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C. R. CARPENTER	Deputy Superintendent
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M. A. LUNDBERG	Clerk
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NELL WINBERG	Stenographer
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E. R. HARRIS	Examiner
ROY F. LONG	Examiner
A. G. MERKLEY	Examiner
F. F. POTTER	Examiner
W. O. REED	Examiner
R. W. WAITE	Examiner
G. H. WALKER	Examiner
F. W. WALSMITH	Examiner
G. A. WEST	Examiner
R. F. WILSON	Examiner

STATE OF IOWA

1921

 REPORT OF THE

STATE BOARD OF HEALTH

FOR THE

 BIENNIAL PERIOD ENDING JUNE 30, 1920

 GUILFORD H. SUMNER, M. D.
 Secretary

 Published By
 THE STATE OF IOWA
 Des Moines

LETTER OF TRANSMITTAL

HON. W. L. HARDING, Governor of Iowa:

SIR: In accordance with the provisions of Section 2565 of the Code, I have the honor to present the nineteenth biennial report of the State Board of Health for the period commencing July 1, 1918, and ending June 30, 1920.

GULFORD H. SUMNER, M. D., *Secretary*.
Des Moines, December 31, 1920.

IOWA STATE BOARD OF HEALTH

MEMBERS OF THE BOARD

EX OFFICIO MEMBERS

Hon. W. L. Harding, Governor.....	Des Moines
Hon. W. C. Ramsay, Secretary of State.....	Des Moines
Hon. Frank S. Shaw, Auditor of State.....	Des Moines
Hon. E. H. Hoyt, Treasurer of State.....	Des Moines
Dr. Guilford H. Sumner, Secretary-Executive Officer.....	Des Moines

BOARD MEMBERS

Dr. George F. Severs, President.....	Centerville
Dr. Walter L. Bierrinc.....	Des Moines
Dr. C. S. Grant.....	Iowa City
Dr. Frank T. Launder.....	Garwin
Lafayette Higgins, C. E., Vice President, Sanitary Engineer.....	Des Moines

STATE EXAMINATION OF PHYSICIANS

Dr. Geo. F. Severs, President.....	Des Moines
Dr. Guilford H. Sumner, Secretary-Executive Officer.....	Des Moines

MEMBERS—The Physicians of the State Board of Health

STATE EXAMINATION OF NURSES

Dr. C. S. Grant.....	Iowa City	Anna M. Drake, R. N.....	Des Moines
Dr. Frank T. Launder.....	Garwin	Amy Beers, R. N.....	Fairfield

STATE EXAMINATION OF EMBALMERS

Dr. George F. Severs.....	Centerville	W. P. Hohenschuh.....	Iowa City
Dr. C. S. Grant.....	Iowa City	C. S. Hopkins, L. E.....	Lake City

STATE EXAMINATION OF OPTOMETRISTS

C. M. Patrick.....	Marshalltown	James G. McMasters, Pres.....	Cedar Rapids
A. J. Decker.....	Newton		
Dr. George F. Severs.....	Centerville		

LABORATORIES FOR STATE BOARD OF HEALTH

Dr. Henry Albert, Director.....	Iowa City
Dr. Don M. Griswold, Epidemiologist.....	Iowa City
Mr. W. E. Burns, Junior Bacteriologist.....	Iowa City
Mr. Jack J. Hinman, Jr., Senior Water Bacteriologist and Chemist.....	Iowa City

STATE REGISTRATION OF VITAL STATISTICS

Dr. Guilford H. Sumner, State Registrar and Superintendent.....	Des Moines
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LEGAL DEPARTMENT

Hon. H. M. Havner, Attorney General.....	Des Moines
Assistant Attorneys General:	
Hon. J. W. Sandlucky.....	Des Moines
Hon. F. C. Davidson.....	Des Moines
Hon. W. R. Kendrick.....	Des Moines

INSPECTION OF LODGING HOUSES AND HOTELS

J. B. Heefner, Hotel Inspector.....	Des Moines
Deputy Hotel Inspectors:	
H. K. Horning.....	Des Moines
C. J. Buckley.....	Waterloo

BUREAU VENEREAL DISEASE CONTROL

(Joint Federal and State)

Dr. Wilbur S. Conkling, Director.....	Des Moines
Dr. Jeannette F. Throckmorton, Lecturer in Charge Women's Work.....	Des Moines
State Board of Medical Examiners.....	Iowa City
Zelma Zenitmir, Serologist.....	Iowa City
Venerereal Disease Laboratory, Dr. Henry Albert, Director.....	Iowa City

HOUSING DEPARTMENT

Edwin H. Sands, Commissioner.....	Des Moines
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BACTERIOLOGICAL EXAMINATIONS AND CHEMICAL ANALYSES

Dr. Henry Albert, Director, Laboratories for State Board of Health.....	Iowa City
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N. B.—Correspondence relating to examination for Physicians, Osteopaths, Nurses, Embalmers and Optometrists should in all cases be addressed to Dr. Guilford H. Sumner, Secretary of Health and Centerville Building, Des Moines, Iowa. The regular meetings of the State Board of Health and State Board of Medical Examiners are held semi-annually, in July and January of each year, and at such other times as may be deemed necessary, by the Secretary, or on the written request of two or more members of the Board of Health, each meeting to be held at the seat of government, in the Capitol Building, in the city of Des Moines.

All correspondence relating to SANITARY ENGINEERING should be addressed to Prof. Lafayette Higgins, Sanitary Engineer, Iowa State Board of Health, Capitol Building, Des Moines, Iowa. All correspondence relating to EPIDEMIOLOGY, SANITARY ANALYSIS OF WATER, AND ICE, and BACTERIOLOGICAL EXAMINATIONS should be addressed to Dr. Henry Albert, Director Laboratories for State Board of Health, Iowa City, Iowa.

REPORT OF STATE BOARD OF HEALTH

The following departments form the State Board of Health:

- I. State Board of Health
- II. Medical Examiners (Physicians)
- III. Nurses' Examiners (Nurses)
- IV. Embalmers' Examiners (Embalmers)
- V. Optometry Examiners (Eye-Glasses)
- VI. Vital Statistics (Marriages, Divorces, Births, Deaths)
- VII. Hotels Inspections (Three Inspectors)
- VIII. Sanitary Engineering (One Sanitary Engineer)
- IX. Educational Bulletins (Literature on Health)
- X. Antitoxin Distribution (Prevention of Diseases)
- XI. Bureau of Venereal Diseases (Government and State)
- XII. Bacteriological Laboratories (State University)
- XIII. Collaborating Epidemiologist (Government Reports)
- XIV. State Epidemiological Department.

All of the above are established by law and are in full operation, and the Secretary-Executive Officer supervises all of the work.

I. The members of the State Board of Health and the Secretary are appointed by the Appointing Board composed of the Governor, Secretary of State and Auditor of State, and the Secretary of the Executive Council is the Secretary of the Appointing Board. All members of the Executive Council are members of the State Board of Health ex-officio.

II. The Medical Examiners are composed of the physician members of the State Board of Health.

III. The Nurses' Examiners are composed of two physicians of the State Board of Health, the Secretary and two nurses appointed by the State Board of Health. The nurses are appointed annually.

IV. The Embalmers' Examiners are composed of two physicians of the State Board of Health. The embalmers are appointed annually.

V. The Optometry Examiners are composed of one physician of the State Board of Health, the Secretary and three optometrists. The optometrists are appointed annually by the Governor.

VI. The State Registrar of Vital Statistics is the Secretary of the State Board of Health, by virtue of his being the Secretary.

VII. The Hotel Inspector is appointed by the State Board of Health and serves for two years. The Hotel Inspector appoints two deputies.

VIII. The Sanitary Engineer is appointed by the Board of Appointment and serves as a member of the State Board of Health and his term is for five years.

IX. The educational bulletins are edited by the Secretary and published quarterly.

X. Antitoxin distribution is supervised by the Secretary at 350 distributing centers or stations.

XI. Bureau of Venereal Diseases is in connection with the State Board of Health and is in charge of a director and an assistant, supervised by the State Board of Health.

XII. Bacteriological Laboratories are located at the State University and are under the supervision of a director and are supervised by the State Board of Health.

XIII. The Secretary of the State Board of Health is the collaborating epidemiologist of the U. S. Government and makes regular reports to the government.

XIV. Any institution or community desiring the services in the field of the epidemiologist shall make arrangements for community paying expenses, and make a request to State Board of Health for his services, which are free.

XV. The Bureau of Venereal Disease Control is a joint State and Federal Bureau in charge of Director appointed by, and under the supervision of the State Board of Health.

XVI. Department of Housing has supervision of the enforcement of the State Housing Law passed by the Thirty-eighth General Assembly, giving special attention to health and sanitary conditions of the mining camps in so far as it relates to housing.

PUBLIC HEALTH AND A PUBLIC HEALTH BOARD

For years in Iowa there has been much discussion pro and con in regard to public health and public health boards.

At this time it seems fittingly proper to say something in favor of public health work in a general way that the members of our legislature may be guided by a liberal spirit when it shall be considering methods to keep the people of Iowa well.

BOARD OF HEALTH WORK.

In all the past real physicians have observed that the various communicable diseases may be controlled, if proper steps are taken to prevent their spread. Good sanitary regulations, and their vigorous enforcement, are very necessary in order that this may be accomplished. The food that comes into the city or town, and the stores where it is handled and sold, must be inspected. The homes and factories where people live and work, and the streets, yards, and open places must be supervised to see that there are no conditions likely to cause disease. The public must be educated as to the cause of disease and taught how diseases of all kinds may be avoided. The statistics of births, deaths, and cases of communicable disease must be carefully kept and analyzed, so that the whole public health campaign may be properly directed. These things are the duties of the boards of health of the state, city, town or township, and the United States Public Health Service of the Government at Washington, D. C.

CONTROLLING COMMUNICABLE DISEASES.

All cases of communicable disease should be promptly reported, so that the board of health may send an inspector to see that the case is properly isolated during its course, and that the necessary cleansing or disinfection is carried out afterward.

In diphtheria, it is the business of the health authorities to see that sick persons and carriers in the family are given antitoxin; and in smallpox and typhoid fever, they must see that all persons who have been exposed are protected by vaccination.

Whenever there is an increase in the number of cases of any disease, the Board of Health attempts to discover the cause and takes the necessary steps to prevent the further spread of the germs, by purifying water or milk, by isolating infected individ-

Divisions of the Health Department

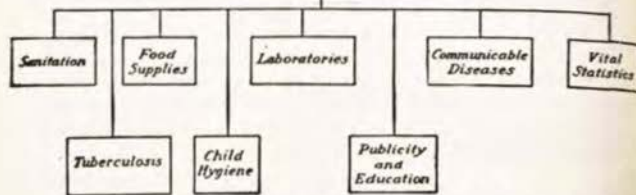


Fig. 1.—Organization of the Health Department. Above, the five principal divisions, and below the three divisions which are organized separately only in the larger cities.

uals, by destroying insect carriers, or by whatever other measures are required. When a serious epidemic occurs, such as the influenza epidemic of 1918, the Board of Health may decrease the opportunities of infection by closing schools, churches, and places of public assembly.

A LABORATORY FOR BOARD OF HEALTH.

The Board of Health must have not only trained medical experts, but a properly arranged and equipped laboratory. This is absolutely necessary in order to carry on the work of the Board.

In this laboratory, samples from the throat and samples of blood and other body fluids are examined to see whether suspected cases are really diphtheria, tuberculosis, malaria, typhoid fever, or whatever the disease may be. In the four diseases mentioned, and in many more, the bacteriologist, with his microscope and growths or cultures of bacteria, is the one to give final judgment as to the nature of a doubtful case. Diphtheria and typhoid carriers can be detected only in this way—by the fact that the bacteriologist actually finds the disease germs in throat or discharges. In diphtheria, the end of the isolation or quarantine period is usually fixed by the disappearance of diphtheria germs from the throat, as shown by laboratory tests. In the larger city and state laboratories, various sera and vaccines are prepared for free distribution to the public. Diphtheria antitoxin, and smallpox and typhoid vaccines, with other

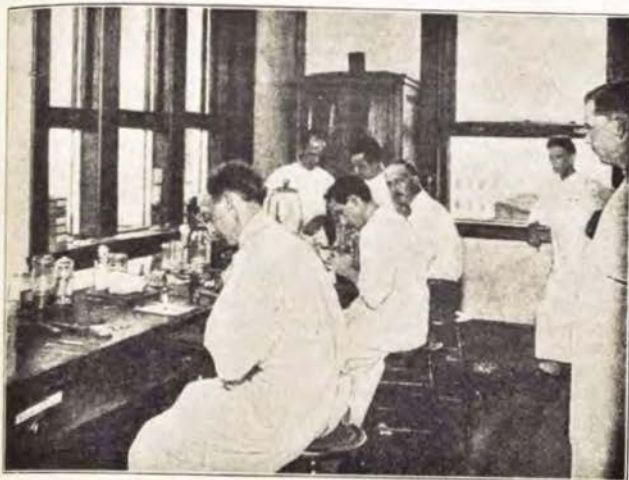


Fig. 2.—A Board of Health Laboratory.

preparations of the same sort, should be available for all, whether they are able to pay or not. The purity of these preparations should, moreover, be guaranteed by the Board of Health.

It is also the duty of the Board of Health Laboratory to examine samples of water, milk, foods, and drugs, so as to determine their quality by chemical and bacteriological tests. It should be here stated that all of the various antitoxins and vaccines sent out by the Iowa State Board of Health are guaranteed by the United States laboratories, hence, it is advisable to observe that the words: "E. R. Squibb & Sons, New York; and prepared for distribution under direction of the Iowa State Board of Health" are printed on the boxes and packages sent out for Board of Health work in Iowa.

SUPERVISION OF FOOD SUPPLIES

The Board of Health must assure itself by inspections, as well as by laboratory examinations, of the purity of the public water supply and of the milk and food supplies of the city or town. Its representatives inspect the land near the river, lake, or reservoir

from which the water supply comes, to make sure that there is no danger of pollution by sewage. They watch the operation of the filter or disinfecting plant by which the public water supply is purified, and see that it works efficiently; and another of their duties is the inspection of the dairies which supply milk, to see that the stables and milk houses are clean, that the cows and milkers are healthy, and that the milk is properly iced and cared for in transportation to the city. The inspectors carefully oversee the working of the pasteurizing plants, to make sure that all the milk is really heated as it should be. In Iowa, Mr. W. B. Barney is the State Food and Dairy Commissioner and his inspectors perform these important duties.

The representatives and inspectors herein mentioned inspect the stores, restaurants, and other places where food is handled, and assure themselves that conditions are clean, and that sick people are not employed in the preparation of the food. They inspect the food itself to see that no infected or spoiled food of any kind is sold, not only because it is unhealthful to eat such food, but because no dealer has the right to take people's money for food that is not clean and wholesome.

In many cities and states, the boards of health also attend to the detection of food and drug frauds—adulteration, the use of misleading labels on foods, and the use of preservatives which may be injurious to health. It is particularly important that medicines should be of the right strength, for if they are too weak they will not give the effect the doctor wants, or if too strong they may do serious harm. The examination of foods for fraud is chiefly important to protect the pocketbook of the consumer and enable him, when purchasing food, to get as good quality as he pays for. In all such inspections as have just been mentioned, Mr. W. B. Barney, State Food and Dairy Commissioner, has full charge and his inspectors travel over the state to perform their duties.

INSPECTION OF GENERAL SANITARY CONDITIONS

It is to be observed that another group of inspectors deals with the general sanitation of the city or town, with the conditions which may breed disease, or which create offensive nuisances. Much of the work of these sanitary inspectors has to do with the prevention of bad smells, from glue factories and other offensive industries, with the cleaning up of dirty backyards, and with the

removal of conditions that are objectionable to the eye or to the nose.

The most important activities of the sanitary inspectors are those which deal with the disposal of human wastes and with conditions that favor the breeding of insect carriers of disease. Carelessly-built outside toilets, overflowing cesspools, and open drains are very real dangers, and whatever is done to remedy these conditions is an aid to public health. The treatment of mosquito-breeding pools, and the removal of filth in which flies may breed, may also directly and effectively prevent disease.

The inspection of tenements to see that there is light and air for those who live in them, that fire-escapes are provided and are kept clear, that toilet facilities are adequate, and that the building is decent and clean; the inspection of factories to see that machinery is safe, that the workers are protected against harmful dusts and poisons used in their work, and that the workrooms are properly ventilated and lighted—these are special types of inspection which must be carried out by some public authority. Sometimes these important duties are under the care of the board of health, but more often there is a special department created for these purposes, such as a Housing Department and a Bureau of Labor. The housing work is connected with the State Board of Health, under the efficient management of Mr. Edwin H. Sands, but the inspection of factories and the sanitary conditions connected therewith are under the Department of Labor of which Mr. A. L. Uriek is the efficient Commissioner.

EDUCATIONAL ACTIVITIES OF THE BOARD OF HEALTH.

The experience of the Iowa State Board of Health is that, probably, the two most important health problems are infant mortality and tuberculosis. In dealing with these questions and many others, any board of health must use educational methods rather than legal force. In the early youth of our children, pictures of evil consequences, coming from the violations of natural laws, should be held up before their growing and forming minds in order that they may avoid doing those things that will bring on to themselves sickness, misery and ultimately death. This cannot be done except through educational activities.

It has been demonstrated over and over again, and it has been clearly seen that tuberculosis can best be controlled by teaching people how to live healthy lives, so as to build up their vital

resistance, and that infant mortality must be controlled chiefly by teaching mothers how to care for their babies. For these reasons the board of health should provide clinics and dispensaries, where medical advice and treatment can be given to those suffering from tuberculosis, and should send nurses into homes to find the early cases and to teach how to check the progress of the disease. The State Board of Health should be able, by a liberal appropriation from the State Legislature, to support the Infant Welfare Stations, where the mothers may bring their babies to get instruction as to feeding and care.

In the cities and towns in Iowa and in the rural communities, the health boards need the help of all individual citizens. Progressive and industrious health departments in cities and the larger towns, should publish bulletins, quarterly at least, besides special circulars of information for the general public. Local newspapers should be supplied with carefully prepared news items of the latest discoveries, and of the facts people ought to know in order to keep themselves and their families well. The Iowa State Board of Health has prepared exhibits annually for ten years last past and had the same on exhibition at the Iowa State Fair, and thousands of Iowa's very best people have viewed these exhibits every year. The Iowa State Board of Health should be given sufficient funds in order that lecturers may be sent out to speak in schools and churches, and before various clubs and civic organizations.

Health workers will not be satisfied until the whole system of proper health work and each whole community are organized into a great united army for the prevention of all preventable diseases.

THE PUBLIC HEALTH NURSE.

One thing the public has discovered: that it is much better to prevent disease than it is to cure disease. The state legislature is impertuned every session to license some new system of healing and to create some new board so that a new school of practice of healing may be started. This is nothing but commercialism, and the object is to license persons to practice a peculiar healing method, when preventative methods are needed more than healing methods.

The modern quack seeks to eliminate all scientific conclusions which have been worked out in laboratory experiments and demonstrations, by substituting some mysterious assertions that diseases are caused by certain displacements and malformations of bones

and muscles; while others advance the theory that disease does not exist at all except in imagination. The true physician and surgeon has neither the time nor the inclination to enter into any discussion with any of these crossroads pretenders of medical science and research, for to come in contact with mere ignorance is but to come into the darkness of superstition and imagination without any advancement.



Fig. 3.—The public health nurse showing the mother how a case of communicable disease should be cared for in the home.

The State Board of Health tries to bring health activities into active operation, and one of the most recent and most important of the activities of the Board of Health is the employment of public health nurses, not to take care of the sick but to help people to keep well by teaching them the principles of hygiene.

The first person to see what a future there was for such *health nursing* was the great Englishwoman, Florence Nightingale (1820-

1910). It is said that, when a child, her favorite game was to bandage and nurse her dolls, and that her first living patient was an injured shepherd dog. When she grew up, she kept her love of animals and combined it with a passion for helping suffering men and women. She became a pioneer in organizing hospitals and developing the work of nursing. Then came the Crimean War in 1854-1855. There was no proper preparation for caring for the wounded at the front. Florence Nightingale was called upon for help and went out to the Crimea, where she soon had ten thousand men in the hospitals under her care. She organized these hospitals so successfully that the death rate was cut to one twentieth part of what it was before.

Florence Nightingale thought of nursing as including much more than the sick nursing done in a hospital. She saw, as few people did in those days, that fresh air, light, warmth, cleanliness, quiet, and diet were the chief factors and elements in keeping health, as well as in recovering from sickness. After the war was over, she urged, at every opportunity, the value of health nursing, or education by nurses in the principles of hygiene. The infant welfare nurse, the school nurse, and the tuberculosis nurse are employed by, or should be employed by the board of health today largely as an indirect result of the teachings of Florence Nightingale.



Fig. 4.—Florence Nightingale (1820-1910), founder of the profession of health nursing.

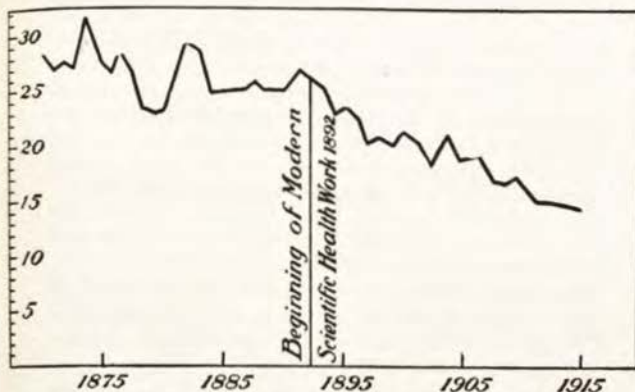


Fig. 5.—Results of the Public Health work in New York City. The curve shows how the death rate in New York City fell from between 25 and 30 deaths per 1,000 population between 1870 and 1880, to less than 15 per 1,000 in 1915. The principal reduction has been since 1892, when active, modern public health work began.

RESULTS OF THE WORK IN PUBLIC HEALTH.

The work to eliminate from the people communicable diseases really began only after the discoveries as to the relations between microbes and disease, made by Pasteur and his followers between 1880 and 1890. Since that time, the results obtained in many cities and countries have given clear proof of the value and the importance of progressive sanitary measures.

The success in public health work in any community is measured by its *vital statistics*, or the records of deaths and cases of disease, from various causes and at different ages, compared with the actual population. In this brief outline of health work we can consider only the simplest of all methods of measuring sanitary conditions which is the general death rate.

The general death rate is the ratio of the total number of deaths from all causes in a year to the number of people in the city, town, or state, reduced to a basis of 1,000. For instance, if in a city of 10,000 people there are 150 deaths in a given year, the general death rate would be 15 per 1,000.

Fig. 5 shows what has happened to the general death rate in New York City since 1870. The death rate fell from 26 in 1888 to 14 in 1913, or, in other words, decreased by 46 per cent in twenty-five years. There are today in the United States many cities that can show remarkable decreases in deaths from preventable diseases. In the city of Chicago, deaths from all causes have decreased at a wonderful rate.

The health departments of New York City and New York State have taken as their motto the greatest of all statements:

PUBLIC HEALTH IS PURCHASABLE. *Within natural limitations a community can determine its own death rate.*

The people of Iowa should remember, and attention should be called to all children who are growing up, that in securing a low death rate, we are setting in operation the machinery necessary for the prevention of preventable diseases.

Note.—The editor hereby acknowledges much aid in the compilation of this article. He does not claim originality, but gives all credit to many good authors whose works have been freely consulted.

BOARD OF MEDICAL EXAMINERS

Total number of physicians registered and practicing in this state	
June 30, 1920.....	3,785
Number of certificates issued upon examination.....	174
Number of certificates issued by reciprocity from other states.....	118
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Total number of certificates issued during biennial period.....	292
Number of itinerants' licenses issued during biennial period.....	8
Number of osteopathic certificates issued during biennial period.....	47
Total number of osteopaths registered in Iowa at the end of the biennial period, June 30, 1920.....	732

OPTOMETRY DEPARTMENT

At the end of the biennial period, June 30, 1920, there were 437 optometrists in good standing in Iowa.

At the end of the biennial period, June 30, 1920, there were 811 optometrists registered in Iowa, but of this number only 437 had paid their annual renewal fee and remained in good standing, the others having either discontinued business, or allowed their licenses to lapse.

Number of certificates issued upon examination.....	31
(during biennial period)	
Number of certificates issued by reciprocity.....	6
(during biennial period)	
Number of optometry certificates issued during the biennial period.....	37

EMBALMERS' DEPARTMENT

At the end of the biennial period, June 30, 1920, there were 1,421 licensed embalmers in good standing with the Iowa State Board of Health.

During the biennial period, July 1, 1918, to June 30, 1920, there were 121 embalmers' licenses issued upon examination and 15 by reciprocity, making a total of 136.

Iowa has reciprocity with the following states upon the basis of an examination only: Illinois, Idaho, Colorado, Nebraska and Wisconsin.

During the biennial period ending June 30, 1920, there were 2,072 disinterment permits issued.

Special disinterment permits issued, 71.

Total number of disinterment permits issued, 2,143.

NURSES' DEPARTMENT.

At the end of the biennial period, June 30, 1920, there were 3,549 nurses registered in Iowa. Of this number, 659 were granted certificates during the last biennial period, 615 upon examination and 44 by reciprocity from other states.

Iowa has reciprocity with the following states, upon the basis of an examination only: Colorado, Idaho, Illinois, Indiana, Kansas, Michigan, Minnesota, Montana, Missouri, Nebraska, Ohio, Pennsylvania, South Dakota, Utah, West Virginia and Wisconsin.

STATE EXAMINATIONS HELD.

Number of examinations held for physicians and osteopaths for the biennial period ending June 30, 1920.....	8
Number of examinations held for embalmers.....	4
Number of examinations held for nurses.....	8
Number of examinations held for optometrists.....	4

FINANCIAL STATEMENT OF MONEY TURNED INTO STATE TREASURY DURING BIENNIAL PERIOD BEGINNING JULY 1, 1918, ENDING JUNE 30, 1920.

STATE BOARD OF HEALTH.

Paid into state treasury—	
June 30, 1919.....	\$ 25.69
June 30, 1920.....	2,610.37
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For biennial period.....	\$3,636.06

ANTITOXIN DEPARTMENT

Paid into state treasury—	
June 30, 1919.....	\$ 24.25
June 30, 1920.....	372.58
For biennial period.....	\$ 396.83

MEDICAL EXAMINERS

Paid into state treasury—	
June 30, 1919.....	\$2,456.34
June 30, 1920.....	3,837.74
For biennial period.....	\$6,294.08
Paid into state treasury—	
Itinerant licenses paid March and April, 1919.....	\$1,000.00
Itinerant licenses paid February and March, 1920.....	1,000.00
For biennial period.....	\$2,000.00

EMBALMER'S EXAMINERS.

Paid into state treasury—	
June 30, 1919.....	\$ 899.43
June 30, 1920.....	1,184.26
For biennial period.....	\$2,083.69

NURSES' EXAMINERS

On hand July 1, 1920.....	\$5,326.51
This is a continuous account and is used for the nurses alone. No person connected with the state board of health receives any money from this fund except the two nurses who are members of the nurses' examining board.	

OPTOMETRY EXAMINERS

On hand June 30, 1919.....	\$ 996.23
On hand June 30, 1920.....	1,153.82
Total for biennial period.....	\$2,150.05
In accordance with the law governing this department, there was retained each year, \$500 or for biennial.....	
Paid into state treasury for biennial period.....	\$1,150.05

VITAL STATISTICS.

Paid into state treasury—	
June 30, 1919.....	\$.....
June 30, 1920.....	26.27
For certified copies of birth and death records from July 1, 1918, to July 1, 1919.....	266.00
From July 1, 1919, to July 1, 1920.....	184.50
For biennial period.....	\$476.77

PLUMBING DEPARTMENT

Paid into state treasury June 30, 1920.....	\$453.15
Total amount paid into state treasury from above departments during biennial period.....	\$15,890.63

MONEY ON HAND JANUARY 1, 1921, IN FOLLOWING DEPARTMENTS:

Department	Appropriation	Bal. Jan. 1, '21
State Board of Health.....	\$10,000.00	\$6,408.60
Antitoxin Department.....	2,000.00	1,330.94
Vital Statistics Department.....	3,000.00	2,122.43
Medical Examiners.....	Fees	2,182.47
Embalmer's Examiners.....	Fees	1,558.78
Nurses' Examiners.....	Fees	6,643.55
Optometry Examiners.....	Fees	1,181.19
Housing Department.....	5,000.00	2,227.82
Plumbing Department.....	Fees	162.00
Bacteriological Laboratory.....	8,000.00	2,648.35

TABLE NO. 1—QUARANTINABLE DISEASES IN IOWA

Number Reported for Iowa, by Months, for Biennial Period Ending
June 30, 1920.

	Cerebrospinal meningitis	Typhoid	Folicompetis (Typhoid Paratyphoid)	Scarlet Fever	Smallpox	Scarlatina	Total
1918—							
July.....	3	62	76	46	121	0	308
August.....	2	53	35	49	68	0	197
September.....	2	78	18	79	47	0	224
October.....	5	115	29	110	79	42,797	43,115
November.....	0	62	1	112	110	13	288
December.....	1	76	1	110	86	0	274
1919—							
January.....	1	55	0	118	130	0	302
February.....	1	69	1	130	91	0	294
March.....	5	51	0	200	218	0	474
April.....	3	46	0	150	254	161	625
May.....	1	74	0	117	284	0	496
June.....	2	46	0	67	162	0	317
Total for year.....	25	777	161	1,305	1,662	42,973	46,806
1920—							
July.....	4	39	0	24	20	0	106
August.....	4	30	3	39	19	0	95
September.....	2	122	3	118	23	6	284
October.....	2	194	5	213	74	36	596
November.....	5	156	1	171	222	9	674
December.....	1	115	0	197	256	9	678
1921—							
January.....	4	117	1	256	451	4,828	5,687
February.....	2	65	2	258	282	8,075	8,641
March.....	2	45	0	327	343	134	786
April.....	2	38	0	188	381	11	629
May.....	0	69	1	270	535	0	878
June.....	4	57	1	111	410	0	587
Total for year.....	36	1,068	18	2,102	3,046	13,124	19,434

TABLE NO. 2

Venereal Diseases Reported During the Fiscal Year 1919 and 1920.

	Chancroid	Gonorrhoea	Syphilis	Total
1918—				
July	2	44	34	80
August	7	304	101	412
September	24	492	145	661
October	16	365	138	519
November	12	257	60	329
December	2	213	22	337
1919—				
January	0	242	72	314
February	2	185	79	366
March	2	183	39	324
April	0	111	40	151
May	0	221	65	286
June	8	175	54	237
Total for year	86	2,792	859	3,737
1920—				
July	10	238	80	328
August	12	257	96	365
September	14	399	166	619
October	17	438	175	630
November	15	373	105	493
December	17	334	104	455
1920—				
January	14	290	102	412
February	9	216	69	294
March	8	243	85	346
April	6	197	108	311
May	14	241	120	375
June	9	284	111	404
Total for year	145	3,485	1,553	4,883

TABLE NO. 3

Stillbirths, Births and Deaths Reported for Calendar Years 1918 and 1919.

County	Year 1918			Year 1919		
	Stillbirths	•Births	•Deaths	Stillbirths	•Births	•Deaths
Adair	7	328	175	5	304	112
Adams	8	214	125	8	213	94
Alamakee	14	282	196	11	325	141
Appanoose	24	755	472	20	641	303
Audubon	11	322	136	4	282	112
Benton	18	545	307	11	422	227
Black Hawk	33	1,204	717	19	1,059	566
Boone	15	503	402	17	522	324
Bremer	8	366	214	5	345	178
Buchanan	10	406	379	8	363	225
Buena Vista	11	483	299	11	400	166
Butler	15	381	194	12	380	181
Calhoun	15	477	164	14	284	141
Carroll	14	475	333	8	116	211
Cass	10	450	214	13	286	231
Cedar	10	317	198	5	300	137
Cerro Gordo	31	783	475	21	732	388
Cherokee	7	492	304	15	420	236
Chickasaw	7	352	151	5	276	144
Clarke	6	218	134	5	168	112
Clay	12	384	175	6	304	151
Clayton	6	559	201	11	516	256
Clinton	21	775	603	18	723	486
Crawford	10	494	249	11	329	207
Dallas	10	553	301	17	504	259
Davis	7	298	109	8	284	67
Decatur	11	354	184	6	302	145
Delaware	11	402	253	9	361	194
Des Moines	23	579	560	16	581	440
Dickinson	7	312	138	7	276	97
Dubuque	20	954	623	18	872	614
Emmet	17	385	141	7	237	112
Fayette	18	547	369	6	460	251
Floyd	12	368	196	6	338	203
Franklin	11	361	208	13	256	168
Fremont	6	335	209	7	280	141
Greene	21	396	205	10	301	150
Grundy	7	363	117	9	356	78
Guthrie	7	441	254	16	372	173
Hamilton	14	344	282	11	473	209
Hancock	6	398	121	10	358	97
Hardin	15	476	318	8	461	241
Harrison	15	546	297	7	471	254
Henry	4	318	228	3	231	112
Howard	10	328	134	7	284	128
Humboldt	11	323	140	12	305	116
Ia	8	325	167	6	296	63
Iowa	7	424	267	7	343	158
Jackson	10	555	291	1	277	168
Jasper	10	379	245	12	255	209
Jefferson	8	383	250	9	230	171
Johnson	11	628	604	9	595	457
Jones	12	389	215	7	323	148
Keokuk	9	329	234	10	301	182
Keosau	7	241	152	6	257	127
Lee	9	628	242	11	616	486

TABLE NO. 3—CONTINUED

County	Year 1918			Year 1919		
	Stillbirths	*Births	*Deaths	Stillbirths	*Births	*Deaths
Linn	29	1,391	1,152	33	1,104	927
Louisa	6	182	160	5	159	140
Lucas	8	333	205	3	304	114
Lyon	4	428	143	5	396	115
Madison	11	351	172	7	398	159
Mahaska	10	548	253	10	445	227
Marion	24	530	359	17	495	270
Marshall	37	699	376	8	347	456
Mills	4	312	223	3	242	186
Mitchell	13	390	154	8	249	134
Monona	11	450	169	5	389	140
Monroe	14	499	369	12	430	225
Montgomery	11	384	235	9	304	184
Muscatine	16	630	502	25	572	366
O'Brien	17	448	197	8	392	141
Osceola	2	314	113	2	306	85
Page	16	501	427	12	475	302
Palo Alto	6	398	190	9	330	104
Plymouth	13	571	277	10	468	202
Pocahontas	10	352	152	7	380	201
Polk	95	3,077	3,094	78	3,170	1,869
Pottawattamie	32	1,079	915	32	970	729
Poweshiek	13	405	232	14	367	182
Ringgold	5	287	118	6	254	95
Sac	14	418	188	6	413	148
Scott	23	1,333	1,190	25	1,267	830
Shelby	9	395	183	8	357	126
Sioux	15	699	335	8	576	138
Story	19	642	408	15	669	295
Tama	8	478	283	7	397	211
Taylor	8	396	173	8	190	117
Union	3	256	238	4	284	199
Van Buren	8	247	181	2	227	139
Vandeventer	9	691	678	13	695	467
Warren	10	412	292	5	392	293
Washington	10	438	632	8	433	199
Wayne	8	374	290	5	294	122
Webster	16	858	422	16	773	310
Winnebago	3	316	113	5	289	126
Winnechick	15	467	277	17	452	234
Woodbury	41	1,624	1,298	39	1,782	1,075
Worth	6	347	130	5	229	97
Wright	23	507	216	19	513	189
Total	1,338	51,142	32,421	1,080	45,716	24,616

*The figures showing births and deaths are exclusive of stillbirths.

TABLE NO. 4—MARRIAGES AND DIVORCES

Marriages and Divorces Reported for Fiscal Years Ending June 30, 1919, and June 30, 1920.

County	Fiscal year 1919		Fiscal year 1920	
	Marriages	Divorces	Marriages	Divorces
Adair	61	10	61	10
Adams	59	7	80	3
Adams	57	2	157	6
Appanoose	244	46	285	61
Archer	83	9	305	8
Benton	114	31	221	54
Black Hawk	544	149	874	172
Boone	271	41	478	58
Bremser	117	7	245	11
Buchanan	152	26	269	14
Buena Vista	119	19	171	17
Butler	65	9	151	9
Calhoun	103	5	178	19
Carroll	116	17	272	11
Cass	142	20	250	30
Cedar	159	19	107	11
Cerro Gordo	60	10	485	100
Cherokee	106	13	174	17
Chickasaw	90	8	149	9
Clarke	130	13	117	17
Clay	129	23	135	18
Clayton	143	10	221	13
Clinton	113	48	624	75
Crawford	412	8	241	22
Dallas	168	30	229	48
Davis	81	8	113	9
Decatur	91	15	479	21
Delaware	190	10	151	23
Des Moines	241	44	375	88
Dickinson	54	8	113	17
Dubuque	491	21	689	59
Emmet	85	15	132	12
Fayette	179	49	254	37
Floyd	139	25	214	32
Franklin	92	8	141	28
Fremont	96	9	109	14
Greene	105	15	158	24
Grundy	82	7	149	4
Guthrie	96	7	127	15
Hamilton	241	10	217	11
Hancock	72	4	108	6
Hardin	128	12	187	11
Harrison	123	19	136	33
Henry	112	14	178	12
Howard	30	3	169	10
Humboldt	68	1	111	23
Ia	79	5	198	19
Iowa	69	7	170	7
Jackson	82	13	172	17
Jasper	191	22	293	53
Jefferson	115	14	199	21
Jones	311	23	374	36

TABLE NO. 4—CONTINUED

County	Fiscal year 1919		Fiscal year 1920	
	Marriages	Divorces	Marriages	Divorces
Jones	85	11	180	20
Keokuk	99	19	155	26
Kossuth	129	11	261	15
Lee	431	75	302	76
Linn	696	200	1,092	258
Louisia	55	5	79	17
Lucas	121	15	199	17
Lyon	88	2	174	30
Madison	87	11	116	30
Mahaska	220	42	324	82
Marion	128	23	198	26
Marshall	271	65	476	110
Mills	85	18	148	21
Mitchell	78	13	136	16
Monona	199	17	216	16
Monroe	192	32	280	63
Montgomery	148	22	261	18
Muscatine	269	75	425	84
O'Brien	110	6	166	11
Osceola	67	5	121	4
Page	184	20	287	25
Palo Alto	85	8	145	10
Plymouth	135	6	213	19
Pocahontas	76	3	127	6
Polk	2,507	683	2,817	688
Pottawattamie	882	109	1,317	205
Poweshiek	93	12	177	23
Ringgold	81	11	169	18
Sac	109	14	177	24
Scott	763	180	1,043	218
Shelby	88	6	136	15
Sioux	162	8	200	10
Story	171	26	294	27
Tama	134	21	177	24
Taylor	73	11	168	15
Union	158	21	303	30
Van Buren	37	4	80	23
Wapello	430	66	596	156
Warren	143	16	212	16
Washington	121	10	191	12
Wayne	104	9	150	22
Webster	343	35	585	68
Winnebago	75	5	133	4
Winneshek	138	9	207	11
Woodbury	581	302	1,069	429
Worth	67	4	98	19
Wright	119	12	198	7
Total for year	18,933	3,253	28,468	4,728

TABLE NO. 5

Deaths from Tuberculosis for the Calendar Year 1918 and 1919.

County	1918		1919		
	1918	1919	1918	1919	
Adair	3	1	Jefferson	2	1
Adams	5	5	Johnson	106	75
Adair	3	4	Jones	10	5
Appanoose	15	27	Keokuk	7	9
Ashtabula	2	3	Kossuth	2	7
Benton	10	4	Lee	23	29
Black Hawk	16	23	Linn	46	45
Bloom	16	9	Louisia	6	3
Bresler	9	3	Lucas	7	8
Buchanan	25	19	Lyon	2	3
Buena Vista	8	2	Madison	8	10
Butler	7	4	Mahaska	15	7
Calhoun	3	1	Marion	13	8
Carroll	8	4	Marshall	15	14
Cass	4	7	Mills	28	18
Cedar	2	10	Mitchell	13	10
Cerro Gordo	11	14	Monona	3	18
Cherokee	29	12	Monroe	4	5
Chickasaw	6	4	Montgomery	4	5
Clarke	3	5	Muscatine	26	18
Clay	4	10	O'Brien	5	2
Clayton	10	10	Osceola	1	1
Clinton	22	20	Page	25	17
Crawford	4	3	Palo Alto	4	3
Dallas	14	7	Plymouth	4	5
Davis	8	5	Pocahontas	1	3
Decatur	11	5	Polk	158	107
Delaware	11	6	Pottawattamie	43	23
Des Moines	16	17	Poweshiek	11	10
Dickinson	5	2	Ringgold	6	4
Dubuque	44	33	Sac	5	5
Emmet	1	2	Scott	47	68
Fayette	9	12	Shelby	4	3
Flory	6	8	Sioux	2	4
Franklin	8	4	Sioux	18	9
Fremont	1	2	Tama	2	9
Greene	6	4	Taylor	8	5
Grundy	3	1	Union	6	2
Guthrie	8	6	Van Buren	10	4
Hamilton	7	8	Wapello	25	25
Hancock	2	1	Warren	14	11
Hardin	10	10	Washington	13	5
Harrison	9	7	Wayne	7	9
Henry	17	21	Webster	22	14
Howard	4	3	Winnebago	4	9
Humboldt	4	6	Winneshek	14	13
Ia	1	1	Woodbury	56	34
Iowa	12	11	Worth	3	4
Jackson	10	9	Wright	9	5
Jasper	12	5			
Total for years	1,335	1,097			

TABLE NO. 6
Deaths in Entire State, 1918 and 1919.

Classification	1918	1919
Total for calendar year.....	32,421	34,076
Males.....	17,483	18,971
Females.....	14,938	15,045
White.....	31,721	33,339
Colored.....	700	737
Native.....	25,497	18,470
Foreign.....	5,532	4,812
Unknown.....	1,482	454
Single.....	12,414	8,641
Married.....	12,967	9,598
Widowed.....	5,569	5,337
Divorced.....	358	281
Unknown.....	1,179	391
Under 1 year.....	3,576	3,933
From 1 to 5 years.....	1,844	1,111
From 5 to 10 years.....	829	538
From 10 to 20 years.....	2,139	1,138
From 20 to 30 years.....	4,738	1,836
From 30 to 40 years.....	3,442	1,842
From 40 to 50 years.....	2,223	1,670
From 50 to 60 years.....	2,761	2,240
From 60 to 70 years.....	3,590	3,467
From 70 to 80 years.....	4,137	4,066
From 80 to 90 years.....	2,379	2,518
90 years and over.....	453	514
Unknown.....	128	12
Death in institutions.....	1,031	884
Typhoid fever.....	157	108
Malarial fever.....	10	6
Smallpox.....	203	22
Measles.....	113	78
Scarlet fever.....	361	560
Whooping cough.....	211	177
Diphtheria and croup.....	1,183	1,183
Influenza.....	99	45
Erysipelas.....	2	4
Other epidemic diseases.....	269	256
Septicemia.....	3	4
Pellagra.....	41	32
Tetanus.....	1,335	1,067
Tuberculosis of lungs.....	49	68
Tuberculous meningitis.....	2	2
Pott's disease.....	125	118
Other forms of tuberculosis.....	1,996	2,700
Cancer and other malignant tumors.....	315	306
Acute articular rheumatism.....	80	43
Diabetes.....	105	85
Exophthalmic goiter.....	283	422
Leukemia.....	29	15
Anemia, chlorosis.....	297	274
Other general diseases.....	30	8
Abscesses.....	396	392
Simple meningitis.....	86	58
Cerebrospinal meningitis.....	86	23
Locomotor ataxia.....	18	1
Acute anterior poliomyelitis.....		

TABLE NO. 6—CONTINUED

Classification	1918	1919
Cerebral hemorrhage, apoplexy.....	1,722	1,670
Softening of the brain.....	78	45
Paralysis.....	379	306
General paralysis of insane.....	130	132
Other forms of mental alienation.....	83	50
Epilepsy.....	130	111
Convulsions (non puerperal).....	5	5
Convulsions of infants.....	101	102
Neuralgia and neuritis.....	3	5
Other diseases of nervous system.....	0	0
Disease of the ears.....	49	37
Acute endocarditis.....	152	77
Organic disease of heart.....	2,340	2,278
Angina pectoris.....	232	182
Diseases of arteries, atheroma, aneurysm, etc.....	378	645
Embolism and thrombosis.....	5	5
Hemorrhage; other diseases of circulatory system.....	113	48
Bronchitis.....	212	258
Bronchopneumonia.....	246	577
Pneumonia.....	3,393	1,358
Pulmonary congestion.....	8	8
Asthma.....	52	36
Other diseases of the respiratory system.....	24	1
Ulcer of stomach.....	168	101
Other diseases of stomach.....	35	2
Dysarrhoea and enteritis (under two years).....	437	480
Dysarrhoea and enteritis (two years and more).....	265	234
Appendicitis and typhlitis.....	301	300
Hernia and intestinal obstruction.....	410	345
Cirrhosis of liver.....	160	129
Other diseases of the liver.....	180	204
Peritonitis.....	188	119
Other diseases of digestive system.....	4	4
Acute nephritis and Bright's disease.....	1,425	1,432
Other diseases of kidneys.....	301	160
Diseases of the bladder.....	10	1
Diseases of prostate.....	108	149
Noncancerous tumors and other diseases female genital organs.....	113	101
Puerperal septicemia.....	90	74
Other puerperal diseases.....	115	114
Gangrene.....	74	51
Diseases of bones and organs locomotion.....	7	3
Malformations and injuries at birth.....	73	50
Premature birth.....	911	638
Congenital debility, atrophy, marasmus, etc.....	101	107
Other causes peculiar to early infancy.....	717	727
Senility.....	87	74
Suicide.....	329	290
Poisoning by food, accident.....	30	20
Other acute poisoning.....	11	1
Burns.....	132	150
Absorption of deleterious gases, suffocation.....	25	21
Accidental drowning.....	124	150
Traumatism by firearms.....	30	194
Traumatism by cutting or piercing instruments.....	4	4
Traumatism by fall.....	151	299
Traumatism in mines.....	39	39
Traumatism by machines.....	31	40
Traumatism by other crushing.....	166	166
R. R. accidents.....	219	163
Street car accidents.....	4	3
Automobile accidents.....	211	161
Motorcycle accidents.....	2	2
Injuries by other vehicles.....	24	9
Injuries by animals.....	49	50
Excessive cold.....	8	4
Effects of heat.....	7	9
Other external violence.....	30	20
Lightning.....	12	11
Electricity (except lightning).....	28	28
Fractures.....	74	30
Homicide.....	15	7
Not specified or ill-defined.....	390	60

ANTITOXIN DEPARTMENT.

Following is a report of the antitoxins and vaccines, known as the Iowa State Board of Health products, manufactured by E. R. Squibb & Sons of New York, and distributed from the office of the Iowa State Board of Health through 350 stations established in the State of Iowa. This report covers a period during the biennial period July 1, 1918 to June 30, 1920.

METHOD OF DISTRIBUTION.

The Iowa State Board of Health contracts with a reliable manufacturer for diphtheria antitoxin, tetanus antitoxin, typhoid vaccine and smallpox vaccine to be distributed in the state at a contract price. The manufacturer who gets the contract consigns to the Iowa State Board of Health a supply to be used in filling emergency orders.

OBJECT OF DISTRIBUTION.

The fact that the use of biologic products in public health work is an important factor in controlling the mortality and morbidity from certain infections is well recognized by the medical profession and health officials of this state and nation. Their use is of particular value because they not only cure sick people of certain diseases, but they are used for the prevention of disease with assured success.

It is for the latter purpose that biologic products are of the most interest and greatest use to public health officials, for we are primarily concerned with the prevention, rather than the cure of disease. We cannot even approximate the number of lives saved in the 125 years smallpox vaccine has been used in protecting individuals against the disease, smallpox, and so it is with diphtheria antitoxin, years of experience with its use not only as a prophylaxis, but as a curative also, has made its use essential in public health work.

Typhoid vaccination was begun in the United States by Colonel Russell in 1908. The results were so striking that it was soon made compulsory in the army. During the Spanish-American War, before the days of vaccination, practically one soldier out of seven had typhoid fever and one out of sixty-seven died. If the same prevalence of typhoid fever had existed as was found during the Spanish-American War, out of the four million troops we had mobilized in the great war, there would have been approximately 600,000 cases of typhoid with 60,000 deaths. Or in other words, practically twice as many would have died from typhoid fever as were killed in action. With typhoid vaccination, typhoid fever has been practically eradicated in the army.

The State of Iowa has during the past year distributed 3,000 vaccinations against typhoid fever free, and in addition you will find in this report the number of vaccinations distributed from our sale stock.

The use of tetanus antitoxin is necessary for the prevention of tetanus or lock-jaw, and its use as a curative and results obtained from its use, prove to us the necessity of distributing same in the State of Iowa.

The board recognized the fact for several years that the price of antitoxin was prohibitive in a good many cases, and in others the use of it was delayed because of its expense. This was not due to the fact that either the manufacturer or the retailers were making a big profit, but the cause is in the deterioration of the antitoxin, making it necessary to renew it once in fifteen to eighteen months at least.

The legislature makes an annual appropriation of \$2,000 to defray the expense of handling the emergency stock in this office, which is consigned to us by the manufacturer, and emergency orders only are filled from this office, as each distributor is required to carry enough stock on hand in his community to meet immediate demands, hence a great many orders go direct to laboratories from our official distributors. We estimate that the emergency orders received at this office comprise two-thirds of the stock used in the state, the other third being ordered direct from laboratories.

The State Board of Health maintains an emergency stock which the distributors located over the state can draw upon when necessary, insures the medical profession and health officials of receiving reliable, fresh stock in time to be used to an advantage.

Prior to the State Board of Health distributing antitoxins and vaccines at state contract prices, the price of same made its use prohibitive in many cases, the reason for which has been given previously in this report. We print herewith a table showing comparison in prices, and the great saving that is made for the people of the state by virtue of this contract.

COMPARISON OF PRICES.

	Druggists' Prices	State Prices	Saving
Diphtheria Antitoxin—			
1000 units	\$ 2.00	\$.30	\$ 1.50
3000 units	5.00	1.35	3.75
5000 units	7.50	1.80	5.70
10000 units	12.00	3.25	8.65
Tetanus Antitoxin—			
1200 units	\$ 2.50	\$ 1.67	\$.83
3000 units	4.25	2.87	1.38
5000 units	5.99	4.09	2.00
Typhoid Vaccine—			
30 Ampul (10 treatment) pkg.....	\$ 3.00	\$ 2.50	\$.50
3 Ampul (1 treatment) pkg.....	.75	.58	.17
3 Syringe (1 treatment) pkg.....	2.25	.85	1.49
Smallpox Vaccine—			
3 tubes (5 vaccinations) pkg.....	\$ 1.00	\$.60	\$.40
10 tubes (10 vaccinations) pkg.....	2.00	.80	1.20

We feel that in this office rendering a service in getting fresh antitoxins and vaccines to the different communities in time when needed, is a factor in the distribution that is appreciated fully as much as is the great saving in price.

During this last biennial period, July 1, 1918, to June 30, 1920, we distributed from this office 6,343 packages 1000 units, 1,265 packages 3000 units, 2,062 packages 4000 units and 2,159 packages 10,000 units diphtheria antitoxin, making total of 12,769 packages, which means a saving to the people of	\$50,084.15
Tetanus antitoxin, we distributed 1,959 packages 1500 units, 465 packages 3000 units and 579 packages 5000 units, making total of 2,925 packages, which means saving of	3,316.90
Typhoid Vaccine, we distributed 59 hospital packages, 2,000 ampul packages and 567 syringe packages, making total of 3,067 typhoid vaccinations and a saving of	1,560.50
Smallpox vaccine, we distributed 61,525 vaccinations, which means a saving of	7,317.00
Total Saving	\$62,578.55

The above figures in comparison are taken from the prices charged for antitoxins and vaccines in this state prior to establishment of the Iowa State Board of Health antitoxin department, and these prices are compared above with the contract prices at which this board distributes identically the same products.

HOTEL INSPECTION

Items for Which Money is Used	Citation of authority	Fees collected July 1, 1918 to June 30, 1920	Expended in fiscal year, 1919-1920
Department receipts	S. S. 2514-S	\$21,417.75	
Hotel Inspector			\$2,400.00
Clerical services			1,200.00
Deputies' salary and expense			5,477.07
Inspectors' expense			125.62
Printing			112.36
Postage			68.00
Miscellaneous			73.25
Total			\$9,455.31

BUREAU OF VENEREAL DISEASE CONTROL.

W. S. CONKLING, M. D., Director

The establishment of a Bureau of Venereal Disease Control as an integral part of the State Board of Health, was the result of the work of the Federal Government, which was first initiated as a war measure under the Chamberlain-Kahn Act. At the close of the activities of the war, those in authority realized the importance of a continuation of the work, as a health measure in time of peace. The Thirty-eighth General Assembly enacted the Venereal Disease Control law and appropriated fifteen thousand dollars annually for carrying on the work, which began as a State Board of Health activity July 1, 1919. In addition to the fifteen thousand dollars appropriated by the State of Iowa, a like amount was received from the Federal Government for the fiscal year ending June thirtieth, 1920.

The following were employed by the State Board of Health, the same being approved by the Executive Council: Dr. Wilbur S. Conkling, Director; Dr. Jeanette F. Throckmorton, State Lecturer for Women and Girls; Miss Edith Barker, Secretary, Miss Phurne Young, Assistant Secretary and Record Clerk, in the office of the Bureau of Venereal Disease Control.

The following were employed in the Venereal Disease Laboratory, Iowa City, Iowa, Miss Eva Bruett, Serologist; Irving Borts, Assistant Serologist; Miss Helen Davis, Stenographer; Miss Ethel Beyatt, Technician.

Free Venereal Disease Clinics have been established in the following cities:

Des Moines, 406 Center Street.....	Dr. R. A. Weston
Davenport, 415 Lane Building.....	Dr. R. E. Jameson
Dubuque, 140 Fifth Street.....	Dr. A. H. Blocklinger
Clinton, 237 1/2 Fifth Street.....	Dr. G. A. Smith
Fort Dodge, Oleson Building.....	Dr. J. D. Lowry
Mason City, 112 N. Washington Avenue.....	Dr. M. J. Fitzpatrick
Grinnell.....	Dr. E. S. Evans
Sioux City, 210 Davidson Building.....	Dr. A. J. McLaughlin
Ottumwa, 508 East Second Street.....	Dr. F. L. Nelson
Council Bluffs, 1820 Broadway.....	Dr. R. S. Moth
Marshalltown, Masonic Temple.....	Dr. R. S. Grosseman
Manly.....	Dr. G. S. Westly

There were 2,640 indigent cases treated with a total of 29,842 treatments given. These clinics are all supported by the local communities, with the exception of medication and laboratory service.

The University hospital at Iowa City treated many indigent venereal cases during the year ending June 30, 1919. There were also a large number of indigent cases treated by private physicians and local Boards of Health, this bureau furnishing the salvarsan, upon their certificate that the patient was indigent, and that no fee was being charged for their treatment.

The Bureau of Venereal Control Laboratory in charge of Dr. Henry Albert, made 11,047 Wassermann and 799 Gonorrhea tests during the year.

There were 2,929 cases of Gonorrhea, 969 cases of Syphilis and 115 cases of Chancroid reported by the physicians of the State.

The educational activities were as follows: The Director has visited in an official capacity 26 Iowa cities and towns, visited and addressed 9 county or district medical societies, addressed the following conventions and meetings:

- County Superintendents of Schools.
- City Superintendents of Schools.
- Iowa League of Municipalities.
- State Directors Extension of the Agricultural College.
- Commercial Clubs.
- Rotary Clubs.
- Junior Chamber of Commerce.

Dr. Jeannette F. Throckmorton delivered 460 lectures, reaching 66,540 girls and women. Her work has been received in a splendid manner, and not a single word of criticism has resulted, but many commendatory letters have been received and it is believed much permanent good has resulted from her work.

Many thousand people saw the exhibit at the State Fair and a large number of both men and women held personal conference with the physicians in charge.

Personal letters were sent to 5,600 school teachers of the rural districts, together with literature and pamphlets on Sex Hygiene.

8,642 boys in the city high schools, 3,250 employed boys of high school age were reached by lectures, moving pictures, slides and chart exhibits. 24,595 rural boys and 20,864 rural girls were sent suitable pamphlets by mail. 5,000 school children were shown the film "How Life Begins."

A specially prepared book on Venereal Disease was placed in 1,353 barber shops of the state.

The total number of pamphlets distributed during the year was 126,552.

Personal letters on the various phases of the venereal problem have been prepared and sent as follows:

- 1100 mayors of cities and towns (two letters).
- 3600 physicians of the state.
- 927 clergymen of the state.
- 2350 druggists and pharmacists.
- 1100 members of the Iowa Manufacturing Association (two letters).
- 99 County Superintendents (two letters).
- Board of Supervisors (two letters).
- 99 County Medical Societies, Presidents and Secretaries, (two letters)
- Farm Extension Agents, Red Cross Workers.
- Sheriffs, County Auditors, Presidents of Women's Clubs.
- Superintendents of Public Schools.
- Rotary Clubs, Y. M. C. A's. and Public Librarians.
- of practically every section of the State.

The work has been continued along the same general plan as outlined by the U. S. Public Health Service, with the necessary changes to meet local conditions. In carrying out the principles of the law, the bureau has attempted to deal with the problem in a practical manner, with the realization that this was real pioneer work, and if good was to result the good will and co-operation of all concerned must be secured.

REPORT OF HOUSING DEPARTMENT.

EDWIN H. SANDS, *Commissioner*

The Housing Department of the State Board of Health, was authorized under chapter 123, senate file No. 475, 38th General Assembly, and section 2, chapter 388, laws of the 38th General Assembly of Iowa.

The law under this legislation became effective July 4th, 1919, and is made mandatory in the cities of the first-class and, "so far as is reasonably applicable and practicable under the circumstances" in the mining camps of the State. It also provides that, "all other cities and incorporated towns may adopt ordinances for the regulation and control of any or all such matters and fix penalties for the violation thereof." Dr. C. W. Reese was temporarily appointed to the head of this department, and had charge of the work for the first two months, but upon his removal from the State, the present incumbent, Edwin H. Sands, took charge of the work on September 1st, 1919. The year has been largely occupied in publicity and education and in assistance to the cities in getting the work inaugurated and co-ordinated, especially through interpretation of the various applicable sections of the law.

Commercial clubs, rotary clubs and similar civic organizations of the cities have been co-operating and have largely been instrumental in urging heartiest co-operation on the part of the local municipal government. This especially after the law had been thoroughly explained to them. Some of the cities were able to begin enforcement promptly but several of them were so organized that considerable time was necessary before adequate arrangement could be made. Des Moines anticipated beginning of the work of enforcement by appointing a local commissioner and an assistant in June, which gave them an opportunity to study the provisions of the law, to make a preliminary survey of conditions in the city, etc., so that they began active operation on the 4th of July. Marshalltown, Clinton and Council Bluffs to date have not succeeded in reorganizing their local forces so that the law can be enforced as provided for and intended by the statutes govern-

ing in the case. These places however have and are giving the matter careful consideration and plans are being made with a view to solving this difficulty in the near future.

In all of the cities where the law is being enforced, good results are being obtained. Difficulties have generally been encountered only with the owners of low class tenement or rental property who object to further outlay upon this property. It has even been necessary to take from one to three such cases into court to secure adequate enforcement and in every case thus far the courts have sustained the action of the local boards.

The year has given opportunity to test out the reasonableness and practicability of this statute as it affects the city and we believe it to be the general opinion of those acquainted with the working of the law as drawn, that it is both reasonable and practicable in every detail. While there has not been much new building during the year except in Des Moines, practically every phase of new building has been encountered and in such variety and quantity as to really test out the provisions of the law. We have investigated and acted upon fourteen appeal cases and have been called upon to assist four different cities in the enforcement of certain provisions in those cities. The reports from the cities covering the period of this report show that an average of about 15% of all plans submitted required adjustment or corrections in order to make them comply with the provisions of the law. The most common difficulty is insufficient window area and living rooms having less than the required 80 square feet of floor space, while insufficient yard area has called for frequent adjustment. Des Moines has built several large apartment and tenement houses and several of these have required considerable change before they were permitted to build. One of the chief difficulties of this class of building was found to be inside living rooms, that is, rooms without direct light and ventilation to the outside. In every case however, this has been adjusted without any hardship or additional costs. This same class of building has likewise called for considerable attention to the fire protection measures required and is the only class of building coming under the jurisdiction of the department in which it can be said there has been an additional cost incurred because of the requirements of the law and this only because of the provisions ordered to provide adequate fire protection for the occupants thereof.

The second phase of the work, that of the application of the housing law to mining camps has been one of considerable difficulty. To determine how much of the law is "reasonably applicable and practicable of enforcement" in such camps is difficult and can only be decided after careful survey of the camps and a study of all of the conditions that exist therein. This is a slow process as each camp presents a problem peculiar in itself and very largely must be handled as such. The work of making these surveys has occupied a large portion of our time and has progressed favorably, permanent records having been made of about twenty camps to date. We have had the active and hearty support and co-operation of the district mine officials and have been promised the support of the mine operators' organizations.

From a general standpoint, most of the existing camps are in bad condition, especially from the standpoint of water supply, toilet conditions and general sanitation.

Only one new camp has been built during the year and in this we have secured the heartiest co-operation and with good results so far as the comparison of camps is concerned. It is understood that several new camps are in contemplation and the plans will be submitted for these camps at an early date and we are assured of the willingness on the part of the promoters of these camps to co-operate in the development scheme so that much, if not all, of the objection to old camps will be eliminated.

After a year's study of the mining camps and of their needs, we are inclined to feel that section 106, which gives the housing department jurisdiction, is inadequately drawn to cover the situation and obtain the results really expected and desired.

The provision of the law authorizing cities and incorporated towns of less than 15,000 to adopt ordinances for the regulation of housing conditions as set forth in the law, has received a good deal of attention and we have had frequent calls to meet with town councils and civic organizations to explain to, and discuss with them the provisions of the law as it might be applied to that particular locality. The chief difficulty that has appeared in the matter of the adoption of ordinances governing the work of the law has been the cost of printing, etc., which is a considerable item if adequate ordinances to cover the situation are drawn. In spite of this, many have indicated that they expect to proceed as soon as the finances can be arranged to cover the cost.

REPORT OF CIVIL AND SANITARY ENGINEER IOWA STATE BOARD OF HEALTH

For the Biennial Period Ending June 30, 1920.

LAFAYETTE HIGGINS
Engineer Member of the Board.

SANITATION

OUTLINE OF WORK.

Field Investigations—

Field trips and sanitary surveys relating to installation of water supply, sewerage and sewage disposal, garbage disposal, and inspection and supervision of existing water supply systems and sewage treatment plants.

Office Work—

- (a) Examination and approval of plans and specifications for water works, sewers and sewage treatment plants.
- (b) Consultation service by correspondence relative to water works, sewerage, sewage treatment plants and garbage disposal.
- (c) Advice and consultation relative to installation of water works, sewers, sewage treatment and garbage disposal, to engineers, municipal officials and other parties, given at the office of the State Board of Health.

FIELD TRIPS AND INVESTIGATIONS.

MADE BY THE SANITARY ENGINEER

Places Investigated, Population, and the Purpose of the Investigation
Akron, 1,235. (May 5, 1919) Investigation of conditions affecting public water supply by reason of change in channel of Big Sioux River.

Albia, 5,138. (April 2, 1920) Investigated sewage disposal and inspected proposed sites for new sewage treatment plant. Met the city council and citizens to discuss proposed installation of new sanitary sewer system.

Ames, 5,091. (March 22, 1920) Investigated proposed locations for new sewage treatment plant. Conference with city council.

Baxter, 572. (March 26, 1920) Investigation of waterworks proposition and location of source of supply.

Belle Plaine, 3,668. (January 31, 1919) Conference with city council relative to new public water supply.

Brighton, 1,023. (June 10, 1919) Assisted town council in locating water supply.

Carlisle, 625. (August 7, 1919) met with school board to determine the method of sewage disposal at the public school building.

Centerville, 7,803. (June 11, 1919) Conference with city council on water supply and sewage disposal.

Council Bluffs, 21,354. (May 22, 1919) Met with architect and trustees to advise relative to sewage disposal for the new tuberculosis hospital.

Cumberland, 574. (July 3, and August 23-24, 1918) Investigating sewage disposal at public school.

Davenport, 48,483. (Oct. 14, 1918, July 6, 1919, May 5, 1919) Conferences with County attorney and investigation of Garbage Hog Farm.

Dubuque, 41,795. (September 15, 1919) Conference with trustees of new Tuberculosis Hospital relative to sewage disposal.

Dyersville, 1,885. (August 15, 1919) Investigated sewer controversy. Consultation with town council relative to installation of new sewers.

Fairbank, 629. (March 24, 25, 1920) Investigation of refuse and sewage disposal.

Farragut, 511. (June 5, 1919) Met with town council and citizens to discuss need of a public water supply, and the issuance of bonds to finance the same.

Fonda, 1,106. (May 6, 1919) Conference with engineer and city council relative to proposed sewer system.

Ft. Dodge, 19,372. (September 25, 1918) Investigating sewage disposal at Hog Serum Plant.

Ft. Dodge, 19,372. (May 17, 1919) Conference with city council relative to new public water supply.

Ft. Dodge, 19,372. (October 29 and November 20, 1919) Investigated sewage pollution of ice fields, and public water supply. Conference with city council to consider new source of water supply.

Garner, 1,226. (February 7, 1919) Conference with city council relative to installation of sanitary sewer system.

Geneva, 295. (November 15, 1918) Investigated sewage disposal at public school.

Glidden, 913. (May 25, 1920) Investigated unsanitary conditions affecting public water supply. Conference with city council and citizens to consider installation of a sanitary sewer system.

Greenfield, 1,315. (November 26, 1918) Conference with city council relative to public water supply.

Grinnell, 5,061. (March 22, 1919) Conference with town council and citizens relative to sewage disposal plant.

Guthrie Center, 1,678. (August 1, 1918) Consultation with city council relative to reconstruction of sewage filters.

Humboldt, 2,061. (May 10, and October 28, 1919) Met with city council to investigate existing sewers and consult relative to the installation of a new sanitary sewer system.

Iowa City, 12,033. (September 17, 1919) Investigated possible pollution of Iowa City's public water supply by cesspools and residential sewage treatment plants.

Iowa City, 12,033. (November 5, 6, 7, 1919) Conference at Board of Health Laboratory at State University on public water supplies of state and survey made by Mr. Wagenhals of the U. S. Public Health Service, on water supplies used in interstate traffic.

Kanaucha, 516. (May 28, 1919) Met with town council to advise relative to installation of sewers.

Kellogg, 619. (July 27, 1918) Investigating sewage disposal at public school.

Lawler, 656. (July 25, 1918) Investigating sewage disposal at public school.

Lenox, 1,320. (September 1, 2, 1919) Conference with town council relative to water supply. Inspected catchment area and impounding reservoir.

Leon, 2,199. (September 26, 1919) Consultation with Board of Supervisors of Decatur county relative to a new water supply and sewage disposal for county home.

Livermore, 634. (November 14, 1918) Sanitary survey and conference with Mayor relative to unsanitary sewers and sewage disposal.

Lohrville, 696. (April 9, 10, 1919) Located sewage treatment plant, and investigated sewage cesspool.

Mason City, 17,152. (April 1, 1919) Investigated waste disposal at Decker Packing Plant.

Monona, 966. (January 20, 1920) Met with city council to discuss installation of sanitary sewer system.

Monroe, 926. (December 5, 1918) Investigating sewage disposal at public school.

Nevada, 2,686. (November 3, 4, 1919) Attended court case to enjoin discharge of untreated sewage at Collins, Iowa.

Newell, 787. (August 30, 1918) Conference with city council relative to installation of sanitary sewer system.

New Sharon, 1,225. (March 21, 1919) Conference with town council and citizens relative to installation of sanitary sewer system.

Newton, 5,165. (February 14, 22, 1919) Consultation with city council relative to sewage disposal.

Olin, 706. (April 8, 1920) Investigated sewage disposal and conferred with city council relative to installation of new sewers and sewage treatment plant.

Osceola, 2,714. (July 2, 1918) Investigating public water supply.

Osceola, 2,714. (November 25, 1918) Conference with Board of Education relative to safety of public school building.

Pacific Junction, 660. (May 21, 1919) Met with Board of Education to advise relative to sewage disposal at public school.

Prairie City, 817. (July 29, 1918) Investigating unsanitary conditions.

Rock Valley, 1,306. (May 27, 1919) Conference with city council relative to installation of sanitary sewer system.

Rock Valley, 1,306. (June 23, 1920) examination of completed sanitary sewer to determine amount of excessive infiltration. Conference with city council, engineer, and contractor to determine requirements for completion of sewer contract.

Rockwell City, 1,864. (July 12, 13, 1918) Locating sewer at Women's Reformatory.

Rockwell City, 1,864. (December 24, 1918) Investigation of sewage treatment plant.

Rockwell City, 1,864. (October 12, 13, 14, 21, 23, 1919) Locating sewage treatment plant for Women's Reformatory and supervising the installation of the same.

Roland, 691. (April 4, 1919) Met town council and citizens of Roland in public meeting to discuss necessity of installation of sewage treatment plant, and sewers. Sewers now being installed.

Ruthven, 744. (April 24, 1919) Conference with town council and citizens relative to installation of sanitary sewer system.

South English, 333. (March 23, 1919) Investigating sewage disposal at public school.

Tama, 2,621. (May 20, 1920) Investigated unsanitary conditions produced by collapsed outlet sewer. Conference with city council relative to installing new outlet sewer and sewage treatment plant.

Walcott, 461. (May 30, 1919) Conference with town council relative to completion of present sewage treatment plant.

Woodward, 820. (August 5, 1918) Conference with city council relative to installation of sanitary sewer system.

Woodward, 820. (July 30, 1919) Conference with city council relative to new public water supply.

Woodward, 820. (October 7, 1919) Assisted Board of Control in locating new source of water supply for State Hospital and Colony for Epileptics.

FIELD TRIPS AND INVESTIGATIONS.

MADE BY J. H. DUNLAP

Places Investigated, Population, and the Purpose of the Investigation.

Ackley, 1,289. (August 5, 1919) Investigation of unsanitary conditions. Conference with city council.

Arnold's Park, 408. (July 8, 12, 1919) Sanitary survey of Arnold's Park.

Cedar Rapids, 40,667. (July 14, 1919) Investigation of starch works problem.

Charles City, 6,374 (July 16, 1919) Conference with city council relative to discharge of unpurified sewage into Cedar river.

Clarksville, 965. (August 6, 7, 1919) Sanitary investigation relative to sewage disposal.

Marengo, 2,037. (August 15, 1919) Sanitary investigation of conditions at plant of Iowa Valley Canning Company.

Mount Vernon, 1,568 (August 25, 1919) Sanitary investigation.

Nora Springs, 1,148. (July 15, 1919) Conference with city council relative to installation of sanitary sewer system.

Sumner, 1,585. (July 17, 1919) Conference with city council relative to sewage treatment plant.

Tama, 2,621. (July 3, 5, 1919) Conference with city council relative to repairing broken sewer main. Assisted council in letting new contract for repairing broken sewer main.

Toledo, 1,721. (July 5, 1919) Conference with city council relative to waterworks and sewage treatment plant.

Tripoli, 854. (July 18, 1919) Conference with city council and Tripoli Creamery Company relative to discharge of creamery waste into sanitary sewer system. Assisted city council in drawing a protective contract with the Tripoli Creamery Company defining character of creamery waste admitted into the sanitary sewer and defining financial responsibility of the Creamery Company in necessary care and restoration of sewage treatment plant incident to the discharge of the creamery waste.

FIELD TRIPS AND INVESTIGATIONS.

MADE BY LAFAYETTE HIGGINS, JR.

Places Investigated, Population and the Purpose of the Investigation.
Fairbank, 629. (March 24, 25, 1920) Sanitary survey and investigation of methods of sewage disposal.

Ft. Dodge, 19,372. (Feb. 19, 20, 1920) Investigation of unsanitary conditions affecting public water supply and ice supply, and collecting data.

Minburn, 430. (Jan. 20, 1920) Investigation of public water supply.

Minden, 429. (March 5, 1920) Investigation of methods of sewage disposal and conference with city officials relative to proposed installation of sanitary sewer system.

Rockwell City, 1,864. (June 11-25, 1920) Supervising installation of sewage treatment plant at women's reformatory.

Rockwell City, 1,864. (June 28-29) Supervising installation of sewage treatment plant at Women's Reformatory.

Woodward, 820. (June 1, 1920) Locating sewer for Custodial Cottage at State Hospital and Colony for Epileptics.

INSPECTIONS OF WATERWORKS, SEWER SYSTEMS AND SEWAGE TREATMENT PLANTS.

BY LAFAYETTE HIGGINS

July 2, 1918, to June 30, 1920.

1918.

July 2. Creston, sewage treatment plant.

July 29. Prairie City, public water supply.

August 1. Guthrie Center, sewage treatment plant.

- September 27. Storm Lake, waterworks and sewage treatment plant.
 October 14. Davenport, Garbage Feeding Hog Farm.
 November 14. Livermore, fragmentary sewer systems and school sewage treatment plant.
 November 15. Geneva, public school sewage disposal plant.
 November 25. Osceola, public school building.
 November 26. Greenfield, public water supply.
 December 5. Monroe, public school sewage treatment plant.
 December 23. Storm Lake, sewage treatment plant and waterworks.
 December 24. Rockwell City, sewage treatment plant.

1919.

- January 31. Belle Plaine, public water supply.
 February 12. Newton, sewage treatment plants.
 March 21. Grinnell, sewage treatment plant.
 March 21. New Sharon, public water supply.
 March 24. Montezuma, sewage treatment plant.
 March 28. Ringgold, county home.
 April 4. Roland, public water supply.
 May 5. Akron, water supply.
 May 6. Fonda, public water supply.
 May 17. Ft. Dodge, public water supply.
 May 28. Kanawha, public water supply.
 May 30. Walcott, public water supply and sewage treatment plant.
 June 11. Centerville, public water supply.
 August 1. Sigourney, sewage treatment plants.
 August 2. Okaloosa, sewage treatment plant.
 August 7. Carlisle, public water supply.
 August 15. Dyersville, public water supply.
 September 1-2. Lenox, public water supply.
 September 26. Leon, public water supply.
 September 26. Decatur, county home.
 November 13. Rockwell City, sewage disposal.
 November 20. Ft. Dodge, public water supply.

1920.

- January 5. Sewage disposal plant at State Industrial School for Girls at Mitchellville.
 January 20. Monona, public water supply.
 March 18. Montezuma, sewage treatment plant.
 April 5. Albia, public water supply and sewage treatment plant.
 April 7. Okaloosa, sewage treatment plant.
 April 9. Oakdale, sewage treatment plant.
 May 20. Tama, sewage treatment plant.
 May 25. Glidden, public water supply.

INSPECTION OF WATERWORKS, SEWER SYSTEMS AND SEWAGE TREATMENT PLANTS.

BY J. H. DUNLAP.

July 4, 1919 to August 30, 1919.

- July 4. Toledo, waterworks and sewage treatment plant.
 July 7-8. Spirit Lake, waterworks and sewage treatment plant.
 July 17. Sumner, sewage treatment plant.
 July 18. Tripoli, sewage treatment plant.
 July 19. Oelwein, sewage treatment plant.
 August 8. Postville, waterworks, sewers and sewage treatment plant.
 August 12. Ogdon, sewage treatment plant.
 August 12. Carroll, sewage treatment plant.
 August 13. Audubon, waterworks, sewers and sewage treatment plant.
 August 13. Atlantic, waterworks, sewers and sewage treatment plant.
 August 14. Stuart, waterworks, sewers and sewage treatment plant.
 August 15. Marengo, waterworks and sewers.
 August 16. Wilton, waterworks and sewage treatment plant.
 August 19. Onawa, waterworks, sewers and sewage treatment plant.
 August 20. Mapleton, waterworks, sewers and sewage treatment plant.
 August 21. Orange City, waterworks, sewers and sewage treatment plant.
 August 22. Milford, waterworks and sewage treatment plant.
 August 23. Grinnell, sewage treatment plant.
 August 25. Mt. Vernon, sewage treatment plant.
 August 25. Lisbon, sewage treatment plant.
 August 26. Marion, sewage treatment plant.
 August 26. St. Berchman's Seminary, sewage treatment plant at Marion.
 August 27. Kenwood Park, waterworks, sewers and sewage treatment plant.
 August 28-29. West Union, waterworks, sewers and sewage treatment plant.
 August 30. Newton, sewage treatment plants.

INSPECTION OF WATERWORKS, SEWERS AND SEWAGE TREATMENT PLANTS.

BY LAFAYETTE HIGGINS, JR.

December 26, 1919 to June 10, 1920.

- December 26. Valley Junction, waterworks and sewage treatment plant.
 December 31. Ankeny, waterworks and sewage treatment plant.

1920.

- January 5. Mitchellville, waterworks.
 January 8. Dexter, waterworks.
 January 12. Redfield, waterworks.

January 14. Slater, waterworks.
 January 14. Ames, waterworks.
 January 15. Story City, waterworks.
 January 15. Roland, waterworks.
 January 16. Gilbert, waterworks.
 January 21. Adel, waterworks.
 January 27. Cambridge, waterworks.
 January 27. Maxwell, waterworks.
 January 27. Collins, waterworks.
 January 28. Colo, waterworks.
 January 29. Grimes, waterworks.
 February 3. Casey, water supply.
 February 3. Adair, water supply.
 February 4. Anita, water supply.
 February 4. Griswold, water supply.
 February 5. Lewis, water supply.
 February 6. Exira, water supply.
 February 11. Marne, water supply.
 February 11. Walnut, water supply.
 February 12. Kimballton, water supply.
 February 13. Avoca, water supply.
 February 17. State Reformatory for Women, sewer system.
 March 1. Oakland, water supply and sewer system.
 March 1. Carson, water supply.
 March 3. Macedonia, water supply.
 March 4. Harlan, water supply and sewer system.
 March 5. Minden, water supply.
 March 17. Shelby, water supply and sewage disposal plant.
 March 18. Underwood, water supply.
 March 19. Neola, water supply.
 April 2-3. Albia, water supply and sewage disposal plant.
 April 7. Colfax, water supply.
 April 8. Kellogg, water supply.
 April 9. Malcom, water supply.
 April 12. Sigourney, sewage treatment plant and waterworks.
 April 14. Keota, water supply and sewage disposal plant.
 April 15. Hedrick, water supply.
 April 21. Brooklyn, water supply and sewage disposal plant.
 April 22. Victor, water supply and sewage disposal plant.
 May 25. Onawa, water supply and sewage disposal plant.
 May 26. Mapleton, water supply and sewage disposal plant.
 May 27. Charter Oak, water supply and sewage disposal plant.
 June 10. Rockwell City, sewage treatment plant.

SANITARY SURVEYS

Ackley	Fairbank	Mount Vernon
Akron	Farragut	New Sharon
Arnold's Park	Fort Dodge	Pacific Junction
Baxter	Glidden	Prairie City
Brighton	Iowa City	Roland
Carlisle	Lenox	South English
Cedar Rapids	Livermore	Tama
Charles City	Lohrville	Tripoli
Clarksville	Marengo	Walcott
Cumberland	Mason City	Woodland
Davenport	Minden	

OFFICE WORK OF THE ENGINEER.

(a)

Approval of Plans and Specifications.

Albia, Monroe County, Population 5,067. Plans and specifications for extension of existing sewers, additional sewers and enlargement of sewage treatment plant and for new system and north sewage treatment plant. The new sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved April 15, 1920.

Albia, Monroe County, population 5,067. Plans and specifications for south and southeast sewer system and sewage treatment plant. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved June 17, 1919.

Alta, Buena Vista County, population 1,290. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show practically the entire town included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved July 11, 1918.

Ames, Story County, population 6,270. Plans and specifications for sewers and new sewage treatment plant. The sewage treatment plant consists of multiple Imhoff tanks, trickling filters and a sewage pumping station. The plans and specifications were approved May 21, 1920.

Anita, Cass County, population 1,236. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and a siphon chamber and intermittent sand filters. The plans and specifications were approved June 29, 1920.

Auburn, Sac County, population 406. Plans and specifications for a water works system. The plans provide for the customary distributing system, a pumping station and equipment and an elevated steel tank of 30,000 gallons capacity. The plans and specifications were approved February 27, 1920.

Aurelia, Cherokee County, population 708. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plan shows the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and intermittent sand filter. Plans and specifications were approved May 31, 1919.

Bancroft, Kossuth County, population 902. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved June 18, 1920.

Baxter, Jasper County, population 571. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and trickling filter. The plans and specifications were approved March 31, 1920.

Bode, Humboldt County, population 513. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved October 31, 1919.

Boydton, Sioux County, population 419. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved December 31, 1919.

Brighton, Washington County, population 1,014. Plans and specifications for a water works system. Plans provide for an elevated steel tank of 50,000 gallons capacity, the distribution system, a pump house and pumping machinery. The plans and specifications were approved May 23, 1919.

Brighton, Washington County, population 1,014. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans provide for including practically the entire town in one sewer district. The sewage treatment plant consists of a housed Imhoff tank and intermittent sand filter. The plans and specifications were approved June 12, 1919.

Buffalo Center, Winnebago County, population 894. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and siphon chamber, a sewage pumping station and a trickling filter. The plans and specifications were approved March 10, 1920.

Burt, Kossuth County, population 626. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved March 9, 1920.

Carson, Pottawattamie County, population 692. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and trickling filter. Plans and specifications were approved February 12, 1920.

Centerville, Appanoose County, population 8,486. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show that the south and west parts of the town are to be included in this district. The sewage treatment plant consists of two housed Imhoff tanks, a siphon chamber and intermittent sand filters. The plans and specifications were approved March 5, 1920.

Charter Oak, Crawford County, population 750. Plans and specifications for sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. Plans and specifications were approved July 31, 1919. These plans were substituted for the plans approved November 9, 1915.

Churdon, Greene County, population 763. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and siphon chamber and intermittent sand filters. The plans and specifications were approved July 14, 1919. Substitute plans for the sewage treatment plant were approved September 12, 1919.

Clarinda, Page County, population 4,511. Plans and specifications for waterworks improvements. The contemplated work includes a new source of public water supply, the intake being located in the Nodaway River, about two miles upstream from the city waterworks station, a low service pumping station at the river, a ten-inch force line, or main, leading from the low service pumping station to the city waterworks station, a purification plant and high service pumping plant constitute the city waterworks station. The plans and specifications were approved March 14, 1919.

Corning, Adams County, population 1,840. Plans and specifications for extensions to existing sewer system. The plans and specifications provide for connecting the proposed extension by means of a 10-inch sewer approximately 2,800 ft. in length with a gradient of 0.10%. The correspondence with the engineers reveals the fact that a new sewer district should have been created and a sanitary sewer with sewage treatment plant designed for such district instead of connecting the extension into the existing sewer system. The plans and specifications were received August 26th, but were not approved for the reason above given. The engineer was so advised, which advice was acknowledged.

Coon Rapids, Carroll County, population 1,328. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plan shows the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. The plans and specifications were approved May 29, 1919.

Corwith, Hancock County, population 635. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved June 18, 1920.

Cushing, Woodbury County, population 286. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved March 2, 1920.

Dayton, Webster County, population 836. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of an Imhoff tank, a siphon chamber and a trickling filter. The plans and specifications were approved March 12, 1920.

Deer, Dallas County, population 790. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show practically the entire town to be included in one sewer district. The sewage treatment plant consists of a septic tank with removable wooden cover, a siphon chamber with concrete cover, and intermittent sand filters. The plans and specifications were approved July 29, 1919.

Doon, Lyon County, population 576. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved June 20, 1920.

Durant, Cedar County, population 775. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show

the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and trickling filter with after sedimentation tank. The plans and specifications were approved Jan. 1, 1920.

Dysart, Tama County, population 955. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district with the provision that the sewage from the east part of the town be lifted and discharged into the sewer leading to the disposal plant located west of tank and intermittent sand filters. Plans and specifications were approved August 13, 1919.

Elgin, Fayette County, population 623. Plans and specifications for a waterworks system. The plans call for the usual distributing system, pumping station and equipment, and an elevated steel tank of 50,000 gallons capacity. Alternative specifications for wood stave pipe. The plans and specifications were approved June 30, 1920, conditionally, and the wells subject to rules for constructing sanitary wells.

Farragut, Fremont County, population 494. Plans and specifications for a waterworks system. The plans and specifications provide for the water supply to be taken from point wells located within the town. A 50,000-gallon elevated steel tank, the necessary pumping equipment and the customary distributing systems are provided for. The plans and specifications were approved July 1, 1919.

Farragut, Fremont County, population 494. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and siphon chamber, and intermittent sand filters. The plans and specifications were approved June 21, 1920.

Fonda, Pocahontas County, population 1,136. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank and siphon chamber, and intermittent sand filters. Provision is made for pumping the sewage into the Imhoff tank. The plans and specifications were approved May 26, 1919.

Garcin, Tama County, population 587. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. The plans were approved June 26, 1919.

Grand Junction, Greene County, population 1,910. Plans and specifications for a system of waterworks. The plans and specifications provide for a 40,000-gallon elevated steel tank, pumping equipment and a distribution system. The plans and specifications were approved August 26, 1919.

Harris, Osceola County, population 359. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show

the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber, and intermittent sand filters. The plans and specifications were approved March 2, 1920.

Hawkeye, Fayette County, population 582. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district with the provision for future pumping from a small area in southeast portion of the town. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved July 27, 1919.

Hospers, Sioux County, population 570. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. Plans and specifications were approved July 18, 1919.

Hudson, Black Hawk County, population 408. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. The plans and specifications were approved July 29, 1919.

Hull, Sioux County, population 791. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the town to be divided into two sewer districts, the present plans covering the sewerage of one district. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. Plans and specifications were approved April 21, 1919.

Humboldt, Humboldt County, population 2,232. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show practically the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. The plans and specifications were approved October 15, 1915.

Hameston, Wayne County, population 1,214. Plans and specifications for two sanitary sewer systems and two sewage treatment plants. The plans show the town to be included in two sewer districts. Each sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved May 1, 1920.

Inwood, Lyon County, population 746. Plans and specifications for a sanitary sewer system and sewage treatment plant prepared by C. H. Currie. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank and siphon chamber and a housed trickling filter. The plans and specifications were approved October 16, 1919.

Jefferson Grade School Building, Des Moines, Iowa. Plans and specifications for a sewage treatment plant. The sewage treatment plant consists of a septic tank and sub-irrigation system. The plans and specifications were approved November 5, 1919.

Kawacha, Hancock County, population 659. Plans and specifications for sanitary sewer system and sewage treatment plant, consisting of a housed Imhoff tank and intermittent sand filters, approved November 5, 1919.

Kellogg, Jasper County, population 603. Plans and specifications for a sewage treatment plant for public school. The sewage treatment plant consists of a septic tank and siphon chamber with concrete covers and intermittent gravel filters. The plans and specifications were approved May 1, 1919.

Klemme, Hancock County, population 468. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and a housed trickling filter. The plans and specifications were approved June 18, 1920.

Lake City, Calhoun County, population 2,110. Plans and specifications for sewer extensions and sewage treatment plant for north sewer district. The sewage treatment plant consists of a housed Imhoff tank, and trickling filters. The plans and specifications were approved June 2, 1920.

Lake City, Calhoun County, population 2,110. Plans and specifications for proposed extension and improvements on the public water system. The plans provide for reconstruction of the present distribution system and extensions thereto and also provide for the reservoirs and appurtenances necessary for the aeration of the water. The plans and specifications were approved September 8, 1919.

Lawler, Chickasaw County, population 631. Plans and specifications for a sewage treatment plant for public school. The sewage treatment plant consists of a septic tank and a sub-irrigation system. The plans and specifications were approved November, 1918.

Lime Springs, Howard County, population 595. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show practically the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved March 2, 1920.

Lincoln, Tama County, population 146. Plans and specifications for system of waterworks. The plans provide for an elevated wooden tank, of 24,000 gallons capacity, a distribution system, a pump house and pumping machinery. Plans and specifications were approved June 7, 1919.

Linn Grove, Buena Vista County, population 433. Plans and specifications for a sanitary sewer system and sewage treatment plant. Plans and

specifications provide for the installation of sewer in the main part of the town lying to the west of the Chicago, Northwestern Railway. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. Plans and specifications were approved September 21, 1918.

Little Rock, Lyon County, population 573. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and a housed trickling filter. The plans and specifications were approved January 22, 1920.

Livermore, Humboldt County, population 648. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank and trickling filters. Plans and specifications were approved August 18, 1919.

Lohrville, Calhoun County, population 727. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, and intermittent sand filters. The plans and specifications were approved April 19, 1919.

Madrid, Boone County, population 1,783. Plans and specifications for a sanitary sewer system and a sewage treatment plant. The plans show practically the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and closing chamber and a trickling filter. The plans and specifications were approved February 26, 1920.

Mallard, Palo Alto County, population 431. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and siphon chamber and intermittent sand filters. The plans and specifications were approved June 22, 1920.

Malyern, Mills County, population 1,195. Plans for extensions to the sanitary sewer system. The plans and specifications were approved April 11, 1919.

Manning, Carroll County, population 1,863. Plans and specifications for sanitary sewer system at South Manning, Iowa. The plans show that the proposed sewer system for South Manning is an extension of the sewer system installed at Manning, Iowa. Plans and specifications were approved April 6, 1919.

Manson, Calhoun County, population 1,409. Plans and specifications for a sanitary sewer system and sewage treatment plant. Plans and specifications were approved Oct. 2, 1918. Note: Refer to the plans for more complete description.

Minburn, Dallas County, population 418. Plans and specifications for sanitary sewer system and sewage treatment plant. Plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and trickling filters. The plans and specifications were approved August 14, 1919.

Minden, Pottawattamie County, population 381. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber, and intermittent sand filters. The plans and specifications were approved February 12, 1920.

Mitchellville, Polk County, population 752. Plans and specifications for waterworks improvements. The plans contemplate the source of supply on the river bottoms northeast of the town of Mitchellville, and include the necessary pipe line and pumping equipment to deliver the water to a reservoir within the corporate limits of the town. The plans and specifications were approved October 6, 1919.

Monona, Clayton County, population 1,049. Plans and specifications for sanitary sewer systems and sewage treatment plants. The plans show the entire town to be divided into three sewer districts, two of which are provided for. The sewage treatment plants consist of housed septic tanks, siphon chambers and intermittent sand filters. The plans and specifications were approved December 13, 1919.

Monroe, Jasper County, population 936. Plans and specifications for a water works system. The plans provide for a distributing system, a pumping station with pumping equipment and an elevated steel tank of 60,000 gallons capacity. The plans and specifications were approved June 18, 1920.

Montezuma, Poweshiek County, population 1,273. Plans and specifications for small sewer extensions. The plans and specifications were approved April 17, 1920.

Mosville, Woodbury County, population 878. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved March 6, 1919.

Mt. Pleasant, Henry County, population 3,987. Plans and specifications for extension of existing sewer system and an additional sewage treatment plant. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. Plans and specifications approved July 24, 1919.

Nexcell, Buena Vista County, population 809. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show practically the entire town included in one sewer district. The

sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The conditions are such as to require the sewage to be pumped into the sewage treatment plant. The plans and specifications were approved July 11, 1918.

New Sharon, Mahaska County, population 1084. Preliminary report on proposed sanitary sewer system. The preliminary report shows that the natural division of territory will require three sewer districts. The report recommends the installation of one sewage treatment plant in connection with the main sewer district. The east sewer district may be connected into the same disposal plant. The north sewer district would be provided with a separate disposal plant or a pumping station delivering the sewage into the main sewer district.

The report recommends for the disposal plant the installation of an Imhoff tank and intermittent sand filters. The preliminary report was approved March 5, 1919. The complete plans and specifications were approved March 24, 1919. The sewage treatment plant as designed consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters.

Ocheyedan, Osceola County, population 686. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber, and a housed trickling filter. Alternative plans for a housed septic tank, a siphon chamber and intermittent sand filters. Plans and specifications were approved January 22, 1920.

Osage, Mitchell County, population 2,878. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire city to be included in one sewer district, with a provision for pumping the sewage of outlying districts into the main sewer system. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. The plans and specifications were approved April 30, 1919. Modification of plans approved October 8, 1919.

Pierson, Woodbury County, population 554. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. Plans and specifications were approved January 12, 1920.

Pocahontas, Pocahontas County, population 1,302. Plans and specifications for sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank and trickling filters. The plans provide for lifting the raw sewage into the sewage tank by means of an ejector. The plans and specifications were approved August 13, 1919.

Pocroy, Calhoun County, population 874. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and siphon chamber and trickling filter. Provisions are made for pumping the sewage. The plans and specifications were approved July 5, 1919.

Prairie City, Jasper County, population 780. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show practically the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank and intermittent sand filters. The plans and specifications were approved September 30, 1919.

Quimby, Cherokee County, population 363. Plans and specifications for a water works system. The plans provide for a distributing system, a pumping station and pumping equipment and an elevated steel tank of 40,000 gallons capacity. The plans and specifications were approved February 17, 1920.

Rockwell City, Calhoun County. Plans and specifications for outlet sewer and sewage treatment plant for Women's Reformatory. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved September, 1919.

Rockwell City, Calhoun County, population 2,639. Plans and specifications for reconstruction of the sewage treatment plant. The plans provide for the reconstruction of the intermittent sand filters and minor corrections on the sewage tank. The plans also provide alternative specifications for trickling filter. Plans and specifications approved May 9, 1919.

Rock Valley, Sioux County, population 1,347. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show practically the entire town included in one sewer district. The sewage treatment plant consists of a housed septic tank, and intermittent sand filters. The plans provide for pumping the sewage into the sewage tank. Plans and specifications were approved June 9, 1919.

Robins, Story County, population 829. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and siphon chamber and intermittent sand filter. The plans and specifications were approved February 15, 1919.

Ruhven, Palo Alto County, population 869. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and siphon chamber and intermittent sand filters. The plans and specifications were approved April 28, 1919.

Schleswig, Crawford County, population 655. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. The plans were approved June 26, 1919.

Shelby, Shelby County, population 588. Plans and specifications for a sanitary sewer system and sewage disposal plant at Shelby. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved March 6, 1919.

Stanton, Montgomery County, population 749. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved February 17, 1920.

Story City, Story County, population 1,591. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved March 27, 1920.

Strawberry Point, Clayton County, population 1,101. Plans and specifications for a sanitary sewer system. The plans and specifications provide for a sanitary sewer system and sewage treatment plant to be installed in the north sewer district of Strawberry Point. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. Plans and specifications approved October 12, 1919.

Sumner, Bremer County, population 1,511. Plans and specifications for a sewage treatment plant. The treatment plant consists of a sewage ejector station, a housed septic tank, siphon chamber and a trickling filter. The plans and specifications were approved February 17, 1920.

Swea City, Kosuth County, population 691. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and trickling filters. The plans provide for a sewage ejector to lift the sewage into the Imhoff tank. The plans and specifications were approved February 17, 1920.

Tabor, Fremont County, population 1,186. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved Feb. 20, 1920.

Toledo, Tama County, population 1,604. Plans and specifications for waterworks improvements. The plans and specifications provide for the construction of a 100,000-gallon steel tank on a 70-ft. steel tower, approximately 17,630 ft. of cast iron mains, with the necessary valve hydrants and special castings. The plans and specifications were approved September 25, 1919.

Wall Lake, Sac County, population 737. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and intermittent sand filters. The plans provide for pumping the raw sewage into the septic tank. The plans and specifications were approved September 4, 1919.

Walnut, Pottawattamie County, population 1,672. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber and intermittent sand filters. The plans and specifications were approved March 2, 1920.

Washta, Cherokee County, population 508. Plans and specifications for a water works system. The plans provide for a distributing system, pumping plant and pumping equipment, a concrete reservoir of 50,000 gallons capacity, or a reinforced concrete reservoir of 82,000 gallons capacity and an elevated steel tank of 50,000 gallons capacity. The plans and specifications were approved April 7, 1920.

Washta, Cherokee County, population 508. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a septic tank, a siphon chamber and intermittent sand filter. The plans and specifications were approved March 5, 1920.

Wellsburg, Grundy County, population 482. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed Imhoff tank, a siphon chamber, and intermittent sand filters. The plans and specifications were approved March 13, 1920.

West Branch, Cedar County, population 638. Plans and specifications for a sewage treatment plant for the West Branch School District. Plans and specifications were approved November 29, 1918.

West Point, Lee County, population 591. Plans and specifications for waterworks. The plans and specifications provide for an elevated steel tank of 50,000 gallons capacity, the customary distributing system, and a pumping plant to provide for pumping the water from a tubular well 180 feet deep. The well reaches and passes into about 13 feet of creviced lime stone from which the water supply is obtained. The test of the well shows a capacity of 35,000 gallons per day. The plans and specifications were approved July 17, 1918.

West Union, Fayette County, population 1,777. Plans and specifications for a new sewage treatment plant. The sewage treatment plant consists of a housed septic tank and siphon chamber and intermittent sand filters. The plans and specifications were approved June 22, 1920.

What Cheer, Keokuk County, population 1,626. Plans and specifications for a sewage treatment plant. The plans and specifications provide for a housed Imhoff tank, and intermittent sand filters. These plans and specifications for a sewage treatment plant are substituted for plans prepared in 1915, and approved by the State Board of Health, March 10, 1915. The plans and specifications were accompanied by the plans and specifications for the sanitary sewer system which was prepared in 1915. The plans for the sanitary sewer system were again approved August 23, 1919, and the plans and specifications for the newly designed sewage treatment plant were likewise approved August 23, 1919.

Winfield, Henry County, population 1,927. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show practically the entire town to be included in one sewer district. A small portion in the northeast part of the town will require a sewage lift. The sewage treatment plant consists of a housed two-hopper septic tank, a housed siphon chamber, and intermittent sand filters. The plans and specifications were approved March 16, 1920.

Winneshiek County Home. Plans and specifications for a sanitary sewer system and sewage treatment plant for Winneshiek County Home. The plans and specifications provide for a housed septic tank and siphon chamber with subirrigation system for final disposal. The plans and specifications were approved July 31, 1919.

Woodward, Dallas County, population 868. Plans and specifications for waterworks improvements. The plans and specifications provide for the construction of a drilled well as an extension of an existing open well approximately 4 feet in diameter and 50 feet deep. The drilled well is to be supplied on the bottom with No. 22 Cook's well screen. The plans and specifications also provide for the necessary pumping machinery. The plans and specifications were approved June 25, 1919.

Woodward, Dallas County, population 868. Plans and specifications for a sanitary sewer system and sewage treatment plant. The plans show the entire town to be included in one sewer district. The sewage treatment plant consists of a housed septic tank and siphon chamber and intermittent sand filters. The plans and specifications were approved August 18, 1919.

Woodward Grade School Building, Woodward, Iowa. Plans and specifications for a sewage treatment plant. The sewage treatment plant consists of a septic tank and subirrigation system. The plans and specifications were approved November 5, 1919.

POPULATION, WATER WORKS, SEWERS—SUMMARY

Cities of the 1st class.....	15	Population	567,366
Cities of the 2nd class.....	92	Population	360,307
Towns	806	Population	421,668
Total	913	Population	1,349,341
Villages (not incorporated)	762	Population	136,121
Total	1,675	Population	1,485,462
Rural population (not including villages)			918,559
Total population			2,404,021

1. No. of cities and towns having some form of public water supply	497	Total Pop.	1,222,741
2. No. of cities and towns without sewers but having public water supply.....	191	Total Pop.	129,080
3. No. of cities and towns having public water supply and sewers	85	Total Pop.	763,102
4. No. of cities and towns having installed sewage treatment plants	176	Total Pop.	305,397
5. No. of cities and towns that have plans prepared for sewers and sewage treatment plants	33	Total Pop.	37,741
6. No. of cities and towns having plans for sewage treatment but installation delayed..	15	Total Pop.	13,318
7. No. of towns having no public water supply	416	Total Pop.	139,125

LABORATORY WORK

Report of the Director of the State Board of Health Laboratories for the Biennium

HENRY ALBERT

Director of the Laboratory

During the past biennial period, the work of the Laboratories for the State Board of Health has been considerably increased. The most important addition to the work has been that pertaining to laboratory examinations of venereal diseases. At the same time, the work has been done under many handicaps due especially to increased salaries and to the marked increase in the cost of all kinds of laboratory supplies.

The support of the venereal disease division has not been borne by the regular appropriation for the laboratory. During the first year of the biennial period the expense was borne entirely by the U. S. Public Health Service; during the second year, by a joint appropriation of the U. S. Public Health Service and the State of Iowa for venereal disease work, in connection with the State Board of Health.

LABORATORY STAFF

Several changes have occurred in connection with the laboratory staff during the biennial period. During the early portion of the biennial period frequent changes were necessary because of members leaving to enter the medical service of the army. The diagnostic work was accordingly done for periods of two to four months by William Burns, Margaret Taylor and Dr. C. F. Roder. During the past year, R. L. Laybourn has been in charge of this portion of the laboratory work.

Professor Jack J. Hinman, Jr., was on duty in the Sanitary Corps of the U. S. Army in France for a period of a little more than a year during which time his place was filled by Miss Zelma Zentmire. Although some of the work was rather new to her, she filled the position in a most satisfactory manner.

Dr. J. H. Hamilton resigned as epidemiologist, to enter the service of the International Health Commission. He was succeeded by Dr. E. G. Birge, who succumbed to influenzal pneumonia in February, 1920. For a period of a month following, Dr. L. C. Havens served as acting epidemiologist. Since that time the position has been filled by Dr. Don M. Griswold.

The staff as made up at the present time is as follows:

Henry Albert, Director.
Minnie Hamilton, Clerk and Stenographer.

Diagnostic Division:

R. L. Laybourn, Diagnostic Bacteriologist.
Leo Musgrove, Technician.
W. J. Rittenmeyer, Attendant.

Venereal Disease Division:

Eva Bruett, Serologist.
Irving Borts, Technician.
Helen Davis, Clerk and Stenographer.
Mrs. Ethel Beyatt, Attendant.

Epidemiological and Water Laboratory Division:

Dr. Don M. Griswold, Epidemiologist.
Jack J. Hinman, Jr., Water Bacteriologist and Chemist.
Marie Graves, Clerk and Stenographer.
Grace Horning, Attendant.

BRANCH LABORATORIES

A number of additional branch laboratories have been established during the past biennial period. These branch laboratories are not supported by funds from the main laboratory of the State Board of Health. They are supported entirely by the local community or through the efforts of individuals. The appointment is based on competency and reliability. The examinations made in branch laboratories are accordingly regarded as official. The main laboratory supplies the branches with diagnosis outfits and report blanks. The branches are established with the idea of bringing the service of the laboratory as near to the people to be served as possible. The branch laboratories are located in the following places and are in charge of the persons named:

Ames	Prof. A. C. Buchanan.
Burlington	Dr. E. J. Wehman.
Cedar Rapids	H. A. Grimm.
Carroll	Dr. Jessie B. Hudson.
Creston	Dr. H. M. Stanley.

Des Moines	Pearl Spanawiek.
Dubuque	Cora Hesselberg.
Grinnell	Vivian Shutway
Keokuk	Dr. Sarah R. Kelman
Little Rock	Dr. F. J. Smith.
Mason City	Dr. A. Echternacht.
Sioux City	W. D. Hays.
Waterloo	Dr. J. W. Rountree

NUMBER OF EXAMINATIONS, ETC.

During the past two years a total of 129,705 examinations and investigations were made, preventive treatments given, and outfits distributed. Of these 29,923 represents the number of examinations for diphtheria; and 2,468, for typhoid fever; 7,142, for tuberculosis; 14,118 were Wassermann tests; and 3,991 examinations of water were made; 62,459 diagnosis outfits were distributed; 91 epidemics were investigated.

DIVISION OF LABORATORIES.

The work of the Laboratories for the State Board of Health is divided into five divisions as follows:

- I—Diagnostic Division.
- II—Immunization Division.
- III—Venereal Division.
- IV—Water Analysis Division.
- V—Epidemiological Division.

DIAGNOSTIC DIVISION

(In charge of R. L. Laybourn)

The work of this division consists principally of the routine bacteriological diagnosis of diphtheria, tuberculosis, typhoid fever (Widal tests), and rabies. Various miscellaneous specimens are examined from time to time.

Diphtheria Examinations.

During the past biennium, a total of 29,923 examinations were made in connection with diphtheria. Of these 7,804 were for diagnosis, 10,704 were for release from quarantine, 10,870 for the recognition of diphtheria bacilli carriers and 545 for virulence tests. The search for carriers of diphtheria bacilli should be carried on very much more extensively than is being done at the present time. If such were done at the time of beginning of every outbreak of diphtheria it would be possible to prevent

such from assuming the proportion of an extensive epidemic as is often the case at the present time.

Virulence tests should also be performed very much more frequently than is being done at present, in view of the fact that it is not possible to determine with certainty from microscopic examination whether or not a given diphtheria bacillus is virulent, that is, has the power to produce disease. Those diphtheria bacilli that are ordinarily recovered in connection with searches for carriers when there is no epidemic of the disease, are usually non-virulent. There is no reason why such a person should be isolated or kept in quarantine. The making of virulence tests requires the use of guinea pigs. These animals and their maintenance are expensive at the present time. It will accordingly not be possible to carry on extensive virulence tests until additional appropriations are made available.

A detailed analysis of the diphtheria specimens examined during the biennium period giving the number of positive and negative findings, is presented in the following table:

TABLE 1.
Specimens Received for Diphtheria Examination.

	Positive	Negative	Diphtheria Reserv.	Specimens Unsuitable for Exam.	Total
Diagnosis—					
1918-1919	670	1,884	36	20	2,610
1919-1920	1,030	3,335	223	16	5,104
Total	2,200	5,219	259	36	7,804
Release—					
1918-1919	1,046	3,017	47	45	4,155
1919-1920	1,653	4,424	154	16	6,549
Total	3,001	7,441	201	61	10,704
Carrier—					
1918-1919	301	3,753	51	49	4,154
1919-1920	754	5,759	158	5	6,716
Total	1,055	9,512	209	54	10,870
Virulence Tests—					
1918-1919	107	110		4	221
1919-1920	212	110	1	1	324
Total	319	220	1	5	545
Totals	6,665	22,432	670	156	29,923

Grand total for the biennial period, 29,923

Typhoid Fever.

During the biennium, 2,359 specimens of blood were examined for the Widal test, and 199 specimens of excretions were examined for typhoid bacilli, making a total of 2,468 examinations for typhoid fever. It is very desirable that the search for typhoid bacilli in the excretions of the body should be very materially extended. Some laboratories are making such examinations to determine when a patient who has had typhoid fever may be regarded as no longer capable of transmitting the disease to others. Whenever an outbreak of typhoid fever occurs, a search for carriers should immediately be instituted. This work requires special containers and a great deal of the time of laboratory workers. It cannot be provided for on a large scale without additional assistants.

The tabulated summary of the results obtained in connection with the examinations of blood, feces and urine for typhoid fever are given in the following table:

TABLE 2.

Specimens Received for the Diagnosis of Typhoid Fever.

	Positive	Negative	Diagnosis Reserv.	Specimens Unsuitable for Exam.	Total
Widal—					
1918-1919	147	824	53	17	1,041
1919-1920	222	939	154	3	1,318
Total	369	1,763	307	20	2,359
Cultural examinations—Feces and Urine—					
1918-1919	7	63	15	7	92
1919-1920	2	6	1	1	10
Total	9	77	16	7	100
Totals	378	1,840	223	27	2,468

Grand total for the biennial period, 2,468.

Paratyphoid Fever.

Paratyphoid fever is very much more common than is generally recognized. Its increase may be in part due to the fact that the disease has been carried back from Europe by returned soldiers. The clinical recognition of the disease, because of its similarity to typhoid fever, is rather difficult. It is very desirable that the laboratory should have sufficient assistants so that the agglutination test for paratyphoid fever may be made in every blood examination which proves to be negative for typhoid fever.

The following table gives a summary of examinations made for paratyphoid fever:

TABLE 3.

Specimens Received for the Diagnosis of Paratyphoid Fever

	Positive	Negative	Diagnosis Reserv.	Specimens Unsuitable for Exam.	Total
1918-1919—					
[Widal	3	373	-----	3	379
A] Feces	1	33	-----	6	40
1919-1920—					
[Widal	10	332	18	5	365
B] Feces	-----	34	-----	6	40
Total	14	792	18	20	844
Total for 1918-1920, 844.					

Tuberculosis.

The work in tuberculosis consists almost entirely of the examination of sputum for tubercle bacilli. Occasionally specimens of spinal fluid, pus and various excretions are also received. During the biennial period 7,142 examinations were made for tuberculosis. Tubercle bacilli were found in 1,233 specimens. A more detailed record of the findings is found in the following table.

TABLE 4.

Specimens Received for the Diagnosis of Tuberculosis.

	Positive	Negative	Diagnosis Reserv.	Specimens Unfit for Exam.	Total
Sputum—					
1918-1919	536	2,199	8	17	2,760
1919-1920	690	3,551	17	80	4,338
Total	1,226	5,750	25	97	7,098
Feces and Urine—					
1918-1919	1	1	-----	-----	2
1919-1920	1	10	-----	-----	11
Total	2	11	-----	-----	13
Pus—					
1918-1919	-----	7	-----	-----	7
1919-1920	-----	5	-----	-----	13
Total	-----	12	-----	-----	20
Spinal Fluid—					
1918-1919	1	1	-----	-----	2
1919-1920	-----	9	-----	-----	9
Total	1	10	-----	-----	11
Totals	1,233	5,787	25	97	7,142
Grand total for the biennial period, 7,142.					

Rabies.

Rabies or hydrophobia has not been as prevalent in Iowa during the past biennial period as during the preceding periods. This is no doubt very largely due to the educational work that has been carried on. Animals suspected of being affected by rabies are more promptly shut up and in that way the disease is being prevented from being spread. During the past biennial period, the brains of 42 animals were examined for rabies. Of these, all but one, which was from a cow, were from dogs. During the first year of the biennial period a total of 22 examinations were made, of which 6 were found positive, and during the second year a total of 20 examinations were made, of which 3 were positive.

Miscellaneous Specimens

The number of miscellaneous specimens received at the Central and Branch laboratories has very markedly increased. This is due to the more general recognition on the part of physicians in general of the value of laboratory work in the diagnosis of diseases and also the existence of laboratories where such examinations could be made. During the biennial period, a total of 5,589 miscellaneous examinations were made. Of these 1,445 were made during the first year, and 4,435 during the second year of the biennial period.

II IMMUNIZATION DIVISION

The amount of work done in connection with the immunization against various diseases has been very materially diminished during the past biennial period. This has been due in part to the fact that rabies has not been as prevalent in the state during the past biennial period as previously; in part, to the fact that the Pasteur treatment for the prevention of rabies is now available in a form that it may be given by the home physician, but chiefly due to the fact that vaccinations of university students for the prevention of smallpox and typhoid fever formerly made at the laboratory, are now made by the director of student health of the university. Accordingly, we have had but 11 persons who received the Pasteur treatment for the prevention of rabies, and 7 who received antityphoid vaccination. A total of 223 individual antirabic injections were made, and 17 antityphoid injections.

III VENEREAL DISEASE DIVISION

(In charge of Eva Bruett)

The work of this division has grown by leaps and bounds. Indeed previous to the present biennial period very few examinations

were made for venereal diseases. The increased amount of work has been made possible by a joint appropriation of the State Board of Health and U. S. Public Health Service. It is also the very natural result of the efficient organization of various venereal disease clinics in the state. The various clinics and physicians on request, are supplied with outfits for the collection of blood for the Wassermann test and for syphilis, and the collection of material for the microscopic examination for gonorrhoea.

The Wassermann outfit consists of a double mailing case, in the inner tube of which there is a small test tube closed with a cork stopper and containing a needle for the collection of blood. The tubes and needles are sterilized in the laboratory. The outfit is accompanied by a card, the front of which represents a data blank as follows:

WASSERMANN TEST CARD	
	Serial No.
	Day No.
(To be filled out by Physician. Write plainly with pen) Send report to Dr. Address	(To be filled out at the Laboratory) Received Reported Report
Patient's name State Record No. Blood or spinal fluid? Day of month? Time of Day? No. of specimen, 1st, etc. Date of latest test? Result? Duration of disease after appearance of primary lesion? Clinical signs: Primary Secondary Tertiary Has specific treatment been administered? When last given? Has patient taken alcohol or anaesthetic within last 24 hours? A report of every test is mailed as soon as made (from 2 to 4 days after receipt of specimen). Shall an additional report be sent by telegraph (at physician's expense)? Remarks: Laboratories for the State Board of Health and the United States Public Health Service, Medical Laboratory Building, University of Iowa, Iowa City, Iowa.	

The back of the card contains directions for the collection of blood and spinal fluid as follows:

DIRECTIONS FOR COLLECTING BLOOD

Blood for the Wassermann test should be drawn shortly before meals. Specimens should not be taken within 24 hours after the ingestion of alcoholic beverages, or the administration of anaesthetics.
 Blood is readily obtained from the median basilic vein at the elbow. Clean the surface of the skin over the vein thoroughly, using soap and water followed by alcohol. Tie a bandage or tourniquet around the arm just above the elbow, and below the deltoid muscles tight enough to constrict the venous circulation and yet not stop the pulse below. Remove the sterile needle from the cork, taking hold of the grip. Do not touch either end of the needle. Lay the cork down small end up. The needle may be passed through the skin and outer wall of the vein, usually with one steady thrust. Let the blood flow into the tube. After having secured a sufficient amount of blood (five cc or tube three-fourths full are neces-

sary), release the constricting band, withdraw the needle, apply a small dressing. Discard the needle. Immediately place the cork in the tube, taking care not to contaminate the blood. Slant the tube and let it remain at room temperature for one-half hour.

DIRECTIONS FOR COLLECTING SPINAL FLUID

1. Needle—Stiff—Length 5 cm. (for children) to 9 cm. (for adult)—Sterile.
2. Position of patient—Sitting, bent over or lying on right side with knees well drawn up.
3. Location of puncture—Between the 3rd and 4th lumbar vertebrae. The spinous process of the 4th is on a level with the crests of the ilia.
4. Disinfect the skin surface. May use tincture of iodine.
5. Insert needle—Beginning at a point midway between the 3rd and 4th lumbar vertebrae and one cm. to the right of the mid-line, insert the needle directing it slightly upward and inward toward the median line. Spinal fluid should appear when the needle has reached a depth of 2 to 4 cm. in children or 7 to 8 cm. in adults.
6. Allow the first few blood-tinged drops to flow away and collect the remainder (at least 5 cc.) in the sterile test tube provided.
7. Dress the puncture wound with sterile gauze fastening such with adhesive tape. Keep specimen (blood or spinal fluid) in ice box until mailed. Fill out card and send by first mail in container provided.

When the Wassermann test has been completed the report is sent on the following form:

LABORATORIES FOR THE STATE BOARD OF HEALTH AND THE UNITED STATES PUBLIC HEALTH SERVICE.

BUREAU OF VENEREAL DISEASE CONTROL, MEDICAL LABORATORY BUILDING, UNIVERSITY OF IOWA, IOWA CITY, IOWA.

Date.....

Dr.

Dear Doctor:—

A Wassermann test was made on the blood—cerebro-spinal fluid from Lab. No. with the result that a reaction was obtained (See other side for interpretation of report).

Remarks:

Henry Albert, M. D.

Director.

A. A. S., U. S. P. H. S.

The back of the form contains an interpretation of the report as follows:

INTERPRETATION OF REPORT GIVEN

Results of the test are classified by this laboratory into six degrees as follows:

Positive 4+ Indicates complete inhibition of hemolysis—a strongly positive.

Positive 3+ reaction nearly complete—moderately positive.

Positive 2+ reaction partial—a weakly positive.

Doubtful 1+ reaction slight, of doubtful significance.

Doubtful ± reaction very slight.

Negative indicate complete hemolysis—absence of reaction.

The interpretation of the Wassermann test varies with the different stages of the disease. In the primary stage, the greatest number of negative and doubtful reactions occur. Some time must elapse after the infection before sufficient change has taken place in the tissues to produce the complement fixing substance. The time interval varies from a few days to several weeks. In the primary stage of syphilis, positive results are obtained in from 75-80% of all cases; in the secondary, 90-95% and in

the tertiary, 80% of all cases; latent 70%. In early latent cases the percentage of positives is higher than in late latent cases. Syphilis may continue in a latent form after the disappearance of the active lesions and symptoms of the disease.

A **positive** reaction is practically specific for syphilis. It also occurs in yaws, some cases of leprosy and possibly also certain cases of malaria infrequent occurrence in Iowa as to have practically no significance.

A **doubtful** reaction may be of a diagnostic value in primary, tertiary and latent stages, provided clinical symptoms are present or there is a clear history of infection. One doubtful reaction in a secondary case is not diagnostic for syphilis unless typical symptoms are present. Confirmatory tests should be made. Normal sera sometimes give doubtful or non-specific reactions.

A **negative** result may be met with even in secondary syphilis and still more in this the case in primary and latent syphilis. A single negative result does not exclude syphilis. If there is any reasonable suspicion that the disease may be present, send another specimen in the course of a month.

There is some evidence to show that antisyphilitic treatment may convert a negative reacting serum into a positive one. Certain cases, where syphilis has been present or suspected and the Wassermann test is doubtful or negative, may give a positive reaction in a few days after the administration of the antisyphilitic treatment. This is often referred to as a provocative Wassermann test.

The gonorrhea outfit consists of two slides supported in wooden cases. It is accompanied by a card, the front of which represents a data blank as follows:

GNORRHEA SLIDE CARD

Lab. No.....

Laboratories for the State Board of Health, and the United States Public Health Service, Medical Laboratory Building, University of Iowa, Iowa City, Iowa.

(To be filled out by Physician. Write plainly with pen).

Send report to Dr.

Address

Patient's Name

State Record No. Residence

Occupation

Sex

Age

Color

Date of taking this specimen

Number of specimens 1st, 2d, 3d

Is this specimen for diagnosis or release from treatment

Date of last examination

Duration of disease

Result

Location from which this specimen was taken

A report of every examination is mailed as soon as made, which is from 1 to 2 days after receipt of specimen. *Should additional report be sent by telegraph (at physician's expense)?*

Remarks:

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(To be filled out at laboratory).

Received

Examined

Report

Examined by

Note

The back of the card contains directions for the collection of the specimen as follows:

DIRECTIONS FOR COLLECTING AND SPREADING DISCHARGE ON SLIDE

There is difficulty in finding gonococci in discharges in which many other bacteria are present or in which pus cells have deteriorated. It is therefore very important that as pure pus as possible be obtained directly from the suspected lesion. The material should be spread in a thin layer on at least two slides.

In the male, remove all "old" pus by washing the glans with soap and water. Express a drop of pus by pressure on the urethra. Touch

the drop of pus with one of the slides near one end. Draw the end of the other slide through the pus drop making a continuous sweep over the surface of the first slide. Prepare the other slide in the same way. In case of chronic gonorrhea, discharge representing material squeezed out of the prostate gland should be prepared.

In the female, the material should be taken from the urethra, which is infected in about 90% of acute and 30% of chronic cases; the cervix, which is infected in about 80% of acute and 90% of chronic cases; and also the glands of Bartholin, if they are inflamed, which occurs in about one-third of all cases. Vaginal material often contains such an admixture of bacteria as to make an examination of such unsatisfactory. From the urethra, (including Skene's glands): Insert a finger into the vagina, apply pressure against the floor of the urethra from within outward; collect the exuding drop of pus by means of a probe tipped with a small amount of cotton and spread thinly on the slide. From the cervix: Expose the cervix by means of a speculum; carefully mop away secretions with sterile cotton; insert a probe, tightly wound with a small amount of cotton, into the cervical canal; rotate probe several times and spread material secured on slide.

Let the smear dry in the air. When dry, place the slides in the mailing case, smear side exposed and fasten by means of a rubber band or string. Fill out card and mail in envelope provided.

After the specimen has been collected it is placed in a strong envelope and mailed to the laboratory. The postage required for the sending of the gonorrhea preparation is 2c—the blood preparation for the Wassermann test, 4c.

During the biennial period a total of 16,625 examinations were made in the Venereal Division. Of these 14,188 were Wassermann tests for syphilis; 2,484 were examinations of slides for gonorrhea; 4 were for spirochetes of syphilis, and 19 were complement fixation tests other than the Wassermann test. The following table gives the various findings of the examinations made in the Venereal Disease Division in detail:

TABLE 5.

Specimens Received for Wassermann Tests

	Positive	Negative	Doubtful	Diagnosis Reserved	Specimens Unsuitable for Exam.	Total
1918-1919	695	1,396	302	19	221	2,633
1919-1920	1,935	7,423	840	53	595	11,846
Total	2,630	8,820	1,142	72	817	14,118
Specimens received for Gonorrhea examinations	841	410		307	23	1,581
1918-1919	441	210		197	10	758
1919-1920	400	200		110	13	721
Total	1,241	620		314	33	2,484
Specimens received for Spirochete examinations						4
1918-1919						4
1919-1920	2	2				4
Total	2	2				4
Specimens received for Complement Fixation Tests (other than the Wassermann Test.)						19
1918-1919						15
1919-1920						4
Total						19

Grand total, 1917-1919, 4,761; 1919-1920, 11,864.

Combined total 16,625

WATER LABORATORY DIVISION

(In charge of Jack J. Hinman, Jr.)

The Water Laboratory Division of the Laboratories for the State Board of Health is located on the second floor of the Medical Laboratory building at the State University of Iowa, Iowa City. Like the other divisions of the State Board of Health Laboratories, it is under the direction of Dr. Henry Albert. The work is in charge of Mr. Jack J. Hinman, Jr., water bacteriologist and chemist. During the period of Mr. Hinman's absence with the Water Supply Service of the American Expeditionary Forces in France, Mr. Cecil E. Ewen and later Miss Zelma Zentmaire carried on the work of the laboratory. Miss Celia Kelman, Miss Grace Hornung and Mr. Hubert J. Evers have acted as laboratory assistants at different times during the biennium.

The Water Laboratory was first opened in February, 1914, in accordance with an act of the 35th General Assembly which provided for an "epidemiologist and laboratory." The 36th General Assembly reorganized the laboratory. Prior to the reorganization the work was done gratuitously, but since May, 1915, a fee has been charged as directed by the act of the 36th General Assembly which ordered that a fee, not to exceed two dollars per sample, be charged. The fee was afterwards fixed at one dollar per sample, except in certain special cases when large numbers of samples from a community are to be examined.

The number of samples examined in the water laboratory has been as follows:

February 16, 1914, to July 1, 1915	1,366
July 1, 1915, to July 1, 1916	1,122
July 1, 1916, to July 1, 1917	2,012
July 1, 1917, to July 1, 1918	1,955
July 1, 1918, to July 1, 1919	1,888
July 1, 1919, to July 1, 1920	2,193

All of the cities and towns of the state do not seem to be familiar with the work of the laboratory in spite of the effort which has been made to acquaint the mayors and other officials with the services which are at their command. Relatively few of the communities are taking full advantage of the opportunity available to know the condition of their water supplies by means of frequent examinations. Some communities are failing to obey the regulation of the State Board of Health requiring semi-annual examinations of all

supplies. It is only fair to say that the use of the laboratory is becoming more general as time goes on.

There are a few large cities such as Des Moines, Council Bluffs and Davenport where careful daily examinations are made in the water plant's own laboratory. Many plants are too small to afford the expense of a properly equipped laboratory and a trained analyst. To these plants the Water Laboratory offers the opportunity of having the water supplies examined as often as may be desired. Several plants in the State are now taking advantage of this service. The first to have the work done in a systematic manner was Burlington which has now had several hundred samples examined by the Water Laboratory. The laboratory will be glad to advise any community that contemplates the installation of water works laboratories, both as to the sorts of equipment needed for the laboratory and the manner of its use.

The number of examinations which are needed by any water works plant will naturally depend upon the special local conditions. For example, a deep well supply ought to be examined at least once in six months, and a shallow well supply at least once a quarter. As a matter of fact, monthly examinations would be much better. Where there is any suspicion as to the intermittent pollution of the supply even more frequent examinations are indicated. When the water level is unusually high or unusually low or when an unusually heavy pumpage has been necessary there is the greatest likelihood of a change in the quality of the water pumped.

The surroundings and the manner of the construction of wells very frequently affect the character of the water. The proximity of privy vaults, barn yards, and other sources from which filthy drainage may be expected should be kept as far from wells as is possible, and the well should be located up hill from the possible source of contamination. Many wells are imperfectly cased, or the casing is not carried deep enough. It is very important that the casing excludes surface drainage with its load of bacteria, some of which may be of the pathogenic or disease-producing type. Where wells pass through fissured limestone formations, the entrance of contaminated waters may be possible. Wooden and rough stone casings are likely to admit surface drainage. Brick and tile may do so too, unless the top and the upper ten or twelve feet of casings are actually made water tight by the use of cement or some other impervious material. Iron casings are some times so loose

that surface water can follow them down to the bottom of the well and so pollute the water. Casings rust through in some wells more rapidly than in others, and the entrance of polluted water through the openings may result. Settling of a part of the casing, leaving an unprotected gap, or a faulty setting of a seal may produce the same result. Examinations at intervals can often show whether contamination exists or not, and if an inspection of the well is then made it may be possible to find the trouble and eliminate it. It must be emphatically stated that an analysis can only tell the quality of the water at the time the sample was collected. A good result does not certify to the purity of the water for all time.

When water is filtered, chlorinated or treated in some way to make or keep it safe for drinking purposes, the examinations must be made more frequently than where a well supply is in use, if any attempt is to be intelligently made to produce a satisfactory effluent. If the untreated water is from a source known to be unsafe, as it usually is, or from an unprotected pond or lake, the examinations should be made daily. This is not always possible to be sure, but a general rule is that the more likely the treated water may be polluted or insufficiently treated, the more frequent should be the analyses. At times when the character of the raw water is changing rapidly, as for example at the breaking up of the winter, it is necessary to know that the changes in the treatment of the water are keeping pace with the changes in the untreated water. In cold weather chemical processes generally work less satisfactorily than in the warmer weather and a close watch is often necessary to be sure that they are operating sufficiently well to insure a safe water being produced. It is not enough that the treated water appears bright and clear; it must also be safe from a bacteriological point of view.

The Water Laboratory can also be of service to the owners of private wells and to persons who use water from the private wells of hotels and restaurants or the public wells of rural communities. It is known that water from such sources may be dangerously polluted and that the wells or springs may serve as the foci of severe epidemics of typhoid fever and other intestinal diseases. If these private and semi-public wells are examined from time to time it is possible that those which are unsatisfactory may be improved in such a way as to make them safe, or if this procedure proved to be impractical the well may be abandoned.

Thus, while the function of the Laboratory is chiefly remedial, it can point out the dangerous character of a water so that proper steps may be taken to exclude contamination or remove contaminating influences. When an epidemic is actually at hand, the reports upon samples then collected are of great assistance to the epidemiologists in determining whether or not the epidemic in question was water borne or due to contact, flies, milk, or some other cause.

The Act of the 36th General Assembly which regulates the work of the Water Laboratory stipulates that all investigations must be "in the interest of the public health and for the purpose of preventing epidemics of disease." Samples of water submitted for mineral analysis are therefore rejected with the statement that analysis of this sort being desired to determine the suitability of water for boiler purposes or to determine the supposed therapeutic value of the water are not in the interest of the public health, but are commercial matters. The sender of such samples is always advised that the sanitary condition of the supply should certainly be known, especially if the water is to be put upon the market as a mineral water, and that this sort of examination will be made for him by the Water Laboratory at strictly nominal cost.

The examinations made by the Laboratory are what are known as sanitary chemical and bacteriological examinations. They involve the enumeration of the bacteria, a search for the colon bacillus, typical of sewage contamination, and a chemical examination in which the amounts of free ammonia, albuminoid ammonia, nitrites, nitrates and chlorine are determined. The report upon the water gives the numerical results of the tests made together with a short statement of the findings. A more elaborate explanation is also prepared for each individual case and is sent to the sender of the water at the same time. A copy of the report is also sent to the mayor of the town for the files of the local board of health. Thus the local board is kept informed of the results on all supplies examined from the territory under their jurisdiction. No standard is used in explaining the results as it has been found necessary to cite so many exceptions to all the standards proposed that it is thought that the method of preparing individual letters of explanation is much to be preferred.

The Laboratory has special containers which allow the shipment of samples of water packed in ice. Special sterile bottles are sent out with the containers together with full directions for the col-

lection of the sample. These containers are sent out upon the request of the local authorities or upon requests from private citizens when approved by a member of the local board of health. The sender of the sample pays all express charges involved. The experience with bottles prepared outside of the laboratory has been so disappointing that the laboratory now rejects such samples and suggests to the sender that he procure one of the special containers. The examination of the improperly collected samples involves a waste of money since the work must be repeated in most cases. It also may easily lead to highly incorrect deductions, and the Water Laboratory is very anxious to supply only information which is worthy of the confidence of the public.

Sewage and its disposal are very closely related to public health problems, for sewage may contain the specific organisms of typhoid fever and other diseases. The dangers of infection of men and animals by some of the organisms contained in sewage may be great, when the proper disposition of the sewage is not secured. Moreover, sewage may be a nuisance. Samples of sewage plant effluents are examined when desired in order that some notion may be had as to the degree of purification actually effected by the apparatus in use. The longest series of work of this character so far undertaken by the water laboratory have been the Oakdale and the Grinnell sewage plant investigations.

SPECIAL INVESTIGATIONS

Most of the work of the Water Laboratory force is of necessity confined to the Laboratory itself. Occasionally questions arise which require the presence of some member of the staff in some other community. During the biennium ending July 1, 1920, Mr. Hinman has visited the following communities: Lime Springs, Fort Dodge (two trips), Dixon and Cedar Rapids.

Lime Springs.

At the request of Mayor M. H. Jones, of Lime Springs, Mr. Hinman visited Lime Springs on October 6th, 1919 to investigate the condition of the city well and certain other wells of the community. The city well, 146 feet deep, showed evidences of contamination probably due to the character of the limestone rock tapped. Certain of the community's wells appeared to be contaminated also. It was found that in two instances the effluents from private septic tanks had been discharged into abandoned wells.

Fort Dodge.

Mr. Hinman visited Fort Dodge on November 1 and 19, 1919 at the request of the city officials through the State Board of Health. On the first visit an inspection of the sewage effluent from the disposal plant of the Fort Dodge Serum Company in its relation to the contamination of the ice field of the Crystal Ice Company was made. The investigation was repeated on the 19th in company with Professor Lafayette Higgins, Sanitary Engineer of the State Board of Health. This investigation was made the subject of a joint report with Professor Higgins. At the time of the later visit samples from the city water supply were collected as a part of an investigation of the city water resources of the city of Fort Dodge.

Dixon.

At the request of Town Clerk George Kirk, a visit was made to Dixon to investigate the condition of the town water supply which showed evidence of contamination. The trouble appeared to be due to entrance of contaminated water through uncased abandoned drill holes. The inspection was made on February 3, 1920.

Cedar Rapids.

An inspection was made of the plant of the City of Cedar Rapids under instructions of Dr. Guilford H. Sumner, Secretary-Executive Officer of the State Board of Health, on May 17, 1920. The purpose of the investigations was to check up the survey made of the plant by Associate Sanitary Engineer H. H. Wagenhals of the United States Public Health Service and to suggest to the city water commission of Cedar Rapids means by which the approval of the State Board of Health and the Public Health Service could be given to the local plant. All of the findings of Mr. Wagenhals were confirmed and the following recommendations were made:

1. Disconnect or close and seal valve in river by pass line.
2. Cover the clear well in an adequate manner.
3. Change the method of making tests to conform more nearly to U. S. Public Health Service methods.
4. Centralize control of plant more effectively, viz., by securing a competent, qualified man to take charge of all phases of work and be responsible to the Board.
5. Consider the construction of an adequate settling basin.
6. Consider the extension of the clear well.
7. Keep in touch with the Laboratories of the State Board of Health for control and inspection.
8. Replace gravel in filters from which it has been removed.

It is believed that these changes will adequately protect the Cedar Rapids supply.

OTHER INVESTIGATIONS**Railroad Water Supplies.**

An investigation of the railroad water supplies of the State was undertaken jointly with the United States Public Health Service. The Public

Health Service furnished an experienced engineer to make surveys of the railroad water supplies and samples collected from the different sources were analyzed by the Water Laboratory. The engineer assigned to this work was Associate Sanitary Engineer, H. H. Wagenhals, U. S. Public Health Service. His investigations covered the period August 15, 1919 to November 25, 1919. He surveyed 53 interstate railroad supplies in 49 towns and 15 other public supplies which were not at the time being used for interstate carriers.

Burlington.

The Citizens Water Company, of Burlington, has continued to have its effluent examined by the Water Laboratory at frequent intervals. During the biennium ending July 1, 1920 the number of samples analyzed was 195. Other Iowa plants which treat a variable raw water would do well to follow Burlington's example in this matter.

The State University of Iowa.

The Water Laboratory has continued to keep a close watch over the swimming pools of the University. Daily examinations are made during the time the pools are open for use, and the water bacteriologist and chemist oversees the treatment employed to keep the pools in sanitary condition.

By a special arrangement between the University and the Iowa City Water Company daily inspections are also made of the city water as supplied to the students and the citizens of the city. It has been possible through this control to keep the city water in a satisfactory condition most of the time in spite of the fact that the plant is performing a service much in excess of that for which it was designed. At the times when the water is not found to be safe, the people are notified by means of bulletins and through the public press.

The Emergency Chlorinator.

An emergency chlorinator for the administration of liquid chlorine has been lent to the State Board of Health by the Wallace and Tiernan Company of New York. This apparatus is at the call of any community which is suffering from or threatened by an epidemic of water-borne disease. It has been sent out on but one occasion thus far. In March, 1917 it was sent to Cedar Falls as there was a contamination of the deep wells due to the high stage of the river and an epidemic of diarrhea resulted from the pollution of the water. The chlorine was applied to destroy any pathogenic bacteria which the water might then contain.

The Extent of the Use of the Water Laboratory.

The following table shows the cities and towns from which samples from public sources have been received. Those communities which are not listed have presumably failed to take advantage of the services of the laboratory. It is possible, of course, that there may be one or two communities which have not been credited with having examinations made of their public water supplies, due to the fact that they did not describe the source of the sample with sufficient detail.

CITIES AND TOWNS FROM WHICH PUBLIC SAMPLES WERE RECEIVED DURING THE BIENNIUM, 1916-17.

Adair County—Greenfield, Adair.
 Adams County.
 Allamakee County—Postville, Waukon.
 Appanoose County—Centerville, Moulton.
 Audubon County—Exira, Kimballton.
 Benton County—Belle Plaine, Blairstown, Keystone, Mount Auburn, Norway, Vinton.
 Black Hawk County—Cedar Falls, Hudson, LaPorte City, Waterloo.
 Boone County—Boone, Boxholm, Luther, Madrid.
 Bremer County—Readyln, Sumner, Waverly.
 Buchanan County—Independence, Quasqueton.
 Buena Vista County—Alta, Linn Grove, Marathon, Sioux Rapids, Storm Lake, Truesdale.
 Butler County—Allison, Clarksville, Dumont, Greene.
 Calhoun County—Lake City, Manson, Pomeroy, Rockwell City.
 Carroll County—Carroll, Coon Rapids, Halbur, Templeton.
 Cass County—Atlantic, Griswold, Marne.
 Cedar County—Downey, Durant, Lowden, Mechanicsville, Tipton, West Branch.
 Cerro Gordo County—Mason City, Meservey, Thornton.
 Cherokee County—Cherokee, Marcus.
 Chickasaw County.
 Clarke County.
 Clay County—Peterson, Webb.
 Clayton County—McGregor, North McGregor, Strawberry Point.
 Clinton County—Clinton.
 Crawford County—Charter Oak, Denison, Kiron, Manilla.
 Dallas County—Dallas Center, Dexter, Minburn, Perry, Redfield, Woodward.
 Davis County.
 Decatur County—Davis City, Lamoni.
 Delaware County.
 Des Moines County—Burlington, Danville, West Burlington, Yarmouth.
 Dickinson County—Arnold's Park, Milford, Spirit Lake, Terril.
 Dubuque County—Cascade, Dubuque, Dyersville, Farley.
 Emmett County—Armstrong, Estherville, Ringsted.
 Fayette County—Oelwein, Waucoma, Westgate, West Union.
 Floyd County.
 Franklin County—Alexander, Hampton.
 Fremont County—Tabor.
 Greene County—Jefferson, Rippey.
 Grundy County—Dike, Grundy Center.
 Guthrie County—Casey.
 Hamilton County—Jewell, Kamrar, Williams.
 Hancock County—Garner, Webster City.
 Hardin County—Aldin, Eldora, Iowa Falls, Radcliffe.

Harrison County—Logan, Mondamin, Missouri Valley.
 Henry County—New London, Winfield.
 Howard County—Cresco, Lime Springs.
 Humboldt County—Bode, Humboldt, Livermore, Renwick.
 Ida County—Battle Creek, Galva, Holstein, Ida Grove.
 Iowa County—Marengo, North English, Parnell, Williamsburg.
 Jackson County—Bellevue, Lamotte, Maquoketa, Miles, Preston, Sabula.
 Jasper County—Kellogg, Newton, Prairie City.
 Jefferson County.
 Johnson County—Iowa City, Lone Tree, Oakdale.
 Jones County—Oxford Junction.
 Keokuk County—Sigourney.
 Kossuth County—Bancroft, Buri, Ledyard, Wesley, Whittemore.
 Lee County—Argyle, Fort Madison, Keokuk, Shopton.
 Linn County—Cedar Rapids, Kenwood Park, Marion, Mount Vernon, Walker.
 Louisa County—Wapello.
 Lucas County—Chariton.
 Madison County.
 Mahaska County—Oskaloosa, Pella, Pleasantville, Tracy.
 Marshall County—Clemens, Gilman, Marshalltown, Rhodes, St. Anthony, State Center.
 Mills County—Glenwood.
 Mitchell County—Osage, Riceville, St. Ansgar.
 Monona County—Mapleton, Moorehead, Onawa.
 Monroe County.
 Montgomery County—Red Oak, Villisca.
 Muscatine County—Muscatine, Wilton.
 O'Brien County—Hartley, Paulina, Pringhar, Sanborn, Sheldon, Sutherland.
 Osceola County—Ashton, Ocheyedan.
 Page County—Clarinda, Essex, Shenandoah.
 Palo Alto County—Ruthven.
 Plymouth County—Akron, Kingsley, LeMars.
 Pocahontas County—Laurens.
 Polk County—Des Moines, Runnels, South Fort Des Moines, Valley Junction.
 Pottawattamie County—Avoca, Carson, Council Bluffs, Minden, Neola, Walnut, Weston.
 Poweshiek County—Brooklyn, Grinnell.
 Ringgold County.
 Sac County—Lake View, Odebolt, Sac City, Schaller.
 Scott County—Davenport, Dixon, Donahue, Eldridge, Walcott.
 Shelby County—Defiance, Harlan.
 Sioux County—Alton, Boyden, Hawarden, Ireton, Orange City, Rock Valley.
 Story County—Ames, Collins, Colo, McCallsburg, Maxwell, Roland.
 Tama County—Clutier, Elberon, Gladbrook, LeGrande, Lenox, Tama.

Taylor County—Sharpsburg.
 Union County—Creston.
 Van Buren County—Birmingham, Bonaparte.
 Wapello County—Eldon, Ottumwa.
 Warren County—Indianola.
 Washington County—Alasworth, Brighton, Washington, Wellman.
 Wayne County.
 Webster County—Duncombe, Fort Dodge, Lehigh.
 Winnebago County—Forest City.
 Winneshiek County—Calmar, Decorah.
 Woodbury County—Anthon, Salix, Sioux City, Smithland.
 Worth County—Manly, Northwood.
 Wright County—Belmond, Clarion, Dows, Eagle Grove.

CITIES AND TOWNS HAVING PUBLIC SUPPLIES EXAMINED.

Biennium July 1, 1916 to July 1, 1918.....199
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COUNTIES FROM WHICH NO SAMPLES PUBLIC OR PRIVATE WERE RECEIVED DURING THE BIENNIAL 1918-20.

Clarke County.
 Davis County.
 Delaware County.

TABLE 15.

Report for 1918-19, 1919-20—Water Department.

	1918	1919	1918	1918	1919	1918	1918	1919	1918	1919	1918	1919	1918	1919	1918	1919
	1919	1920	1920	1920	1920	1920	1920	1920	1920	1920	1920	1920	1920	1920	1920	1920
Public	Good			Bad			Doubtful			Total						
Shallow wells	76	66	147	33	44	79	12	15	27	123	125	248				
Deep wells	149	109	249	7	27	34	10	14	24	137	150	287				
Springs	2	0	0	0	0	0	0	0	0	0	0	0				
Treated	531	503	1,087	40	73	113	27	27	54	609	655	1,264				
Raw streams	347	28	286	36	530	366	0	0	0	383	368	751				
Lakes, etc.	4	1	5	1	3	4	2	0	2	7	4	11				
Ice	4	1	5	0	0	0	0	0	0	4	1	5				
Cisterns	0	0	0	0	0	0	0	0	0	0	0	0				
Miscellaneous	26	1	21	10	12	22	8	2	10	35	15	52				
Sewage	0	29	29	2	17	19	0	1	1	5	27	59				
Swimming pools	348	348	695	28	65	125	0	29	29	375	472	847				
Total	1,474	1,161	3,433	161	634	764	70	89	159	1,705	1,854	3,559				
Private	Good			Bad			Doubtful			Total						
Shallow wells	22	33	90	74	118	194	25	32	59	158	200	358				
Deep wells	15	24	39	10	4	14	0	3	3	22	31	56				
Springs	0	1	1	0	1	1	0	0	0	0	0	2				
Treated	0	0	0	0	0	0	0	0	0	0	0	0				
Raw streams	0	0	0	0	0	0	0	0	0	0	0	0				
Lakes, etc.	2	7	3	2	6	8	1	0	1	5	7	12				
Ice	1	0	1	0	0	0	0	0	0	0	0	0				
Cisterns	2	7	3	2	6	8	1	0	1	5	7	12				
Miscellaneous	1	0	1	0	0	0	0	0	0	0	0	0				
Total	50	81	130	98	123	226	25	35	61	174	249	423				

TABLE 15—CONTINUED

Ownership not stated	Good	Bad	Doubtful	Total
Shallow wells	3	0	2	5
Deep wells	1	0	1	2
Springs	1	0	0	1
Treated	1	0	0	1
Raw streams	1	0	0	1
Lakes, etc.	1	0	0	1
Ice	1	0	0	1
Cisterns	1	0	0	1
Miscellaneous	1	0	1	2
Total	3	0	3	6
No data	0	0	0	0
Total	1,524	1,241	2,776	379

RECOMMENDATIONS.

The equipment of the Water Laboratory is housed in a single room. It is compact equipment and capable of turning out a considerable volume of work, but a greater amount of space is earnestly needed. A media kitchen, and office room, and separate rooms for the chemical and bacteriological work, together with a place for the storage containers, bottles and spare apparatus should be provided. At the present time assistance in the laboratory is restricted to one full-time and one part-time laboratory assistant. In addition to these, there should be employed a junior water bacteriologist and chemist capable, by reason of college or university training, of conducting the work of the laboratory during the absence of the water bacteriologist and chemist. This would allow the latter to respond more readily to emergency calls throughout the state when ordered to do so by the Secretary-Executive Officer of the State Board of Health, or to assist the Sanitary Engineer of the State Board of Health in making field inspections or other investigations which experience has shown are advisable at frequent intervals. The matter of the semi-annual inspections of all water supplies used by the common carriers for drinking purposes or culinary purposes for passengers in interstate traffic involves the inspection of about fifty-three supplies twice in the course of a year. Under the opinion of the Solicitor of the United States Treasury Department which requires these inspections, any car, vessel, or vehicle carrying passengers traveling in interstate traffic is considered as operating in interstate traffic, and further any carrier participating in such movement becomes subject to Interstate Quarantine Regulations. This ruling would seem to involve

the certification of other supplies than those which have been already inspected with this end in view. Perhaps a safe number of inspections to be required in one year would be 150. This would require the time of one man for this work alone.

REPORT OF THE DIVISION OF EPIDEMIOLOGY

(In charge of Dr. DON M. GRISWOLD.)

"Public Health is purchasable. Within natural limitations a community can determine its own death rate."—Dr. Herman Biggs.

"It is within the power of man to banish communicable diseases from the earth."—Pasteur.

The division of epidemiology is concerned chiefly with investigations of the spread of communicable diseases.

Whenever any contagious disease reaches proportions that seem undue to the president of the local Board of Health, he may call on the State Board of Health for the services of this Division.

By close co-operation with the Diagnostic Laboratory, outbreaks of contagious diseases are located by the specimens sent to the laboratory for diagnosis.

If a large number of throat cultures from a certain school or city show the presence of diphtheria bacilli, the president of the local Board of Health is notified and the services of the Division of Epidemiology offered.

"No health department, State or local, can effectively prevent or control disease without knowledge of when, where and under what conditions cases are occurring."—United States Public Health Service.

With the above dictum firmly in mind it must be evident that the first requirement of anything approaching control of communicable disease must be full and complete reports.

Case reports of contagious diseases cannot be considered to be complete until there are at least ten cases of diphtheria, typhoid and scarlet fever reported for each death from these diseases. In many localities there are actually more deaths reported of tuberculous people than there are reported cases of the disease. As long as such conditions exist effective efforts at controlling the contagious disease situation must be spasmodic and fragmentary.

When the science of preventive medicine is called upon only in a frantic effort and as a last resort to placate a hysterical public, it is performing only a small part of its real usefulness.

Public health like individual health is merely an accumulation of every day habits. The individual who has proper daily health habits lives long and is happy.

Just so with the community that has a proper conception of community responsibility for health matters. For an individual to keep healthy means time, work and money. If a community proposes to keep well, the mechanics of it will require a great deal of someone's time, a lot of hard work and more or less money. Good health does not come to a community without reason any more than it does to an individual.

The community that is 100% vaccinated will not have smallpox.

The community that has adequate medical inspection of its schools will never have them closed because of epidemics.

The community that is thoroughly vaccinated against typhoid will never have a typhoid epidemic with its attendant sickness and death roll.

The community whose babies are inoculated against whooping cough will have little of a disease that annually kills more people than scarlet fever, smallpox and meningitis combined.

To accomplish tangible results the effort to suppress contagious diseases must be continuous rather than intermittent.

The Division of Epidemiology can blaze the way, set the pace or indicate a weak point in the defense against contagion, but continuous local effort is the only way to make the Division's work effective after the visit is made.

The services of the State Epidemiologist are available to any local Board of Health in the State who indicates to the Secretary of the State Board of Health that they desire such service.

Diphtheria caused more sickness and death last year than any of the contagious diseases except influenza, pneumonia and tuberculosis.

A large part of this was avoidable and preventable. There are more known facts concerning the bacteriology, symptomatology, epidemiology and specific therapy of diphtheria, than any of the other contagious diseases.

Whenever and wherever a case of diphtheria occurs the nose and throat of all persons who have been in contact with the cases should be examined for the presence of diphtheria bacilli.

Whenever a case of diphtheria occurs all members of the patient's family should have cultures taken at the beginning of the quarantine to find out whether others are harboring the germs or are about to develop the disease.

At the close of the quarantine, when the patient is considered no longer infectious, the culturing of all those who were in contact

with the patient during his infectious period should be repeated.

Whenever two children in the same school develop diphtheria in the same week, all children of the school should have cultures made of their noses and throats to identify carriers and to pick out early cases before they have exposed others.

When diphtheria is epidemic in a community no child should be allowed to attend school who has a membrane on the tonsils, a nose discharging pus or even a simple sore throat until it is proven by clinical and laboratory examination to be something other than diphtheria.

The routine culturing of the throats of school children is a preventive measure which should be much more popular than it is at present. The outfits for collecting these specimens and the laboratory work is done gratis by the Division of Diagnostic Laboratory.

Many cases of diphtheria expose six people before the case is diagnosed and an equal number between the time the case is diagnosed and the quarantine is lifted.

Under such circumstances there should be twelve cultures made for each case. Under any circumstances, all persons in contact with a patient from the very first symptoms should be cultured, and all persons in contact with a patient in quarantine should be cultured and found free from diphtheria bacilli before quarantine is lifted.

One of the most recent adjuncts in the control of diphtheria epidemics is the use of diluted toxin as described by Von Schick.

He found that if diphtheria toxin was diluted so that 1/50 M. L. D. was contained in 1/10 c. e. and that this amount was injected intracutaneously a red wheal was formed within 48 hours on persons who were susceptible to diphtheria infection, and, that on a person who is immune to diphtheria, no such red wheal was formed.

The reaction is due to the fact that diphtheria toxin is a very irritating substance and if it remains in the skin, causes the wheal mentioned.

If the person is immune to diphtheria and has free circulation antitoxin in the blood stream equal in concentration to 1/30 of an antitoxic unit per cubic centimeter of blood the diphtheria toxin in the skin is neutralized and does not exert this irritating effect.

If the concentration of self developed antitoxin is below the above quoted figure the person is susceptible to diphtheria and if intimately exposed should have antitoxin that has been developed by

some other animal administered at once, so that the concentration of antitoxin may be high enough to keep the person well.

The immunity granted by injections of antitoxin developed by other animals is rather transient and lasts only six to eight weeks.

However, as this is longer than most epidemics of diphtheria last, it is usually considered long enough.

A method of developing a more lasting form of immunity within a person has been devised by Park.

All of the biological manufacturers are making "toxin-antitoxin mixture" as devised by Park for the purpose of thus actively immunizing people against diphtheria. This is one of the greatest contributions to knowledge of the control of communicable disease since Raux announced anti-toxin.

The "toxin-antitoxin mixture" is injected in a manner similar to the injection of typhoid vaccine.

Since the last biennial report there has been a number of weapons added to the armamentarium of the epidemiologist.

Of smallpox vaccine nothing need be said, for its use has been on a sound scientific basis since the time that manufacturers have been making it according to aseptic methods and physicians have been using it with aseptic technic.

Typhoid vaccine has been given to nearly five million men in the United States army and typhoid is now among the rare diseases in the army. Millions of the civil population have also taken this immunizing treatment and there has been no epidemics of typhoid among persons so protected.

Rabies is one disease that has a death rate of nearly 100%. Cases that develop symptoms sufficient for diagnosis are usually beyond aid of any kind. In this disease prevention is our only hope. As a result of the work of Pasteur, hundreds of lives are saved annually. Persons bitten by animals known to be rabid should be given the preventive treatment at the earliest possible moment.

Where there is any suspicion of the health of the biting animal, the carcass or the whole head should be sent to the laboratory for examination.

Antitoxin as a preventive of diphtheria has won its well deserved place. It is now definitely established that persons who have diphtheria antitoxin in their blood stream in the concentration of 1/30 of an antitoxic unit to one cubic centimeter of blood do not take diphtheria.

Persons who manufacture this substance in their own bodies are said to be immune. Persons who are exposed to diphtheria who do not have this amount of antitoxin in their blood should have antitoxin administered in sufficient amount to give them protection for the disease.

Pertussis vaccine for the prevention of whooping cough is rapidly gaining in favor, and is now given in many child welfare clinics throughout the country.

On the basis of the favorable reports of the thousands of cases where it has been used it would seem to be worthy of a wider use in general practice.

SUMMARY OF EPIDEMIOLOGICAL FIELD INVESTIGATIONS.

No.	Date	Disease	County	Town or City	Manner of Infection	By Whom
49	7-6-18	Typhoid fever	Bremser	Reedlyn	Contact	H. Hamilton
50	8-23-18	Scarlet fever	Wasson	Wasson	Contact	J. Hamilton
51	8-23-18	Scarlet fever	Wasson	Wasson	Contact	J. Hamilton
52	10-2-18	Scarlet fever	Benton	Wasson	Contact	J. Hamilton
53	11-18-18	Influenza	Poweshiek	Grinnell	Milk	J. Hamilton
54	11-18-18	Typhoid fever	Wasson	Wasson	Contact	J. Hamilton
55	1-3-19	Influenza	Wasson	Mitcheville	Contact	J. Hamilton
56	2-17-19	Scarlet fever	Union	Wyoming	Contact	J. Hamilton
57	2-17-19	Diphtheria	Union	Wyoming	Contact	J. Hamilton
58	2-17-19	Typhoid fever	Union	Wyoming	Contact	J. Hamilton
59	5-6-19	Typhoid fever	Union	Wyoming	Contact	J. Hamilton
60	5-6-19	Typhoid fever	Union	Wyoming	Contact	J. Hamilton
61	8-10-19	Typhoid fever	Des Moines	Storm Lake	Water	E. G. Hires
62	10-30-19	Typhoid fever	Des Moines	Storm Lake	Water	E. G. Hires
63	12-17-19	Diphtheria	Des Moines	Storm Lake	Water	J. Hamilton
64	12-17-19	Measles	Des Moines	Storm Lake	Water	J. Hamilton
65	1-4-20	Typhoid fever	Kossuth	Wasson	Carrier	L. C. Havens
66	1-4-20	Typhoid fever	Black Hawk	Wasson	Carrier	L. C. Havens

SUMMARY OF REPORT NO. 49.

Investigation—Typhoid fever at Readlyn, Bremer County, Iowa, by Dr. John H. Hamilton on July 6, 1918.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, upon request of Hon. Fred Boedeker, City Clerk.

History—Between April 7th and July 6th there had occurred four cases of typhoid fever. During the past thirty years typhoid fever has been endemic in the community.

Epidemiologist investigated the situation and conferred with the local Board of Health.

Conclusions—That the epidemic is one of typhoid fever and that the infectious agent was conveyed by contact.

Recommendations—1. That all sections of the rules and regulations of the State Board of Health which refer to the control of typhoid fever be rigidly enforced.

2. That convalescent patients continue to disinfect and properly dispose of their excrement, for several months after convalescence.

3. That the convalescent patients be advised to wash their hands very carefully before handling foods of any sort.

4. That no night soil be used to fertilize ground on which vegetables are grown.

5. That those who cannot connect with the city sewer construct a sanitary privy.

6. That the effluent from septic tanks and cess pools be deposited in the ground at a depth of not less than two and not more than four feet.

7. That all garbage, manure and other refuse which attract flies, be carefully disposed of.

8. That all new cases of typhoid fever be reported promptly and an effort made to ascertain the source of the infective agent.

9. All persons should be advised to be vaccinated with typhoid vaccine.

SUMMARY OF REPORT NO. 50.

Investigation—Sanitary survey at Dyersville, Dubuque County, Iowa, by Dr. J. H. Hamilton, July 29th, 1918.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, at request of mayor of Dyersville.

History—The town has been comparatively free from infectious diseases except one case of poliomyelitis which was imported from Dubuque.

Epidemiologist made a hasty sanitary survey, conferred with the chairman of the local Board of Health and the health officer.

Conclusions—While the sanitary condition of Dyersville is fairly satisfactory there are numerous nuisances which should be abated.

Recommendations: 1. In order to diminish the possibility of an epidemic of poliomyelitis the directions outlined in Bulletin No. 3 of the State Board of Health, published in 1916, should be followed in detail.

2. That a sample of city water be sent to the State Laboratory for analysis each year.

3. That the conditions in the local dairy farms be improved.

4. That each house be connected with the city sewage system.

5. That the city arrange for the regular collection of garbage.

6. That the following nuisances be abated: Flies—by the prompt removal of garbage and proper treatment of manure. Mosquitoes—by the drainage of cess pools, reservoirs and pools of water in the streets. Rats—by the destruction of several buildings, rock-piles, weed patches, etc. Dust—by frequently sprinkling the streets. Piggeries—by the passage of a city ordinance which forbids the keeping of pigs within the city limits.

SUMMARY OF REPORT NO. 51.

Investigation—Sanitary survey at Arnold's Park, Dickinson County, Iowa, by Dr. John H. Hamilton, August 23-26, 1918.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, upon request of Mayor Thos. Jenkins.

History—About three hundred cases of gastroenteritis occurred in the town between July 15th and August 15th.

Epidemiologist made a sanitary survey of the town and conferred with the local Board of Health.

Conclusions—That the sanitary conditions as they exist at present are a menace to the health of the people of the State of Iowa.

Recommendations: 1. There should be a municipal water supply which is above reproach for the town. All wells should be protected from pollution. All polluted wells should be condemned.

2. Numerous measures should be taken to improve the quality of the food supply.

3. There should be installed a municipal sewage disposal plant. In the meantime only privies of sanitary construction should be used in the town.

4. Garbage should be collected at regular intervals—at least twice each week during the warm weather and at least once each week during the cold weather.

5. Nuisances such as flies, rats, rubbish, dust and piggeries should be abated.

6. There should be a full time health officer to look after the sanitary conditions of the lake region.

7. An accurate record should be made of all cases of infectious diseases, births, deaths, marriages, etc.

SUMMARY OF REPORT NO. 52.

Investigation—Influenza at the State College for the Blind, Vinton, Benton County, Iowa, by Dr. J. H. Hamilton, October 2, 1918.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, upon request of Supt. Palmer.

History—Eighty cases of influenza occurred in the institution between September 14th and October 2nd.

Epidemiologist investigated the situation and conferred with the college physician.

Conclusions—That the epidemic was one of influenza with a few complications of pneumonia and that the infectious agent was transferred by direct and indirect contact.

Recommendations: 1. That all patients suffering from an infection of the respiratory tract be promptly isolated.

2. That all suspected cases be treated as real cases until a definite diagnosis can be made.

3. That an effort be made to detect any mild or unrecognized case.

4. That all secretions from the respiratory tract be carefully collected and disinfected.

5. That all patients, as well as nurse or other attendants, wear masks, consisting of several layers of gauze which completely cover the mouth and nose.

6. That any case which would be seriously inconvenienced by the wearing of a mask be carefully separated from other patients by means of hospital screens.

7. That when infectious diseases threaten to become epidemic that public assemblages be discontinued for the duration of the epidemic.

8. It would be advisable to isolate all newly arrived inmates for a period of at least 5 days before permitting them to assume their regular routine duties.

9. That all students and all new employees receive a careful medical examination before assuming their routine duties.

10. That all employees be proved by laboratory examination not to be carriers of typhoid bacilli.

11. All employees should be in good health and free from tuberculosis.

12. All students and employees should be immunized against smallpox by vaccination.

SUMMARY OF REPORT NO. 53.

Investigation—Typhoid fever at Grinnell, Poweshiek County, Iowa, by Dr. John H. Hamilton, November 18 to 21, 1918.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, upon request of Honorable D. F. White, mayor.

History—Thirty-two cases of typhoid fever occurred between September 15 and November 8. Only a few cases of typhoid fever had occurred in the city within two years previous to this outbreak.

Epidemiologist investigated the situation and conferred with the local Board of Health.

Conclusions—That the epidemic is one of typhoid fever and that the infectious agent was transmitted by milk from dairy No. 1.

Recommendations: 1. That the rules and regulations of the State Board of Health covering the sale of food-stuffs, delivery of supplies, milk bottles and other utensils, employment of diseased persons, and the disinfection of infective material be rigidly enforced.

2. That the patients should continue to disinfect and properly dispose of their excrement for at least six months after convalescence.

3. That the convalescent patient be advised to wash his hands carefully before handling foods.

4. That the attendant of the typhoid fever patient refrain from preparing food for other members of the family.

5. In homes where the disinfection of infective material cannot be properly looked after, that the patient be removed to a hospital or other suitable place.

6. Night soil should not be used to fertilize ground upon which vegetables are grown.

7. That householders be required to connect with city sewers.

8. That garbage, manure and other refuse be disposed of carefully.

9. That all cases of typhoid fever be reported promptly and an effort be made to ascertain the source of the infective agent.

10. That typhoid vaccination be administered to those who come in contact with the disease.

11. Food handlers should be examined for the detection of carriers.

12. A full-time health officer should be employed to look after the health work in the city.

13. Flies should be excluded from places where food is handled.

14. Unsanitary conditions where food is handled, should be detected and abated.

SUMMARY OF REPORT NO. 54.

Investigation—Influenza at West Union, Fayette County, by Dr. John H. Hamilton, December 3 to 4, 1918.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, upon request of Honorable E. M. Phillips, mayor.

History—About 180 cases of influenza have occurred in the city since October first.

Epidemiologist investigated the situation and conferred with the local Board of Health.

Conclusions—That the epidemic is one of influenza and that the infectious agent was transmitted by contact.

Recommendations: 1. All cases of influenza should be reported promptly.

2. All persons should be isolated promptly.

3. An effort should be made to detect any mild unrecognized cases.

4. That all suspected cases be treated as real cases.

5. That all secretions of the respiratory tract be carefully collected at the bedside and disinfected.

6. Both patients and attendants should wear masks.

7. Any patient who would be inconvenienced by wearing a mask should have the bed screened.

8. At present it is inadvisable to close the schools. A careful daily inspection should be made and any suspected cases of influenza should be sent home.

9. At present it is inadvisable to close public meetings. Any person suspected of having influenza should be requested to leave the meeting.

10. All people should cover the mouth and nose with a clean handkerchief when coughing or sneezing.

11. The people should be instructed of the source and mode of transfer of infective material.

12. Patients who will not isolate themselves should be quarantined.

13. If the epidemic becomes more serious it is advisable to make the wearing of masks compulsory.

14. If the epidemic is uncontrollable all meetings and public gatherings should be closed.

15. All persons should avoid crowds as much as possible. Overcrowding should be prohibited.

16. There should be some plan for caring for patients in cases of emergency.

SUMMARY OF REPORT NO. 55.

Investigation—Influenza at the State Industrial School for Girls, Mitchellville, Iowa.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, upon request of Supt. Sickles.

History—Between October 15th and November 14th there had occurred in the institution about 75 cases of influenza. During December the institution was free from the disease. On January 8th another epidemic started in which the chief symptom was sore throat.

Epidemiologist investigated the situation and conferred with the college physician.

Conclusions—That the epidemic was one of influenza.

Recommendations: 1. All cases of sickness should be reported promptly to the school physician.

2. All patients suffering from influenza should be isolated promptly.

3. An effort should be made to detect mild or unrecognized cases.

4. All suspected cases of influenza should be treated as real cases.

5. All secretions of the respiratory tract should be carefully collected and disinfected.

6. Patients and nurses should wear a face mask.

7. No patient should wear a mask who would be seriously inconvenienced by this procedure. Their bed should be separated from other patients by hospital screens or sheets.

8. Careful daily inspection of the pupils should be made.

9. Persons with chronic cough or other symptoms of influenza should not attend public gatherings.

10. All people should cover their mouth and nose with a clean handkerchief whenever coughing or sneezing.

11. All the people in the institution should be taught the source and modes of infection of this disease.

12. Overcrowding should be prohibited.

13. The institution should be provided with a modern, completely equipped hospital.

14. All newly arrived students should be isolated for two weeks after arrival.

15. An effort should be made to detect carriers of infectious diseases.

16. The institution should be provided with a complete history of infectious disease for each student.

17. All students and employees should be immunized against smallpox by vaccination.

18. All employees should be in good health and free from tuberculosis.

19. No typhoid fever carrier should be allowed to handle food.

SUMMARY OF REPORT NO. 56.

Investigation—Scarlet fever at Wyoming, Jones County, Iowa.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, upon request of local Board of Health.

History—For several months preceding January 31st there have been no recognized cases of scarlet fever in Wyoming. January 31st there were five recognized cases of scarlet fever.

Epidemiologist investigated the situation and conferred with the local Board of Health.

Conclusions—That the epidemic was one of scarlet fever and that the infectious agent was disseminated by means of contact.

Recommendations: 1. That the schools be kept open and that careful daily examinations of all school children be made.

2. All cases of scarlet fever should be quarantined.

3. That all suspected cases be treated as real cases.

4. All rules and regulations of the State Board of Health relative to scarlet fever should be strictly enforced.

5. That parents, teachers and physicians be on the alert for new or unrecognized cases.

6. That any person knowing or suspecting a case of scarlet fever to exist be required to report same to local Board of Health.

7. Particular care should be taken in handling food stuffs.

SUMMARY OF REPORT NO. 57.

Investigation—Diphtheria at Creston, Union County, Iowa, March 10-13, 1919.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, Iowa State Board of Health, upon request of Hon. D. Davenport, mayor.

History—Between December 21, 1918 and February 13, 1919, there had occurred in the city, fifteen recognized cases of diphtheria.

Epidemiologist investigated the situation and conferred with the local Board of Health.

Conclusions—That the epidemic is one of diphtheria.

Recommendations: 1. All cases, suspected cases or carriers of diphtheria should be promptly reported to the mayor.

2. An effort should be made to recognize all cases of diphtheria and of diphtheria carriers.
3. All patients should be promptly isolated and all rules and regulations of the State Board of Health should be rigidly enforced.
4. All carriers of diphtheria bacilli should be isolated in their homes and kept separate from other members of the family.
5. All secretions of the respiratory tract of patients and carriers should be carefully collected and promptly disinfected.
6. All persons who come in contact with a patient or carrier should be immunized by an injection of diphtheria antitoxin.
7. It is advisable that the immunity or susceptibility of the children of your community be determined.
8. There should be careful medical inspection of your school children.
9. The people of your community should receive instruction in the fundamental principles of public health.
10. The community should endeavor to secure more prompt laboratory service by the installation of a branch laboratory.
11. The community should realize that the control of infectious diseases is primarily for the benefit of the community and that the community should pay for this service.

SUMMARY OF REPORT NO. 58.

Investigation—Typhoid fever at Wapello, Louisa County, Iowa, by Dr. John H. Hamilton, March 24-26, 1919.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, State Board of Health, upon request of Hon. J. A. Bigger, mayor.

History—For ten years previous to February, 1919, Wapello had been relatively free from typhoid fever. Between February 15th and March 24th there occurred fourteen cases of typhoid fever.

Epidemiologist investigated the situation and conferred with the local health officer and mayor.

Conclusions—That the epidemic was one of typhoid fever and infectious agent was transmitted by milk from Dairy A.

Recommendations: 1. That the rules and regulations of the State Board of Health governing the sale of food stuff from premises where infectious disease exists and the disinfection of infectious material be rigidly enforced.

2. Patients should properly dispose of their excrement for at least six months after their convalescence.

3. Convalescent patient should be advised to wash his hands carefully before handling food.

4. Attendant of typhoid fever patient should refrain from preparing food for other members of the family.

5. Where infective material cannot be properly disinfected patient should be removed to hospital.

6. Night soil should not be used to fertilize ground upon which vegetables are grown.

7. Householders should be compelled to connect with the city sewer or to construct a sanitary privy.

8. Garbage, manure and other refuse should be disposed of carefully.

9. All cases of typhoid fever should be reported promptly and an effort made to detect the infectious agent.

10. Typhoid vaccine should be administered to those who come in contact with the disease. Its use should be encouraged among the population at large.

11. Food handlers should be examined for the detection of carriers.

12. Flies should be excluded from places where food is handled.

13. The sale of milk or other dairy products from Dairy A should be prohibited unless pasteurized or boiled before use.

14. Prof. Lafayette Higgins, Sanitary Engineer, Iowa State Board of Health should be consulted in regard to the condition of the sewer system.

SUMMARY OF REPORT NO. 59.

Investigation—Municipal water supply at Lenox, Taylor County, Iowa, by Dr. John H. Hamilton, May 6 and 7, 1919.

By order—Dr. G. H. Sumner, Secretary-Executive Officer, Iowa State Board of Health.

History—Municipal water supply of Lenox was established about four years ago. Since then they have frequently had turbid water. The community during this time has been free from typhoid fever. Two cases of typhoid fever exist in the community at present. Neither case was a user of the public water supply.

Epidemiologist investigated the water system and conferred with the local Health Officer, Mayor and the local Board of Health.

Conclusions—The public water supply of Lenox is unsatisfactory. The water at present is grossly polluted.

Recommendations: 1. The municipality should secure control of the water shed.

2. The water shed must be kept free from human pollution and should be kept free from animal pollution.

3. Every member of the community should be educated concerning the dangers of polluted water and the necessity of keeping the water shed free from pollution.

4. A sedimentation basin should be constructed, the water treated by adding first alum and then lime.

5. If a sedimentation basin is not constructed the present method of adding chemicals to the water should be changed so that the chemical reaction will occur in the water.

6. An automatic apparatus for regulating the dosage of the chemicals should be installed.

7. The disinfectant should be added after the water has passed through the filter.

8. The community should use every safeguard possible in order to secure a uniformly safe water.

9. A competent sanitary engineer should be employed to work out the details of the necessary changes in your water purification plant.

10. You should consult Prof. Lafayette Higgins, Sanitary Engineer, State Board of Health, Des Moines, Iowa, before any alterations are made in your water plant.

SUMMARY OF REPORT NO. 60.

Investigation—Cases of typhoid fever occurring on farm of Ben Bledsoe. By order—Dr. Guilford H. Sumner, Secretary-Executive Officer, Iowa State Board of Health, by letter September 17, 1919.

History—In 1918 three cases of typhoid fever developed on the farm of Ben Bledsoe. In 1919, after moving to another locality four cases of typhoid fever developed which could be definitely traced to this same family. From the evidence it is apparent that some member of the family was and probably still is a "carrier" of typhoid bacilli.

Epidemiologist—At the request of the epidemiologist specimens of feces and urine from the Bledsoe family were submitted for examination for bacillus typhosis in order to locate the carrier who was evidently a member of the family.

Conclusions—From the letter accompanying the request for investigation it was evident that we were dealing with a typhoid carrier; hence it was deemed that a laboratory examination of the excreta of the members of the family would be sufficient to locate the source of infection. The specimen of urine from Mrs. Ben Bledsoe proved to contain the bacilli and there is no doubt but that she is the source of infection in these cases.

Recommendations: 1. That the patient be treated with a view of clearing up the urinary condition and that after one month's treatment, specimens of her excreta be submitted for examination, until two negative cultures are obtained.

2. That all excreta be so disposed of that they will not be a source of danger to the community or family, i. e., disinfected.

3. That a sanitary condition of the family's privy and water supply be carefully gone into and any unsanitary conditions corrected at once.

4. That no milk or milk products be sold in the community from this farm, unless it can be proved that the patient has absolutely no connection with the handling of milk, or milk containers, and does not play any part in the production or sale of those products in any way.

5. That the patient be instructed that in her present condition she is dangerous to the other members of the family, so long as she prepares or takes part in the preparation of food, or handles either food or cooking utensils which might in any way become contaminated.

6. That the patient be instructed that personal cleanliness will materially minimize the danger of spreading the infection and that cleanliness of hands is of paramount importance, and that after using the toilet the hands should be thoroughly and carefully washed.

SUMMARY OF REPORT NO. 62.

Investigation—Cases of typhoid fever occurring west of Kellogg, Iowa. By Order—Dr. Guilford H. Sumner, Secretary-Executive Officer, Iowa State Board of Health; by phone, October 31, 1919.

History—Following a sale at the farm of L. K. Hinshaw October first an epidemic of typhoid fever broke out in the neighborhood comprising fifteen cases with one death. Dates of onset were six cases on the 13th of October, one case each on the 19th, 20th, 21st, 26th and 29th. Three contact cases on the 11th, 15th and 20th.

Epidemiologist—At the request of the epidemiologist specimens of water were sent to the Water Laboratory from the stock well and the kitchen well on the E. Hinshaw farm, from the slough well and milk house well on the K. Hinshaw farm. That specimens of feces and urine from Mr. and Mrs. K. Hinshaw be submitted for examination for the presence of typhoid bacillus.

Conclusions: 1. That the water from the stock well and the kitchen well on the E. Hinshaw farm, from the slough well and milk house well on the K. Hinshaw farm show definite evidence of gross contamination with bacteria from human sources and that none of these waters should be used for drinking purposes without either boiling or filtering. It would be better that these wells be abandoned or else driven to a deeper water-bearing layer and cased so that no surface drainage can get into the well. 2. No carriers were found on the farm of K. Hinshaw. 3. The evidence all points to the epidemic having started by case 1, presumably through the milk used for the last batch of coffee.

Recommendations: 1. That the wells on the farm be abandoned for drinking purposes or driven to a deeper water-bearing strata and cased in such manner that no surface drainage can get into it.

2. If new wells be made that they be sunk in such a place that the barnyard and outbuildings cannot drain into them.

3. That all individuals in the townships in which these cases occurred be vaccinated against typhoid fever and that sanitary measures be taken to examine and improve the water supply on all the farms in this neighborhood.

SUMMARY OF REPORT NO. 63.

Investigation—Cases of diphtheria at Ogden, Iowa.

By Order—Dr. Guilford H. Sumner, Secretary-Executive Officer, State Board of Health, Des Moines, Iowa, by letter December 14, 1919.

History—A total of 11 cases of diphtheria occurred in the town of Ogden, population of about 2,000, the first case developing October 26th, the last one appearing December 11th. The other nine occurred during the month of November and the early part of December. In view of the fact that the epidemiologist was not consulted until almost two months after the first case developed, no detailed history of the cases and the sources of infection could be obtained. The contacts had not been isolated, the only treatment given being an immunizing dose of antitoxin. Being allowed to associate with the rest of the community, they were undoubtedly

an important source, if not the sole source of new cases which developed.

Epidemiologist—A visit was made to Ogden on December 17th. Cultures were taken from 250 school children and arrangements made for all of the school children to be routinely cultured, the cultures to be sent to the Laboratory for diagnosis: It was believed, and the belief was borne out by subsequent results, that there were carriers among the school children which accounted for the sporadic cases appearing from time to time.

Conclusions—A total of about 400 children were cultured both from the nose and throat, and 39 were found to be positive, a total of about 10 per cent. This is a very high incidence of diphtheria carriers, but it was not more than was to be expected in view of the fact that contacts with the original cases were not isolated. Consequently, the infection was spread directly throughout the schools. The fact that more cases did not develop in view of such a high incidence of healthy carriage was probably due to the fact that all of the contacts had received immunizing antitoxin. Since the finding and isolation of these carriers no new cases have developed. In view of the fact that the carrier condition cleared up rather rapidly after isolation and treatment, it was not deemed advisable or necessary to run virulence tests on such a large number. It was found at the end of about two weeks that ten cultures continued to be positive. Virulence tests were made with these and all were found to be virulent.

- Recommendations:** 1. That all carriers be isolated and treated.
2. If new cases develop, all contacts be cultured and isolated at once and held for result of culture.
3. Schick tests should be made on all contacts, and those reacting positively should receive an immunizing dose of antitoxin.

SUMMARY OF REPORT NO. 64.

Investigation—Meningococcus carrier from Burt, Iowa.

History—A discharged soldier, who had been diagnosed in the army as a meningococcus carrier, came to Burt in August of 1919. He had been released as a carrier on negative examinations in the army in November, 1918. Soon after returning to Burt he was married and the wife, three weeks after the marriage, developed cerebro spinal meningitis and died about a month later.

Epidemiologist—In view of the history of this man, Dr. J. G. Clapsaddle of Burt, Iowa, wrote a letter requesting advice concerning him. In view of the technical difficulties connected with the culturing of the meningococcus, Dr. Clapsaddle was advised that either the expenses of the epidemiologist should be paid to go to Burt and take the culture, or that the suspect should be sent to the Laboratory at Iowa City for culturing. The latter course was followed. The man arrived on January 2nd and cultures were taken from his nasopharynx.

Conclusions—The cultures were positive culturally and serologically for meningococcus. This is a very striking instance, on account of its rarity, of the real duties of the epidemiologist. This man was sent to us and was found to be a carrier before he had caused an epidemic of

meningitis, instead of the epidemiologist being called upon after an epidemic had developed. It is a real example of preventive medicine.

- Recommendations:** 1. That the carrier need not give up his business which is that of butter-making.
2. That he, however, avoid all contact with other individuals.
3. That he be instructed in the care of all fomites which are contaminated with his nasal and buccal secretions.
4. That he should return to the Laboratories of the State Board of Health in about a month for another culture.

SUMMARY OF REPORT NO. 65.

Investigation—Typhoid fever in Waterloo, Iowa.

By Order—Dr. Guilford H. Sumner, Secretary-Executive Officer, State Board of Health, Des Moines, by telephone March 3, 1920.

History—During the preceding two weeks six cases of typhoid fever had developed along one particular milk route. No other cases existed in the city, and it seemed highly probable in consequence that since all the cases had received a common milk supply that milk was the source of the infection.

Epidemiologist—A trip was made to Waterloo on March 4th and the sources of the milk supplied to these families was carefully studied.

Conclusions—As was anticipated, a history of typhoid fever a year ago was obtained from the wife of one of the farmers who supplies part of the milk for the families where the typhoid cases occurred. Specimens of feces were obtained and the typhoid bacillus isolated. Consequently, definite laboratory evidence in addition to epidemiological proof shows that this carrier was the source of the epidemic.

Recommendations: 1. That this person be excluded from any part in the handling of the milk, including washing pails or cans, and in short, that she have nothing whatsoever to do with the milk supply.

2. That she have impressed upon her the fact that in her present condition she is a source of danger to the community and that utmost pains must be taken in regard to her personal cleanliness and that all excreta be disposed of in a manner which will not constitute a menace to the neighborhood, i. e., that it be disinfected.

3. In view of the fact that typhoid carriers are relatively common, much more common than is ordinarily supposed, all of the milk supplied to Waterloo should be pasteurized. This is a simple measure which will obviate all danger of future milk-borne epidemics of any disease, and in view of the simplicity of this step it should be carried out efficiently. If the milk is not pasteurized future epidemics such as the present one can be expected from time to time.

4. Unless the milk from the Mericle farm, where the carrier lives, is excluded from sale there is potential danger if the milk is not pasteurized.

BRANCH LABORATORIES.

The work and organization of the branch laboratories have already been referred to. Many of them are making a large number of examinations and serving the public health interests in their communities in a very efficient way. The kind and number of examinations made at each of the branch laboratories is indicated in the following table:

DIAGNOSIS OUTFITS.

The call for diagnosis outfits continues to be large. Theoretically, as many outfits should be returned as are being distributed. There is, however, a considerable loss as the result of outfits being retained in stations where there does not happen to be a call for same. It is impossible to avoid such, and it would be inadvisable to further restrict sending out outfits, since it is very important that outfits should be available in all parts of the state whenever needed.

The number and kind of diagnosis outfits distributed during the past biennium is given in the following table:

EXAMINATIONS MADE AT THE BRANCH LABORATORIES

Locality	Diphtheria		Typhoid		Tuberculosis			Miscellaneous			Total
	1915-19	1919-20	1918-19	1919-20	1918-19	1919-20	1918-19	1919-20	1918-19	1919-20	
Ames	7	14	0	18	3	35	0	20	0	67	
Burlington	0	5	0	15	0	0	0	13	0	13	
Central Rapids	5	608	0	29	0	298	0	5	0	886	
Clinton	0	0	0	59	0	0	0	0	0	59	
Chariton	0	0	0	7	0	0	0	0	0	7	
Creston	0	28	0	0	0	0	0	0	0	28	
Des Moines	1,810	3,295	6	102	42	1,062	88	1,966	1,966	4,399	
Dubuque	0	214	0	7	0	0	0	0	0	214	
Emporia	0	0	0	2	0	0	0	0	0	2	
Granger	0	0	0	39	0	0	0	0	0	39	
Keokuk	0	130	0	137	0	0	0	0	0	267	
Little Rock	24	0	0	11	0	0	0	0	0	35	
Mason City	129	203	13	21	1,105	1,125	1,105	1,314	1,314	1,393	
Newton	0	0	0	17	0	1	0	0	0	17	
Osceola	0	0	0	17	0	2,123	0	21	0	2,140	
Waterloo	7	1	0	3	0	4,567	1,388	3,657	11,071	11,071	
Total	2,068	5,803	38	668	163	4,567	1,388	3,657	11,071	11,071	
Combined total		7,871		771		5,555		14,728		14,728	

SUMMARY OF WORK OF THE BIENNIUM.

During the past biennial period the work of the laboratories has been very markedly increased. This has been caused especially by the large number of Wassermann tests which have been made. The following table presents in detail the kind and numbers of the various kinds of examinations made and diagnosis outfits distributed:

OUTFITS DISTRIBUTED

	Diphtheria	Typhoid (Widal)	Tuberculosis	Wassermann	Gonorrhoea Slides	Fees	Total
1918-1919	12,973	800	4,541	950	34	27	19,415
1919-1920	29,406	2,090	4,028	8,892	1,948	27	43,044
Total	39,379	3,589	8,570	9,842	1,982	27	62,459

COMPARISON OF VOLUME OF WORK OF THE LABORATORY SINCE ITS ESTABLISHMENT.

That the laboratory has been called upon more and more to serve the people of the State is well indicated by the increase in the volume of work done during each succeeding year. The figures by years and biennial periods is given in the following table. The most marked increase has occurred during the past biennium. The volume of work is represented by a total of 129,705, as compared with a figure of 46,880 for the immediate preceding biennial period:

SUMMARY OF THE WORK OF THE BIENNIUM
LABORATORIES FOR THE STATE BOARD OF HEALTH

	1918-19	1919-20	Summation	Total
I—Diagnostic Division—				
a. Outfits distributed	19,415	43,044	62,459	
b. Specimens received—				
Diphtheria	11,146	18,783	29,929	
Typhoid	1,138	1,330	2,468	
Paratyphoid	844	844	
Tuberculosis	2,771	4,371	7,142	
Rabies	22	30	42	
Miscellaneous	1,445	4,455	5,899	
Total	36,775	71,983	Summation	108,758
II—Immunization Division—				
Antibrill infect	299	23	323	
Antityphoid infect	15	2	17	
Total	315	25	Summation	340
III—Venereal Disease Division—				
Wassermann	3,071	11,047	14,118	
Gonorrhoea	1,099	794	2,484	
Spirochete	4	4	
Complement Fixation Test	19	19	
Total	4,269	11,864	Summation	16,025

SUMMARY OF THE WORK OF THE BIENNIUM—CONTINUED.

	1918-19	1919-20	Summation	Total
IV—Water Analysis Division—				
Water	1,882	2,043	3,925	
Ice	4	3	7	
Sewage	2	57	59	
Total	1,888	2,103	Summation	3,991
V—Epidemiology Division—				
Field investigations	11	5	17	
Laboratory investigations	60	74	134	
Total	77	14	Summation	91
Grand total	43,719	85,989		129,708

ANNUAL AND BIENNIAL VOLUME OF THE WORK SINCE ESTABLISHMENT OF THE LABORATORY

Year	Fiscal Period	Volume	Biennium	Volume
1	July 1, 1904—June 30, 1905.....	5,589	1st	8,779
2	July 1, 1905—June 30, 1906.....	5,199		
3	July 1, 1906—June 30, 1907.....	8,433	2nd	17,280
4	July 1, 1907—June 30, 1908.....	8,856		
5	July 1, 1908—June 30, 1909.....	10,437	3rd	22,901
6	July 1, 1909—June 30, 1910.....	12,524		
7	July 1, 1910—June 30, 1911.....	13,437	4th	27,078
8	July 1, 1911—June 30, 1912.....	15,641		
9	July 1, 1912—June 30, 1913.....	17,464	5th	35,432
10	July 1, 1913—June 30, 1914.....	17,968		
11	July 1, 1914—June 30, 1915.....	14,401	6th	50,480
12	July 1, 1915—June 30, 1916.....	35,795		
13	July 1, 1916—June 30, 1917.....	23,752	7th	46,880
14	July 1, 1917—June 30, 1918.....	25,128		
15	July 1, 1918—June 30, 1919.....	43,716	8th	129,705
16	July 1, 1919—June 30, 1920.....	85,989		

RECOMMENDATIONS.

The marked increase in the cost of all laboratory supplies and the necessity of paying larger salaries than a few years ago, has made it very difficult for the laboratory to operate on a full and efficient basis during the past year. Proper work would be impossible during the coming year except for the very generous and cordial attitude on the part of the Secretary-Executive Officer of this Board in being willing to permit the use of \$2,185.00 of the past year's appropriation for the Board of Health for the purchase of 23,000 mailing cases for the use of the Laboratory. This action was approved at a recent meeting of the Executive Council.

Greatly as the work has been increased during the past year, the Laboratory is by no means doing the amount of work that it can well do in the interest of the public health. Extensions of work should include especially the following:

1. Greater search for carriers of diphtheria and typhoid bacilli.

Examinations for such carriers have very materially reduced the number of cases and outbreaks of these diseases during the past few years. I am sure that an extension of such examinations will produce further very material reductions in the number of cases of these diseases.

2. Virulence tests of diphtheria bacilli.

This work should be materially extended both with the idea of discovering the true carriers of virulent diphtheria bacilli and the release from quarantine of carriers of non-virulent organisms. This work is rather expensive but it is well worth while.

3. Examinations of blood and various discharges,

so that an earlier and more definite diagnosis of typhoid fever may be made.

4. Examinations for paratyphoid fever

—a disease frequently mistaken clinically for typhoid.

5. Marked extension of the laboratory work for venereal diseases.

6. Examination of a greater number of miscellaneous specimens of concern to the public health.

In order that the work of the Laboratory may continue to be done in an efficient manner and that the extensions outlined above may be provided for, I recommend that the next Legislature be asked to increase the annual appropriation for the Laboratory from \$8,000.00 to \$15,000.00.

I assume that adequate facilities for carrying on the Laboratory work of the Division of Venereal Diseases will continue to be made.

Very respectfully submitted,

HENRY ALBERT.

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