**

Surg. McIntosh, of the Public Health Service, reported that during the week ended August 22, 1914, 33 cases of typhoid fever had been notified in Portland, Me., making a total of 79 cases reported since the beginning of the outbreak in that city.

TYPHOID FEVER—Continued.

State Reports for August, 1914.

Places.	New cases reported.	Places.	New cases reported.
California:		Indiana—Continued.	
Alameda County.....	1	Crawford County.....	1
Alameda.....	1	Davless County.....	3
Oakland.....	9	Dearborn County.....	2
Amador County—		Decatur County.....	2
Sutter Creek.....	3	Delaware County.....	8
Butte County.....	1	Elkhart County.....	3
Contra Costa County—		Floyd County.....	7
Martinez.....	3	Franklin County.....	1
Fresno County.....	3	Fulton County.....	1
Fresno.....	2	Gibson County.....	3
Humboldt County—		Greene County.....	13
Eureka.....	1	Hamilton County.....	4
Ferndale.....	1	Hancock County.....	4
Imperial County.....	3	Hendricks County.....	6
El Centro.....	3	Henry County.....	1
Lake County.....	1	Howard County.....	18
Lassen County.....	1	Huntington County.....	9
Los Angeles County.....	1	Jay County.....	3
El Monte.....	1	Jefferson County.....	5
Long Beach.....	3	Jennings County.....	2
Los Angeles.....	13	Johnson County.....	6
Watts.....	1	Knox County.....	2
Mariposa County.....	1	Lagrange County.....	1
Modoc County.....	1	Lake County.....	1
Monterey County.....	1	Laporte County.....	17
Nevada County—		Lawrence County.....	6
Nevada City.....	1	Madison County.....	4
Orange County.....	3	Marion County.....	61
Newport Beach.....	5	Montgomery County.....	34
Santa Ana.....	2	Morgan County.....	10
Plumas County.....	1	Orange County.....	4
Riverside County—		Owen County.....	4
Riverside.....	1	Parke County.....	6
Sacramento County—		Pike County.....	6
Sacramento.....	24	Putnam County.....	2
San Bernardino County.....	3	Randolph County.....	3
Ontario.....	1	Ripley County.....	6
San Francisco County—		Rush County.....	5
San Francisco.....	13	Scott County.....	3
San Joaquin County—		Shelby County.....	3
Stockton.....	1	Steuven County.....	5
San Luis Obispo County.....	2	St. Joseph County.....	14
San Mateo County—		Sullivan County.....	3
San Mateo.....	1	Switzerland County.....	3
Santa Barbara County—		Tippecanoe County.....	9
Santa Maria.....	1	Tipton County.....	5
Santa Clara County.....	1	Vanderburgh County.....	19
San Jose.....	2	Vermillion County.....	2
Santa Cruz County.....	2	Vigo County.....	4
Sonoma County.....	3	Washington County.....	19
Cloverdale.....	1	Wayne County.....	2
Healdsburg.....	70	White County.....	2
Santa Rosa.....	7	Whitley County.....	1
Stanislaus County.....	1		
Tehama County—		Total.....	393
Red Bluff.....	1		
Tulare County.....	4	Massachusetts:	
Ventura County—		Barnstable County—	
Ornard.....	1	Barnstable.....	1
Yolo County.....	1	Provincetown.....	1
Woodland.....	2	Berkshire County—	
Yuba County—		Adams.....	3
Marysville.....	1	Becket.....	1
		North Adams.....	38
Total.....	211	Pittsfield.....	2
		Sandisfield.....	1
Indiana:		Bristol County—	
Adams County.....	5	Acushnet.....	9
Blackford County.....	2	Attleboro.....	3
Boone County.....	8	Fall River.....	6
Carroll County.....	1	Freetown.....	1
Cass County.....	2	Mansfield.....	3
Clark County.....	4	New Bedford.....	7
Clay County.....	2	Taunton.....	1
Clinton County.....	1		

TYPHOID FEVER—Continued.

State Reports for August, 1914—Continued.

Places.	New cases reported.	Places.	New cases reported.
Massachusetts—Continued.		Mississippi—Continued.	
Essex County—		Grenada County	9
Amesbury	1	Hancock County	6
Beverly	4	Harrison County	12
Danvers	2	Hinds County	37
Haverhill	6	Holmes County	22
Lawrence	16	Issaquena County	5
Lynn	7	Itawamba County	13
Marblehead	3	Jackson County	3
Middleton	1	Jasper County	22
Peabody	2	Jefferson County	2
Hampden County—		Jefferson Davis County	9
Chicopee	5	Jones County	47
Ludlow	1	Kemper County	5
Northampton	1	Lafayette County	25
Springfield	3	Lamar County	9
Westfield	2	Lauderdale County	33
Middlesex County—		Lawrence County	15
Cambridge	4	Lee County	31
Everett	5	Leflore County	5
Frammingham	1	Lincoln County	9
Malden	1	Lowndes County	4
Melrose	1	Madison County	24
Natick	2	Marion County	19
Newton	6	Marshall County	22
Somerville	3	Monroe County	50
Waltham	7	Montgomery County	15
Watertown	8	Neshoba County	11
Wayland	1	Newton County	7
Nantucket County—		Noxubee County	16
Nantucket	1	Oktibbeha County	6
Norfolk County—		Panola County	11
Norwood	1	Pearl River County	8
Quincy	1	Perry County	7
Plymouth County—		Pike County	32
Brockton	5	Pontotoc County	29
Hull	3	Prentiss County	16
Middleboro	2	Quitman County	1
Plymouth	1	Scott County	8
Suffolk County—		Simpson County	13
Boston	48	Smith County	23
Chelsea	3	Sunflower County	57
Winthrop	1	Tallahatchie County	16
Worcester County—		Tate County	19
Barre	1	Tippah County	11
Blackstone	1	Tishomingo County	6
Fitchburg	1	Tunica County	2
Hubbardstown	3	Union County	6
Leominster	1	Warren County	7
Milford	1	Washington County	36
Northbridge	1	Wayne County	2
Worcester	3	Wilkinson County	6
		Winston County	10
Total	248	Yalobusha County	18
		Yazoo County	15
		Walthall County	9
Mississippi:		Total	1,086
Adams County	11	North Dakota:	
Alcorn County	10	Burling County	1
Amite County	7	Dickey County	2
Attala County	21	Foster County	1
Bolivar County	29	Golden Valley County	3
Calhoun County	16	McHenry County	6
Carroll County	16	Mountrail County	1
Chickasaw County	20	Nelson County	1
Choctaw County	8	Ramsey County	1
Clarke County	5	Ransom County	2
Clay County	9	Richland County	1
Coahoma County	13	Walsh County	2
Copiah County	22	Williams County	3
Covington County	15		
De Soto County	4	Total	24
Forrest County	5		
Franklin County	9		
George County	3		
Greene County	2		

TYPHOID FEVER—Continued.

State Reports for August, 1914—Continued.

Places.	New cases reported.	Places.	New cases reported.
Ohio:		Ohio—Continued.	
Adams County.....	7	Montgomery County.....	14
Allen County.....	16	Morrow County.....	1
Ashland County.....	3	Muskingum County.....	4
Ashtabula County.....	4	Ottawa County.....	1
Athens County.....	4	Paulding County.....	1
Auglaize County.....	1	Pickaway County.....	5
Belmont County.....	8	Pike County.....	3
Brown County.....	7	Portage County.....	2
Butler County—		Preble County.....	3
Hamilton.....	5	Putnam County.....	10
Middletown.....	6	Richland County.....	9
Carroll County.....	1	Ross County.....	8
Champaign County.....	4	Sandusky County.....	9
Clark County.....	4	Senoto County.....	23
Clermont County.....	2	Seneca County—	
Clinton County.....	9	Fostoria.....	2
Columbiana County—		Tiffin.....	4
Salem.....	2	Shelby County.....	2
Wellsville.....	1	Stark County.....	13
Crawford County.....	4	Summit County.....	10
Cuyahoga County.....	52	Trumbull County.....	5
Darke County.....	6	Tuscarawas County.....	3
De fiance County.....	3	Van Wert County.....	2
Delaware County.....	1	Vinton County.....	3
Erie County.....	3	Warren County.....	2
Fairfield County.....	1	Washington County.....	8
Fayette County.....	5	Wayne County.....	3
Franklin County.....	43	Wood County.....	3
Fulton County.....	1	Wyandot County.....	8
Gallia County.....	1		
Geauga County.....	2	Total.....	565
Greene County.....	22		
Guernsey County.....	7	Oregon:	
Hamilton County—		Clackamas County.....	1
Cincinnati.....	17	Columbia County.....	1
Norwood.....	1	Douglas County.....	2
Hancock County.....	3	Harney County.....	6
Hardin County.....	3	Josephine County.....	2
Harrison County.....	1	Lane County.....	3
Henry County.....	2	Linn County.....	11
Highland County.....	7	Marion County.....	1
Hocking County.....	4	Multnomah County.....	2
Holmes County.....	3	Portland.....	7
Huron County.....	2	Total.....	36
Jackson County—			
Wellston.....	2	Vermont:	
Jefferson County.....	14	Addison County.....	2
Knox County.....	2	Bennington County.....	1
Lawrence County.....	6	Chittenden County.....	21
Licking County.....	10	Franklin County.....	1
Logan County.....	5	Orleans County.....	1
Lorain County.....	1	Rutland County.....	1
Lucas County.....	54	Washington County.....	19
Madison County.....	8	Windham County.....	3
Mahoning County.....	10	Windsor County.....	1
Marion County.....	1	Total.....	50
Meigs County.....	1		
Mercer County.....	3		
Miami County.....	7		

TYPHOID FEVER—Continued.

New York Report for July, 1914.

Places.	New cases reported.	Places.	New cases reported.
New York:		New York—Continued.	
Albany County.....	7	Orange County.....	3
Allegany County.....	8	Oswego County.....	2
Cattaraugus County.....	2	Otsego County.....	1
Cayuga County.....	6	Putnam County.....	1
Chautauqua County.....	8	Rensselaer County.....	2
Chemung County.....	2	Rockland County.....	1
Chenango County.....	2	St. Lawrence County.....	1
Columbia County.....	1	Saratoga County.....	17
Cortland County.....	5	Schenectady County.....	2
Delaware County.....	2	Schoharie County.....	4
Erie County.....	17	Schuyler County.....	3
Essex County.....	1	Seneca County.....	18
Franklin County.....	1	Steuben County.....	2
Fulton County.....	5	Sullivan County.....	1
Hamilton County.....	1	Tioga County.....	1
Herkimer County.....	4	Tompkins County.....	4
Jefferson County.....	2	Ulster County.....	5
Madison County.....	2	Washington County.....	2
Monroe County.....	14	Wayne County.....	3
Nassau County.....	1	Westchester County.....	4
Niagara County.....	14	New York City.....	200
Oneida County.....	4		
Onondaga County.....	2	Total.....	392

City Reports for Week Ended Sept. 12, 1914.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Albany, N. Y.....	1	1	Mobile, Ala.....		1
Altoona, Pa.....	4		Moline, Ill.....	17	1
Aurora, Ill.....	9	2	Montclair, N. J.....	1	
Baltimore, Md.....	20	3	Nashville, Tenn.....	14	
Boston, Mass.....	23	3	Newark, N. J.....	7	2
Brockton, Mass.....	1		New Castle, Pa.....	4	
Buffalo, N. Y.....	15	4	New Orleans, La.....	5	1
Cambridge, Mass.....	2		Newport, R. I.....	3	
Camden, N. J.....	2		Newton, Mass.....	2	
Charleston, S. C.....	8	1	New York, N. Y.....	144	10
Cincinnati, Ohio.....	2		Norfolk, Va.....	1	
Cleveland, Ohio.....	4	1	Norristown, Pa.....	3	
Columbus, Ohio.....	2	1	North Adams, Mass.....	4	2
Cumberland, Md.....	3		Oakland, Cal.....	2	
Dayton, Ohio.....	3		Orange, N. J.....	3	
Detroit, Mich.....	23	2	Passaic, N. J.....	1	
Duluth, Minn.....	1	1	Philadelphia, Pa.....	35	2
Elmira, N. Y.....	6		Pittsburgh, Pa.....	6	
Erie, Pa.....	1		Portland, Oreg.....	1	
Everett, Mass.....	1	1	Providence, R. I.....	12	1
Florence, S. C.....	2		Racine, Wis.....	1	
Galveston, Tex.....	1		Reading, Pa.....	12	2
Grand Rapids, Mich.....	2	2	Richmond, Va.....	7	
Harrisburg, Pa.....	1	1	Roanoke, Va.....	2	
Hartford, Conn.....	5		Rochester, N. Y.....	2	
Hoboken, N. J.....	2		Rutland, Vt.....	1	
Jersey City, N. J.....	2		Sacramento, Cal.....	4	1
Kalamazoo, Mich.....	1		St. Louis, Mo.....	14	
Kansas City, Kans.....	2		San Francisco, Cal.....	10	3
Kansas City, Mo.....	2	1	Schenectady, N. Y.....	3	1
La Crosse, Wis.....	3		Seattle, Wash.....	9	
Lexington, Ky.....	4		Springfield, Mass.....	8	
Little Rock, Ark.....	2		Springfield, Ohio.....	2	
Los Angeles, Cal.....	5		Steeltown, Pa.....	3	
Lowell, Mass.....	3		Toledo, Ohio.....	7	
Lynchburg, Va.....	5	1	Trenton, N. J.....	1	
Lynn, Mass.....	3		Washington, D. C.....	16	1
McKeesport, Pa.....	1	1	Wheeling, W. Va.....	1	
Massillon, Ohio.....	2		Wilmington, N. C.....	1	1
Milwaukee, Wis.....	1		Worcester, Mass.....	8	

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

State Reports for August, 1914.

State.	Cases reported.			State.	Cases reported.		
	Diphtheria.	Measles.	Scarlet fever.		Diphtheria.	Measles.	Scarlet fever.
California.....	107	385	95	North Dakota.....	12		19
Indiana.....	149	78	92	Ohio.....	474	205	261
Iowa.....	30		21	Oregon.....	23	74	22
Massachusetts.....	386	258	226	Vermont.....	16	3	21
Mississippi.....	71	239	8				

New York Report for July, 1914.

The State Department of Health of New York reported that during the month of July, 1914, 1,165 cases of diphtheria, 2,837 cases of measles, and 820 cases of scarlet fever had been reported in the State of New York.

City Reports for Week Ended Sept. 12, 1914.

Cities.	Population as of July 1, 1914 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Over 500,000 inhabitants:										
Baltimore, Md.....	579,590	152	16	1	1		4		15	17
Boston, Mass.....	733,802	190	28		15		17		35	13
Chicago, Ill.....	2,393,325	490	87	13	10		12	1	263	51
Cleveland, Ohio.....	639,431	132	42	5	1		8		17	13
Detroit, Mich.....	537,650	150	21	1			16	2	18	11
New York, N. Y.....	5,333,537	1,206	209	13	36	2	49		363	147
Philadelphia, Pa.....	1,657,810	412	37	1	8		8		50	45
Pittsburgh, Pa.....	564,878	160	19		8	1	22	3	23	3
St. Louis, Mo.....	734,667	168	52	6	1		14		35	11
From 300,000 to 500,000 inhabitants:										
Buffalo, N. Y.....	454,112	130	12		3	1	3		23	14
Cincinnati, Ohio.....	402,175	99	16				11		20	12
Los Angeles, Cal.....	438,914	94	7		6		5		45	10
Milwaukee, Wis.....	417,054	93	19	4	1		8		9	6
Newark, N. J.....	339,106	104	14	1	1		8		36	11
New Orleans, La.....	361,221	123	41	3			2		28	20
San Francisco, Cal.....	448,502	132	10	3	69		4	1	36	17
Washington, D. C.....	353,378	101	5	1			1		26	13
From 200,000 to 300,000 inhabitants:										
Columbus, Ohio.....	204,567	53	8				1		9	5
Jersey City, N. J.....	293,921	56	9	1			7		22	9
Kansas City, Mo.....	281,911	68	5		1		1		1	4
Portland, Oreg.....	260,601	45	4	1	1		1		5	6
Providence, R. I.....	245,090	59	6	1	1		1			4
Rochester, N. Y.....	241,518	71	4				2		6	4
Seattle, Wash.....	313,029	54	4				2			1
From 100,000 to 200,000 inhabitants:										
Albany, N. Y.....	102,961	35			1		8	1	10	4
Cambridge, Mass.....	110,357	16	4				1		3	3
Camden, N. J.....	102,465		1						4	
Dayton, Ohio.....	123,794	33	7		1		2		3	3
Grand Rapids, Mich.....	123,227	33	6	1	1		3			2
Hartford, Conn.....	107,038	30	1				1		2	
Lowell, Mass.....	111,004	45				2			4	4
Nashville, Tenn.....	114,899	31	1		1		2		2	3
Oakland, Cal.....	183,002	51			3		1		5	3
Reading, Pa.....	103,361						3		2	1
Richmond, Va.....	134,917	46	6				1		7	3

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Con.

City Reports for Week Ended Sept. 12, 1914—Continued.

Cities.	Population as of July 1, 1914 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 100,000 to 200,000 inhabitants—Continued.										
Springfield, Mass.	100,375	22	1	1	1				5	3
Toledo, Ohio	184,126	47	6	1	1		3			3
Trenton, N. J.	106,831	35	1		1		1		8	3
Worcester, Mass.	157,732	38	8	2			1		10	
From 50,000 to 100,000 inhabitants:										
Altoona, Pa.	56,553	9	3						1	
Atlantic City, N. J.	53,952	10								
Bayonne, N. J.	65,271	14	2	1					5	1
Berkeley, Cal.	52,105	1			3					
Brockton, Mass.	64,043	9							4	
Charleston, S. C.	60,121	29	2							3
Duluth, Minn.	89,331									
Erie, Pa.	72,401	26	1						3	
Evansville, Ind.	71,284	14	2							2
Harrisburg, Pa.	69,493	22	3						3	
Hoboken, N. J.	74,904		5						17	4
Johnstown, Pa.	64,642	16	6				4		1	1
Kansas City, Kans.	94,271		1						1	2
Little Rock, Ark.	58,811	28							1	
Lynn, Mass.	98,207	18	3		1		3		1	2
Manchester, N. H.	75,635	28					5		2	2
Mobile, Ala.	55,573	26	1						1	1
Norfolk, Va.	86,540		15						5	2
Passaic, N. J.	66,276	16	1						3	
Pawtucket, R. I.	56,901	10								
Saginaw, Mich.	53,988	15	4						3	1
Schenectady, N. Y.	90,503	22	5		2		3			2
South Bend, Ind.	65,114	16	3	1					2	2
Springfield, Ill.	57,972	20					2		2	2
Springfield, Ohio.	50,058	14	1						2	1
Wilkes-Barre, Pa.	73,660	18	4						3	1
Yonkers, N. Y.	93,383	16	3						5	2
From 25,000 to 50,000 inhabitants:										
Alameda, Cal.	26,330	5	1	1			1			1
Aurora, Ill.	33,022	9	1							1
Austin, Tex.	33,218	7	1							1
Brookline, Mass.	31,138	3			1				1	
Butte, Mont.	41,781	21	2				1		3	5
Chelsea, Mass.	32,452	6	1		1				1	
Chicopee, Mass.	28,057	8								
Danville, Ill.	30,847	2	1		1					1
Elmira, N. Y.	37,816	10	2						1	1
Everett, Mass.	37,381		1						2	1
Fitchburg, Mass.	40,507	9	2						3	
Galveston, Tex.	40,269	14		1						1
Haverhill, Mass.	47,071	12					3		1	1
Kalamazoo, Mich.	45,842	15							1	1
La Crosse, Wis.	31,367	6	1	1						
Lancaster, Pa.	49,686								1	
Lexington, Ky.	38,819	11	1				2		4	1
Lynchburg, Va.	31,830	13			1				2	2
Malden, Mass.	48,979	11	5						3	1
McKeesport, Pa.	45,965	10	1							
Medford, Mass.	25,240	7								2
Moline, Ill.	26,402	5								
Newcastle, Pa.	39,569		4				1			
Newport, Ky.	31,517	12	3				2		2	3
Newport, R. I.	29,154	8								
Newton, Mass.	42,455	8								
Niagara Falls, N. Y.	35,127	3	1						2	
Norristown, Pa.	30,265	4								1
Orange, N. J.	31,968	6	2				2		3	1
Pasadena, Cal.	40,880	8			1		2		1	
Portsmouth, Va.	37,599	9								2
Racine, Wis.	44,528	16								
Roanoke, Va.	40,574	8	8				1			1
Sacramento, Cal.	62,717	12	2		2					1
San Diego, Cal.	48,900		3							
South Omaha, Nebr.	26,368	7								

IN INSULAR POSSESSIONS.

PHILIPPINE ISLANDS.

Cholera—Cholera Carriers.

The following information has been received from Asst. Surg. Duffy, acting chief quarantine officer for the Philippine Islands: During the week ended August 8, 1914, 39 cases of cholera, with 31 deaths, were notified in Manila. Of these, 9 cases, with 9 deaths, occurred during preceding weeks, but were reported during the week ended August 8, 1914, on corrected diagnoses.

The occurrence is not steady as to numbers. The closing day of the week showed 6 cases and 6 deaths. On the same day there were 23 cholera patients under treatment at the San Lazaro Hospital.

No striking or unusual features have developed in this epidemic. Cholera carriers continue to be found in almost every group of contacts. The situation may be grasped by the statement that at the close of the week there were 14 suspects awaiting completion of diagnosis by laboratory methods, 28 cholera carriers were under treatment and 23 cholera cases were inmates of the San Lazaro Cholera Hospital. The laboratory facilities are adequate, but the length of time required for carrying out the full technique of the examinations is as heretofore a subject worthy of further study.

There has been very little, or no spread of the disease from the various foci of infection. Practically no traces of connection between the different cases can, as a rule, be established.

In the provinces a few sporadic cases of cholera have occurred each week since the commencement of the present outbreak in Manila. Almost simultaneously cholera cases appeared in six provinces; some at places at least 200 miles from the nearest known case of cholera.

Plague.

During the week ended August 8, 1914, 1 case of plague, with 1 death, was notified in Manila.

FOREIGN REPORTS.

AUSTRIA-HUNGARY.

Cholera—Dysentery.

A report from Vienna dated September 26, 1914, states: Cholera has broken out in five different localities in Hungary. Budapest has a case, and a case was present in a hospital at Vienna during the past week. Hundreds of cases of serious dysentery are reported among wounded soldiers.

CHINA.

Newchwang—Quarantine Against Hongkong Modified.

The quarantine restrictions previously enforced at Newchwang against arrivals from Hongkong were modified August 7, 1914, as follows: Medical inspection of vessels discontinued; regulations governing the importation of rags, old paper, old gunny bags, coffins containing corpses, earth, and mold, remain in force; rat guards still to be used on all pontoons and on all lines by which cargo boats are made fast.

Plague-Infected Rat—Shanghai.

During the week ended August 15, 1914, 247 rats were examined at Shanghai for plague infection. One plague-infected rat was found.

CUBA.

Communicable Diseases—Habana.

Communicable diseases were notified in Habana for the 10 days ended September 10, 1914, as follows:

Diseases.	Cases.	Deaths.	Remain- ing under treat- ment.	Diseases.	Cases.	Deaths.	Remain- ing under treat- ment.
Diphtheria.....	6	2	3	Paratyphoid fever.....	3		6
Leprosy.....	1	2	264	Scarlet fever.....	5		7
Measles.....	5		20	Typhoid fever.....	15	2	58

GREAT BRITAIN.

Examination of Rats—Liverpool.

During the period from August 1 to 29, 1914, 890 rats were examined at Liverpool for plague infection. No plague-infected rat was found.

INDIA.

Cholera Epidemic—Madras.

During the week ended August 15, 1914, 33 cases of cholera with 30 deaths were notified in Madras. On August 19, 1914, the disease was declared epidemic. The greatest number of cases occurred among Hindus.

ITALY.

Typhoid Fever—Genoa.

During the two weeks ended August 31, 1914, 222 cases of typhoid fever with 15 deaths were notified in Genoa.

JAPAN.

Typhus Fever—Tokyo.

During the week ended August 29, 1914, 3 new cases of typhus fever were notified in Tokyo, making a total from the beginning of the present outbreak in March, 1914, of 4,118 cases. The mortality from the disease has not been reported.

Communicable Diseases.

Communicable diseases were notified in the Empire of Japan, exclusive of the Island of Taiwan, for the month of July, 1914, as follows:

Diseases.	Cases.	Deaths.	Total from January, 1914, to July 31, 1914.	
			Cases.	Deaths.
Diphtheria.....	795	167	10,432	2,702
Dysentery.....	5,209	1,016	7,512	1,374
Paratyphoid fever.....	771	63	3,055	338
Plague.....	12	7	78	64
Scarlet fever.....	71	7	892	53
Smallpox.....	64	12	414	89
Typhoid fever.....	3,381	566	15,697	2,763
Typhus fever.....	555	101	7,264	1,214

JAVA.

Cholera Epidemic—Batavia.

Cholera was reported present in epidemic form at Batavia, September 22, 1914.

SIAM.

Quarantine Against Singapore Suspended—Bangkok.

The quarantine measures imposed at Bangkok against Singapore, on account of cholera, were suspended August 4, 1914.

UNION OF SOUTH AFRICA.

Plague.

A telegraphic report from Cape Town, dated September 24, 1914, states as follows: Few cases plague, outlying districts, reported localized.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX.**Reports Received During Week Ended Oct. 2, 1914.**

(From medical officers of the Public Health Service, American consuls, and other sources.)

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary:				
Hungary.....				Sept. 26, present in 5 localities.
Budapest.....	Sept. 26.....	1		
Vienna.....	Sept. 13.....	1		
Dutch East Indies:				
Celebes.....	July 19-Aug. 1....	88	83	Epidemic.
Java:				
Batavia.....	Sept. 22.....			
India:				
Calcutta.....	Aug. 2-15.....		11	
Philippine Islands:				
Manila.....	Aug. 2-8.....	39	31	Including 9 fatal cases not previously reported. Present in 6 provinces.
Provinces.....	July 4-Aug. 8....			

PLAGUE.

Brazil:				
Pernambuco.....	Aug. 1-15.....		2	
Egypt:				
Alexandria.....	Aug. 17-22.....	2	1	
Port Said.....	July 30-Aug. 22..	2	1	
India:				
Calcutta.....	Aug. 2-8.....		3	
Japan:				July 1-31: Cases, 7. Total Jan. 1- July 31: Cases, 78; deaths, 64.
Philippine Islands:				
Manila.....	Aug. 2-8.....	1	1	
Turkey in Asia:				
Beirut.....	Aug. 23.....	1		Epidemic.
Samos.....	Aug. 2.....			
Smyrna.....	Aug. 23-29.....	4	3	
Union of South Africa:				
Cape Town.....	Sept. 24.....			"Few cases plague outlying dis- tricts reported localized."

SMALLPOX.

Australia:				
New South Wales— Sydney.....				Aug. 7-20: Cases, 28, in the met- ropolitan area, and 8 in the country districts.
Brazil:				
Pernambuco.....	Aug. 1-15.....		7	
Canary Islands:				
Teneriffe— Santa Cruz.....	Aug. 16-29.....		4	
Dutch East Indies:				
Borneo.....	July 19-25.....	139	28	In the western part. July 19-Aug. 1: Cases, 518; deaths 89, in the western part, includ- ing Batavia.
Java:				
Batavia.....	do.....	42	10	
Egypt:				
Alexandria.....	July 13-26.....	6	3	
Cairo.....	July 6-19.....	21	7	
France:				
Paris.....	July 27-Aug. 15..	2		
Greece:				
Patras.....	Sept. 2-8.....	3	1	
India:				
Bombay.....	Aug. 2-15.....	10	5	
Calcutta.....	July 19-Aug. 15..		43	
Madras.....	Aug. 8-15.....	2		
Japan:				July 1-31: Cases, 64; deaths, 12. Total, Jan. 1-July 31: Cases, 414; deaths, 89.
Nagasaki.....	Aug. 1-7.....		3	
Do.....	Aug. 23.....		1	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received During Week Ended Oct. 2, 1914—Continued.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Mexico:				
Maratlan.....	Aug. 19-Sept. 1.....		3	
Spain:				
Madrid.....	Aug. 1-31.....		1	
Valencia.....	July 26-Aug. 1.....	4	1	
Turkey in Europe:				
Constantinople.....	July 19-25.....	2		
Saloniki.....	Aug. 23-29.....		5	

Reports Received from June 27 to Sept. 25, 1914.

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Ceylon:				
Coleambo.....	June 14-20.....	1	1	
Uda Pusselawa, district.....	June 7-13.....			Present in Kumbalagamuwa and the neighboring tea estates.
China—				
Amoy—				
Kulansu.....	Aug. 1.....	1		
Hankow.....	July 12-18.....	1		From up-country districts.
Chaochow fu.....	July 4.....			Present.
Canton.....	Jan. 1-Apr. 30.....	4		
Hongkong.....	May 17-23.....	1	1	
Dutch East Indies.				
Celebes.....	July 19-25.....	2	2	
Java—				
Batavia.....	Aug. 28-July 18.....	2	2	
Moluccas—				
Menado.....	June 21-27.....	42	14	
India:				
Bassein.....	Apr. 26-June 20.....	82	64	
Bombay.....	May 17-Aug. 15.....	198	125	
Calcutta.....	May 10-Aug. 1.....		247	
Cocanada.....	July 18-24.....		5	
Madras.....	May 31-Aug. 15.....	162	116	
Moulmine.....	June 7-13.....	1	1	
Negapatam.....	May 14-July 25.....	30	30	
Rangoon.....	Apr. 1-June 30.....	10	9	
Indo-China.				
Battambang.....	June 11-20.....	4		
Cholon.....	July 1-10.....	4		
Saigon.....	June 2-Aug. 3.....	33	12	
Persia:				
Anzali.....	June 15.....	1		
Philippine Islands:				
Manila.....	July 4-19.....	17	15	
Russia:				
Podolia.....				July 19-Aug. 2: Cases, 254; deaths, 85.
Bratzlaw.....	July 26-Aug. 2.....	1		
Jampol.....	July 19-Aug. 2.....	25	8	
Letichev.....	July 10.....	2	2	
Litine.....	July 26-Aug. 8.....	8	3	
Vinnitza.....	July 19-Aug. 2.....	220	74	
Siam:				
Bangkok.....	Apr. 19-June 13.....		253	
Straits Settlements:				
Singapore.....	May 10-July 25.....	96	86	
Turkey in Europe:				
Adrianople.....	May 14-19.....		2	
Constantinople.....	July 15.....	1		
Viza.....	July 22.....	1		
Turkey in Asia:				
Eski-Cheri.....	July 23-24.....	2	1	
Tagadima.....	July 29.....	2		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 27 to Sept. 25, 1914—Continued.

YELLOW FEVER.

Places.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Bahia.....	May 10-Aug. 15...	18	15	
Pernambuco.....	May 1-15.....		1	
Ecuador:				
Guayaquil.....	May 1-31.....	3	1	
Venezuela:				
Caracas.....	June 1-30.....	1	1	
Maracaibo.....	June 15.....			Present in light form. No cases since.

PLAGUE.

Brazil:				
Bahia.....	May 17-Aug. 22...	9	8	
Pernambuco.....	May 1-July 31.....		3	
British East Africa:				
Mombasa.....	June 1-30.....		1	
Ceylon:				
Colombo.....	May 19-Aug. 8....	121	109	
China.....				Jan. 1-Apr. 30, present in Hokschan, Shuntak, Tangching, and Tungkun. Apr. 3-17, present in Kan-lai and San-hu, 20 miles distant from Pakhol. June 6, still present in vicinity of Swatow. June 20, improving in the Chaochow and Punning districts.
Amoy.....	June 20-July 18.....			Present: July 13, present in inland villages. Aug. 10, diminishing.
Kulangsu.....	May 20.....	1		
Canton.....	Jan. 1-June 11.....	1,156		
Chinchew.....	May 30-June 6.....			Present 30 miles north from Amoy.
Fatshan.....	May 13.....			Present.
Hongkong.....	May 10-Aug. 8....	908	746	Total, Jan. 4-July 25: Cases, 2,127; deaths, 1,679.
Pakhol.....	June 18.....	2		From a vessel from Hongkong. Apr. 3-June 18: Cases, 100. In Kan-lai and San-hu, 20 miles distant.
Cuba.....				Total, Mar. 5-Aug. 14: Cases, 43; deaths, 9.
El Aceite (near El Caney).....	July 27-Aug. 2....	4		Including 2 cases previously reported from vicinity of El Caney; all removed to and previously reported as from Santiago.
Santiago.....				June 30-Sept. 23: Cases, 12 (case Sept. 17 from El Caney); deaths, 4. One of these deaths was a case from El Aceite.
Dutch East Indies:				
Provinces.....				Total, Apr. 1-June 30: Cases, 3,787; deaths, 3,385.
Kediri.....	Apr. 1-June 30....	718	692	
Madison.....	do.....	252	220	
Paseroean.....	do.....	2,628	2,301	
Surabaya.....	do.....	189	172	
Ecuador:				
Guayaquil.....	May 1-July 31....	7	4	
Egypt.....				Total, Jan. 1-Aug. 16: Cases, 184 deaths, 95.
Alexandria.....	June 2-Aug. 16....	27	14	
Dahletos.....	July 17.....	1		
Port Said.....	June 9-July 29....	19	8	
Provinces:				
Assiout.....	May 25-June 20....	5	1	
Charikh.....	July 13.....	1	1	
Fayoum.....	May 27-Aug. 13....	8	2	
Gharbiyah.....	July 24.....	1		
Gizeh.....	May 27-June 24....	6	3	
Menouf.....	June 17.....	1		
Minieh.....	May 23-July 12....	10	5	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 27 to Sept. 25, 1914—Continued.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
German East Africa:				
Dar-es-Salaam.....	May 2-June 10....	7	3	
Muanza.....	Feb. 21-Mar. 18...	7	5	
Great Britain:				
Liverpool.....	Aug. 8-12.....	9	3	
Hawaii:				
Paauhau.....	Aug. 17.....	1	1	
India.....				Total, Apr. 27-Aug. 1: Cases, 47,605; deaths, 41,811.
Bassein.....	Apr. 26-July 25....	31	31	
Bombay.....	May 17-Aug. 15....	539	456	
Calcutta.....	May 10-Aug. 1.....		154	
Karachi.....	May 24-July 18....	28	27	
Maulmine.....	Apr. 26-July 25....	83	82	
Rangoon.....	Apr. 1-June 30....	557	524	
Indo-China.....				Total, Jan. 1-June 10: Cases, 1,414; deaths, 1,146. June 11-July 20: Cases, 132.
Cholon.....	Jan. 1-July 20....	81		
Phanitet.....	Jan. 1-July 10....	389		
Phanrang.....	do.....	852		
Pnum Penh.....	do.....	24		
Saigon.....	May 19-Aug. 3....	121	40	
Soctrang.....	May 1-July 10....	22		
Italy:				
Catania.....				Reported present.
Japan.....				Total, Jan. 1-June 30: Cases, 66; deaths, 57. Near Yokohama.
Hodogaya.....	June 9-July 3....	3		
O-No district.....	June 9-15.....	1		
Taiwan (Formosa)—				
Kagi.....	May 3-Aug. 8....	303	273	
Tokyo.....	June 22-Aug. 8....	14	4	
Yokohama.....	July 5-Aug. 15....	4	4	Total, Apr. 18-July 25: Cases, 45. And vicinity. Total, May 23-Aug. 15: Cases, 23; deaths, 19.
Mauritius.....	Apr. 17-23.....	2		
Peru:				
Ancachs.....				No reports of deaths received.
Casma.....				Total, Feb. 9-Mar. 22: Cases, 4, including 2 cases, p. 1319, pt. 1.
Chimbote.....	Mar. 23-May 2....			Present.
Quarhuay (Huaylas).....	do.....			Do.
Samanca.....	do.....			Do.
Arequipa—				
Mollendo.....	Mar. 23-July 5....	14		
Cahamarca—				
Contumaza.....	Mar. 23-May 2....	3		
Lambayeque—				
Chiclayo.....	do.....	3		
Guadalupe.....	do.....	1		
Libertad—				
Huacamarca (Otzuco).....	Mar. 23-May 30....			Do.
Pichipampa (Otzuco).....	Mar. 24-30.....	4		
Salavarry.....	Mar. 23-May 2....	1		
San Pedro.....	do.....	8		
Trujillo.....	Mar. 23-June 7....	16		From Pacasmayo.
Lima—				
Unigambal (Santiago de Chuco).....	do.....	16		
Lima.....	Mar. 23-July 5....	17		
Surco (Matucana).....	do.....	11		July 7, still present.
Piura—				
Catacaos.....	do.....	4		
La Huaca.....	June 8-July 5....	1		
Piura.....	Mar. 23-July 5....	12		
Philippine Islands:				
Manila.....	May 17-July 25....	5	5	May 17, 1 case from s. s. Taisang from Amoy; May 23, 1 case from s. s. Linan from Amoy; June 12-20, a fatal case from s. s. Linan from Amoy; June 17 a fatal case in the Philippine General Hospital.
Cebu.....				May 20, 1 case on s. s. Rubi from Hongkong.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 27 to Sept. 25, 1914—Continued.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Russia:				
Astrakhan government.....				Total, May 25-July 15: Cases, 49; deaths, 46.
Kirghis steppe—				
Betas-Tschagal.....	May 25-July 15.....	2		
Bulanai.....	May 25-June 14.....	10	10	7 of these cases pneumonic.
Manyseh-Tschagal.....	do.....	5		
Kalmuck steppe—				
Archanskoge-Tebe.....	do.....	4		
Gubja.....	do.....	4		
Schitkur.....	do.....	1		
Senegal:				
Dakar.....	May 15.....	12		May 17-23, 5 deaths daily among natives.
Siam:				
Bangkok.....	Apr. 19-June 13.....		9	
Straits Settlements:				
Singapore.....	May 10-16.....	2	2	
Tripoli.....				July 15, present in Azizia, Tarhuna, and Zanzur, vicinity of Tunis.
Turkey in Asia:				
Basra.....	June 24-July 19.....	16	8	
Beirut.....	June 16-Aug. 1.....	4		
Chios.....	Aug. 2.....			Epidemic.
Jaffa.....	June 5-27.....	4	3	
Kut.....	July 6.....		1	From a steamboat from Bagdad to Basra.
Smyrna.....	July 2.....	1		
Turkey in Europe:				
Saloniki.....	Sept. 15.....	3		
Zanzibar:				
Zanzibar.....	July 1-14.....	5	4	

SMALLPOX.

Algeria:				
Departments—				
Algiers.....	Mar. 1-May 31.....	7		
Constantine.....	do.....	7		
Oran.....	do.....	57		
Arabia:				
Aden.....	June 10-16.....		1	
Argentina:				
Buenos Aires.....	June 1-30.....		1	
Australia:				
New South Wales—				
Sydney.....				Total May 8-Aug. 6: Cases, 185 in the metropolitan area and 62 cases in the country districts.
Western Australia—				
Bunbury quarantine station.....	May 5-June 12.....	8	1	From s. s. Kilchattan, from Bombay, including previous report.
Austria-Hungary:				
Galicia.....	May 17-23.....	10		
Upper Austria.....	do.....	3		
Belgium:				
Liege.....	June 1-6.....		3	
Brazil:				
Bahia.....	June 1-Aug. 8.....	14		
Para.....	May 24-30.....		1	
Pernambuco.....	May 1-July 31.....		34	
Rio de Janeiro.....	May 10-Aug. 1.....	1,089	164	
Canada:				
British Columbia—				
Vancouver.....	Aug. 18-Sept. 5.....	4		
Manitoba—				
Winnipeg.....	June 14-July 25.....	8		
Ontario—				
Hamilton.....	Aug. 1-31.....	3		
Niagara Falls.....	July 15-21.....	1		
Ottawa.....	July 26-Aug. 1.....	1		
Prince Edward Island—				
Charlottetown.....	July 16-22.....	1		
Quebec—				
Quebec.....	July 11-Sept. 12.....	3		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 27 to Sept. 25, 1914—Continued.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Canary Islands:				
Tenerife—				
Santa Cruz.....	June 28-Aug. 15.....		10	
Ceylon:				
Colombo.....	May 19-Aug. 8.....	4	2	
Uva district—				
Passara.....	June 7-13.....	39	11	Among coolies from India. May 16-23, present in Kaying and increasing in Choa Chow. Present.
China.....				
Amoy.....	May 17-June 13.....			
Canton.....	Jan. 1-Apr. 30.....	21		
Chungking.....	May 23.....			Endemic.
Dairen.....	June 7-July 4.....	2		
Hongkong.....	May 10-July 18.....	15	12	Total Jan. 4-May 30: Cases, 98; deaths, 65. Always prevalent.
Nanking.....	May 23.....			Do.
Newchwang.....	June 13.....			Present, and in San-hu, 20 miles distant.
Pakhoi.....	Apr. 17.....			Deaths among natives.
Shanghai.....	May 18-Aug. 9.....	10	16	
Tientsin.....	June 6.....	1		
Tsingtau.....	May 19-July 5.....	21	3	
Dutch East Indies:				
Borneo.....	May 17-June 27.....	301	63	In the western part. In the western part. May 3-July 11: Cases, 1,243; deaths, 253, including Batavia.
Java.....				
Batavia.....	May 3-July 11.....	79	27	
Egypt:				
Alexandria.....	June 4-Aug. 12.....	19	9	
Cairo.....	May 21-July 29.....	170	66	
Port Said.....	May 21-June 6.....	4		
France:				
Bordeaux.....	June 7-July 11.....		4	
Marseille.....	May 1-31.....		2	
Paris.....	May 24-July 11.....	23	1	
Germany:				
Hamburg.....	June 7-27.....	6		May 31-Aug. 22: Cases, 10.
Kehl.....	May 1-31.....		1	
Gibraltar.....	June 8-27.....	1	1	
Great Britain:				
Leeds.....	June 6-July 18.....	4		
Southampton.....	June 29-July 4.....	1		
Greece:				
Athens.....	July 6-12.....		1	
India:				
Bombay.....	May 19-Aug. 1.....	68	42	
Calcutta.....	May 10-July 18.....		187	
Karachi.....	May 24-July 25.....	13	4	
Madras.....	May 17-Aug. 1.....	21	10	
Rangoon.....	Apr. 1-June 30.....	9	1	
Indo-China:				
Saigon.....	May 12-18.....	2		
Italy:				
Turin.....	July 20-26.....	2		
Japan.....				Total Jan. 1-June 30: Cases, 358 deaths, 77; exclusive of Taiwan.
Kobe.....	June 19-23.....	1		
Nagasaki.....	May 18-Aug. 2.....	55	14	
Taiwan (Formosa).....	May 3-Aug. 8.....	15	6	
Yokohama.....	June 23-29.....	1		
Mexico:				
Chihuahua.....	May 18-Sept. 6.....		45	
Juarez.....	Aug. 1.....	2		
Matatlan.....	June 17-30.....	2	1	
Mexico.....	Jan. 17-Feb. 21.....	99	16	
Monterey.....	June 30-Aug. 16.....		8	
Tampico.....	May 11-July 31.....		70	
Vera Cruz.....	June 1-Sept. 5.....	16	6	
Norway:				
Trondhjem.....	June 1-July 31.....	12		
Peru:				
Callao.....	June 22.....			Decreased.
Lima.....	do.....			Do.
Portugal:				
Lisbon.....	June 14-Aug. 16.....	9		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.**Reports Received from June 27 to Sept. 25, 1914—Continued.****SMALLPOX—Continued.**

Places.	Date.	Cases.	Deaths.	Remarks.
Russia:				
Batum.....	Feb. 1-Apr. 30.....	7		
Moscow.....	May 10-July 18.....	40	3	
Odessa.....	May 10-Aug. 4.....	6		
Riga.....	May 31-July 11.....	12		
St. Petersburg.....	May 24-July 4.....	75	19	
Vladivostok.....	Apr. 22-May 13.....	8	1	
Warsaw.....	Feb. 1-Apr. 25.....	92	44	
Serbia:				
Belgrade.....	May 25-July 19.....	12	2	
Spain:				
Alicante.....	July 1-31.....		1	
Barcelona.....	June 14-July 31.....		28	
Cadiz.....	May 1-31.....		5	
Madrid.....	June 1-30.....		5	
Valencia.....	June 7-Aug. 15.....	47	12	
Switzerland:				
Basel, Canton.....	May 31-June 20.....	14		
Geneva.....	July 5-11.....	1		
Grisons, Canton.....	June 7-13.....	1		
Zurich, Canton.....	July 19-25.....	1		
Turkey in Asia:				
Beirut.....	June 1-Aug. 15.....	41	18	
Damascus.....	Mar. 15-July 11.....	570	277	
Jerusalem.....	May 3-July 25.....	33	2	
Mersina.....	Aug. 2-8.....	2		
Smyrna.....	May 13-June 13.....		5	
Trebizond.....	May 19-June 27.....			Present.
Turkey in Europe:				
Constantinople.....	June 14-July 11.....		8	
Saloniki.....	May 31-Aug. 22.....		44	June 6: Present in a mild form, among 20,000 refugees from Asiatic Turkey, Chio, and Mitylene.
Union of South Africa:				
Pretoria.....	May 9-23.....	1		

SANITARY LEGISLATION.

STATE LAWS AND REGULATIONS PERTAINING TO PUBLIC HEALTH.

HAWAII.

Civil Service Rules for Board of Health. (Reg. Bd. of H., May 22, 1914.)

RULE 1. *Definition of terms.*—1. The “civil service of the Territorial board of health,” which for convenient reference is designated the “health service,” includes all offices or employment in the “health service” except as are exempted by section 7 of act 119 of the Session Laws of 1913.

2. The term “classified service” refers to that portion of the “health service” that is arranged in classes.

3. The term “class” refers to the competitive class, the noncompetitive class, or the labor class as defined in these rules.

4. The term “grade” refers to subdivisions of the competitive class arranged for the purposes of promotion and based upon the relative character of the duties and the amount of compensation.

5. The term “classification” refers to the arrangement of the titles, offices, and positions in the several classes and grades as decided upon by the commission.

6. The term “commission” when used by itself refers to the civil-service commission of the “health service.”

7. The term “appointing officer” refers to the president of the “health service,” who may make temporary appointments subject to the rules of the commission and the approval of the Territorial board of health.

8. The term “laborer” refers to any skilled or unskilled laborer employed or seeking employment in the labor class.

9. The term “position,” when used by itself, refers to any classified office or employment.

10. The masculine pronoun “he” and its derivatives includes the feminine pronoun “she” and its derivatives.

RULE 2. *General provisions.*—1. All appointments, promotions, transfers, reinstatements, or selections for employment in the classified service shall be made according to the merit and fitness of candidates therefor, and in the manner prescribed by these rules.

2. The appointing officer shall not appoint, promote, or employ any subordinate officer or employee in the classified service, or in any way change the official status of any such officer or employee except in accordance with these rules, and no such appointment, promotion, employment, or change of status made in contravention of any provision of these rules shall be valid.

3. No appointment to, or selection for, or removal from any office, position, or employment in the classified service and no change in the official status of any person in such service shall be in any manner affected or influenced by the political opinions or affiliations of any applicant or of any officer or employee. No inquiry made by or on behalf of the appointing officer nor any question in any form of application or in any examination shall be framed so as to elicit, and no answer shall be given so as to disclose, any information whatsoever concerning such opinions or affiliations; and no application or recommendation involving any such disclosure shall be received, filed, or considered.

4. No person in the health service shall use his official authority or influence to coerce the political action of any person or body; and no discrimination shall be exercised, promised, or threatened by any such person in favor of or against any applicant, officer, or employee in the classified service because of his political opinions or affiliations, or because he has declined to contribute to any political fund or to render any political service.

5. The right of every applicant, officer, or employee in the health service, active or otherwise, to entertain political opinions and the right of elective franchise, is sacred and inviolate, but no applicant, officer, or employee in the health service shall be a delegate to or a member of any political or partisan convention, or take active part in any political combine, and shall refrain from political discussion while in the offices of the Territorial board of health or on duty.

6. The violation by any person in the health service of any provision of act 119, Session Laws of 1913, or of these rules, shall be considered sufficient cause for the removal of such person.

RULE 3. Classification.—1. The classified service shall be arranged in three general classes, which shall be known, respectively, as the competitive, the non-competitive, and the labor class.

2. The positions in each of the aforesaid classes shall be those specifically designated under the head of each in the appended classification, except that all positions, whether now existing or hereafter created, the titles of which are not so designated, shall be deemed to be in the competitive class.

RULE 4. The competitive class.—1. Appointments shall be made to the competitive class that are not filled through promotion, transfer, reduction, or reinstatement by selection from among those persons graded highest on the most nearly appropriate eligible list resulting from open competitive examination, except as provided by rule 10.

2. For the purposes of such examinations and of regulated promotion, where practicable, the competitive class shall be subdivided as follows:

Part 1. Clerical service.

Part 2. Engineering service.

Part 3. Inspection service.

Part 4. Quarantine service.

Part 5. Insane asylum service.

Part 6. Pure-food service.

3. The positions in the foregoing parts shall, for purposes of promotion, be arranged in grades, which, so far as they shall have been established, shall be the grades fixed by these rules and which shall be as designated in the classification. The positions included in each subdivision and in each grade shall be those designated under the head of each in the classification.

4. The titles of positions in the competitive class, as set forth in the classification, are descriptive of the duties and functions attaching generally to such

positions or to groups of positions of similar or corresponding character and not necessarily to particular positions.

5. Examinations for positions in the competitive class shall be held and eligible lists therefor shall be established only under titles designated in the classification, except where it is shown that the qualifications required for a particular position are of a peculiar or unusual character, to which no classified title is applicable; the commission, in such case, may hold a special examination for appointment to such position, but shall state in its minutes the reasons for which each such special examination is held.

RULE 5. Competitive examinations.—1. The commission shall hold examinations for appointment to positions in the competitive class and shall fix the dates therefor and the conditions thereof whenever necessary to meet or to anticipate the needs of the health service. So far as practicable examinations for admission to positions in a graded service shall be held periodically, and the dates thereof shall be published at least 30 days prior to such examination, with such information with reference to the conditions of each as can be given.

2. Every examination shall be under the responsible direction of the chief examiner, who shall consult, when necessary, with the appointing officer concerning the qualifications required for particular positions, but such examinations shall be free from the influence or participation in any manner either of the appointing officer or of any person other than the commission or its designated officers or employees.

3. The subjects of examinations and the relative weight given to each, where not fixed by these rules or by regulations, shall be fixed by the chief examiner, subject to the direction of the commission.

The chief examiner shall assign the examiners for a given examination or for a given subject, except where experts are employed, and all written questions prepared by such examiners or experts shall be placed in his custody in advance of such examination. Such questions shall be printed from type or other process under his immediate supervision; and, unless relieved by the commission, he shall be responsible for their safe-keeping.

4. The examinations shall be practical in their character, and shall relate to such matters as will test fairly and adequately the relative fitness and capacity of the persons to be examined for the discharge of the duties of the service, or of the position into which they seek to enter. For positions of a designated grade or compensation they shall vary in strictness as the grade or the amount of compensation advances.

5. The commission may direct oral examinations or special practical tests of fitness. Physical qualifications are requisite, and candidates shall be required to pass a physical examination by a licensed physician and be certified as qualified in such respect before admission to examination.

6. In advance of examination for a position the duties of which are scientific, professional, or technical, candidates shall be required to present evidences of the special education or preliminary training they have had tending to qualify them for such position; and the commission may require, as a condition of examination, evidence of practical experience for a satisfactory term in such service.

Training and experience, of a character tending to show peculiar or especial fitness for the position examined for, may be rated as a fixed subject of examination, but a candidate in stating such training and experience shall be required to give reference through which such statements may be satisfactorily verified.

7. All examinations shall be in writing, except as herein otherwise provided. Whenever oral questioning is prescribed, as part of any scheme of examination, so far as practicable a stenographic record of such oral questions and of the answers thereto shall be filed with the papers of the candidate. All papers upon which examinations are to be written shall be furnished by the commission and shall bear some suitable official indorsement, stamp, or mark.

8. On the day of examination the identification sheets of candidates shall be sealed up and the identity of each shall remain hidden until the papers are rated.

9. No candidate shall be granted a second or special examination either written or physical preliminary to or in connection with any examination held hereunder; unless it be shown to the satisfaction of the commission that his failure to appear for, or to gain admission to, or to complete such examination or test, was due to a manifest error or mistake for which the commission is responsible, the nature of which shall be set forth in its minutes, or that such failure was due to compulsory attendance before any court or other public authority having the power to compel such attendance.

10. No person who has entered any examination for appointment to a competitive position and failed therein, or who has withdrawn therefrom, shall be admitted within one year from the date of such examination to a new examination for the same position.

11. No person shall be admitted to an examination whose application therefor has not been presented and accepted under the condition of rule 6.

12. The commission may refuse to examine, or after examination, to certify, an applicant who is found to lack any of the established preliminary requirements for the examination or position for which he applies; or who is found physically unfit to perform the duties attaching to such position, or who is addicted to the habitual use of intoxicating beverages to excess, or who has been guilty of a crime or of infamous or notoriously disgraceful conduct, or who has been dismissed from the public service for delinquency or misconduct, or who has intentionally made a false statement of any material fact or practiced or attempted to practice any deception or fraud in his application or in his examination or in securing his eligibility or appointment.

Where action is taken under this clause, the name of the person affected, if it be upon any list, shall, after due notice to such person and an opportunity to be heard, if he so desires, be stricken from such list.

RULE 6. *Filing of applications.*—1. Applications for examination for positions in the competitive class shall be addressed to the commission on a prescribed form, in the handwriting of the applicant, and accompanied by such certificates or other evidences as to citizenship, character, condition of health, education, previous employment, training, and fitness as the commission may require.

The statements of the applicant in these particulars shall be made under oath, properly attested.

2. Every application shall bear the certificate of four reputable citizens, whose residence or places of business are within the district in which the applicant resides, to the effect that they have personally known the applicant for not less than one year; that they have read his statements and believe them to be correct; and that they will, upon request, give such further facts concerning him as they may possess, either for the files of the commission or for the information of the appointing officer.

If the previous occupation or employment of the applicant has been wholly or in part outside the district in which he resides the said certificates may be accepted, in the discretion of the commission, from persons resident or en-

gaged in business elsewhere; but no such certificate shall be accepted from a near relative of the applicant or from any person the character of whose business, in the judgment of the commission, may disqualify him as a fit voucher.

3. The commission shall, by regulation or otherwise, fix the limits of time between which applications for a given examination shall be presented; but such period shall in no case be less than one week, and there shall be not less than five days between the last date for the presentation of applications and the date of examination.

No application shall be accepted from any person who has failed to fill out properly the application form, or to furnish the required certificates or other preliminary evidences of fitness, or who is barred by any of the provisions of clause 3 of rule 2 or of clause 12 of rule 5.

4. An application found to be defective shall be suspended and notification shall be given to the applicant of the particulars in which it requires correction. Such an application shall be accepted if corrected and returned five days before the date of examination, but not otherwise.

5. Applications when presented shall be dated, numbered, and recorded in the order of their receipt. An application that has been accepted and filed shall not be returned for any reason to the applicant.

6. Application forms shall be furnished to intending applicants, upon personal or written requests, at the office of the secretary of the commission, and shall be procurable there only.

RULE 7. Marking and rating.—1. The examination papers shall be rated, in each case, by at least three examiners assigned therefor, who shall review them separately, and after such rating is completed shall affix to each a mark expressing the average of their judgment, attested by their respective signatures or initials. The marking shall be strictly comparative and according to such standards of proficiency as the needs of the service may require. Each subject shall be marked upon a scale of 100, which shall represent the maximum possible attainment.

2. Every candidate who receives a general average marking of not less than 75 per cent and who has received not less than 20 per cent in any required subject, or not less than 80 per cent in any technical subject, when the examination is for a position of scientific, professional, or technical nature, shall be eligible for certification and appointment in the manner and under the condition hereinafter prescribed.

3. Where the chief examiner is satisfied, through investigation made under his direction, or otherwise, that the general character or the reputation of a candidate whose papers have been marked is not good, or that he is debarred by any of the provisions of clause 12 of rule 5, the name of such candidate shall not be placed on any eligible list; but all action under this clause shall be reported in writing, with the reasons therefor, to the commission and shall be subject to the commission's approval. The burden of proof of good character shall be upon the candidate who may, where doubt exists, be required to furnish evidence thereof additional to the certificates required at the time of his application.

4. The secretary, as early as practicable after the completion of an examination, shall notify each candidate therein of the rating he has received, and, if such rating be above the required minimum, of his comparative standing. He shall likewise notify any candidate who, though admitted to the examination, has been rejected for reasons other than failure to receive the required minimum, stating such reasons specifically.

5. No examination paper or any part thereof and no record of the results of a physical test, or any other record or statement rated as part of an examination, or in connection therewith, shall be subject to review, alteration, or rerating after the marks of the examiners have been registered or attested, except that the commission, at any time within a year from the date of the certification of an examination, may correct any manifest error or mistake of marking or rating appearing in any such paper or record, the nature of which shall be set forth in its minutes; such correction, in any case, to be without prejudice to the status of any person previously appointed as a result of such examination.

RULE 8. Eligible Lists.—1. The results of each examination shall be reported by the chief examiner to the secretary, who shall enter the names of the persons passing, in the order of their average rating, on the proper list of eligibles. The date of the establishment of a list shall be the date of such report.

2. When two or more eligibles on a list have the same average rating preference in certification shall be determined by the order in which their applications were filed, or, if the examination be for promotion, by the order of their original appointment in the department or other division of the service in which the promotion occurs.

3. The term of an eligible list shall be not less than one year nor more than four years from the date of its establishment. An eligible list that has been in force for one year shall terminate whenever a new list is established under the same title and, in case of a graded position, for the same grade or grades.

Persons whose names appear on a list about to be terminated shall be notified of the new examination, in the same manner that applicants therefor are notified, and shall be informed that, upon the establishment of a new list, their original eligibility shall cease.

RULE 9. Certification and appointment.—1. Selection to appointment to all positions in the competitive class not filled by promotion, reduction, transfer, or reinstatement shall, except as provided in rule 10, be made in the following manner:

The appointing officer shall notify the commission of the title of the position, the duties to be performed, and the compensation. The commission shall thereupon certify to such appointing officer from the eligible list most nearly appropriate to such position, and for the grade thereof, if in a graded service, the three names at the head thereof. The relative rating of each candidate shall be stated in the certification, and, if the appointing officer requests the application and examination papers of each shall be submitted for his inspection at the office of the health service. Certification shall be made without regard to sex unless sex is specified in the requisition.

The appointing officer shall make selection, with reference solely to merit and fitness, from the three names certified, unless objection shall be made, and sustained by the commission, to one or more of the persons named, for any of the reasons stated in paragraph 12 of rule 5, in which case the certification of three names shall be completed by addition of the name or names next following upon the eligible list.

2. The person selected shall be duly notified by the appointing officer, and, upon accepting and reporting for duty, shall receive from such officer a certificate of appointment for a probationary period of six months. For a temporary service in accordance with clauses 1 and 2 of rule 10, such certificates of appointment shall be issued for a probationary period of 30 days. If his conduct or capacity on probation be unsatisfactory to the appointing officer the probationer shall be notified in writing that at the end of such period he shall, for

that reason, not be retained; his retention in the service otherwise shall be equivalent to permanent appointment.

3. A probationer separated from the health service for any reason other than fault or delinquency shall be restored to the eligible list from which he was selected, with the same relative standing and the time during which he has actually served be deducted from the period of probation if he be again selected by the same appointing officer. When two or more persons selected from the same eligible list are serving as probationers under the same appointing officer, and a reduction of force is necessary, they shall be preferred for retention in the order of their original standing on such list.

4. The name of any person certified as eligible for a probationary appointment who shall decline such appointment shall be stricken from the list from which such certification is made unless such declination be for one of the following reasons:

(a) Residence in a district other than that in which the duties are to be performed; (b) insufficiency of the compensation offered, if such compensation be lower than the amount or the maximum amount stated in the announcement of examination; or (c) temporary inability, physical or otherwise, the evidences of which must be acceptable to and approved by the commission and set forth in the minutes.

The failure of an eligible person to respond within seven days to an offer of an appointment sent to his post-office address, shall be considered a declination.

A person certified for appointment from an eligible list resulting from an open, competitive, or a promotion examination, or from a list of suspended employees prepared in accordance with rule 11, paragraph 1, who declines the position by reason of insufficiency of the compensation offered shall not be again certified for a position at the same or any less compensation.

RULE 10. Temporary and exceptional appointment.—1. When services are to be rendered of a temporary character and for a limited period, the appointing officer shall inform the commission, stating the duration of such period, the rate of compensation and other conditions of employment, and may select for such employment one of the first three persons on the appropriate eligible list who, after due notice of the condition, is willing to accept certification therefor; but successive temporary appointments under this clause shall be permitted only upon the request of the appointing officer for reasons to be approved by the commission, and in no case shall such appointments continue for a longer period than six months.

2. The commission shall establish and maintain a separate eligible list of persons willing to accept temporary employment under the conditions of the preceding clause. If the appointing officer shall certify that the services of a person appointed from such list have been satisfactory the name of such person shall, at the termination of such temporary employment, be placed on a preferred list, from which he shall be eligible for reemployment for any similar service, under the conditions of clause 1 of rule 11.

3. Where there is a vacancy in any position in the competitive class demanding peculiar and exceptional qualifications of a scientific or professional character, and upon satisfactory evidence that for specified reasons competition in such special case is not practicable, and that the position can best be filled by the selection of some designated person of high and recognized attainments in such qualities, the commission may suspend the provisions of the rules requiring competition in such case; but no such suspension shall be general in its application to such position.

4. The commission may, by resolution, except from competitive examination any person engaged in private business who shall render any professional, scientific, technical, or expert service of an occasional and exceptional character.

5. All exceptions from competitive examination under this rule, with the circumstances thereof, shall be stated by the commission in its minutes.

RULE 11. Suspension and reinstatement.—1. Whenever any permanent position in the competitive class is abolished or made unnecessary or whenever the number of positions of a certain character is reduced the person or persons legally holding such positions shall be deemed to be suspended without pay, and the names of such persons shall, on due notification from the appointing officer, be placed by the commission on a special list, under such classified title and corresponding to such competitive eligible list as, in the judgment of the commission, most nearly cover the class of duties performed by such person in the position from which suspension is made; but no person who has received a permanent appointment shall be suspended from any position for lack of work or appropriation while probationers serving under the same title are employed in the same department, office, or institution. For a period of one year from the date of suspension such persons shall be entitled to reinstatement in any position or any grade of such position.

A person who declines to accept reinstatement, except for one of the reasons and under the conditions stated in clause 4 of rule 9, shall be considered to be permanently separated from the health service.

2. The provisions of the foregoing clause shall not apply to any person who resigns his position or who is suspended or removed therefrom for any reason other than those therein specified.

3. A person who has resigned from a permanent competitive position, or who has been removed or otherwise separated therefrom for any cause other than fault or delinquency on his part, may be reinstated without examination, at any time within one year from the date of such separation, in a vacant position in the same class and grade, provided that for original entrance to such position there is not required by these rules, in the judgment of the commission, an examination involving tests or qualifications different from or higher than those involved in the examination for appointment to the position formerly held by such person. But no person shall be so reinstated who at any time within a year prior to the date of his separation from the service had been eligible for reinstatement as a suspended employee.

The commission may in its discretion extend the period during which reinstatement may be made under this clause where the person seeking reinstatement resigned his position in order to serve in the Army or Navy of the United States in time of war and has received an honorable discharge therefrom.

4. Upon the written request of the appointing officer, stating the essential facts regarding a reinstatement proposed under the foregoing clause, the commission will, if such reinstatement be in accordance with these rules, issue its certificate to that effect to such officer, but no such reinstatement shall be made or recognized until after the issuance of such certificate.

RULE 12. Transfer.—1. A person may be transferred from a noncompetitive position to a competitive position, or from a position in the competitive class to a position in a different group of such class, only when the person transferred has qualified in an open competitive examination and is eligible for certification and appointment from the appropriate eligible list for the position to which transfer is proposed.

Such transfer shall remove from the eligible list the name of the person transferred; but no such transfer shall be allowed when there is in existence

an appropriate list of persons eligible for promotion to the position proposed to be filled by transfer. A person holding a position in the noncompetitive class may be transferred to a similar position in the same class.

2. A person who, by transfer or promotion from a competitive position, continuously therein from the date of such transfer or promotion, may be retransferred, without the application of the foregoing restrictions, either to the position originally held by him or to any position to which transfer could be made therefrom.

3. Upon the written request of the appointing officer, stating the facts with reference to a proposed transfer, accompanied by the consent, also in writing, of the person to be transferred, the commission may, if such transfer be in accordance with the provisions of these rules, issue its certificate to that effect; but no such transfer shall be made or recognized until after the issuance of such certificate.

RULE 13. Promotion.—1. Vacancies in positions above the lowest grade in any part of the competitive class that are not filled by original appointment, transfer, reinstatement, or reduction shall be filled by promotion, based, as far as practicable, on competitive tests.

2. Examinations for promotion shall be ordered as often as may be necessary to meet or anticipate the needs of the higher grades, and, so far as practicable, shall be held periodically.

3. Mental examination for promotion shall, as far as practicable, correspond in scope, subjects, and preliminary conditions to examinations as would have been prescribed for original entrance to the same position, but due consideration shall be given to the particular requirements of the department, office, or institution for which the examination is held. No person shall be eligible for promotion who lacks any of the preliminary requirements for original entrance to the position to be filled by promotion.

4. No person shall be admitted to an examination for promotion who lacks any preliminary qualifications for the position to be filled, fixed by these rules or who may have become ineligible for any of the causes set forth in clause 12, rule 5.

5. Promotion examination in all parts of the competitive class shall be further regulated as particularly described in the following clauses (6, 7, and 8) of this rule.

6. *Part 1: The clerical service.*—All persons who shall have served with fidelity for not less than two years in positions in grade 1 shall be eligible for examination for the next higher grade in the same position.

7. *Part 2: The engineering service.*—Examination shall be open to all persons who shall have served with fidelity for not less than six months in positions in the same class in the grade next lower in the same department or office.

8. *Part 3: The inspection service*—*Part 4: The quarantine service*—*Part 5: The insane asylum service*—*Part 6: The pure food service.*—Wherever a vacancy exists or is anticipated in a position in parts 3, 4, 5, and 6, which, in the opinion of the appointing officer or of the commission, may be filled satisfactorily by promotion from among persons holding positions of lower but corresponding character in the same part, the commission may order a competitive examination for such promotion open to all persons who shall have served at least one year in such lower position.

RULE 14. Removals.—1. No person holding a position in the health service shall be removed from such position, except in the manner prescribed by these rules; and the officer charged with the power of removal in each case shall transmit to the commission, with the report of his action required under rule

17, a copy of the reasons therefor, or of the findings of any trial board or officer, as stated to the person removed, and as filed in the department or office.

2. The provisions of this rule shall apply to the removal of any person from a graded position by reduction to a position in a lower grade, but shall not apply to a suspension from service for lack of work or reduction of force.

RULE 15. The noncompetitive class.—1. The positions in the noncompetitive class shall be those of a minor nature, in the health service, that are not practicable to fill either through competition or through registration under the provision of rule 16 and that are specifically designated in the classification.

2. A vacancy in any position in the said class, at compensation not exceeding the limit, if any, set in the classification for such position may be filled by the appointment of any person who, upon nomination by the appointing officer to such board of examiners, and upon appropriate noncompetitive examination, shall be certified by such board to be qualified to perform the duties of such position.

3. Such examinations shall be conducted so as to show (a) that the applicant is free from any physical defect likely to interfere with the proper discharge of his duties, (b) that his general character and habits are satisfactory, and (c) that he possesses the requisite knowledge and ability, or that he is qualified by experience to discharge his duties efficiently and intelligently.

4. For the position of trained nurse, when the applicant is a registered nurse, a certificate of such registry may, when presented, be accepted in lieu of the examination required herein.

5. Any position of which the title appears in the classification of the noncompetitive class, but with compensation attaching thereto which exceeds the limit, if any, set by the classification for such position shall be deemed to be in either the competitive or labor class, according to the duties of such position.

6. No person holding a position in the noncompetitive class shall be increased in compensation beyond the limit set in the classification for such position unless he shall have qualified for appointment for such higher paid position in an open competitive examination or shall have been promoted in accordance with these rules.

RULE 16. The labor class.—1. Positions in the labor class that are not filled through transfer or reinstatement shall be filled by selection, in the manner hereinafter provided, from among those persons whose names are highest on the eligible list, resulting from the registration, according to priority of application, of duly qualified applicants therefor.

2. The commission shall establish and, so far as practicable, shall maintain continuously registration lists of persons eligible for employment under the labor class.

3. Applications for registration for positions in the labor class shall be addressed to the secretary of the commission on a prescribed form, signed by the applicant with his name or mark, indicating the position sought, stating, under oath, such facts as to his age, residence, citizenship, physical condition, previous occupation, and experience as the commission may require, and accompanied by the certificate of three reputable citizens, whose residence or places of business are within the county in which he resides, to the effect that they have known him personally for not less than one year, that they believe his character and habits of industry and sobriety to be good, and that they have read his statements and believe them to be correct. If the applicant has been employed, at least one of such persons shall be an employer or former employer, who shall certify as to his capacity for the kind of work for which he applies, or an explanation satisfactory to the commission shall be given as to why such a certificate can not be obtained. If the application is not in the handwriting

of the applicant he shall state by whom it was written, giving the name, occupation, and address of such person.

4. Applications for positions in the labor class shall be received continuously and shall be numbered in order of their receipt, and the names of the applicants shall be entered upon the registration list in such order.

5. As often as may be necessary to meet or anticipate the needs of the health service selection of employees in the labor class shall be made in numerical order from the registration list by the appointing officer, who shall report his action, with full particulars thereof, to the commission, and such action shall be subject to the commission's subsequent approval.

6. When a registration list has been in operation for one year from its date it shall be discontinued, and the names of the available persons thereon shall be placed upon a new registration list in their relative numerical order.

RULE 17. *The civil list and reports of changes in the service.*—1. The commission shall keep in its office an official roster of the health service, which shall be known as the "civil list," and shall enter upon such roster the name of every person who has been appointed to or employed, promoted, or reinstated in any position in such service, upon such evidence as it may require or deems satisfactory that such person was appointed, employed, promoted, or reinstated in conformity with the provisions of these rules. Such roster shall show opposite or in connection with each name placed thereon the date of appointment, employment, promotion, or reinstatement, the compensation of the position, the date of commencement of service, and the date of transfer in or of separation from the service by suspension, removal, resignation, cancellation of appointment or death. Such roster shall also bear the residence by street numbers, where there are such, of each person, which shall be corrected when such residence is changed, on notice from the said person in writing.

2. It shall be the duty of the appointing officer to report to the commission in writing each selection made by him for appointment to or employment or reinstatement in, any position in the classified service, except in the noncompetitive class, upon the date thereof, stating, in each case, the name of the appointee or employee, the title and character of his office or employment, the date of commencement of service by virtue thereof, and the amount of compensation to be paid, and it shall be the duty of such officer to report to the commission, in like manner, upon the date of his official action therein or knowledge thereof, in each case, every suspension, removal or resignation from, or transfer to, any such position, with such pertinent data with relation to each as the commission may require.

MUNICIPAL ORDINANCES, RULES, AND REGULATIONS PERTAINING TO PUBLIC HEALTH.

COUNTY AND CITY OF DURHAM, N. C.

County and City Board of Health—Organization, Powers, and Duties. (Act of N. C., Mar., 3, 1913.)

SECTION 1. The board of commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham shall at a joint meeting to be held by them in the courthouse in the county of Durham on the first Monday of April, 1913, at 12 o'clock of the day, elect a board of health for the county and city of Durham, which said board shall be composed of seven citizens of said county at least two of whom shall be practicing physicians located in the city of Durham or Durham County. Three of said seven members shall be elected for a term of two years and so designated at said election, and four of said seven members shall be elected for a term of three years and so designated at said election. At the expiration of the term of the said three members so elected, their successors shall be elected at a joint meeting of the said board of commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham for a term of two years. At the expiration of the term of the said four members elected for the term of three years, their successors shall be elected at a joint meeting of the said board of commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham for a term of two years. The said joint meeting of the board of commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham for the election of the said members of the board of health shall be held at the courthouse in the city of Durham on the first Monday of April at 12 o'clock of the day. The clerk of the board of commissioners shall be clerk of said joint sessions, and it shall be his duty to notify the board of commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham of the time and the place of holding said joint session at least three days before the time prescribed for said joint session, and it shall be his further duty to immediately notify in writing the persons elected at said joint meeting the term for which they are elected and to certify their names to the clerk of the board of aldermen or other governing authorities of said city.

SEC. 2. The board elected as prescribed in section 1 of this act shall be known and called the board of health of the county and city of Durham, and the members thereof shall hold their offices for the terms prescribed in section 1 of this act and until their successors are elected. And if any member of said board shall die, resign, remove from said county, or become incompetent to discharge the duties of said office, his successor shall be elected for the unexpired term by the board of health of said county and city.

SEC. 3. The said board of health of said county and city of Durham created by this act shall elect the superintendent of health of the county of Durham

and the health officer of the city of Durham at the time hereinafter prescribed, and the said officer, when elected, shall be known as the superintendent of health of the county of Durham and the city of Durham, and shall perform all the duties and have all the powers now prescribed by law, whether by the public laws of the State or the public local laws for the city and county of Durham now imposed upon the superintendent of health of the county of Durham and the health officer of the city of Durham, and he shall likewise be required to enforce all the rules and regulations now prescribed by the board of health of the city of Durham or which may hereafter be prescribed by the board of health of the county of Durham and city of Durham by this act created.

SEC. 4. On the second Tuesday of April at 12 o'clock of the day following their election the said board of health shall meet in the courthouse in the county of Durham and elect its chairman and secretary and the superintendent of health of said county and city and fix the compensation of said superintendent of health. It shall be the duty of the said secretary to certify to the board of commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham the names of the persons so elected chairman, secretary, and superintendent of health and the compensation of the said superintendent.

SEC. 5. The board of health of said county and city created by this act shall be charged with the performance of all the duties and shall be invested with all the powers now prescribed or imposed by law for and upon the sanitary committee of said county and the board of health of said city of Durham, or which may hereafter by law be prescribed or imposed.

SEC. 6. The said board of health shall on the first Monday of June of each year submit in writing to the board of commissioners of said county and to the board of aldermen or other governing authorities of said city of Durham in joint meeting held at the courthouse in the county of Durham at 10 o'clock of said day an estimate of the cost and expense of discharging the duties imposed upon them by law, and enforcing and carrying out the rules, regulations, and ordinances prescribed or enacted for the protection and preservation of the public health and the payment of the salary of the superintendent of health and of such other employees as it now or may be authorized by law to employ. And it shall be the duty of the board of commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham, respectively, to appropriate for the use of said board of health such amount of money as may by said board be deemed necessary to pay the salaries, costs, and other expenses authorized by this act. Fifty per cent of the money so appropriated shall be paid by the city of Durham and fifty per cent by the board of commissioners of Durham County, upon such warrant as is hereinafter prescribed by the respective treasurers of the city of Durham and the county of Durham. The money so appropriated by the said commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham shall be paid by the treasurer of the county of Durham and the treasurer of the city of Durham upon warrants drawn thereupon by the secretary of the board of health, approved or countersigned by the chairman of the said board of health and the superintendent of health; and an itemized statement of such expenses duly verified by the said secretary shall be published at the end of each quarter of the year and a copy thereof delivered to the clerk of the board of county commissioners and the clerk of the board of aldermen or other governing authorities of the city of Durham.

SEC. 7. It shall be the duty of the superintendent of health to give his entire time to the duties of his office, and he shall visit at least once during each

session or term each public school in the county and city of Durham and instruct them as to the preservation of health. He shall be removable by the board of health upon notice to him and after hearing for incompetency or neglect of duty.

SEC. 8. If the chairman of said board, or the secretary thereof, or the superintendent of health shall misapply or misappropriate any of the money appropriated for the use of the board of health by the board of commissioners of the county of Durham, or the board of aldermen or other governing authorities of the city of Durham, he shall be guilty of a misdemeanor.

SEC. 9. The board of health shall meet in regular session at the courthouse in the county of Durham on the first Mondays of May, July, September, November, January, and March of each year, and special meetings of said board may be called by the chairman of said board at such other times as he may designate, and notices of said special meetings shall be mailed to each member of said board by the secretary thereof at least two days before the time appointed for said special meeting. The chairman and secretary of said board shall be paid \$4 a day for each regular meeting they shall attend and the other members of the said board shall each be paid the sum of \$3 a day for each regular meeting they shall attend, but no per diem shall be allowed for special meeting, which said sum shall be paid out of the moneys appropriated for the expenses of the said board of health. In the event that there shall be an epidemic of disease in the said county or city of Durham which shall create an expense upon the board of health in excess of the amount appropriated by the board of commissioners of the county of Durham and the board of aldermen or other governing authorities of the city of Durham, then it shall be the duty of the chairman of said board of health to report the fact to the said board of county commissioners and the said board of aldermen or other governing authorities of the city of Durham and request a joint meeting of said boards to appropriate a sufficient amount of money to cover such extraordinary expenses, and in the event of any surplus of appropriation for the expenses of said board of health remaining unexpended at the end of any fiscal year, the same shall be credited upon the appropriations for the next succeeding year.

SEC. 10. Nothing in this act is intended to require or shall be construed as requiring the board of commissioners of the county of Durham to defray any part of the expenses of the sanitary department of the city of Durham or the governing authorities of the city of Durham to defray any expense for sanitation in that part of Durham County beyond the corporate limits of the city of Durham, but such expense of sanitation shall be borne respectively for the city by the governing authorities thereof and for the county outside the city limits by the board of commissioners of the county.

Definition of Terms Used in Regulations. (Reg. Bd. of H., Mar. 2, 1914.)

ARTICLE 1. SECTION 1. The term "board of health" or "board" as used in this code, shall be construed to mean the board of health of the county and city of Durham or its official representative.

SEC. 2. The term "person," as used in this code, shall be construed to mean any person or persons, firms, corporation, or association of persons.

SEC. 3. The term "food," as used in this code, shall include every article used for food or drink by man and every ingredient in such article.

SEC. 4. The term "dairy," as used in this code, shall be construed to mean and include any place where milk bottled or stored, or where any cow or cows are kept, from which milk is sold.

Nuisances. (Reg. Bd. of H., Mar. 2, 1914.)

ART. 2. SECTION 1. Whatever is dangerous to human health, whatever renders the ground, the water, the air, or food a hazard or an injury to health, is hereby declared to constitute a nuisance.

SEC. 2. No tan yard, slaughterhouse, or pen or place for the storage of green hides shall be established within the limits of the city unless the same shall comply with the rules and regulations of the board of health, and then only when said board has granted permission in writing.

Any person violating this ordinance shall be fined \$5, and every day shall constitute a separate offense: *Provided*, That one killing beef, mutton, or pork for sale shall be construed as running a slaughterhouse.

SEC. 3. Stagnant, filthy, or putrid water in cellars, wells, ditches, branches, creeks, or other place or places in the city or county of Durham shall be removed on notice from the superintendent of health to the owner, occupant, or agent of such plantation, lot, cellar, or place or places. Any person violating this section shall be fined \$2 for every day it shall remain after such notice. And if the said owner or agent shall, notwithstanding the above provisions, neglect to remove such stagnant or putrid water or other filth, the superintendent of health of the county and city may employ any person or persons, upon such terms as to him may seem reasonable and just, to remove such filthy or stagnant or putrid waters, and the expense shall be considered as a further fine for not complying with this section and shall be collected accordingly, and shall also be a lien upon the plantation, lot, or lots upon which the same has been expended. And in case the ditch, branch, or creek is on a dividing line between property, then the cost shall be divided equally between property owner adjacent thereto.

SEC. 4. It shall be the duty of every occupant of a city lot or, if the lot be vacant, the owner thereof, to remove therefrom any dead animal or other nuisance which may happen to be thereon, the same to be carried beyond the limits of the city of Durham or the sanitary districts of East and West Durham, at least 200 yards from the bounds thereof, or from any public road or dwelling, or bury the same so as not to be offensive to anyone. Any person violating this section shall be fined \$2.

SEC. 5. If any owner or occupant shall keep any lot, house, or cellar in the city or county of Durham in such a condition as to be a nuisance, and after one day's notice by the superintendent of health fail to abate such nuisance, he shall be fined \$3, and the further sum of \$2 for every 24 hours such nuisance shall be suffered to remain; and if the said owner shall, notwithstanding the above provisions, neglect to remove such nuisance, the superintendent of health of the county and city of Durham may employ any person or persons, upon such terms as to him may seem reasonable and just, to remove such nuisance, and the expense shall be considered as a further fine for not complying with this section and shall be collected accordingly, and shall also be a lien upon the lot upon which the same has been expended.

SEC. 6. No person shall be suffered to carry out of his or her kitchen the dish-water and other slops into any of the streets or street gutters or any public road or allow such water or slops to run into the same. Any person violating this section shall be fined \$2.

SEC. 7. Any person throwing filth or anything that may operate as a nuisance into the streets, roads, ditches, or gutters of the city or county of Durham from the guardhouse, privies, or from any other place shall be fined \$2 for every offense.

SEC. 8. No hog or hogs shall be kept within the limits of the city of Durham. Any person violating this ordinance shall be fined \$1 per day for each hog so kept within the city limits in violation of this ordinance, and each day shall constitute a separate offense.

SEC. 9. Every consignee of guano or other manure or article offensive to the smell or detrimental to the public health shall, within five days after notice in any manner of its arrival at any railroad depot of the city, store it in such a manner as not to be offensive to the neighborhood or detrimental to its health: *Provided*, That if such consignee is a resident of or has a place of business in the city, it shall be prima facie evidence that he has notice as aforesaid. Any person violating this section shall, after one day's notice from the board of health, through a policeman, be fined \$20 for every day the nuisance shall continue.

SEC. 10. No occupant of a lot in the city or county of Durham shall be allowed to throw dishwater or slops upon the roof of any building, or other offensive matter on the ground on such lot, within 30 feet of any public street, and shall not retain, drain, pipe, or throw any dishwater or slops so as to be offensive to any person. Any person violating this ordinance shall be fined \$5 for each offense.

SEC. 11. No occupant or owner of a lot in the city or county of Durham shall allow such lot to remain in such a condition as to hold water until it becomes stagnant, nor allow barrels, tubs, or hogsheads to hold water on same until it becomes stagnant. Any person violating this section and failing to comply therewith, after three days' notice from the board of health, shall be fined \$2.

SEC. 12. All camping and wagon yards or lots where horses and wagons are allowed to stand in the city of Durham shall be thoroughly cleaned once a week. Any owner or person who shall keep a lot in violation of this section shall be fined \$3 for each offense.

SEC. 13. Any owner or occupant of any lot in the city or county of Durham who shall suffer to remain on his or her lot any decayed flesh or vegetables, or any other thing which may annoy his or her neighbors or tend to affect injuriously the health of any citizen, shall be required to remove or remedy the same within six hours, and on failure to so remove or remedy the same within six hours, on conviction, shall pay a fine of \$2 per day for every day the same shall so remain, and if it be adjudged by the health officer to be a nuisance, the sanitary police shall abate the same and the offender shall pay the cost of such abatement.

SEC. 14. It shall be unlawful for any person to expectorate upon any paved sidewalk, or upon the floor of any public building, or any store, or upon the pavement adjacent to any public building or store, or upon any public conveyance within the city of Durham. Any person violating this ordinance shall, upon conviction, be fined \$1.

SEC. 15. Whenever a water-closet, urinal, privy, or drain becomes obstructed or offensive or in any condition making it a nuisance, the same shall be cleansed and made free and the owner, agent, occupant, or other person having charge of the premises on which any water-closet, urinal, or privy or drain is situated, shall remove, cleanse, alter, or amend or repair the same within such time after notice in writing to that effect, given by the board of health, as shall be expressed in such notice. Any person violating this ordinance shall, upon conviction, be fined \$1.

SEC. 16. Any person, firm, or corporation keeping a store, factory, or any commercial establishment within the city or county of Durham shall keep the immediate surroundings of the same clean and free from trash, weeds, empty

boxes, barrels, or any substance that could be declared a nuisance. Any person violating this ordinance shall be fined \$2, and each day thereafter this ordinance is violated it shall constitute a separate offense.

SEC. 17. Every householder shall provide a suitable receptacle for the collection of all dry garbage and refuse from the premises owned or controlled by him. No refuse or trash shall be piled elsewhere than in such receptacle. The receptacle shall be placed in a convenient place for the collector. All ashes must be emptied into a metal receptacle. Any person violating this section shall be fined \$1, and each day shall constitute a separate offense.

SEC. 18. It shall be unlawful for any person, firm, or corporation to allow waste water to flow from any kitchen or other sink, basin, faucet, or spigot within the sewer district, unless the same shall be connected by pipe with the city sewer: *Provided, however,* That said connection or connections can be made in accordance with the provisions of article 8, section 1, of the sanitary code.

Any person, firm, or corporation violating the provisions of this section shall be given seven days' notice by the health officer to make such connections, and upon his or their failure to do so shall be fined \$3; and each day thereafter this ordinance is violated it shall constitute a separate offense.

SEC. 19. (a) Every person, firm, or corporation owning, using, or occupying any public stall, stable, shed, barn, warehouse, or hitching lot where any horse, mule, or any cattle shall be kept, shall maintain a covered, fly-proof, hard-bottom bin, pit, barrel, or box, in which shall be placed at least once a day during the months of April, May, June, July, August, September, and October all manure or refuse from any such horse, mule, or cattle. (b) All such manure or refuse shall be removed outside the city limits at least once every seven days: *Provided, however,* That the same may be spread on land within the city limits for the purpose of cultivating the same. (c) Every person, firm, or corporation owning, using, or keeping any private stalls, stable, barn, shed, or warehouse, where any such horse, mule, or cattle shall be kept, shall maintain a covered, fly-proof, hard-bottom bin, pit, barrel, or box where the manure from such horse, mule, or cattle shall be deposited at least once every seven days. (d) All such bins, pits, barrels, or boxes shall be thoroughly cleaned once a month, or oftener, if, in the opinion of the health officer, the same is necessary: *Provided, however,* That the same may be spread on land within the city limits for the purpose of cultivating the same.

SEC. 20. It shall be unlawful to accumulate or store manure in an open yard or lot in any wagon, car, or vehicle, except in and during the actual process of transporting manure from one place to another place.

Every bin, box, receptacle, vault, wagon, car, or vehicle for the storage and transportation of manure shall be maintained in good repair, dry, and in clean condition as to all its parts and surroundings.

SEC. 21. No person or corporation shall place or cause to be placed upon any street, sidewalk, or public way, or upon the roof of any building, or upon the surface of any lot or parcel of ground, any straw, hay, shavings, or other substance which has been used as bedding for animals, for the purpose of drying such substance or storing same; nor shall any person or corporation burn or cause to be burned any such straw, hay, shavings, or other substance which has been used as bedding for animals in any place other than a properly constructed crematory, and then only upon a permit issued in writing by the superintendent of health for that purpose.

SEC. 22. Any owner or occupant of any lot in the city or in the county of Durham who shall suffer to remain on his or her lot any decayed flesh or vegetables, or any other thing which may annoy his or her neighbors or tend

to affect injuriously the health of any citizen, shall be required to remove or remedy the same within six hours, and on failure to so remove or remedy the same within six hours, if it can be done, on conviction shall pay a fine of \$10 per day for every day the same shall so remain, and if it be adjudged by the health officer to be a nuisance the sanitary police shall abate the same, and the offender shall pay the cost of such abatement.

Communicable Diseases—Notification of Cases—Disinfection—Vaccination.
(Reg. Bd. of H., Mar. 2, 1914.)

ART. 3. SECTION 1. The health officer of the city of Durham shall distribute pamphlets setting forth the nature of and method of transmission of tuberculosis, typhoid fever, scarlet fever, diphtheria, and smallpox, and the directions to be followed when any of these diseases exists in the city of Durham. The health officer shall cause said pamphlets to be printed in suitable form for distribution, and it shall be his duty to deliver or have delivered to the patient, or family of the patient, a suitable pamphlet within 24 hours after a case of any of the above diseases is reported to him, or comes to his knowledge.

Sec. 2. It shall be the duty of every physician or householder in the county or city of Durham to report to the superintendent of health, in writing, the full name, age, and address of every person suffering with or suspected to be suffering with any of the following diseases: Scarlet fever, diphtheria, epidemic cholera, typhus fever, typhoid fever, rubeola (measles), plague, tuberculosis, chicken pox, whooping cough, epidemic cerebrospinal meningitis, and pellagra within 24 hours after the case is first seen or diagnosed by such physician practicing in the county or city of Durham, and any physician or householder who shall fail to report as aforesaid any cases of such diseases that come under his professional care shall pay a fine of \$5 for each and every failure.

Sec. 3. It shall be the duty of the health officer upon receiving notification from a physician, or otherwise, of a person having tuberculosis or consumption, to notify at once the owner of the premises of the fact, giving the name of the person afflicted, calling attention to the following section:

Sec. 4. It shall be the duty of owner, or agent of such owner, of the premises upon which the tubercular or consumptive person had resided, to give immediate notice to the health officer upon the vacation of such premises by said person, from death or other cause, and any property owner who fails or neglects to make such report shall, upon conviction, pay a fine of \$3.

Sec. 5. It shall be the duty of the health officer, upon being informed of the vacation of premises by a tubercular or consumptive person, by death or otherwise, to see that every room of the said house is thoroughly disinfected and fumigated under his supervision, the expense of such disinfecting and fumigating to be borne by the householder in whose family the case occurs, if able; otherwise by the city of Durham. When a house in which there has lived within one year a consumptive or tubercular patient is not occupied, it shall be thoroughly fumigated and cleaned under the supervision of the health officer before any person or family shall be allowed to move into the same, the expense of such fumigation or cleaning to be borne by the owner of the property.

Sec. 6. It shall be the duty of the health officer to record in a book the name, age, sex, color, and address of every consumptive or tubercular person reported to him, together with the place of residence of the owner of the premises; he shall also keep a record of every house fumigated under his supervision, with the date of the fumigation.

Sec. 7. No person, without first obtaining for that purpose the permission of the board of health, shall knowingly bring, or allow to be brought, or shall con-

nive at bringing, into the city or county of Durham any person in his or her employment or under his or her management or control affected with smallpox or other mortal disease of a contagious nature; and every person offending against this ordinance shall be fined \$25 and all expenses incurred on account of such afflicted person being so brought into the city or county of Durham.

SEC. 8. If any such afflicted person shall come into the city or county of Durham without permission, as aforesaid, he shall be fined \$25.

SEC. 9. The health officer shall have power to move from the corporate limits of the city of Durham or the sanitary districts of East and West Durham any person who may be afflicted with smallpox or other mortal disease of contagious nature; and it shall be his duty to do so whenever, in the judgment of the health officer, such removal may be necessary to prevent the further spread of the disease. Any person attempting, by threats or force, to prevent the removal out of the city of any person ordered to be removed thither shall be fined \$25.

SEC. 10. All applications for medicine made by the poor of the city shall be made to the board of health and the health officer shall countersign the prescription and keep a suitable book wherein the names of all such applicants shall be recorded.

SEC. 11. All public street carriages shall be fumigated whenever, in the judgment of the health officer, the same shall be necessary, and the owner or driver of any public street carriage who shall fail or refuse to fumigate the same when notified to do so by the city health officer, within 24 hours after such notice, shall be guilty of a misdemeanor, and, on conviction, shall be fined \$5.

SEC. 12. Every person who has been recently exposed to smallpox or who has recently lived in the same house or building occupied by a smallpox patient is required to be successfully vaccinated, unless the facts shall be certified to by two reputable physicians of the city of Durham that in any particular case it will be dangerous to the life or health of the person in question to be vaccinated.

SEC. 13. Any such person over 15 years of age who has not been successfully vaccinated and who shall refuse or fail after 24 hours' notice to be so vaccinated and who fails to furnish the certificate above referred to shall be guilty of a misdemeanor; and any parent, guardian, or any other person having control of a child under 15 years of age who has not been successfully vaccinated and who shall fail to have such child so vaccinated after 24 hours' notice, or who shall fail to present to the health officer the certificate above referred to within 24 hours after such notice, shall be guilty of a misdemeanor.

Milk and Cream—Production, Care, and Sale. (Reg. Bd. of H., Mar. 2, 1914.)

ART. 4, SECTION 1. No one shall engage in the sale of milk or cream in the city of Durham or East or West Durham, ship the same into the city for sale, or supply to others for use in the city of Durham, or East or West Durham, unless he shall first obtain a permit from the board of health so to do.

SEC. 2. A fee of 50 cents will be charged for each cow in permit, and the same shall be credited to the sanitary fund. Permits shall be renewed every 12 months. Permit forms will be issued by the board of health. All applications for permits shall be signed by the applicant, and when received by the milk and dairy inspector shall be placed on file, and the name of such applicant shall be entered in a book of registration for such purpose.

SEC. 3. The board will not issue any permit unless it is satisfied, after inspection, with the cleanly and sanitary condition of the stables, cows, wagons, or

place of business of the applicant therefor, and with all the utensils used by him from which his milk or cream is obtained; and that the food given the cows is pure and wholesome, and that all persons engaged in the care and handling of the milk are free from any contagious diseases and that said persons use due cleanliness in their work.

SEC. 4. As soon as possible after an application is received at the health office for a permit to sell milk, the milk dairy inspector shall visit the dairy or place of business of such applicant and make such observation and gather such information as will enable the board to properly consider such application.

SEC. 5. If, after issuing a permit to sell milk or cream, the board of health shall become satisfied that the provisions of this subdivision of the sanitary code are being violated, it will at once revoke the permits issued to such person or persons and no new permit will be issued until all insanitary conditions have been remedied and all other provisions of this subdivision of the sanitary code are complied with.

SEC. 6. Quality of milk: No person shall sell, bring, or offer for sale any milk—

- (a) Containing more than 88 per cent of water or fluids.
- (b) Containing less than 12 per cent of milk solids.
- (c) Containing less than 3 per cent of milk fats.
- (d) From which any part of the cream has been removed.
- (e) Having a specific gravity of less than 1.029.
- (f) Containing dirt, foreign matter, or sediment.
- (g) Containing any boric or salicylic acid, formaldehyde, or other foreign chemicals.
- (h) Containing any pathogenic bacteria.
- (i) Bacterial count, if having more than 500,000 per cent, regarded as insanitary.
- (j) Drawn from any cow having a communicable disease or showing clinical symptoms of tuberculosis, or from any herd which contains any diseased cattle, or are afflicted with or exposed to any communicable disease.
- (k) Drawn from any cow which has been fed on garbage or refuse.
- (l) Which has existed or been kept under conditions contrary to these ordinances.
- (m) No milk shall be kept, sold, offered for sale, or drawn from cows suffering with sore and inflamed udders and teats.
- (n) Drawn from any cow within 15 days before or 12 days after calving.
- (p) No milk in partially filled bottles shall be sold or offered for sale, and no bottles shall be filled, capped, or recapped outside of the dairy building regularly used for this purpose.

Provided, That the subdivisions *a, b, c,* and *d* shall not apply to milk sold under the title of "skimmed milk."

SEC. 7. No person shall bring into the city of Durham or sanitary districts of East or West Durham, for sale, or sell or offer for sale, milk from which the cream has been removed, either in part or in whole, unless plainly marked on the container, "skimmed milk."

SEC. 8. Stable and surroundings.—The stable shall be so constructed that the cows have plenty of air space and light, and should be painted in some light color or whitewash twice a year. The stables must be kept free from dirt, dust, cobwebs, and odor. No water-closet, cesspool, urinal, habited room, or workshop shall be located within any building or shed used for stabling cows used for dairy purposes, nor shall any fowl, hog, horse, or goat be kept in any room used for such purposes.

SEC. 9. The urine and manure shall be twice daily removed from the stable and must be moved at least 30 feet from the stable and placed where the cows can not get into it. Manure must not be thrown out of the stable windows. The bedding shall be kept sweet and clean.

SEC. 10. The surroundings to the stable must be kept in a sanitary condition. Cows must not be allowed to stand in manure and filth. Cows must be kept clean. Manure, litter, etc., must not be allowed to become caked or dried on them. The udder must be wiped off with damp clean cloth before milking.

SEC. 11. The milkers must thoroughly wash and wipe their hands before they begin milking.

SEC. 12. They must not use pails, cans, strainers, etc., unless they have been thoroughly washed in hot water and soap or hot water and soda and afterwards sterilized with boiling water or steam. Care must be taken that the seams of the vessels are thoroughly cleaned. They must refrain from milking or handling milk—anyway when in themselves or their families there is even a suspicion of any contagious or infectious disease.

SEC. 13. *Handling the milk.*—Immediately after milking the milk shall be removed from stable into a milk room, screened from flies and other insects—the milk room only to be used for handling milk—and put into perfectly clean bottles or cans.

SEC. 14. The milk house or milk room must be located at least 20 feet from any building. Dairymen who use both bottles and cans in delivering milk shall not fill bottles or cans while on their delivery route.

SEC. 15. *Care of cans or bottles.*—All cans or bottles used in the distribution of milk or cream must be thoroughly cleaned, either by hot water and soap or hot water and soda or other alkalies, rinsed and sterilized by boiling water or steam before they are again used as receptacles for milk or cream. Extreme care must be exercised in cleaning the faucets to cans by use of a brush. No person shall use a milk bottle or can for other than milk or cream purposes.

SEC. 16. *Contagious diseases.*—Should scarlet fever, smallpox, diphtheria, typhoid fever, tuberculosis, or other dangerous or infectious, or in any house in the family of any dairyman, or among any of his employees, or in any house in which milk is kept for sale, or in the family or among the employers of any person who ships milk into the city for sale, such dairyman, venders, or shippers of milk shall immediately notify the board of health of the facts of the case, and the health officer shall at once investigate and order the sale of such milk stopped or sold under such regulations as he thinks proper.

SEC. 17. Should dairymen, venders, or shippers of milk fail to notify the health officer when contagious diseases exist in their families or in the families of their employees, or who, after such information is given the health officer, fail to obey his directions, the milk and dairy inspector shall seize and destroy all milk sent into the city of Durham or sanitary districts of East and West Durham by such persons.

SEC. 18. In delivering milk to families in which there exists any of the above-named contagious or infectious diseases, the dairyman shall not enter, neither shall he come in contact with any person or persons attending or waiting on such patient. No empty milk or cream receptacle cans shall be taken away from any dwelling where any contagious disease exists until authorized by the board of health and in the way prescribed by the board of health.

SEC. 19. *Milk delivery wagons.*—No one shall use any vehicle for the delivery of milk in Durham, sanitary districts of East or West Durham, which has not painted thereon in legible Roman letters not less than 3 inches in height, and

on both sides of the vehicle in a conspicuous place, the name and location of his dairy and the number of his permit.

The milk delivery wagons shall be kept at all times in a cleanly condition and free from any substance liable to contaminate or injure the purity of the milk.

SEC. 20. The board of health may require a certificate from a licensed veterinarian showing the cows furnishing milk brought for sale within its jurisdiction are free from tuberculosis or other dangerous diseases.

SEC. 21. *Milk inspector.*—The milk inspector, the superintendent, or any member of the board of health may examine all dairy herds, utensils for handling milk of all dairymen or other persons engaged in selling or shipping for sale milk or cream to city of Durham, or sanitary districts of East or West Durham.

SEC. 22. These inspectors shall have power to open any can, vessel, or package containing milk or cream, whether sealed (locked) or otherwise, or whether in transit or otherwise, and take samples of the milk or cream for testing or analysis, provided the price is tendered; and, if upon inspection, the milk or cream is found to be filthy, or the cans or other containers are in an unclean condition, the said inspector may then and there condemn the milk or cream as deemed by him to be filthy and pour the contents of such bottles, vessels, or packages upon the ground or sewer forthwith, and he shall, if done in good faith, be held harmless for damages therefrom in any suit or demand made.

SEC. 23. *Penalty for violation.*—Whoever violates any provision of this subdivision of the sanitary code of Durham County shall be fined in the sum of \$25.