

1930

REPORT OF THE STATE DEPARTMENT OF HEALTH

FOR THE

BIENNIAL PERIOD ENDING JUNE 30, 1930

D. C. STEELSMITH, M. D., C. P. H.
Commissioner

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Des Moines

IOWA STATE DEPARTMENT OF HEALTH

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DIVISIONS

Administration
Preventable Diseases and Epidemiology
Child Hygiene
Public Health Engineering and Housing
Examinations and Licensure
Lecturing
Law Enforcement
Vital Statistics

Laboratories (at State University, Iowa
City)
Nursing Education
Records and Accounts
Barber Inspectors
Cosmetology Inspectors
Tuberculosis Prevention

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LETTER OF TRANSMITTAL

Hon. JOHN HAMMILL, Governor of Iowa:

Sirs: In accordance with the provisions of Section 2216, Code of Iowa, 1927, I have the honor to present the twenty-third biennial report of the State Department of Health for the period commencing July 1, 1928, and ending June 30, 1930.

D. C. STEADSMITH, M. D., C.P.H.,
Commissioner.

Des Moines, December 1, 1930.

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IT IS with regret that the death of Dr.

Henry Albert, Commissioner of Health of Iowa, is announced. An operation for appendicitis was done on Wednesday, April 2, 1930, following an illness of ten days. Death occurred on Sunday, April 6, 1930.

Dr. Albert was appointed head of the State Department of Health in 1926, returning to Iowa, his native state, from Reno, Nevada, where he was director of the State Hygienic Laboratory.

He was formerly chief of the pathology and bacteriology departments of the University of Iowa. He was 52 years of age.

Under his wise and expert leadership, the State Department of Health was developed as it had never been before. New divisions of Epidemiology and Preventable Diseases, Law Enforcement, Public Health Nursing, and Nursing Education were created within the Department through his guidance.

Gifted with infinite patience, blessed with wisdom and far-sightedness, endowed with wide vision, a friend of all, a gentleman always, courageous ever, intensely interested in all that pertained to the welfare of the state, he was an inspiration to those who were associated closely with him and his loss will be felt most keenly by all.

Requiescat in pace.



DR. HENRY ALBERT

REPORT OF THE STATE BOARD OF HEALTH

Simultaneously with announcement of the passing of Dr. Henry Albert, state health commissioner, comes the current quarterly issue of the Iowa Public Health Bulletin. A considerable portion of the bulletin is devoted to discussion of health problems by Dr. Albert, illustrating his sense of justice and his progressive attitude on such subjects. Being a just man, Dr. Albert was deeply interested in procuring for rural citizens a more equal share of the advantages which flow from adequate health service and modern methods of disease prevention. He observed with satisfaction that "Iowa people are gradually becoming more public health conscious," but lamented the health handicaps endured by country people.

In his address to the Iowa Farm Bureau Federation last January, Dr. Albert said: "Although the conditions which prevail in the country are more conducive to good health than those of the city, our sickness and death figures show that our larger cities have better health protection than prevails in country districts, and as a result there is less sickness and the death rate is lower in such cities than in the country."

His sense of justice was disturbed by this situation. "Our country people," he exclaimed, "are as much entitled to effective health protection as city people are." He proposed as a remedy to abolish the township as the unit of local health administration, since it is too small to afford the expense of adequate supervision, and to make the county the administrative unit with full time health service. The health unit for full time service, in his opinion, should include "at least a physician, sanitary inspector, and community nurse with the addition, in some cases, of another nurse devoted to the problems of maternity and children."

"In many states," he added, "the people who live on farms are now receiving the benefits of full time public health service through a county public health unit. There is not a county in Iowa that does not need whole-time public health service."

He was deeply interested also in child health work. In order to bring home to the people more forcibly the need for this work, he resorted to working out a table to illustrate the economic value of children. Perhaps he worked out this table with a sardonic smile while reflecting that the dollar and cents value of children

might prove more effective than other values in demonstrating the need for preserving their health.

"Considered from a purely economic standpoint," he wrote, "there is increasing recognition that the money value of a child should be figured in terms of his future net earning capacity instead of placing it at the actual cost of raising the child—plus, in case of death, burial expense." Regarded in one sense this is satire almost as ferocious as that of Jonathan Swift. Whether Dr. Albert's lip curled cynically as he wrote it no one can say. He was under the necessity of presenting his case in the most effective way and current materialism values everything by a money standard. Dr. Albert's figures show that a child is not an economic burden and is more valuable than a Poland China hog or a Holstein cow.

Dr. Albert was an enthusiast on the subject of preventive medicine, and deplored the burden which illness places on the moderate income. He made the assertion some months ago in an interview that preventive medicine can eliminate half the poverty in Iowa. He based this assertion on an investigation of the state department of health which showed that out of 814 families, fifty-four had been forced to appeal to charity because of illness. In forty-five cases the father was affected, in six the mother, and in three the children.

"It will be seen," commented Dr. Albert, "that in the great majority of cases the poverty is due to robbing the family of its breadwinner. In the remainder illness placed such a heavy burden on the small income there was not enough left to provide the necessities of life." He then made the point that efficiently administered health departments could prevent at least one-third of present day illness, increase the efficiency of workers, and add ten years to the duration of life.

Human progress and welfare mainly depend on scientists such as Dr. Albert and on the efforts of the chemist and educators. The chemist has done more for farm relief than the politician. Dr. Albert's faithful labors were of more importance than innumerable sessions of the legislature. To men of his type the public will give increasing gratitude and honor.

DIVISION OF ADMINISTRATION

FUNCTIONS

The work of the department as prescribed by law is contained in Chapter 105, Sections 2181 to 2585, Code of Iowa, 1927. The functions of the several divisions of activity are given more in detail in the "Iowa Health Bulletin", Vol. XLII, No. 1 (Jan., Feb., March, 1928).

ORGANIZATION

A department to which have been delegated by law as many functions and types of work as has the State Department of Health, must have the work set out by divisions which correspond to the type of work done and the group of persons assigned to each division.

DIVISIONS OF THE STATE DEPARTMENT OF HEALTH

- | | |
|--|---------------------------|
| 1. Administration | 6. Law Enforcement |
| 2. Barber Division | 7. Nursery Education |
| 3. Cosmetology Division | 8. Public Health Lecturer |
| 4. Epidemiology and Preventable Diseases | 9. Public Health Nursing |
| 5. Examinations and Licensure | 10. Sanitary Engineering |
| | 11. Vital Statistics |

NEW DIVISIONS AND PERSONNEL

The 43rd General Assembly gave the Department two new divisions, Epidemiology and Law Enforcement. Under the division of Epidemiology has been placed the function of control of communicable diseases.

Dr. Howard A. Lanpher of Connecticut was placed at the head of the Division of Epidemiology and Preventable Diseases. He has had charge of the Division since August 1, 1929.

The Division of Law Enforcement has been directed by Herman B. Carlson, an attorney of Des Moines. Mr. Carlson began his duties July 8, 1929.

The report of these new Divisions will indicate their usefulness and proves the wisdom of the 43rd General Assembly.

LICENSING OF PROFESSIONS AFFECTING THE PUBLIC HEALTH

The State Department of Health is charged with the licensing and the annual renewal of licenses of the ten following professions: Medical, Nursing, Dental, Optometry, Osteopathy, Chiropractic, Podiatry, Embalming, Cosmetology and Barber.

Upon the recommendation of the respective Boards of Examiners, the licenses are issued by the Commissioner.

While the administration of these several professions is by law a duty of the Administration Division of the State Department of Health, it is not a public health function and the cost of same should not be charged to public health.

The members of these several professions pay an examination and an annual license fee far in excess of the cost of their administration. The fees paid and the expenditures for the last year of the Biennium are as follows:

RECEIPTS AND EXPENDITURES BY BOARD

Board	Receipts	Expenditures	Unexpended Receipts
Medical	\$ 15,933.00	\$ 2,228.35	\$13,704.65
Dental	6,998.00	4,968.12	2,029.88
Nurses	23,874.00	4,010.92	19,863.08
Optometry	3,104.00	1,232.61	1,871.39
Osteopathy	3,089.00	3,742.52*	
Chiropractic	7,046.00	4,715.89	2,330.11
Podiatry	251.00	399.68*	
Embalming	5,182.00	1,586.38	3,605.62
Cosmetology	32,189.12	24,578.69	7,610.43
Barbers	46,142.00	43,534.64	2,607.36
Vital Statistics	706.00		706.00
Total	\$144,524.12	\$90,997.78	\$54,328.52

* Expenditures exceed receipts.

The estimated cost of administration, including law enforcement, per year would not exceed \$9,000.00. Therefore, approximately \$45,000 revert to the State Treasurer each year from these ten professions.

APPROPRIATIONS FOR THE DEPARTMENT AND THE SOURCE THEREOF AS COMPARED WITH OTHER STATES

A total of \$81,525 was the total budget appropriated for the State Department of Health the last year of the biennium.

Since the laws governing the professions were not made for the protection of the public, the cost of administration of same should not be charged to the professions.

The same facts should apply to the Division of Nursing Education. Therefore the expense of the Law Enforcement Division (\$9,000.00) and the Nursing Education Division (\$5,000.00) should not be charged to the appropriation of the State Department of Health. This would cause the appropriation to be reduced to \$67,525.00.

The professions paid to the state in each year of the biennium \$27,164.26 more than the cost of licensure, so with these amounts deducted we have a total of \$40,361.00 actually appropriated for the activities of the State Department of Health from the State Treasury. This would amount to less than 2c per capita per year.

Much money is spent for strictly public health functions in other Departments of State. It is impossible to estimate accurately the amount, but a close guess would be about 6c per capita. However, only 2c per capita is appropriated for the use of the State Department of Health, the lowest of any state in the Union, while the highest for any state is .308 for Delaware and the average for all states is approximately 9c per capita.

PROGRESS REPORT

As civilization advances each Department of State is charged with new duties. This is true of all new and growing departments and especially true of the Department of Health.

Each Division and activity is making progress. Occasionally we find ourselves unable to render the service so greatly needed and desired by the public.

Letters and telephone calls received by the Department pertaining to our work have shown a steady increase.

The policy of decentralization of the administration of public health functions seems generally to improve conditions.

The State Department of Health endeavors to guide and direct local activities, but depends upon local authority to administer the functions. The Department stands ready at all times to aid, assist and advise local health officials in the organization and execution of their desired aims.

It is clear that the policy adopted tends away from paternalism and makes for better local efficiency.

The legislature has been generally kind to public health functions in giving us legislation. The State Department of Health has made more progress during Governor Hammill's administration than during all the years combined since the Department's organization.

GENERAL CONSIDERATIONS

The fundamental basis upon which is built the prevention of disease and the promotion of human wellbeing is inadequate at present, for the following principal reasons:

The State Department of Health suffers from:

1. Inadequate Housing.
2. Inadequate Personnel.
3. Inadequate Funds.
4. Indefinite division of responsibility for administering of public health functions.

HOUSING

The Department of Health is much handicapped in its work on account of inadequate housing. The crowded condition of the employees is such that it is impossible to concentrate on the work at hand.

It has been necessary occasionally to separate the activities of certain Divisions and again necessary to combine Divisions composed of but few personnel. For illustration, the Division of Public Health Nursing, the State Lecturer and the Division of Nursing Education occupy a room 10x12 feet. When a conference is desired with any of these Division heads, it is necessary for the others present to vacate the room until the conference is ended.

The Engineering Division and the Barber Division are now housed in the main Capitol Building, the two divisions occupying three committee rooms in the rear of the Senate Chamber.

The building now occupied by the State Department of Health is a veritable fire trap, was built as a residence and is entirely unsuited for office purposes.

INADEQUATE PERSONNEL AND FUNDS

The volume of work in the Department has become such that an appeal to the Rockefeller Foundation for extra funds for personnel was made. Extra stenographers, clerical help, etc. have been obtained by the use of these funds.

The policy of the Foundation has been to aid state and local Departments of Health temporarily, or until such time as an appropriation may be made by state or local authorities. This has made it possible for the Department of Health to function properly.

INDEFINITE DIVISION OF RESPONSIBILITY

The functions of a State Department of Health have become definitely established in most states of our Union. The responsibility for strictly public health functions has been in-

definitely placed in several departments in Iowa. For example—the Bacteriological Laboratory of the State Department of Health—The State Water Laboratory—Maternity and Child Hygiene—have all been placed at one of our educational institutions.

Milk, as it affects the public health, has been placed in the Department of Agriculture, while on the other hand stream pollution has thus far been removed from the interests of the Fish and Game and the Board of Conservation and placed fully under the State Department of Health.

To the State Department of Health should be assigned the full responsibility for protecting the public health. Full and complete cooperation and coordination of activities with the educational institutions and other State Departments must be maintained.

LICENSING OF PROFESSIONS AFFECTING THE PUBLIC HEALTH

In Iowa, the practitioners of ten professions, totaling 25,670 members, of which 3,144 were new licensees, are, on the recommendation of the respective examining boards, licensed by the State Department of Health. In addition 119 licenses were issued to Embalmers' Apprentices and 15 to Dental Hygienists of which 8 were new ones. The cost of the administration of these several practice acts cannot be properly charged to expenditures for public health. The members of the several professions pay an examination and annual license renewal fee.

PREVENTABLE DISEASES

Since the formation of the Division of Preventable Diseases and the appointment of a full-time Epidemiologist the reporting of cases of disease has definitely improved, although the percentage of cases reported will not yet permit application to join the newly formed Morbidity Registration Area. Clarification of the law and the appointment in every community of an officer whose definite duty is to report cases of disease are needed. Investigations regarding communicable diseases were made and many questions regarding the control of disease in the field were answered.

EPIDEMICS

Five separate outbreaks of typhoid, four of them transmitted through milk and one through food, all of them occurring in 1929 gave to Iowa its greatest number of typhoid cases since

records were kept. The five outbreaks accounted for 175 of the 288 cases reported during 1929. The only other outbreak during the biennium was one of about 100 cases of septic sore throat also spread through milk.

DIPHTHERIA PREVENTION

The state-wide campaign for immunization against diphtheria sponsored by the Department in 1923 has been continued to date, being stimulated at the beginning of each fall term of school. About two-thirds of the school children of the state have been treated. Credit is given to the protection thus conferred for the reduction in deaths from diphtheria from a yearly average of 242 for the period just preceding the campaign to 34 for the year 1929, six years after its inception.

A MEASLES YEAR

From experience and analysis of the number of cases of measles reported it was possible to predict an increase in measles which began in the winter of 1929 and lasted well into the spring months of 1930. Mortality was comparatively low and complications were rare largely because physicians and the general public were warned.

SMALLPOX

More cases of smallpox were reported than for any preceding period. 4,969 cases were reported which is more than ever reported. Each reported case necessitated a quarantine period of two weeks. An attendant for each case had to spend a like period in quarantine. The amount of time thus lost amounted to 382 years during the period. This loss was entirely unnecessary for vaccination does protect against smallpox.

VENEREAL DISEASES

There has been an improvement in the reporting of these diseases. Efforts have been made to reach the persons whose names are given as the suspected source and to get them under treatment. The same is true when the names of those failing to continue treatment until they are no longer infectious are reported. There should be a change in the law to require reports to be made directly to the Department instead of to the local health officer.

TUBERCULOSIS

The death rate from tuberculosis has been reduced from 35 per 100,000 population in 1928 to 33.0 in 1929. Special effort has been

made to secure better reporting of cases. Where possible reported cases have been relayed to local nursing organizations for follow-up work. 767 cases were hospitalized during the year ending June 30, 1930.

UNDULANT FEVER

With the dissemination of information and better diagnostic aids, cases of undulant fever continue to be reported in increasing numbers. 174 cases were reported in 1929 alone. Most of the cases were investigated by the State Hygienic Laboratories. While in some cases milk was deemed to be the vehicle of infection, the largest number was traced to contact with animals harboring the organism of contagious abortion. Such infection among animals is an economic problem to the breeder and is not entirely one of Public Health. Pasteurization will prevent infection with the disease through the medium of milk.

LAKE AND STREAM POLLUTION

Approximately one-half of the time spent by the entire Division of Sanitary Engineering was applied to the problem of the pollution of lakes and streams. This is not a proper ratio inasmuch as pollution is 80% an economic problem and not more than 15% or 20% a problem of public health. The economic aspect of stream pollution should be divorced from the Division thus allowing more time for problems strictly pertaining to public health.

LABORATORY

The Department has no laboratory. Dependence must be placed upon the University Laboratory at Iowa City. This arrangement is not satisfactory. Time is lost in shipping samples and receiving reports, conference regarding the interpretation of reports is impossible and certain parts of the state are unable to use the laboratory on account of its location. The serological examination of specimens is a proper part of public health work. Such work should serve the state without charge, yet a fee of 50 cents for each such examination is charged by the laboratory.

VITAL STATISTICS

The Division of Vital Statistics is charged with "keeping the books" of the state and deals with records of births, deaths, marriages and divorces. The work of the division is curtailed by

lack of funds. Change in the law is contemplated which will make the fee for a marriage license \$2.00 instead of \$1.00, the extra dollar to be used by the division to expand its work.

BIRTHS AND DEATHS

The number of births has greatly exceeded the deaths during the period. For 1928 there were 43,378 births and 25,315 deaths. The birth rate during that year was 17.8 and the death rate was 10.4 per 1,000 population. For 1927 there were 44,296 births giving a rate of 18.3 and 24,532 deaths giving a rate of 10.1.

MARRIAGES AND DIVORCES

During the year 1928 there were 20,529 marriages and 4,076 divorces. This compares with 21,048 marriages and 4,226 divorces for 1927.

LOCAL HEALTH ADMINISTRATION

The methods employed by communities for handling cases of disease and protecting the public health vary almost with the number of communities. Health officers on full-time, with units large enough to supply an efficient and economic basis are urgently needed. County Health Units should be organized. Such units can be standardized, can coordinate the work and protect the public health more expeditiously.

COORDINATION WITH OTHER HEALTH AGENCIES

The Department has cooperated with many agencies in furthering the health work for the state. Among such agencies are the State University; the State College; The State Medical Society; The County Medical Societies; The State Association of Registered Nurses; The Iowa Tuberculosis Association; The Iowa Congress of Parents and Teachers; The State Federation of Women's Clubs; the Farm Bureau; and many departments of the State Government.

PUBLIC HEALTH EDUCATION

The observation of laws and rules is predicated upon understanding of the reason for them. As an aid to such understanding the Department publishes such material on illness and health and the control of disease. More than 200 letters and 2,500 pieces of second class mail leave the department every day.

A "Weekly Health Message" on timely subjects is published. The material contained in the "Messages" is widely copied by newspapers throughout the state. Letters, circulars, pamphlets,

bulletins, charts, films and lantern-slides are sent out by the Department. A full-time lecturer is employed and talks are given by members of the staff.

MATERNITY AND CHILD HYGIENE DIVISION

Only six states in the Union have no Division of Child Hygiene, a Division which is recognized as the most important of any Health Department. Iowa is one of the six. Following the report of the White House Committee on Child Health, it is understood that President Hoover will demand that the work be carried on by official state departments of health through their divisions of Child Hygiene. It is now time that such a division be created within this Department. The creation of such a division will enable the Department to receive Federal aid for the protection of the health of mothers and children.

PUBLIC HEALTH NURSING

There has been no division of Public Health Nursing within the Department. Such supervision as has been done was financed in part from the fund appropriated under the term "Investigation of Tuberculosis." Such a division could well be a part of the Division of Maternity and Child Hygiene. Appropriations for these two new branches will be asked of the next legislature.

NURSING EDUCATION

This division has continued to operate under the State Department of Health although strictly speaking it does not belong to that body. The division visits accredited schools for nurses, keeps a list of nurses in training, graduate and public health nurses and confers with training school executives and members of hospital boards. It acts as liaison between the graduate nurses body and the State Department of Health.

CONTROL OF MILK AS IT PERTAINS TO PUBLIC HEALTH

Local control of milk supplies, both raw and pasteurized, designed for human consumption, is entirely a public health problem, and rightfully should be administered or directed by the State Department of Health.

Four local milk-borne outbreaks of typhoid fever, causing 168 cases and 19 deaths, and one milk-borne outbreak of septic sore throat causing 100 cases and to which three deaths were attributed occurred during 1929. After discovery of such out-

breaks it is too late to prevent many cases and some deaths. Such outbreaks should be prevented by proper supervision of milk production. A milk inspector should be added to the personnel of the Division of Sanitary Engineering.

BIOLOGICS

There should be an increase in the appropriation for biologics which will enable the department to furnish without charge diphtheria antitoxin, toxin-antitoxin and toxoid, smallpox vaccine, anti-typhoid vaccine, and arsenical medication for the treatment of syphilis. There should be legislation permitting the payment for anti-rabic serum from the dog-tax fund thus in effect causing the dogs to pay for the damage they do in the way of exposure of animals and humans to infection with rabies.

ANTITOXIN AND OTHER PROPHYLACTICS

The following shows the extent of operations in the distribution of antitoxin and other prophylactics.

No. of packages diphtheria antitoxin	5,014
No. of treatments diphtheria toxin-antitoxin	54,309
No. of packages tetanus antitoxin	4,315
No. of tubes smallpox vaccine	50,732
No. of treatments, typhoid vaccine	4,574
No. of treatments for rabies	353
No. of ampuls silver nitrate	50,000
No. of ampuls of neocarsphenamine	3,982

LOCAL HEALTH ADMINISTRATION

There has been much confusion of ideas as to the proper person to be the executive officer of a local board of health. In some towns the mayor insists that it is his duty to receive reports, to make reports to the department, to impose and release from quarantine, to post placards, etc., in some places the attending physician places and releases quarantine, in others the health officer does it all. The result is a lack of standardization which is reflected in poor reporting of cases. County Health Units with trained health officers on full-time would obviate this difficulty.

LAW ENFORCEMENT

The forty-third General Assembly made provision for a Division of Law Enforcement within the department. Such a division was inaugurated in July, 1929. That this division was necessary is shown by the report covering the one year of its existence which notes that 138 investigations of law violations, attempted and suspected violations were made and 10 injunctions

were secured. Three licenses were revoked and seven convictions were secured.

BARBERING

Licensing of Barbers and inspection of barbershops have been conducted by the Department through the barber division. This division consists of one Chief Inspector who is in immediate charge of the Division and three field inspectors. Each barber shop is visited two or three times a year.

COSMETOLOGY

Certain of the laws relating to cosmetologists were changed and strengthened by the last General Assembly. The Division under the State Department of Health now has a secretary and two inspectors. Licenses are issued by the division to those who pass the required examination. During 1929 the two inspectors made 2,599 visits to 772 towns and found 2,646 operators. 119 operators without licenses were discovered. 573 persons discontinued their work. This showing would seem to justify the expenditure of time and funds made necessary by this work.

COORDINATION OF ACTIVITIES AND CONCENTRATION OF RESPONSIBILITY

All organized work done in the State and pertaining to the prevention of disease and relating to public health should be coordinated by one State Department. The only department officially charged with the duties of carrying on public health work in a comprehensive sense is the State Department of Health.

FINANCIAL STATEMENT

For the Iowa State Department of Health there is appropriated for each year of the biennium beginning July 1, 1928, and ending June 30, 1930, amounts as follows:

Salaries—			
Amount Available	1928-29	1929-30	
General Department	\$29,700.00	\$39,700.00	
Sanitary Engineering and Housing Division	9,900.00	9,900.00	
Salary for Investigator		2,479.84	
Tuberculosis Investigation		1,910.86	
Quarantine Expense—			
Amount Available	5,111.07	4,000.00	
Salaries, Traveling Expenses, Supplies	3,382.13	3,662.38	
Balance	1,728.94	337.72	

Antitoxin—			
Amount Available	5,000.00	5,000.00	
Paid for Antitoxin and Vaccines	3,633.23	4,646.16	
Balance	1,366.77	353.84	
Miscellaneous Traveling—			
Amount Available	4,540.65	2,500.00	
Paid for Traveling	1,553.63	2,218.19	
Balance	2,987.02	281.81	
Engineering and Housing Traveling—			
Amount Available	6,148.06	6,000.00	
Paid for Traveling	5,058.74	5,433.45	
Balance	1,089.32	566.55	
Equipment and Laboratory—			
Amount Available	1,006.92	1,000.00	
Paid for Supplies	984.93	659.56	
Balance	21.99	340.44	
Tuberculosis Investigation—			
O. D. Account			
Paid for Salary		1,910.86	
Paid for Traveling		1,859.48	
Health Inspector—			
O. D. Account			
Paid for Salary		2,479.84	
Paid for Traveling		2,705.44	
Members Traveling—			
O. D. Account			
Paid for Traveling		640.65	
Traveling Expense Lecturer—			
Amount Available		1,500.00	
Paid for Traveling		1,231.93	
Balance		268.07	

	1929		1930	
	Receipts	Expenses	Receipts	Expenses
Cosmetology Examiners	\$14,580.00	\$ 8,301.81	\$17,609.12	\$16,276.88
Medical Examiners	7,848.00	1,246.21	8,085.00	982.14
Chiropractic Examiners	3,018.00	2,486.99	4,028.00	2,228.90
Osteopathic Examiners	1,236.00	1,870.09	1,835.00	1,872.43
Barber Examiners	23,494.00	21,342.95	22,648.00	22,191.69
Nurses Examiners	11,140.00	2,107.41	12,734.00	1,903.51
Optometry Examiners	1,653.00	403.14	1,451.00	829.47
Podiatry Examiners	87.00	60.15	164.00	339.51
Dental Examiners	3,371.00	2,442.58	3,627.00	2,525.54
Embalmers Examiners	2,237.00	681.22	2,955.00	905.16
Vital Statistics	346.00		360.00	
Totals	\$69,010.00	\$40,942.55	\$75,514.12	\$50,055.23

DIVISION OF PREVENTABLE DISEASES

HOWARD A. LANPHER, M. D., M. P. H., Director

AUTHORITY FOR THE DIVISION OF PREVENTABLE DISEASES

Section 2191 of the Health Laws of Iowa as found in the Code of Iowa defines the powers and duties of the Commissioner of Health. Paragraph 16 of this section reads in part: "Establish

and maintain such divisions in the department as are necessary for the proper enforcement of the laws administered by it, including a division of contagious and infectious diseases. . . . Section 21, of Chapter 287 of the Acts of the 43rd General Assembly provided an appropriation for the salary of a full-time epidemiologist. The epidemiologist was employed August 1, 1929, and the old Division of Communicable Diseases of which the Deputy Commissioner had been in charge was converted into the Division of Preventable Diseases and the epidemiologist was made Director of the new division.

PERSONNEL

The personnel of the Division of Preventable Diseases is as follows:

Howard A. Lanpher, M. D., M.P.H., Director and Epidemiologist.

Miss Katherine Campbell, Stenographer-Clerk.

ACTIVITIES OF THE DIVISION

Routine work of the Division may be divided into the following lines of activity:

1. Receiving and tabulating reports of disease incidence.
2. Compilation of these reports and analysis of the data thus obtained.
3. Emergency investigations to discover the source of infection in outbreaks of disease.
4. Other field investigations of disease occurrence and control.
5. The preparation of material to be printed for the information of the public, including the subjects of immunity to diphtheria, typhoid fever, smallpox, etc.

Detailed activities of the division were contained in a circular letter to local health officers, which was prepared and issued immediately after the organization of the new division. The circular letter was as follows:

Circular Letter No. 1

To All Health Officers and Health Authorities:

In accordance with Par. 16 of Sec. 2191 of Chapter 105 of the Code of Iowa, the establishment of a Division of Preventable Diseases within the State Department of Health is hereby declared.

The functions of this division are enumerated as follows:

FIELD

1. The making of investigations and surveys in respect to the causes of diseases and epidemics and the control of the same.

This includes outbreaks of disease on milk farms; the investigation of sanitary conditions as they may be related to disease conditions; the investigation of rabies in animals with reference to its relation to human beings; the taking of cultures from nose and throat; the collection of samples of blood, feces, urine or other body fluids for examination by the laboratory and advice as to vaccination and inoculation.

2. Consultation, upon request, with local health officers as to the diagnosis of communicable diseases and the method of procedure under certain conditions.

3. The establishment of quarantine and release from same in the absence of the local health officer.

4. The giving of lectures to various groups of people, professional and lay, upon the prevention of disease, including personal hygiene.

5. Attendance at meetings of Medical Societies, Public Health Associations, etc.

6. Demonstrations of protection against disease. This includes the demonstration of the Schick test to determine susceptibility to diphtheria, inoculation against typhoid fever and vaccination against smallpox.

7. Special health activities as may be necessary from time to time.

OFFICE

1. The receipt of daily reports of communicable disease from local health officials.

2. The compilation of data from these reports.

3. The dissemination of information received from such data to health officials of the state.

4. The preparation of data to be used for educational purposes.

5. The making of maps and charts for the spread of information regarding disease conditions.

6. A clearing house for general information and advice upon health subjects.

7. Correspondence with health officials of this and other states.

8. Preparation of articles for the professional and lay press.

9. Preparation of articles for bulletin.

10. Search of literature for information on special subjects.

11. Collaboration in the preparation of pamphlets on disease.

12. Conferences with health officers on matters of local import.

13. Preparation of reports of field trips and of special studies.

14. Preparation of material and tables for the biennial report.

Dr. Howard A. Lanpher, formerly epidemiologist of the Connecticut State Department of Health, has been employed to act as Director of the Division of Preventable Diseases and Epidemiologist. His services may be obtained by any community upon application through the local health officer. There will be no charge to the community for this service.

It is earnestly desired by this Department that health officers and other health authorities report all cases of communicable diseases to this division at once, for it is only by knowing where cases of disease exist that efforts at control can be made.

Very truly yours,

HENRY ALBERT, M. D.

Collaborating Epidemiologist.

FIELD TRIPS

Prior to the employment of a full-time Epidemiologist the Department was obliged to employ the services of the personnel of the Laboratory and teaching departments of the Medical School of the State University.

Such services were not always satisfactory for three reasons:

1. The situation of the Medical School in the eastern portion of the state. This situation made very long trips necessary to reach towns in the western and northern parts of the state.

2. Frequently when service was required, the epidemiologist was employed in teaching and his services were not immediately available.

3. It was necessary to obtain sanction in advance for payment by the municipality served of the field expenses of the epidemiologist.

However, in spite of the above-mentioned handicaps ten field investigations were made. They are listed as follows.

Dysentery—Elkader, DeWitt (2).

Gastro-Enteritis—Oakdale (3).

Typhoid Fever—Oelwein, Osage, Iowa City (2).

With the employment of a full-time epidemiologist by the Department the difficulties incident to employment of the personnel of the University were obviated. It is now possible for the epidemiologist to proceed directly from the Capitol (in the center of the state) immediately upon notification that his services are required, and without expense to the local community. Such service has obvious advantages.

Between August 1, 1929, and June 30, 1930, 53 field trips for the investigation of disease conditions were made. In addition five lectures were given and 32 meetings were attended. The list of field trips gives the places visited and the reasons for the trips. The number of trips to each place visited more than once is noted by the figure in parenthesis.

FIELD TRIPS FOR THE STUDY OF DISEASE

August 1, 1929 to June 30, 1930

Rabies—Newton (2).

Typhoid Fever—Greenfield (4), Primghar (2), Leon, Poca-hontas, Clinton (6).

Poliomyelitis—Knoxville.

Undulant Fever—Prairie City, Monroe, Newton.

Smallpox—Knoxville, Farson, Hedrick, Sigourney, Sioux Center, Valley Junction (2), Winterset (2), Rock Valley, Blakesburg, Marshalltown, Carroll, McCallsburg, Pella, Des Moines.

Cerebrospinal Meningitis—Waterloo, Mason City, Eldora, West Bend, Oto.

Scarlet Fever—Elgin, Carroll (2), Grundy Center, St. Ansgar, Melcher.

Venereal Disease—Davis City.

Septic Sore Throat—Oskaloosa (2).

Tuberculosis—Dallas Center.

SUMMARY OF FIELD TRIPS

The counties to which field trips were made during the biennium are shown graphically on the map, page 25.

PURPOSE OF TRIP	NO. OF TRIPS	PURPOSE OF TRIP	NO. OF TRIPS
Cerebrospinal Meningitis	5	Tuberculosis	1
Poliomyelitis	1	Typhoid Fever	14
Rabies	2	Undulant Fever	3
Scarlet Fever	6	Venereal Disease	1
Septic Sore Throat	2	Laboratory Visits	2
Smallpox	15	Lectures Given	5
		Meetings Attended	32

continued to date, and has resulted in the immunization of more than 400,000 of Iowa's children. As a result, deaths from diphtheria have shown a very decided trend downward. For the five-year period 1920-1924 the average annual number of deaths was 242; for the four-year period 1925 to 1928, the average annual number of deaths was 104. For 1929 the total deaths from diphtheria was only 34. This is a reduction in 10 years of an average of 139 deaths annually. The year 1929 shows an 87% reduction from the average annual number of deaths for 1920-1924.

The following extract from a paper by Dr. Henry Albert shows the value of immunization against diphtheria from an economic viewpoint.

The figures for 1929 are compared with the average annual figures for the five-year period of 1920-24, such being the period before the state-wide campaign for the eradication of diphtheria by active immunization with toxin-antitoxin.

PRE-1925 AVERAGE

No. deaths from diphtheria.....	242
Cost raising child and funeral—per death....\$	1,000
Cost all deaths.....\$	242,000
No. cases diphtheria (deaths x 15).....	3,630
Cost—treatment, etc., per case.....\$	100
Cost—treatment all cases.....\$	363,000
Total Cost—deaths and cases.....\$	605,000
Economic loss per death (Dublin).....\$	7,500
(future earning power less cost of being raised and maintained)	
Economic loss all deaths.....\$	1,815,000
Economic loss (gross)—cases and deaths.....\$	2,178,000

1929 DATA

No. deaths from diphtheria.....	34
Cost per death.....\$	1,000
Costs all deaths.....\$	34,000
No. cases diphtheria (deaths x 15).....	510
Cost—treatment, etc., per case.....\$	100
Cost—treatment all cases.....\$	51,000
Total cost—deaths and cases.....\$	85,000
Economic loss per death (Dublin).....\$	7,500
Economic loss all deaths.....\$	255,000
Economic loss (gross) cases and deaths.....\$	306,000

NUMBER CASES AND DEATHS PREVENTED

(Based on Pre-1925 minus 1929 figures)

No. cases prevented.....	3,120
No. deaths from diphtheria prevented.....	208

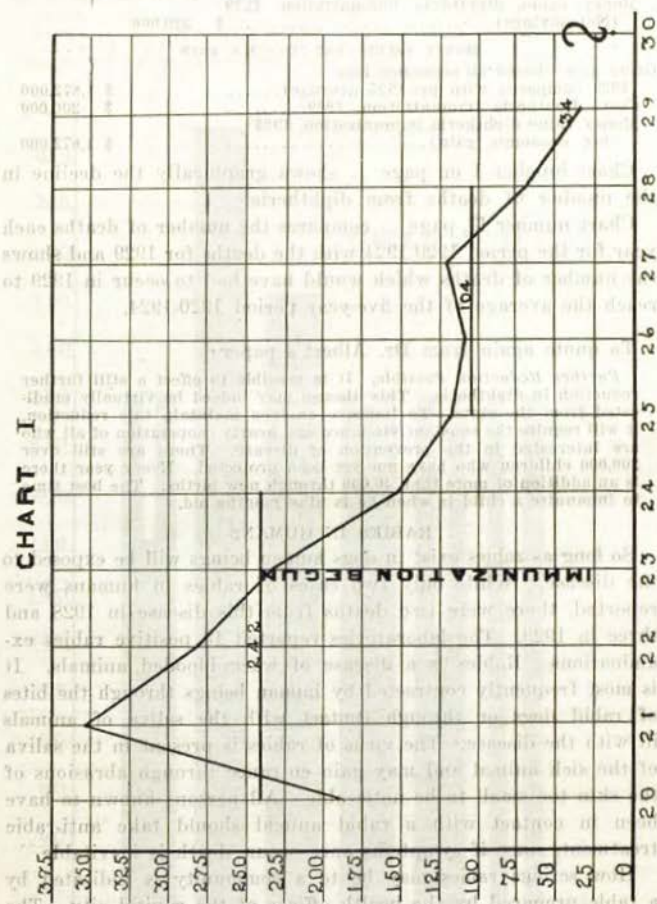


Table follows:
 Number of people bitten by dogs from March 1 to
 October 31, 1929..... 185
 Number of dogs barked and frightened the
 animal..... 50

MONEY VALUE—NET SAVING

Gross saving—based on cost (1929 compared with pre-1925 average).....	\$ 520,000
Cost—diphtheria immunization, 1929.....	200,000
Money value, diphtheria immunization, 1929 (Net savings).....	\$ 320,000

MONEY VALUE—NET ECONOMIC GAIN

Gross gain—based on economic loss (1929 compared with pre-1925 average).....	\$ 1,872,000
Cost—diphtheria immunization, 1929.....	\$ 200,000
Money value diphtheria immunization, 1929 (net economic gain).....	\$ 1,672,000

Chart number I on page .. shows graphically the decline in the number of deaths from diphtheria.

Chart number II, page .. compares the number of deaths each year for the period 1920-1924 with the deaths for 1929 and shows the number of deaths which would have had to occur in 1929 to reach the average of the five-year period 1920-1924.

To quote again from Dr. Albert's paper:

Further Reduction Possible. It is possible to effect a still further reduction in diphtheria. This disease may indeed be virtually eradicated from the state. To improve or even maintain this reduction, it will require the constant vigilance and hearty cooperation of all who are interested in the prevention of disease. There are still over 200,000 children who have not yet been protected. Every year there is an addition of more than 40,000 through new births. The best time to immunize a child is when he is nine months old.

RABIES IN HUMANS

So long as rabies exist in dogs human beings will be exposed to the disease. While only two cases of rabies in humans were reported, there were two deaths from this disease in 1928 and three in 1929. The laboratories reported 13 positive rabies examinations. Rabies is a disease of warm-blooded animals. It is most frequently contracted by human beings through the bites of rabid dogs or through contact with the saliva of animals ill with the disease. The virus of rabies is present in the saliva of the sick animal and may gain entrance through abrasions of the skin too small to be noticeable. All persons known to have been in contact with a rabid animal should take anti-rabic treatment, since if symptoms once occur, death is inevitable.

How serious rabies may be to a community is indicated by a table prepared by the health officer of the capital city. The table follows:

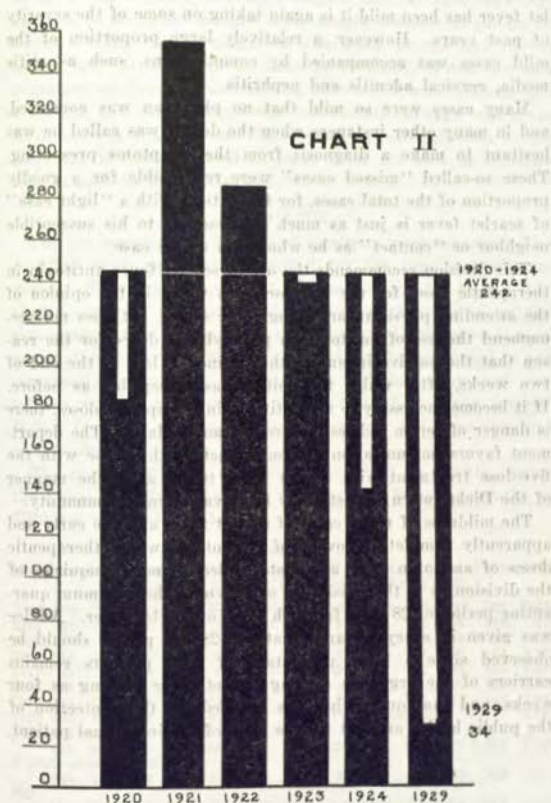
Number of people bitten by dogs from March 15 to October 24, 1929.....	183	Estimated cost \$1,800.00
Number of dogs' heads sent to Laboratory for ex- amination	62	93.00

Number of positive heads.....	38	
Number of persons taking anti-rabic treatment....	46	4,600.00
Number of dogs under quarantine.....	106	212.00

Estimated cost to citizens of Des Moines, 8 months'

period	\$6,705.00
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Rabies cannot be brought under control unless the law requires the licensing of dogs is faithfully observed. Vicious dogs likely to bite persons should not be allowed to run at large—even if they are licensed.



SCARLET FEVER

Seven thousand four hundred and thirty-three cases of scarlet fever were reported for the biennium. Only 109 deaths resulted from such a large number of cases and of these 48 occurred in the first six months of 1930. This increase during the last part of the period may indicate that while most of the scarlet fever has been mild it is again taking on some of the severity of past years. However, a relatively large proportion of the mild cases was accompanied by complications, such as otitis media, cervical adenitis and nephritis.

Many cases were so mild that no physician was consulted, and in many other instances when the doctor was called he was hesitant to make a diagnosis from the symptoms presenting. These so-called "missed cases" were responsible for a goodly proportion of the total cases, for the patient with a "light case" of scarlet fever is just as much of a menace to his susceptible neighbor or "contact" as he who has a severe case.

This division recommends the use of scarlet fever antitoxin in therapeutic doses for use in those cases which in the opinion of the attending physician are going to be severe. It does not recommend the use of antitoxin in prophylactic doses for the reason that the passive immunity thus gained is lost at the end of two weeks, after which the child is as susceptible as before. If it becomes necessary to use antitoxin in therapeutic doses, there is danger of serum sickness or even of anaphylaxis. The department favors immunization of non-contacts with a case with the five-dose treatment with scarlet fever toxin, after the manner of the Dicks, when scarlet fever is prevalent in a community.

The mildness of many cases of scarlet fever and the early and apparently complete recovery of patients to whom therapeutic doses of antitoxin were administered led to many inquiries of the division as to the possibility of lessening the minimum quarantine period of 28 days for such cases of scarlet fever. Advice was given in every instance that the 28-day period should be observed since a large percentage of such patients remains carriers of the organism causing scarlet fever as long as four weeks, and that quarantine was imposed for the protection of the public health and not for the good of the individual patient.

SEPTIC SORE THROAT

Cases of septic sore throat to the number of 49 were reported for the two-year period. This does not include approximately 100 cases of the disease which occurred in a southern city during the month of December, 1929. The health officer had no record of the actual number of cases owing to lack of reporting. The services of an epidemiologist were sought because of public interest. When the investigation was made at the last of the month only 34 case records could be obtained. From the data contained in these 34 case records, however, it was believed that a certain raw milk supply was the vehicle through which the infection was transmitted. This belief was strengthened by the fact that the cases ceased to occur after the milk in question was caused to be pasteurized.

SMALLPOX

For the biennium 4,942 cases of smallpox were reported. This is 2,283 more than were reported for the previous two-year period. This is an increase of 86% and is greater by far than should occur in the face of the present possibilities of protection against this disease. By the simple and safe procedure of vaccination and revaccination smallpox can be prevented in any community or any state. It has been said that community conscience may be measured by the amount of smallpox present. It is a fact that a town or city may or may not have smallpox as it wishes.

The number of cases of smallpox reported by months during the years 1924-1929 inclusive and for the first six months of 1930 are shown in table I.

TABLE I Number of Cases of Smallpox Reported by Months for the Years 1924-1929 Inclusive and the First Six Months of 1930.												
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. Total
1924	52	42	66	71	50	110	22	21	50	64	105	872
1925	148	90	40	37	69	59	13	12	19	29	39	645
1926	158	220	128	212	135	96	59	20	10	12	27	1,131
1927	45	38	116	70	39	91	87	37	32	84	155	1,279
1928	359	295	257	190	212	140	64	6	9	34	181	1,921
1929	113	176	191	180	182	129	155	25	21	100	211	1,913
1930	551	300	412	469	429	427	Total (for 6 months)	2,588				
Total (6 yrs.)	875	861	798	760	687	625	380	121	151	333	748	7,769
6 year average 1924-29	146	143	133	127	114	104	63	20	27	56	125	1,295
Per cent	11.1	11.1	10.3	10.0	8.8	8.0	5.0	1.5	1.9	4.3	9.6	100.0

It will be seen that the number of cases reported for the first six months of 1930 represents a 37% increase over that reported during the whole year 1929.

The economic problem presented by the time alone lost by reason of quarantine is shown as follows:

Each one of the 4,942 cases was required to remain in quarantine for a minimum period of two weeks. Likewise an attendant was quarantined for the same period. The time lost on account of such quarantine amounted to 380 years, during two years.

In the hope of stimulating health officers and to make the task more easy a special compilation of the rules and regulations of the Department relating to the control of cases and contacts was made and sent out to health officers where smallpox made its appearance in considerable numbers.

CASES

Quarantine shall be placed on all cases and contacts. Sec. VI. Premises where smallpox cases are quarantined will be placarded. Sec. IV.

No one will be allowed to enter or leave quarantined premises without permission of the health officer. Par. D. Sec. VI.

The health officer may, at his discretion, permit a person known to be immune, to take a bath, put on clean clothes, and leave a quarantined area, not to return during the quarantine period.

Quarantine of cases shall continue until examination by the health officer shows that all lesions have healed. In no case shall the quarantine period for cases be less than 14 days.

Fortunately nearly all the cases were mild. There were only five deaths in 1929 and two in 1928. The great danger to a community not protected by vaccination lies in the fact that smallpox of the severe type may be imported at any time whereupon many deaths are bound to ensue.

TUBERCULOSIS

Eleven hundred sixteen cases of tuberculosis were reported during the biennium, of which five hundred thirty-two cases were reported in 1929. This is the lowest record for any year subsequent to 1925. The death rate for this disease for 1929 was 33.0 per 100,000 population which is a new low rate for Iowa.

A new policy with regard to tuberculosis was planned in 1929. In keeping with this policy the objectives of the division are as follows:

I. *Purposes.* The listing of every case of tuberculosis in Iowa; determine, if possible, the source of infection; the factors that have led to the development of the disease; the prevention of the spread of the disease which applies to the sources of this

case; the factors involved and an interest in the treatment of the case so that such person will not be the source of infection. The data obtained is to be used not only in connection with the case in question, but also for the benefit of the general public.

II. Methods.

1. Reports of cases—regular method.
2. What patients are or have been, in hospitals or sanatoria, etc., if so, where, when, and how long.
3. Reports of deaths—regular method.
4. Examinations of cases through cooperative clinics.
5. Field investigations by visits to:
 - a. find more cases.
 - b. find source of infection.
 - c. factors which have favored development of the disease.
6. Preventive work:
 - a. Pamphlet to every patient and family.
 - b. Personal visits (in company with local physician) to effect better control of local factors.
 - c. Organize or strengthen local forces—physicians, nurses, social workers, etc.—to forming permanent organizations to prevent further spread of the disease. The logical local organizations are the local tuberculosis associations or seal-sale committees.

Notes regarding clinics:

- a. Cannot join in clinics unless through invitation from local county medical society.
- b. The official agency must deal with the preventive side. Other phases must be provided for by other organizations.

As an aid to the achievement of such objectives a new card for reporting cases of tuberculosis was prepared.

Information from these cards was made available to the Iowa Tuberculosis Association as an aid to follow-up work. A survey of facilities in hospitals and sanatoria for the care of tuberculous patients was made. This survey seemed to indicate the need for more hospitals for the care of the tuberculous.

TYPHOID FEVER

Three hundred ninety-one cases of typhoid fever were reported. Of these 288 were reported during the year 1929. This number gives to 1929 the largest number of cases of typhoid fever

ever reported in Iowa and is 67 cases more than the previous high record of 221 in 1927. During the last six months of 1928, 76 cases were reported and for the first six months of 1930, 27 cases were reported.

The increase in the number of cases for 1929 is accounted for by two large and two minor outbreaks of the disease, all attributable to milk as a vehicle, and one small outbreak traced to food infected by a suspected carrier. These five outbreaks accounted for 175 cases out of the 288 and if they could have been prevented the number of cases of typhoid fever for 1929 would have nearly equalled the lowest record of 103 cases (1924).

THE GREENFIELD OUTBREAK

The attention of the Division was called to Greenfield by a request from the local distributing station for biologicals that twenty-five Widal test outfits be sent to that city. The health officer was reached by telephone and asked the reason for requesting so many outfits. He stated that he had a few cases with symptoms suspicious of typhoid fever.

The epidemiologist went to Greenfield on August 10, 1929, and saw with the health officer 18 cases with clinical symptoms of typhoid fever. The onset date of the first case was July 21. Individual case records were made out for these cases. Analysis of the data obtained showed that all of the cases obtained milk from one dairy. This dairy produced 340 to 350 quarts of milk daily and delivered the milk raw. Another dairy, also distributing raw milk, produced 140-150 quarts of milk daily. No cases occurred among patrons of the latter dairy. The epidemiological evidence pointed to the major milk supply as the vehicle of infection. The proprietor of the larger dairy was seen and the facts presented. He was ordered to suspend the delivery of milk pending further investigation. New cases appeared until a total of 72 cases occurred. There were two deaths. Sixty-four case records were procured. All of these showed a common milk supply.

Investigation disclosed the fact that a man who had had typhoid fever some ten years previously was employed by the dairy. The proprietor was the only other man who had anything to do with the milk. He later in the outbreak became a victim of infection with typhoid fever.

Specimens from the man who had had typhoid fever were sub-

mitted for examination and the laboratory reported him a "carrier" of the germs of typhoid fever. Twelve days from the date on which distribution of the milk was stopped the outbreak was at an end. The outbreak lasted exactly one month, July 21 to August 22.

THE LEON OUTBREAK

On September 4, 1929 an investigation was made of an outbreak of typhoid fever at Leon. Seven cases and one death occurred. Investigation disclosed that each patient with one exception (father and son) had a regular milk supply different from the others. However it was found that all patients had extra milk and that all of this milk had been purchased from three stores. The original source of supply for these three stores was the same dairy. It was found that the dairy employed a man to handle and deliver milk, who had had typhoid fever at a previous time. This man was asked to submit specimens for examination but refused to do so. He was discharged and no other cases occurred.

THE PRIMGHAR OUTBREAK

On September 9, 1929 the epidemiologist was called to Primghar to investigate an outbreak of five cases of typhoid fever. No death occurred. It was found that all of the cases took milk from the same small supply of 40 quarts daily. Four members of the proprietor's family had had typhoid fever at a previous date and all of these were engaged in handling the milk supply. It was not determined which one of these was a carrier, for when the situation was explained to the dairyman, he readily agreed to stop permanently the supply and sale of milk. No other cases occurred.

THE POCAHONTAS OUTBREAK

On October 11, 1929, seven cases of typhoid fever were reported from Pocahontas. Investigation showed that all of the patients were members of or connected with a threshing gang which operated at four farms during the month of August. This gang was provided with the noon meal at the farm where they were working. The last place where the gang worked was a farm known as the Graeber Place. They ended their work at this farm on August 23. The onset dates of the cases were such as to place the date of infection at a period which would include

that date. One patient, a boy of 11 years, was not a regular member of the gang but was present and had dinner with it on August 23. This was the only time that he ate with the gang. This fact seemed to set the date of infection of these patients as that day.

Suspicion was directed to the food, water or milk consumed at the farm. A woman was found at the farm who had had typhoid fever not long before. This woman prepared and served the food consumed by members of the gang. It was suspected that this woman was a carrier and had infected the food which she prepared and served. The suspicion was not confirmed by laboratory test, for the woman moved away and was lost before specimens could be procured.

THE CLINTON OUTBREAK

On November 11, 12, 13, 1929, an investigation of an outbreak of typhoid fever in Clinton was made. It was found that the onset date of the first case was October 8. On the first day of investigation 21 cases of typhoid fever were seen by the epidemiologist. Eight additional cases were reported on that date but time did not permit interviews with the patients. The health officer stated that Clinton had been almost entirely free from typhoid fever for 21 years and that when one doctor was seeing only one or two cases each no impression was made that there was anything unusual afoot. In addition reports of cases were not made so that it was not until the hospitals had received large numbers of cases that it was realized that Clinton was burdened with a real epidemic. It appears then that there was a full-fledged outbreak of typhoid fever under way before the local health authorities were aware that anything extraordinary was happening.

As stated above the earliest case had its onset October 8. It would appear that five other cases were infected through contact with this case. The five cases occurred in members of the same family. The original patient was a man 21 years of age. He lived at home. His mother stated that for almost two weeks after the onset of his illness, he did not employ a physician and that she attended him and prepared the meals for the rest of the family. Not recognizing the nature of the illness, the mother observed no precautions with the result that five other mem-

bers of the family including the mother became ill with typhoid. All six of these patients died.

Twenty-one patients were interviewed on the first day of the investigation and individual case records were made. Meanwhile a check-up on the city water supply was made and a spot map of the places of residence of the patients was begun. This check-up indicated that the city water as a means of spread of the typhoid infection could be eliminated.

Analysis of the data contained on the 21 case records revealed the fact that all but one patient had taken milk from one dairy. This dairy operated a pasteurizing plant and purported to put out for public consumption only pasteurized milk. This milk was suspected as the vehicle for the transmission of the infection. In company of the local health officer a careful study of the charts of the recording thermometers of the plant for a period next preceding the onset of the cases was made in the hope of finding evidence of a break in the technique of pasteurization. No evidence of such a break in technique was found.

The handling of the milk at the plant from the time of its arrival until it left the plant to be delivered was then followed step by step. Nothing wrong was found up to the completion of the process of pasteurization.

The next process investigated was the preparation of milk bottles into which the pasteurized milk was put prior to delivery to customers.

It was learned that the bottles picked up and returned to the plant were not sterilized. Preparation of the bottles prior to filling consisted of two operations: (a) the bottles were washed by hand in a water of unknown temperature, and (b) dependence for sterilization was placed upon the efficacy of an alkaline solution, the strength of which was unknown and the temperature of which was not tested. These facts are considered to be the reason why typhoid fever was spread through milk delivered by the plant.

Two explanations are possible as to the means whereby the infection was transmitted:

(a) It is the custom of the dozen or so milk distributors in Clinton to pick up bottles without regard for the original ownership, to make no effort to get the bottles back to the dairy which owns them and to fill such bottles with their own milk for distribution to their customers. Thus it may happen that

the milk supply of a given dairy is distributed in bottles belonging to many different dairies. Hence it is possible that a bottle contaminated with typhoid bacilli may have been picked up by the dairy in question from a family where there was an early case of typhoid fever or a carrier. (The family in which the original case and the five contact cases occurred was not a customer of the suspected dairy.) Passing this bottle through the washing water would wash off the germs. Bottles which followed such a bottle through the same wash water would be exposed to the hazard of contamination.

(b) The drivers from the different routes were the ones who washed the bottles, one-half the number of drivers washing one week and the other half the next week. It is possible that one or more of these men may be "carriers" of typhoid germs. If so the wash water might become contaminated from the operator, thus exposing all the bottles to the hazard of contamination.

Specimens from all employees of the plant engaged in handling milk were examined by the laboratory daily for a week but negative reports were received in all cases.

Upon discovery that the bottles were not being properly sterilized, the proprietors of the dairy were notified that they would be allowed to continue the sale of milk only upon condition that they put in operation a bottle sterilizer using live steam and that no milk be sold except in bottles so sterilized. The proprietors agreed to the condition and a steam bottle sterilizer was placed in operation immediately. Inasmuch as the condition found to be the reason for the spread of typhoid fever was remedied immediately after its discovery, there appeared to be no reason for prohibiting the sale of milk from the plant.

With the view of preventing the occurrence of a like outbreak of typhoid fever in the future, certain recommendations were made to the Mayor and City Council of Clinton. They were as follows:

1. Avoid drinking water from shallow wells especially those so situated as to be subject to contamination from nearby privies.
2. Continue careful supervision of the city water supply.
3. That the City Council pass an ordinance prohibiting the sale of any milk not pasteurized and providing for the sale of pasteurized milk only in bottles which have been sterilized.
4. That until such time as the present distributors of raw

milk can provide for pasteurization, all raw milk be boiled at home before consumption.

5. That no person who has had typhoid fever be permitted to engage in the handling of milk at any stage in its production from farm to distribution and that no such person be employed to work as cook or waiter or in any other occupation which causes or allows such person to come in contact with food for public consumption.

6. That provision be made by the City Council for constant and adequate supervision of dairies and eating places.

7. That all persons over 3 years of age in the City of Clinton be immunized against typhoid fever.

8. That the County of Clinton be urged to place its public health work on a full-time basis with a full-time Health Officer in charge.

9. That in case the county does not take this step that the City of Clinton arrange at once for a full-time health officer.

No cases occurred after November 11 except such as were already infected and in the incubation stage on that date. The last case had its onset on November 18. The total number of cases in this outbreak was 84. There were 16 deaths. Table II gives the age and sex groups. (See attached table.)

TABLE II—TYPHOID FEVER—CLINTON, IOWA
Age and Sex Groups—84 Cases

Age	Male	Female
- 4	1	3
5- 9	9	3
10-14	2	3
15-19	2	2
20-24	6	4
25-29	3	10
30-34	1	5
35-39	1	0
40-44	6	4
45-49	1	2
50-59	0	9
60+	2	3
Unknown	1	1
Total	35	49

It is remarkable that with the exception of the five cases connected with the original case, only one case occurred which was attributed to contact with a case of typhoid fever. One explanation of this is the fact that nearly all of the cases were hos-

pitalized early and that the attendants of those patients who remained at home were instructed in methods of prophylaxis.

SUMMARY OF FIVE OUTBREAKS OF TYPHOID FEVER

Occurring During 1929 and Accounting for 175 Cases of the 288 Reported.			
City or Town	Month	No. of Cases	No. of Deaths
Greenfield	August	72	2
Leon	September	7	1
Pringhar	September	5	0
Pocahontas	October	7	0
Clinton	October and November	84	16
Total		175	19

The number of cases of typhoid fever reported by months during the years 1924-1929 inclusive and for the first six months of 1930 are shown in table III.

TABLE III

Number of Cases of Typhoid Fever Reported by Months for the Years 1924-1929 Inclusive and the First Six Months of 1930.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
1924	38	3	0	1	2	1	40	1	7	4	2	4	103	
1925	1	3	2	3	1	4	3	2	32	24	25	23	123	
1926	7	0	2	2	3	4	10	35	13	33	12	5	126	
1927	17	19	25	24	20	20	14	29	15	14	12	12	221	
1928	11	9	4	9	2	7	11	14	22	16	8	5	118	
1929	1	7	10	22	1	10	15	67	29	16	94	16	288	
1930	5	3	6	2	1	10	First six months 1930.....						27	
Total	1924-29	75	41	43	61	29	46	93	148	118	107	153	65	979
6-year	average	12	7	7	10	5	8	15	25	20	18	25	11	163
Per	cent	7.7	4.2	4.4	6.1	3.0	4.7	9.5	15.1	12.2	10.9	15.6	6.6	100.0

In connection with the control of typhoid fever, special instructions for patients and attendants have been prepared. A copy is sent to each health officer reporting a case of typhoid fever with the request that it be given to the family.

TULAREMIA

Although in many states tularemia is quite prevalent, only five cases of this disease were reported in Iowa during the biennium. There were no deaths. Tularemia is a disease of rabbits, ground squirrels, quail and grouse. It may be transmitted to man through the bites of infected blood-sucking insects or by the handling of infected rabbits. It has the distinction of being the only American disease, originating and being discovered in America and being investigated and named by Americans. It has been reported from every state in the Union with the exception of the New England States. The greatest hazard

with regard to infection occurs in connection with the dressing of infected rabbits. From the number of cases reported in Iowa apparently it has not yet become a serious menace.

OTHER ACTIVITIES

The Weekly Health Message. Since its inception the Division has cooperated in the preparation of material for the Weekly Health Message. Since April, 1930, the Division has had entire charge of its publication. Material has been prepared for the Health Commissioner's Page of the Iowa State Medical Society Journal and for the Department's Quarterly Bulletin. Special articles have been furnished the State Newspapers and two articles were published in the United States Daily, a national newspaper. The Director prepared and managed an exhibit at the Iowa State Medical Society meeting in Marshalltown. The Division had an exhibit at the State Fair. Many charts showing the seasonal incidence of diseases over a period of years, cases of typhoid fever, deaths from diphtheria and others have been made. Contemporary charts of reports of cases are kept in a special book. Six new pamphlets, The Differential Diagnosis between Chickenpox and Smallpox, Vaccination by the Multiple Pressure Method, Undulant Fever, Smallpox, Tuberculosis, The Care of Cases of Communicable Disease in the Home or Hospital have been prepared. The Director has edited and furnished material for The Campaign, a quarterly publication devoted to tuberculosis and allied conditions. The Division cooperated in the making of plans for the fifth annual Public Health Conference.

Public Health Conference. This Conference was held April 3 and 4, 1930, under the joint auspices of the Iowa Public Health Association and the Iowa State Department of Health. It was the most successful conference of the five which have been held both in point of attendance and of the material presented. Such men as Dr. A. J. McLaughlin of the U. S. Public Health Service; Dr. William F. King, a member of the White House Conference Planning Committee, from Indiana; Dr. P. W. Covington, International Health Division, Rockefeller Foundation; Dr. M. E. Barnes, Professor of Hygiene and Preventive Medicine, University of Iowa and Dr. Earl Brown, Secretary of the Board of Health of the State of Kansas, were members of the faculty.

One hundred twenty-four people interested in health activities were registered among whom were 11 health officers and

Director and Epidemiologist.

TABLE IV

Disease	1928							1929							1930													
	July	August	September	October	November	December	Total	January	February	March	April	May	June	July	August	September	October	November	December	Total	January	February	March	April	May	June	Total	Total for two years
Diphtheria	18	22	36	75	68	65	284	47	42	42	27	28	13	18	17	29	53	42	48	397	35	41	47	30	26	18	217	898
Diphtheria and Croup	69	51	96	266	344	377	1,353	544	676	895	283	459	186	94	53	86	221	209	269	4,315	378	441	406	331	248	111	1,912	7,453
Epidemic Typhoid Fever	11	14	25	16	15	70	139	113	176	113	126	159	135	12	10	94	106	94	16	298	5	3	4	2	1	10	27	301
Measles	6	5	4	4	7	119	355	139	107	367	303	376	223	35	31	100	111	100	111	440	1,913	351	360	412	469	427	2,883	4,909
Scarlet Fever	25	5	4	4	4	119	355	139	107	367	303	376	223	35	31	100	111	100	111	440	1,913	351	360	412	469	427	2,883	4,909
Whooping Cough	58	35	46	39	87	96	361	129	127	155	111	116	142	137	106	97	73	137	158	147	1,184	488	515	1,781	1,899	1,275	9,767	17,101
Croup	4	8	1	0	2	11	16	12	9	5	8	3	5	4	4	3	2	3	2	70	11	17	12	27	13	5	86	106
Croup and Whooping Cough	66	13	167	330	341	260	167	142	163	107	217	108	54	15	16	139	108	356	1,994	251	260	165	255	227	68	1,906	4,220	203
Chickenpox	1	5	0	0	0	0	0	2	1	4	13	13	4	2	1	7	6	2	1	276	5	15	8	2	1	0	26	88
Measles and Chickenpox	69	51	96	266	344	377	1,353	544	676	895	283	459	186	94	53	86	221	209	269	4,315	378	441	406	331	248	111	1,912	7,453
Measles and Scarlet Fever	11	14	25	16	15	70	139	113	176	113	126	159	135	12	10	94	106	94	16	298	5	3	4	2	1	10	27	301
Scarlet Fever	25	5	4	4	4	119	355	139	107	367	303	376	223	35	31	100	111	100	111	440	1,913	351	360	412	469	427	2,883	4,909
Scarlet Fever and Measles	6	5	4	4	7	119	355	139	107	367	303	376	223	35	31	100	111	100	111	440	1,913	351	360	412	469	427	2,883	4,909
Scarlet Fever and Whooping Cough	58	35	46	39	87	96	361	129	127	155	111	116	142	137	106	97	73	137	158	147	1,184	488	515	1,781	1,899	1,275	9,767	17,101
Croup and Whooping Cough	4	8	1	0	2	11	16	12	9	5	8	3	5	4	4	3	2	3	2	70	11	17	12	27	13	5	86	106
Chickenpox and Whooping Cough	66	13	167	330	341	260	167	142	163	107	217	108	54	15	16	139	108	356	1,994	251	260	165	255	227	68	1,906	4,220	203
Measles and Chickenpox	1	5	0	0	0	0	0	2	1	4	13	13	4	2	1	7	6	2	1	276	5	15	8	2	1	0	26	88
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Measles and Chickenpox	1	5	0	0	0	0	0	2	1	4	13	13	4	2	1	7	6	2	1	276	5	15	8	2	1	0	26	88
Measles and Scarlet Fever	69	51	96	266	344	377	1,353	544	676	895	283	459	186	94	53	86	221	209	269	4,315	378	441	406	331	248	111	1,912	7,453
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Scarlet Fever and Whooping Cough	58	35	46	39	87	96	361	129	127	155	111	116	142	137	106	97	73	137	158	147	1,184	488	515	1,781	1,899	1,275	9,767	17,101
Croup and Whooping Cough	4	8	1	0	2	11	16	12	9	5	8	3	5	4	4	3	2	3	2	70	11	17	12	27	13	5	86	106
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Scarlet Fever and Whooping Cough	58	35	46	39	87	96	361	129	127	155	111	116	142	137	106	97	73	137	158	147	1,184	488	515	1,781	1,899	1,275	9,767	17,101
Croup and Whooping Cough	4																											

BARBER DIVISION

The 1927 legislature placed upon the statute books of Iowa a law regulating the practice of barbering. This division consists of a Board of Examiners: L. D. Hamilton, chairman, Sioux City; J. E. Bales, secretary, Cedar Rapids; and L. W. Skinner, Council Bluffs; and four inspectors: John T. McGruder, chief inspector, Des Moines; G. T. Clark, Carroll; F. O. Moffitt, Sioux City and F. C. Sloan, Waterloo, field inspectors.

SANITARY RULES

The principal objects for the passage of this act are to protect the public and raise the general standard of the profession. The State Department of Health prescribed a set of sanitary rules, a copy of which is required to be displayed in a conspicuous place in every shop for the information and guidance of the persons working and employed therein and the patrons.

These sanitary rules pertain to proper quarters, shop in connection with business, sterilization of instruments, clean towels, cleanliness of the barbers' hands, the use of alum lump and styptic pencil to stop the flow of blood, the method of applying creams, and communicable diseases of both the barber and his patron.

INSPECTION STAFF

The three field inspectors visit the barber shops in the State and assist the barbers in correcting wrong conditions. They send weekly reports to the office of the chief inspector and when the reports are not satisfactory a letter is sent to the owner or manager of the barber shop.

The Forty-third General Assembly amended the barber law by giving the State Department of Health the privilege of closing a barber shop after a five-day written notice had been issued for violations of the sanitary rules. This has been a wonderful help toward better sanitation of the barber shops in the State.

The inspectors visit all barber shops at least twice a year and most of them three or four times depending upon the condition of the roads in the community in which they are working.

The chief inspector has charge of all clerical work in the office such as issuing all licenses, receiving applications for examination and apprentices and correspondence in general. The chief inspector also visits the principal towns once or twice a year and when necessary for the Department to issue a closing notice for

violation of the sanitary rules the chief inspector visits said barber shop before the final closing notice is issued.

The co-operation of the local health officers and county attorneys has been a great asset to the Department in enforcing the barber law.

SCHOOLS

The accredited barber schools in the state that received a rating of "A" based upon equipment and course of study, are:

Iowa Barber College, Des Moines
Palmer Barber College, Cedar Rapids
Sioux City Barber College, Sioux City
Tri-City Barber College, Davenport

The graduates of these four accredited colleges, after having completed the additional eight-month apprenticeship under the supervision of a licensed barber are eligible for an examination.

Students learning the profession in private shops are required to serve a two-year apprenticeship. Each apprentice works on an apprentice permit, dated from the time he begins his training and to expire in one year if he completes the four months college course prescribed by the Board of Examiners, or to expire in two years if he serves as an apprentice in a private shop.

NUMBER OF LICENSED BARBERS

During the past biennium 463 certificates have been issued to candidates following successful examination.

DIVISION OF COSMETOLOGY

ALMA K. BERRY, Secretary

In April, 1929 the cosmetology law was amended by the Forty-third General Assembly. The following changes were made:

The annual renewal fee was raised to three dollars.

All students are now required to attend a licensed school of cosmetology until at least 825 hours of instruction has been completed.

In order to be approved and licensed to teach cosmetology schools must pay an annual fee of \$100.00.

Apprentice cards are not issued to students. Only graduates of approved schools of cosmetology who desire to practice from the time of their graduation until the date of the next succeeding examination may be issued apprentice licenses. They cannot be renewed and only one may be issued to each person. The fee for an apprentice license is one dollar.

All managers of cosmetology establishments who directly supervise the work of operators must be licensed cosmetologists.

No person, firm, or corporation may employ a person for cosmetology work who is not a licensed operator or a bona fide apprentice as defined above.

All persons desiring to take the examination in the use of the electric needle must fill out a separate application form and file a fee of ten dollars besides the regular examination blank and fee. A diploma from

a school which teaches a special course in the use of the electric needle is required.

All itinerant cosmetologists must procure a special itinerant's license which costs \$100.00 annually.

A copy of the sanitary rules pertaining to cosmetology is sent out with every certificate to practice cosmetology. These rules are made by the Board of Cosmetology Examiners for the information of the general public as well as for cosmetologists and should be posted in every cosmetology establishment.

The rules governing schools of cosmetology are also compiled by the Board of Examiners and frequent calls are made by the inspectors to see that the schools are complying with the rules and their schedule is in force.

For the first half of the biennial period, from July 1, 1928 to June 30, 1929 only one inspector was employed by this department, Mrs. Goldie Cessna. She reports that during that period she made 1,268 calls in 345 towns and visited 1,432 operators. She found 320 business shops, 449 residence establishments and 124 shops located in barber shops. Sixty-seven unlicensed persons were working in the state and 342 operators have discontinued their profession or left the state.

On July 1, 1929, Mrs. Violet Washburn of Ames, Iowa, was employed as cosmetology inspector. During the period from July 1, 1929, to June 30, 1930, she made 1,367 calls in 427 towns and found 1,737 operators. Five hundred eleven business shops, 398 home shops, and 165 establishments in barber shops were inspected by her. Three hundred fifty-four operators have discontinued the work during that time. Mrs. Washburn found 75 unlicensed operators in her territory in the state, which is the western half.

On September 1, 1929 Miss Verna Onstott of Belle Plaine, Iowa, was appointed cosmetology inspector to fill the vacancy caused by Mrs. Cessna's resignation. In the ten months she has been connected with the department she reports having inspected 345 towns in which she made 1,232 calls and found 909 operators. Two hundred twenty-eight business shops, 93 shops in barber shops and 209 home shops were inspected by her. Forty-four unlicensed persons were operating in her territory and 219 operators have discontinued working. Miss Onstott has made 291 second inspections. Her territory is the eastern half of the state.

In ten instances legal proceedings have been started during the last biennium: two of these have been fined \$100.00 and costs;

two cases have been dropped when offender left the state; four have been bound over to the grand jury; one continued until the next term of court; and one has been permitted to write the examination.

The Board of Examiners are as follows: Mrs. Mabel Hart, Chairman, Mrs. Lillian Kostomlatsky, Vice Chairman, Miss Grace M. Shinn, Secretary.

To date 4,879 licenses have been issued. Eight hundred twenty-seven licenses have been issued by examination since July, 1928.

All conferences, correspondence, and licensure are taken care of in the central office and are in charge of Mrs. Alma K. Berry, secretary of the cosmetology division.

Fifteen schools have been licensed or approved to teach cosmetology. They are as follows:

Madame Wall's School of Beauty Culture, 221 Tama Bldg., Burlington, Iowa.

Thompson's School of Beauty Culture, 616 Locust, Des Moines, Iowa.

Kennedy's School of Beauty Culture, 322 Walnut St., Des Moines, Iowa.

Iowa School of Beauty Culture, 615 Walnut St., Des Moines, Iowa.

National School of Cosmeticians, 808 Tower Court, Chicago.

Moler System of Colleges, Chicago Branch, 512 N. State St., Chicago.

Samuels' School of Cosmetology, 722 Pierce St., Sioux City, Iowa.

Waterloo Beauty College, 226 E. 5th St., Waterloo, Iowa.

Matthews Hairdressing Academy of Iowa, Inc., 756 Main St., Dubuque, Iowa.

Paris Academy of Beauty Culture, 213 S. 2nd St., Cedar Rapids, Iowa.

Busselle School of Cosmetology, 202 Securities Bldg., Davenport, Iowa.

E. Burnham School of Beauty Culture, 218 N. State St., Chicago.

Omaha Academy of Cosmetology, 316 Karback Block, Omaha, Neb.

Paul's Hairdressing Academy of Minnesota, Inc., 210 Loeb Arcade, Minneapolis, Minn.

Iowa City School of Beauty Culture, Iowa City, Iowa.

DIVISION OF EXAMINATION AND LICENSURES

H. W. GREFE Director

Under the provisions of Section 2186, Code 1927, there was created a Division of Examinations and Licensures for the practice of certain professions named in Section 2439, as follows: Medicine and Surgery, "Osteopathy," "Osteopathy and Surgery," Chiropractic, Nursing, Dentistry, Dental Hygiene, Optometry, Pharmacy, Cosmetology, Barbering, and Embalming.

No person shall engage in the practice of any of the above named professions unless he shall have obtained from the State Department of Health a license for that purpose, excepting Pharmacists, who come under the exceptions of Section 2529. The examinations of Chiropractors and Osteopaths come under the ex-

ceptions provided for in Section 2535, but the department issues the licenses to applicants whose names are certified to it by these boards.

The following boards served during the biennial period:

Medical—Wm. Jepson, M. D., Chairman, Sioux City; Frank M. Fuller, M. D., secretary, Keokuk; Frank T. Lauder, M. D., Garwin.

Nurses—Frances G. Hutchinson, R. N., Chairman, Council Bluffs; Marianne Zichy, R. N., Secretary, Marshalltown; Margaret M. Stoddard, R. N., Newton.

Dental—J. J. Booth, D. D. S., Chairman, Marion; Hardy F. Pool, D. D. S., Secretary, Mason City; H. D. Coy, D. D. S., Hamburg; H. J. Altfillisch, D. D. S., Dubuque; Frederick H. Water, D. D. S., Ames.

Optometry—Alfred J. Meyer, Chairman, Davenport; E. W. Martin, Secretary, Carroll, J. J. Brady, Sheldon.

Chiropractic—J. E. Slocum, D. C., Chairman, Webster City; Myrtle E. Long, D. C., Secretary, Des Moines; W. Ruth Van Clark, D. C., Indianola.

Osteopathy—H. B. Willard, D. O., Chairman, Manchester; D. E. Hannan, D. O., Secretary, Perry; Sherman Opp, D. O., Creston.

Embalming—J. A. West, L. E., Chairman, Sioux City; Carrie E. Snider, L. E., Secretary, West Liberty; L. E. Wilson, L. E., Eagle Grove.

Podiatry—S. J. Olson, Chairman, Des Moines; Paul M. Hawk, Secretary, Waterloo; C. I. Groff, Mason City.

Cosmetology—Mabel Hart, Chairman, Ames; Grace Shinn, Secretary, Des Moines; Lillian Kostomlatsky, Sioux City.

Barbers—L. D. Hamilton, Chairman, Sioux City; John E. Bales, Secretary, Cedar Rapids; Lee W. Skinner, Council Bluffs.

Each examining board may meet for the purpose of giving examinations at such times as the department may fix, not exceeding four in any one year. Each board makes rules for conducting examinations and issuing licenses by reciprocity for that profession, also prepares the examination questions and grades the answers thereto.

All communications relating to examinations and registration by reciprocity, together with credentials and fees, should be sent to the State Department of Health, at least fifteen days prior to date of meetings and examinations. (Sec. 2466.) (Exceptions, Sec. 2529 and 2535.)

BOARD OF MEDICAL EXAMINERS

Number of licenses issued upon examination	205
Number of licenses issued upon reciprocity	53
Number of licenses issued by recognition of National Board of Medical Examiners certificates	2

Total number of licenses issued during biennial period.

Number of Itinerants' licenses issued	4
Number of Physicians in good standing at end of biennial period	3,046

BOARD OF OSTEOPATHIC EXAMINERS

Number of licenses issued to practice Osteopathy upon examination	97
Number of licenses issued to practice Osteopathy and Surgery	4

Number of licenses issued upon reciprocity	17
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Total number of licenses issued during biennial period..

Number of Osteopaths in good standing at end of biennial period	617
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BOARD OF CHIROPRACTIC EXAMINERS

Number of licenses issued upon examination	187
Number of licenses issued upon reciprocity	18

Total number of licenses issued during biennial period..

Number of Chiropractors in good standing at end of biennial period	834
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BOARD OF PODIATRY EXAMINERS

Number of licenses issued upon examination	3
Number of licenses issued upon reciprocity	0

Total number of licenses issued during biennial period..

Number of Podiatrists in good standing at end of biennial period	58
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BOARD OF OPTOMETRY EXAMINERS

Number of licenses issued upon examination	6
Number of licenses issued upon reciprocity	1

Total number of licenses issued during biennial period..

Number of Itinerants' licenses issued	7
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Number of Optometrists in good standing at end of biennial period	490
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BOARD OF EMBALMER EXAMINERS

Number of licenses issued upon examination	81
Number of licenses issued upon reciprocity	5

Total number of licenses issued during biennial period..

Number of Embalmers in good standing at end of biennial period	1,687
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Number of Embalmers' Apprentice licenses issued during biennium	119
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BOARD OF NURSE EXAMINERS

Number of licenses issued upon examination	1,195
Number of licenses issued upon reciprocity	95

Total number of licenses issued during biennial period..

Number of nurses in good standing at end of biennial period	4,252
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BOARD OF DENTAL EXAMINERS

Number of licenses issued upon examination	147
Number of licenses issued upon reciprocity	0

Total number of licenses issued during biennial period..

Number of Dental Hygienists licenses issued upon examination	8
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Number of Dental Hygienists in good standing at end of biennial	15
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Number of Dentists in good standing at end of biennial period	1,680
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BOARD OF BARBERS EXAMINERS

Number of licenses issued upon examination	463
Number of licenses issued upon reciprocity	0

Total number of licenses issued during biennial period..

Number of Barbers in good standing at end of the biennial period	6,238
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BOARD OF COSMETOLOGY EXAMINERS

Number of licenses issued upon examination	827
Number of licenses issued upon reciprocity	0

Total number of licenses issued during biennial period..

Number of Cosmetologists in good standing at end of biennial	3,624
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DIVISION OF LABORATORIES

M. E. BARNES, M. D., Head and Director

During the greater part of the biennium Dr. A. V. Hardy was acting head and director of the laboratories. Since February 1, 1930, Dr. M. E. Barnes has been in charge.

The laboratories of the State Department of Health are located at Iowa City in commodious quarters provided by the School of Medicine, State University of Iowa. Administratively, they are a part of, and are operated by the Department of Preventive Medicine and Hygiene. The operating arrangements are such, however, that the only direct connection between the laboratories and the teaching activities of the department is through the senior members of the staff who hold both professorial rank and responsible positions in the laboratories. Under this arrangement excess material from the laboratories, and the data collected in routine work or in research are available for purposes of instruction in the classrooms. Students have no access to, nor do they participate in the work of the state laboratories, all work being conducted by a specially trained and highly competent staff.

During the biennium, special research was continued on undulant fever through the facilities offered by the laboratories, the Medical College and Hospitals. Additional funds for this research were made available by the United States Public Health Service, and the Research Committee of the American Medical Association. The results of these investigations have been published from time to time. For use in large public gatherings and at conventions a special exhibit on Undulant Fever was prepared which has been used in this and other states.

Due to the lack of an appropriation for the Serological laboratory, it could be maintained only through the payment of examination fees. The charge of fifty cents per specimen has proved inadequate and beginning July 1, 1930, the fee per specimen has been increased to one dollar.

The water laboratory, in addition to its routine work, has increased its facilities so as to permit the Division of Sanitary Engineering to expand its work in safeguarding the water supplies of the state. Mr. Jack J. Hinman, Jr., Chief of the Division, continued throughout the biennium to serve as Chairman of the Committee on Standard Methods of Water Analysis of the American Water Works Association. He served as President of this association during 1929-30. In the summer of 1929, he was

granted leave of absence in order that he might advise as to the solution of an acute water supply problem for the city of Barranquilla, Colombia, South America. A former assistant in the Water Laboratory Division is now in charge of the water purification plant in Barranquilla.

On July 1, 1929, the epidemiology work of the State Department of Health was centralized in Des Moines, since which date there has been little occasion for such activities at Iowa City. A summary of the work conducted prior to that date is given in the tables.

The Division of Laboratories now consist of four sections, the work of which is discussed in the several reports which follow:

1. Bacteriological Laboratory, Chief, I. H. Borts, M. D.
2. Water Laboratory, Chief, J. J. Hinman, Jr., M. S.
3. Serological Laboratory, Chief, Miss M. P. Spanswick, M. S.
4. Laboratory Records, Chief, Miss Minnie Hamilton.

I. BACTERIOLOGICAL LABORATORY

I. H. BORTS, M. D., Chief

The personnel of this division consists of a chief bacteriologist, an associate bacteriologist, two full-time technicians and one part-time technician. In addition we have three helpers who serve all three divisions.

DIPHTHERIA EXAMINATIONS

With the introduction of the Schick test and the administration of prophylactic toxin-antitoxin to susceptible individuals the number of diphtheria examinations has decreased each succeeding year. A very marked decrease of over 50% is noted in 1930 as compared with the previous biennium. This decline in all likelihood is due to public health education and the administration of toxin-antitoxin to thousands of school children.

TYPHOID FEVER

During this biennium there have been examined for typhoid fever 6,957 specimens consisting of blood cultures, feces, urine, and the agglutination tests performed on blood serum.

An increase of about 45% in the number of examinations may be accounted for in that all specimens of blood sent for the undulant fever agglutination tests were also examined for typhoid agglutinins. A high percentage of the positive specimens was due to several epidemics that assumed major proportions.

TUBERCULOSIS

The number of examinations performed approximate those of the two previous bienniums. In all 8,583 were examined of which number 741 were found positive. In addition to the routine examinations comparative studies are being made of guinea pig inoculations and the Corper culture method of detecting evidences of tuberculous infection in sputum, urine, tissue, feces, pleural fluid, spinal fluid, etc.

RABIES

Rabies in Iowa is slightly on the increase, the percentage of positives remaining approximately the same in proportion to the number of specimens examined as in the 1928 biennial period. The number of positive specimens reported as shown in table 4 does not represent the number of positive animals in Iowa since in several epidemic areas only those animals that bit persons were sent in for examination, while many suspicious dogs were killed on sight and examinations were not made. Many specimens are also sent to other laboratories for examination.

UNDULANT FEVER

Since the recognition of undulant fever in Iowa, all specimens sent to the laboratory for the typhoid agglutination test were also examined for the agglutinins of undulant fever. In this way many cases with undiagnosed fever were correctly diagnosed as having undulant fever. It is felt that the additional work was well justified in that of the 9,167 specimens examined 661 human specimens were found positive. Since our investigative work began, 105 *Brucella* organisms have been isolated from specimens. Of these 73 were from humans, one of which was a *B. melitensis*, 47 were porcine abortus and 25 were bovine abortus organisms. From cattle 32 bovine abortus cultures were obtained.

MISCELLANEOUS

As shown in table 7, 1,147 miscellaneous examinations were made, an increase of about 40% over the past biennial period. Many of these examinations are time consuming as well as requiring special apparatus and culture media. Of special interest is the increase in the number of positive malarial specimens found on examination. Investigation shows that many of these cases contracted their infection within this state, which emphasizes the importance of considering malaria in all cases of otherwise obscure fevers.

RESEARCH

During the past biennium research was largely confined to field and laboratory investigation in undulant fever and to a lesser extent to the comparison of the guinea pig inoculation and the Corper potato cylinder culture methods for detecting the presence of tubercle bacilli.

Human cases presenting a positive agglutination test for undulant fever were visited by one of the staff, a careful clinical history was taken and a physical examination made. Blood cultures were also taken from the patients and in about 15% of the cases *Brucella* organisms were isolated. A large number of the patients visited were farmers and packing house workers. Serological study of the cattle revealed evidence of wide-spread infection with contagious abortion. The milk of positive reacting cows was examined for *Brucella* by injecting small quantities of cream into guinea pigs. In the specimens thus examined 32 strains of bovine abortus organisms were isolated.

To date approximately 250 specimens suspected of harboring tubercle bacilli have been examined by guinea pig inoculation and by the Corper culture method. The majority of these specimens were received from the University Hospital, half of the specimen being given to a staff worker in the Department of Pathology and Bacteriology for guinea pig inoculation, and the other half sent to our laboratory for culture. The work therefore, was done independently and results are unbiased. A great deal of data has been collected but at the present time we feel that it is insufficient to permit definite conclusions.

II. SEROLOGY LABORATORY

MISS M. P. SPANSWICK, M. S., Chief

During the last two years there have been a number of changes in the staff, which consists of a serologist, associate serologist, assistant serologist, and two technicians.

During this period the Kahn test has been instituted as a routine procedure to supplement the official Wassermann test. The latter is made on all specimens, and both tests where sufficient serum is available.

The experience of this laboratory coincides with that of others as to the close correlation between results of the two methods. As a general rule, the Kahn test becomes positive earlier in new cases and remains positive longer in treated cases. In those with weak reactions, the Kahn usually gives the stronger reaction.

Occasional discrepancies exist between the two methods, especially in old treated cases and, rarely in active cases. Under such circumstances, the tests are repeated, and additional specimens requested from the physician. Inasmuch as the two tests run parallel in approximately 98 per cent of the cases, the Kahn test should prove a valuable aid to the physician, as a confirmatory test. This laboratory is not yet prepared to adopt the Kahn tests to the exclusion of the Wassermann test.

The function of the laboratory is to examine carefully and accurately the material submitted, and report its findings. The interpretation of these findings must, of necessity, be made by the physician who has knowledge of the clinical conditions. Positive reactions of varying degrees occasionally occur in diseases other than syphilis. Thus, on several occasions during the biennium, blood serum from cases of active malaria showed Wassermann reactions as high as four plus. These reactions disappeared with the subsidence of the malarial infection.

Physicians should inform themselves as to the limitations of both methods, and should consider the laboratory findings as an aid to diagnosis and a guide to treatment.

III. WATER LABORATORY DIVISION

JACK J. HINMAN, Jr., M. S. Chief

The personnel of this division consists of a chief, who is also Associate Professor of Sanitation, on the University faculty, a water analyst on full time, and an assistant water analyst on half time duty. During the summers the assistant water analyst has been on a temporary full time status. Additional graduate assistants have been employed on a part time basis as occasion has demanded. Preparation of media, and cleaning and sterilization of glassware are carried out by personnel who serve jointly the other state laboratories of the departments.

The personnel of the Water Laboratory Division conducts a considerable amount of instruction in sanitation and in the examination of water and sewage for students in several colleges of the University. No routine work is entrusted to these students however, and the work which they do is carried out in a teaching laboratory separate from that in which the routine examination of waters for the state is done.

The control of the water supply of the University of Iowa, the city of Iowa City, and the operation of the three swimming pools

of the university are in charge of the Chief of the Water Laboratory Division. Examinations of the water are made in the Water Laboratory but the operation details are entrusted to personnel supported by the Department of Grounds and Buildings of the University, and by the Iowa Water Service Company.

TYPE OF WORK UNDERTAKEN

The work of the Water Laboratory Division has been confined to the sanitary examination of water and sewage, since the original law specified that the examinations were to be made in the interest of the public health and for the purpose of preventing epidemics of disease. Mineral and boiler analyses are not made, even though in certain instances they are desirable, because such analyses are primarily of economic importance. Moreover the staff available is insufficient for the work. It is hoped that some day the study of the mineral characteristics of the water supplies of the state may be made possible.

The sanitary examinations of water and of sewage are made by the Water Laboratory Division for the State Department of Health for other state departments, for city, county and township authorities and for individuals. Individuals are expected to have the endorsement of local health officers in applying for such services.

The fee charged for the examination of water specimens is \$1.00. Work for the State Department of Health is done without charge, and that conducted for the university or where large numbers of samples are to be submitted, has been authorized at reduced fees. Senders of samples are expected to pay all transportation charges on the containers supplied.

SCOPE OF THE WORK ATTEMPTED

In the sanitary examination of waters and sewage, the determinations made involve sanitary chemical analyses and bacteriological examinations. A sanitary chemical examination has for its purpose the detection of old pollutions and the determination of the density of contaminations. Determinations of Ammonia Nitrogen, Albuminoid Nitrogen, Nitrite Nitrogen, Nitrate Nitrogen, Chlorine as Chlorides and Alkalinity are made in regular routine. Other determinations are carried out when required. The bacteriological examination includes an estimation of the numbers of bacteria present, fermentation tests in lactose broth, and partial confirmatory tests applied to fermenting organisms by the use of

eosine methylene blue agar and brilliant green lactose peptone bile for the purpose of discovering if organisms of sewage-like origin are present.

Special reports are made on all specimens, but samples from University and Iowa City systems are usually reported by weekly or monthly statements rather than by individual communications. Advice as to remedial measures is given where required. From a week to ten days are ordinarily necessary for the completion of the examination and forwarding of the reports.

EXTENT OF WORK CONDUCTED

The Water Laboratory Division has enjoyed a rather steady growth, but the amount of work conducted is still much less than should be done in order to keep a satisfactory control over the water supplies of a state which has the large number of water supplies that belong to the cities and towns of Iowa. Efforts are made to inform public officials of the work of the department and the need for regular water examinations, but many of the officials seem not to be reached or to remain unconvinced. They do not seem to appreciate that the relative safety of their community water supplies is much increased by regular inspection and examination. Due to the activities of the present State Sanitary Engineer, Mr. A. H. Wieters, and his assistants, public officials have become better acquainted with these facts during the biennium, and these activities account, in part, for the material increase in demand for the work of the Water Laboratory during this period.

Routine examinations made during the different biennial periods since the establishment of the Water Laboratory Division in 1914 are shown below:

Biennium 1914-1916	2,488	Samples Examined
Biennium 1916-1918	3,957	Samples Examined
Biennium 1918-1920	3,991	Samples Examined
Biennium 1920-1922	6,364	Samples Examined
Biennium 1922-1924	6,465	Samples Examined
Biennium 1924-1926	7,520	Samples Examined
Biennium 1926-1928	7,987	Samples Examined
Biennium 1928-1930	9,278	Samples Examined

The increase in the work of the Water Laboratory Division for the biennium 1928-1930 is thus 1,291 samples, or 16.16% more than for the preceding biennium 1926-1928.

RESEARCH

Various problems of research are under study in the division at all times. Some of these are of purely local application and

others of general interest to those engaged in similar work. The later studies have been included in twelve papers during the biennium, which have been published individually or in connection with the reports of the committee on Standard Methods of Water Analysis.

IV. DIVISION OF RECORDS MISS MINNIE HAMILTON, Chief

The staff of this division consists of a secretary and three stenographers. Upon this group falls the responsibility for the proper handling of records for all laboratories, as well as for the clerical phases of routine and research work. A considerable portion of such work, obviously, does not lend itself to statistical presentation. The receipt or dispatch of telephonic and telegraphic messages, the looking up of records to supply requested information, the compilation of data, and the stenographic work connected with a voluminous correspondence are a part of the invisible services rendered by this division.

Every specimen received by the laboratories involves at least three transactions on the part of the record division, namely, recording its receipt, the results of examination, and sending a report to the physician or institution concerned. Reports are sent out by mail, telegraph, or telephone, in accordance with the desires of the physician. It is one of the functions, and one of the achievements of the record division to forward complete reports with the utmost dispatch.

TABLE 1—SPECIMENS RECEIVED FOR THE EXAMINATION OF DIPHTHERIA

	Positive	Negative	Diagnosis Reserved	Specimens Unsuitable for Exam.	Total
Diagnosis—					
1928-1929.....	314	1,573	75	27	1,969
1929-1930.....	288	1,558	209	97	2,152
Total.....	602	3,131	284	124	4,141
Release—					
1928-1929.....	666	1,299	35	16	2,016
1929-1930.....	435	799	108	61	1,403
Total.....	1,101	2,098	143	77	3,419
Carrier—					
1928-1929.....	61	311	39	5	397
1929-1930.....	48	236	33	11	328
Total.....	109	547	72	16	745
Undesignated—					
1928-1929.....	181	1,364	135	17	1,597
1929-1930.....	176	1,781	173	60	2,190
Total.....	357	3,145	308	77	3,787
Virulence—					
1928-1929.....	8	2	0	0	5
1929-1930.....	1	19	0	0	20
Total.....	4	21	0	0	25
Grand total.....	2,175	8,942	688	294	12,097

Grand total for the biennium, 12,097.

TABLE 2—SPECIMENS RECEIVED FOR THE EXAMINATION OF TYPHOID FEVER

	Positive	Negative	Weak Reaction	Specimens Unsuitable for Exam.	Total
Widal—					
Dry—requests—					
1928-1929.....	55	769	91	6	921
1929-1930.....	104	875	113	6	1,098
Wet—requests—					
1928-1929.....	61	541	39	10	652
1929-1930.....	79	1,172	63	5	1,319
Dry—routine—					
1928-1929.....	0	110	3	0	113
1929-1930.....	1	69	0	0	70
Wet—Routine—					
1928-1929.....	15	1,061	41	2	1,119
1929-1930.....	9	1,231	7	2	1,249
Feces and Urine—					
1928-1929.....	14	94	0	1	109
1929-1930.....	11	231	2	0	244
Blood Cultures—					
1928-1929.....	2	30	0	0	32
1929-1930.....	4	37	0	0	41
Total.....	355	6,220	350	22	6,957

Grand total for the biennium, 6,957.

TABLE 3—SPECIMENS RECEIVED FOR THE EXAMINATION OF TUBERCULOSIS

	Positive	Negative	Diagnosis Reserved	Specimens Unsuitable for Exam.	Total
Sputum—including animal inoculations—1928-29					
57, 1929-30-103—					
1928-1929.....	385	3,716	1	13	4,115
1929-1930.....	356	3,792	6	14	4,168
Total.....	741	7,508	7	27	8,283
Feces—Urine—					
1928-1929.....	2	47	0	5	54
1929-1930.....	4	47	0	12	63
Total.....	6	94	0	17	117
Spinal Fluid—					
1928-1929.....	2	21	0	2	25
1929-1930.....	1	27	0	2	30
Total.....	3	48	0	4	55
Pleural Fluid—					
1928-1929.....	0	26	0	2	28
1929-1930.....	3	29	0	5	37
Total.....	3	55	0	7	65
Other—					
1928-1929.....	1	30	0	3	34
1929-1930.....	1	28	0	0	29
Total.....	2	58	0	3	63
Grand total.....	756	7,763	7	58	8,583

Grand total for the biennium, 8,583.

TABLE 4—SPECIMENS RECEIVED FOR THE EXAMINATION OF RABIES

	Positive	Negative	Diagnosis Reserved	Specimens Unsuitable for Exam.	Total
Dog Heads—					
1928-1929.....	101	74	0	12	187
1929-1930.....	54	37	0	13	104
Total.....	155	111	0	25	291
Heads of cats, cows, rats, lambs, horses, squirrels—					
1928-1929.....	18	26	0	2	46
1929-1930.....	9	23	4	8	44
Total.....	27	49	4	10	90
Grand total.....	182	160	4	35	381

Grand total for biennium, 381.

TABLE 5—SPECIMENS RECEIVED FOR THE EXAMINATION OF UNDULANT FEVER

	Positive	Negative	Diagnosis Reserved	Specimens Unsuitable for Exam.	Total
Human Specimens—					
Request—Wet—					
1928-1929.....	265	1,337	102	11	1,715
1929-1930.....	318	2,027	134	14	2,493
Total.....	583	3,364	236	* 25	4,208
Request—Dry—					
1928-1929.....	6	194	30	0	230
1929-1930.....	0	221	39	1	261
Total.....	6	415	69	1	491
Routine—Wet—					
1928-1929.....	9	193	31	0	233
1929-1930.....	10	345	5	0	360
Total.....	19	538	36	0	593
Routine—Dry—					
1928-1929.....	7	654	97	2	760
1929-1930.....	0	876	37	0	913
Total.....	7	1,530	134	2	1,673
Blood Culture—					
1928-1929.....	23	127	0	0	150
1929-1930.....	23	169	0	0	192
Total.....	46	296	0	0	342
Grand total.....	661	6,143	475	28	7,307
Grand total for biennium, 7,307.					
Animal Specimens—					
1928-1929.....	Hogs 638	Cattle 1,162	Milk 60		Total 1,860
1929-1930.....					

Grand total for human specimens and animal, 9,167.

TABLE 6—SPECIMENS RECEIVED FOR THE EXAMINATION OF TULAREMIA

	Positive	Negative	Diagnosis Reserved	Specimens Unsuitable for Exam.	Total
1928-1929.....	3	51	5	1	100
1929-1930.....	7	72	8	1	88
Total.....	10	123	13	2	138

Grand total for biennium, 138.

TABLE 7—SPECIMENS RECEIVED FOR EXAMINATION OF MISCELLANEOUS MATERIAL

	Positive	Negative	Diagnosis Reserved	Specimens Unsuitable for Exam.	Total
1928-1929.....	43	139	9	16	207
1929-1930.....	117	776	20	25	938
Total.....	160	915	29	41	1,145

Grand total for biennium, 1,145.

TABLE 8—(a) OUTFITS DISTRIBUTED

	Diphtheria Out-fits	Tuberculosis Tubes	Typhoid	Feces and Urine	Blood Cultures	Undulant Fever	Wassermann	Gonococcus	Water	Total
1928-29.....	10,313	5,561	5,929	1,436	55	93	0	31,773	4,064	1,929
1929-30.....	8,104	8,436	6,600	1,983	369	225	363	37,196	4,748	2,367
Total.....	18,417	14,287	12,429	3,419	415	318	363	68,969	8,832	4,198

Grand total for biennium 131,647.

(b)—OUTFITS RETURNED

	Diphtheria Out-fits	Tuberculosis Tubes	Typhoid	Feces and Urine	Blood Cultures	Undulant Fever	Wassermann	Gonococcus	Water	Total
1928-29.....	1,621	1,899	84	19	3	7	0	468	0	4,101
1929-30.....	3,078	3,427	744	279	15	8	0	1,150	148	8,849
Total.....	4,699	5,326	828	298	18	15	0	1,618	148	12,950

Grand total for biennium 12,950.

TABLE 9—SPECIMENS RECEIVED BY SEROLOGICAL DIVISION

	1928-29	1929-30
BLOOD—		
Cholest. Antig. Positive.....	4,382	4,567
Aleh. Antig. Positive.....		
Cholest. Antig. Negative.....	30,083	34,558
Aleh. Antig. Negative.....		
Cholest. Antig. Positive.....	482	449
Aleh. Antig. Negative.....		
Cholest. Antig. Positive.....	697	672
Aleh. Antig. Doubtful.....		
Cholest. Antig. Doubtful.....	422	556
Aleh. Antig. Negative.....		
Specimens unsuitable for examination.....	2,253	2,141
Anticomplementary.....	112	267
Doubtful Cholest. Antig.....		
Doubtful Aleh. Antig.....	287	397
SPINAL FLUID—		
Aleh. Antig. Positive.....	194	250
Aleh. Antig. Negative.....	1,019	1,003
Doubtful.....	47	35
Anticomplementary.....	38	39
Specimens unsuitable for examination.....	7	4
GONORRHEA—		
Positive.....	656	499
Negative.....	385	1,119
Doubtful.....	2,245	1,798
Specimens unsuitable for examination.....	6	8
BACILLUS OF DUCREY.....	2	3
SPIROCHAETES.....	5	14
Total.....	43,323	48,429
Kahn test done on Wassermann specimens.....		43,508

Grand total 1928-1930, 91,752.

TABLE 10—REPORT FOR 1928-29; 1929-30; WATER DIVISION

	1928-1929	1929-1930	1928-1929	1928-1929	1929-1930	1928-1929	1929-1930	1928-1929	1928-1929	1929-1930	1928-1929	1929-1930
Public	Good		Bad		Doubtful		Total					
Shallow wells.....	172	248	450	136	164	300	62	62	124	370	474	844
Deep wells.....	489	706	1,155	96	124	220	19	25	44	604	865	1,469
Springs.....	1	1	2	5	1	6	2	6	2	8	2	10
Treated.....	713	747	1,460	33	67	100	16	3	21	702	819	1,521
Raw streams.....	0	0	0	581	969	1,550	0	0	0	581	969	1,550
Lakes, etc.....	2	3	5	2	0	2	0	0	0	4	3	7
Ice.....	2	0	2	0	1	1	0	0	0	2	1	3
Cisterns.....	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous.....	2	1	3	4	9	13	1	2	7	11	18	29
Sewage.....	0	0	0	60	31	91	0	0	0	60	31	91
Swimming pools.....	1,006	1,018	2,024	50	16	66	60	32	92	1,116	1,066	2,182
Total.....	2,387	2,724	5,111	967	1,382	2,349	169	135	295	3,514	4,241	7,755
Private—												
Shallow wells.....	83	67	150	385	398	783	119	63	212	587	558	1,145
Deep wells.....	66	102	168	38	48	86	9	16	25	113	166	279
Springs.....	1	1	2	6	6	12	2	1	3	9	8	17
Streams, etc.....	0	0	0	1	2	3	0	0	0	1	2	3
Ice.....	0	1	1	0	0	0	0	0	0	0	0	0
Cisterns.....	2	2	4	5	2	7	2	3	5	6	3	9
Miscellaneous.....	4	0	4	1	3	4	0	0	0	5	3	8
Total.....	136	173	329	436	459	895	132	115	247	794	747	1,471
Ownership not stated—												
Shallow wells.....	0	0	0	0	0	0	0	0	0	0	0	0
Deep wells.....	1	0	1	0	0	0	0	0	0	1	0	1
Springs.....	0	0	0	0	0	0	0	0	0	0	0	0
Streams.....	0	0	0	0	0	0	0	0	0	0	0	0
Ice.....	0	0	0	0	0	0	0	0	0	0	0	0
Cisterns.....	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous.....	0	0	0	0	0	0	0	0	0	0	0	0
Total.....	1	0	1	0	0	0	0	0	0	1	0	1
No. data.....	3	8	11	9	24	33	1	6	7	13	38	51
Total.....	3	8	11	9	24	33	1	6	7	13	38	51
Total.....	2,547	2,905	5,432	1,412	1,865	3,277	293	256	549	4,252	5,026	9,279

Grand total for the biennial period, 9,278.

State work included above, 1928-1929, 381 reports.

State work included above, 1929-1930, 1,447 reports.

TABLE 11—*EPIDEMIOLOGICAL INVESTIGATIONS FOR THE BIENNium 1928-1930

Date	Type of Investigation	Place	Probable Mode of Spread	Disease
July 1928	17-19 Field	Nevada	Carrier or unknown exposure.	Diphtheria
August	19-30 Field	Dyersville	Contact	Diphtheria
September	6-7 Field	Elkader	Active case	Dysentery
October	11, 12, 13, 14, 16 Field	Dewitt	Active case	Dysentery
October	24 Field	Oxford Mills (near Oxford Jet.)	Contact	Smallpox
October	2 and 30 Field	Oakdale	Raw milk	Gastro-enter.
November	14-15 Field	Waterloo	Contact	Scarlet fever
December	14 Field	New Virginia	Contact	Smallpox
February 1929	9 Field	Dike	Contact	Menigitis
February	15 Field	Grundy Center	Contact	Smallpox
March	20 Field	Waterloo	Water	Typhoid
March	23-24 Field	Pella	Typh. ear. milk and water	Gastro-enter. and typh.
April	10 Field	Carroll	Contact	Chickenpox
May	31 Field	Oelwein	Carrier	Typhoid
July 1930	9-11 Field	Osage	Water	Typhoid
October	17-21 Field	Iowa City	Water	Typhoid

*Office of Epidemiology taken to Des Moines July, 1929. Other investigations made from there.

TABLE 12—EXAMINATIONS MADE AT AFFILIATED LABORATORIES July, 1928-June 30, 1930

Laboratory	Diphtheria	Tuberculosis	Typhoid	Miscellaneous	Total
Ames	701	9	13	142	865
Atlantic	31	12	1	30	80
Burlington	405	78	64	563	1,110
Cedar Rapids	343	250	29	593	1,215
Council Bluffs	246	101	0	275	622
Des Moines	654	48	10	98	810
Dubuque	1,180	56	10	3,361	4,607
Fort Dodge	45	0	0	3	48
Grinnell	59	72	42	156	329
Keokuk	40	37	27	142	246
Mason City	316	101	25	1,106	1,548
Sioux City	217	9	0	580	806
Washington	122	22	0	105	249
Total	4,359	795	221	7,169	12,535

Grand total for the biennial period, 12,535.

SUMMARY OF WORK OF STATE HYGIENIC LABORATORIES FOR THE BIENNium

(Branch Laboratories Not Included)

	1928-29	1929-30	Summation	Total
I. Diagnostic Division—				
a. Specimens received:				
Diphtheria	6,004	6,095	12,099	
Tuberculosis	4,115	4,168	8,283	
Typhoid	2,936	4,021	6,957	
Rabies	233	148	381	
Tularaemia	100	88	188	
Undulant fever	3,088	9,167	12,255	
Miscellaneous	207	908	1,115	
b. Outfits distributed	23,677	25,971	49,648	
c. Outfits returned	3,633	7,551	11,184	
Total	43,933	58,145	Summation	102,138
II. Serological Division—				
a. Specimens received:				
Blood	38,718	43,507	82,315	
Gonorrhea	1,305	1,391	2,696	
Bac. of Ducrey	3,293	3,424	6,717	
Spirochaete	2	3	5	
b. Outfits distributed	35,837	41,944	77,801	
c. Outfits returned	468	1,298	1,766	
d. Kahn tests made on Wassermanns	0	43,598	43,598	
Total	79,648	135,269	Summation	214,917
III. Water Analysis Division—				
Water	4,192	4,095	9,187	
Sewage	60	31	91	
Containers sent out	1,929	2,369	4,298	
Total	6,181	7,295	Summation	13,476
IV. *Epidemiology Division—				
Investigations:				
Field	14	2	16	
Total	14	2	Summation	16
Grand Total	129,826	200,711	Summation	330,547

Grand total for the biennium, 330,547.

*Office of Epidemiology taken to Des Moines July, 1929. Other investigations made from there.

ANNUAL AND BIENNIAL VOLUME OF WORK SINCE ESTABLISHMENT OF LABORATORY

Year	Fiscal Period	Volume	Biennium	Volume
1	July 1, 1904-June 30, 1905	3,580	1st	8,779
2	July 1, 1905-June 30, 1906	5,199		
3	July 1, 1906-June 30, 1907	8,423	2nd	17,289
4	July 1, 1907-June 30, 1908	8,856		
5	July 1, 1908-June 30, 1909	10,437	3rd	22,961
6	July 1, 1909-June 30, 1910	12,534		
7	July 1, 1910-June 30, 1911	13,457	4th	27,678
8	July 1, 1911-June 30, 1912	13,941		
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	14,691	6th	40,486
12	July 1, 1915-June 30, 1916	25,795		
13	July 1, 1916-June 30, 1917	23,752	7th	46,880
14	July 1, 1917-June 30, 1918	29,128		
15	July 1, 1918-June 30, 1919	43,715	8th	129,705
16	July 1, 1919-June 30, 1920	85,989		
17	July 1, 1920-June 30, 1921	108,662	9th	298,978
18	July 1, 1921-June 30, 1922	190,316		
19	July 1, 1922-June 30, 1923	203,710	10th	395,467
20	July 1, 1923-June 30, 1924	191,737		
21	July 1, 1924-June 30, 1925	169,159	11th	348,008
22	July 1, 1925-June 30, 1926	178,849		
23	July 1, 1926-June 30, 1927	180,811	12th	330,739
24	July 1, 1927-June 30, 1928	149,948		
25	July 1, 1928-June 30, 1929	129,836	13th	330,547
26	July 1, 1929-June 30, 1930	200,711		

DIVISION OF NURSING EDUCATION

PERSONNEL

The personnel of the division has not changed, remaining as follows:

Maude E. Sutton, R. N., Director.

Amy Brooks Knouf, Stenographer.

ACTIVITIES

1. Eighty visits to schools of nursing have been made during the biennium. These visits have combined hospital inspections and conferences with both training school executives and members of hospital boards.

2. Talks have been given to sixteen student nurse groups and to eight nurse and hospital associations.

3. Personal visits to fifteen hospitals operating without schools of nursing were made to gain first hand information concerning operating costs, with special reference to salaries of graduate nurses, organization, etc., and in an effort to secure a wider knowledge of the actual experiences of hospitals maintaining complete staffs of graduate nurses.

The survey revealed:

The average salary for graduate nurses on general floor duty \$ 90.00

The average number hours on day duty 9

The average number hours on duty nights 10

The average number patients cared for by one graduate nurse 4 plus

4. The credentials of all applicants for training have been reviewed and a card file of students maintained in the division.

5. The director works very closely with the board of nurse examiners. She has been present at every meeting of the board of nurse examiners and has met with the Advisory Committee at its seven meetings, acting as secretary to the committee.

6. All applications for nurse examinations have been checked with the student card file.

7. A list of all nurses licensed to practice in the state from July 1, 1929, to June 30, 1930, was prepared and published February 1, 1930.

MONTHLY REPORTS

Reports of changes in nursing personnel are received monthly from all accredited schools.

These reports emphasize the fact that changes in training school executive positions occur far too frequently, one small hospital reporting fifteen changes of supervisors in one year. Another has reported as many as four changes in superintendents of nurses within one year.

The reports give as the most frequent reasons for students leaving training: Inability to grasp the work or unfitness for the work; did not like the work; ill health; marriage.

Educational preparation of students in training July 1, 1930:

Some College	53
High School Graduation	1,838
Three Years High School	50
Two Years High School	110
Total	2,051

In January, 1930, the entrance requirements with regard to preliminary education of students were raised from two to four years of high school, becoming effective for all applicants considered after April 15, 1930. This change will mete no hardship to hospitals since ninety-four per cent of the students admitted in 1929 were high school graduates and thirty-three of the fifty

accredited schools were already requiring graduation from high school.

Ages at which students in training July 1, 1930, were admitted:

Age	Admitted during 1926	Admitted during 1927	Admitted during 1928	Admitted during 1929	Admitted during 1930
18	4	205	298	405	93
19	1	110	161	161	41
20	0	40	76	93	15
21-24	1	58	77	98	29
25-35	0	12	32	32	5
Total	6	425	644	789	187

ACCREDITED SCHOOLS OF NURSING

Accredited schools of nursing according to bed capacity of hospitals:

Bed Capacity	July 1, 1928	July 1, 1930
35 to 49	11	8
50 to 99	19	19
100 to 500	21	21
Over 500	1	1
Total	52	49

Two hospitals of the 35 to 49 capacity group discontinued their schools from choice during 1929 and one during 1930 previous to July 1st.

Three other hospitals from this group will admit no more students and will discontinue their schools when the students now in training have been graduated.

Building programs this year in the 50 to 99 capacity group will increase the bed capacity of three hospitals.

In January, 1930, the board of nurse examiners increased the daily patient average required of hospitals wishing to have their schools of nursing accredited. The requirement is now that there shall be a daily patient average of twenty-five.

This raised requirement has been responsible for the action taken by certain hospitals in discontinuing their schools rather than maintain non-accredited schools. It will probably result in others taking the same action.

AFFILIATIONS

Total number of schools affiliating July 1, 1928	12
Total number of schools affiliating July 1, 1930	13
Services for which schools affiliate:	
Pediatrics, including milk laboratory	13
Psychiatry	11
Medical Nursing	5
Eye, Ear, Nose and Throat	5
Orthopedics	12
Obstetrics	1

Wherever it is possible to give a limited public health nursing experience to student nurses under the supervision of well organized visiting nurse association staffs, such arrangements have been made.

CONCLUSION

The division should:

1. Continue such studies as are necessary for a complete understanding of the training school situation in Iowa.
2. Attempt to educate hospital boards as to their responsibility in providing adequate training for students if they are to maintain schools.
3. Secure the cooperation of larger hospitals in decreasing the number of student nurses admitted to training in an effort to reduce the oversupply of nurses.
4. Stress the importance of schools of nursing keeping complete individual records for all students.
5. Urge every school to secure a full-time instructor especially prepared to teach the subject assigned to her.

DIVISION OF PUBLIC HEALTH LECTURING

The Division of Public Health Education has grown from a small beginning to fill a very real need. The idea of appointing a lecturer who could link the laity with the programs of the department was conceived in 1926, and so far as we know, Iowa is the only state in the Union which has the distinction of employing a full-time lecturer, whose business it is to promote public sentiment in favor of better health in different communities of the state and to fill the programs of disease prevention and health promotion as outlined by the department of health.

Just how popular the service is is evidenced by the calls that come in. The lecturer is still a year and a half behind her schedule, having requests to fill the needs to 1933. A large part of the work and a most important one is the work in the high schools, which consists of a general talk developed on three lines: character building; health promotion; social hygiene. Where there is a request for such, after the general talk, group talks are given to boys and girls separately. The group talks deal with clean social habits and venereal disease information. The demand for these talks is developing so fast that it is becoming a real problem to fill the requests.

Since 1926 and up to the present year, the full-time lecturer has been relieved on extensive leave of absence and the work has been carried forward by Miss Helen M. Needles. Miss Needles has done an outstanding piece of work among the Four-H Club girls and boys of the state. She visits the camps and also assists in the health contest that is held each year at the Iowa State Fair.

Organizations reached through this type of work are: Federation of Women's Clubs, Parent Teacher Associations, Farm Bureaus, Teachers Clubs, Men's Civic Organizations, The American Legion and the schools.

Mrs. D. Pirie-Beyea,

State Lecturer.

SUMMARY OF WORK DONE IN THE DIVISION OF PUBLIC HEALTH EDUCATION

July 1, 1928, to July 1, 1930

Month	Number towns visited	Number talks given	Number pupils addressed	Number adults addressed
1928				
July*	9	24	816	411
August*	4	15	735	387
September*	5	10	479	608
October				
November*	7	10	1,090	278
December				
1929				
January	5	5	750	425
February	12	17	1,435	1,990
March	13	20	2,125	925
April	19	38	3,135	1,935
May	15	32	3,058	2,805
June*	5	8	620	256
July*	7	12	684	74
August*	2	3	215	59
September	20	38	2,296	1,791
October	17	22	1,355	2,995
November	18	22	2,666	1,825
December	11	25	2,003	167
1930				
January	7	16	545	1,975
February	21	34	2,042	1,559
March	11	17	1,165	873
April	16	28	3,355	2,043
May*	6	19	150	152
June*	11	18	874	333

* Work during month was done by Miss Helen Needles.

DIVISION OF PUBLIC HEALTH NURSING

EDITH S. COUNTRYMAN, R. N.

Public sentiment in favor of public health nursing is growing. A survey of nursing in Iowa shows that more governmental groups, such as Boards of Education and County Boards of Supervisors, are contributing wholly or in part to the maintenance of nursing service than ever before. Nursing organizations are making greater efforts to meet their responsibility to the community by raising the standard of work and the qualifications of nurses. There has been a tendency toward the separation of public health nursing services from the non-official groups and considerable interest is aroused through employing Boards in the interest of County Health Units, county nurses in general and the employment of more school nurses by official funds.

At present there are about 215 public health nurses employed in the state. Their salaries are paid either by official or non-official groups, or by both.

FUNCTIONS OF THE DIVISION

Supervision of public health nurses by personal visits and consultation by correspondence is one of the chief functions of the Division. Every nurse who accepts a position in Iowa is contacted either by a personal visit from the Director or by correspondence. She is invited to make the utmost use of the Division in clearing up any questions or solving any problems in connection with her work. She is asked to file a record of her professional history with the Director. If she has not had the required training or experience to fit her for her job, she is encouraged to take a public health nursing course as soon as possible.

Because of our affiliation with the Iowa Tuberculosis Association we are able to stimulate health teaching among school nurses by placing before them health teaching and school health material distributed by that association.

Each nurse is encouraged to send in a report of her activities as nearly after the first of each month as possible. Report forms are furnished for this purpose. A file record is kept of the outstanding achievements of each nurse for every month in the year.

The director early in the year compiled a bulletin "Public Health Nursing in Iowa," which briefly emphasizes phases of public health nursing in Iowa. The bulletin contains material on

minimum qualifications, salaries, hours on duty, phases of public health nursing, uniforms, teaching certificates, courses in public health nursing (approved list of colleges and universities), licenses and registration, laws and regulations, courses of study, suggested plans for organizing county public health nursing services, etc. A copy of this bulletin was mailed to all registered nurses and interested health workers in our state.

A monthly bulletin issued by the director contains timely topics of interest to the nurses such as new placements, vacancies, announcements of meetings, suggestions for reading, etc.

An effort is made to visit every nursing service at least once a year. An attempt is made to visit the new nurses early in the year with a view of helping them with their problems.

PUBLICATIONS

Four special bulletins were issued through the Division of Public Health Nursing, as follows:

Public Health Nursing in Iowa,

May Day-Child Health Day,

The Summer Round-Up of School Children,

and assistance was also given by the director in compiling the bulletin on "Management of Cases of Communicable Diseases in Isolation or Quarantine at Home or in Hospital."

PLACEMENTS

The Division of Public Health Nursing assists materially in the placement of nurses in the field. More employing groups than ever refer their applicants to the director of the division for approval and checking of credentials before hiring them. It has been found expedient, when a community insists upon employing a local nurse who does not meet the minimum requirements, to approve the appointment as a temporary one, with the understanding that the nurse will, at her earliest convenience, plan to make special preparation in public health nursing.

Aside from the general duties of the director, assistance was given health committees of the Iowa Congress of Parents and Teachers, the State Federation of Women's Clubs and the American Child Health Association.

HOSPITAL INSTRUCTION IN PUBLIC HEALTH NURSING

Last year 36 lectures on public health nursing were given to the four junior and senior classes in the hospitals in Des Moines by

the director. Similar classes were held at Grinnell, Cedar Rapids, and Sioux City. There seems to be a unanimous request by the hospitals over the state that this type of instruction be given to their student nurses in order to acquaint them with this particular phase of nursing.

CONFERENCES

During the past year public health nursing conferences were held in the following cities:

Council Bluffs	Burlington
Sioux City	Des Moines
Waterloo	Cedar Rapids
Cedar Falls	Davenport
Dubuque	

Five million three hundred thousand dollars is the annual loss to school taxpayers in Iowa because of school absences due to preventable illness in the five lower grades:

55,700	were absent any one day for sickness
27,800	of these daily absences were preventable
241,000	school children have remedial physical defects
180,000	have teeth defects
72,500	have defects of nose and throat
43,500	have impaired vision or eye trouble
7,500	have defective hearing
4,000	have the beginnings of heart disease
5	decayed teeth per each child

In counties having both public health nursing services and a system of health teaching in the schools, or its equivalent, physical defects among school children decreased over a four-year period, as follows:

Teeth defects	from 60% to 36%
Tonsils and adenoids	from 53% to 14.5%
Underweight	from 60% to 20.7%
Vision	from 12% to 8.7%
Hearing	from 5% to 1.5%

Absences and retardations decreased in these schools.

Absences in Iowa public schools decreased more than 8% in the last ten years—there's a reason. More public health nurses are still needed in Iowa.

LEGISLATION

We are considering future legislation for a permanent Division of Public Health Nursing in the State Department of Health, entirely financed by state funds. The Iowa Tuberculosis Association has assisted in financing the work carried on by the director in the interest of Public Health Nursing and Tuberculosis investigation. It is to be hoped at the next meeting of the legislature that some provision will be made whereby the State Department of Health may entirely finance this service.

DIVISION OF LAW ENFORCEMENT

HERMAN B. CARLSON, Inspector

Under the provisions of Chapter 64, 43rd G. A., creating the position of health department inspector, it is the duty of said inspector to investigate all violations under Title VIII, Code of 1927, and report the same to the department of health.

The health department inspector has made investigation of law violations, attempted law violations and suspected law violations pertaining to the Practice Acts as set out in the following schedule:

Unprofessional conduct	3
Abortion	4
Failing to treat new born with prophylactic solution	2
Using untruthful advertising	5
Itinerants without a license	1
Non-professional persons practicing medicine	38
Graduate Physicians and Surgeons practicing medicine without license	2
Divine healers practicing medicine	3
Licensed chiropractors practicing medicine	5
Chiropractors unlawfully advertising	4
Chiropractors practicing podiatry	2
Graduate chiropractors practicing without a license	4
Non-professional persons practicing chiropractic without a license	2
Licensed osteopaths practicing medicine	5
Licensed osteopaths practicing as itinerants without a license	1
Graduate osteopaths practicing without a license	2
Licensed chiropractors practicing osteopathy	1
Corporations and companies practicing dentistry	2
Licensed optometrists practicing itinerant optometry without a license	4
Practicing optometry when license has lapsed	2
Practicing optometry without a license	12
Practicing podiatry without a license	9
Practicing as a graduate nurse without a license	1
Corporations practicing embalming	1
Advertising unprofessionally (embalming)	2
Practicing embalming without a license	18
Cooperative burial associations practicing embalming	2
Offensive involving turpitude (embalming)	1

Total number of investigations made..... 138

The inspector has cooperated with local authorities and the attorney general's office in the prosecution of cases in the district court where the practice acts have been violated.

Injunction cases pending	3
Convictions	7
Indictments (cases pending)	2
Requests for revocation of licenses	2
Licenses revoked	3
Injunctions secured	10

In addition to the above, the health department inspector has investigated a number of minor violations that are not listed in the report.

The inspector's duties as provided by Section 2217-cl, are completed when the evidence he has procured against a violator has

been submitted to the commissioner. To expedite matters the inspector in many cases has personally filed information against violators; appeared on his own initiative before grand juries and at all times he has been present during the trial of cases. The inspector has also corrected many violations by educational and persuasive methods.

Prior to the enactment of Section 2217-cl by the 43rd G. A. the health department had no one connected with it to investigate violations of Title VIII, Code of Iowa 1927; and only such cases were prosecuted to final determination as were of outstanding character; the evidence being secured by local authorities.

The complaints that come into the department that merit investigation are so numerous that it is physically impossible for one man to do justice to any one of the eight professions that come under the inspector's supervision.

Types of violations of Title VIII range from the masseuse treating ills to the proletariat practicing surgery on mankind. Of necessity it is imperative that additional personnel be given the health department to assist in making investigations and thus more rigidly enforce the state health laws and to protect the health of the citizens of this state.

Changes in the laws pertaining to the practice acts are necessary and recommendations looking to such changes will be made to the next general assembly. Such recommendations have no place in this report, but have been incorporated in a separate and detailed report to the commissioner.

REPORT OF THE DIVISION OF SANITARY
ENGINEERING

A. H. WIETERS, C. E., Director

PERSONNEL

At the beginning of the biennium the personnel of the division consisted of A. H. Wieters, Chief Engineer, M. J. Lonergan, W. W. Towne and W. R. Mark, Assistant Engineers. Mr. Lonergan left to take charge of the Colorado State Board of Health Engineering Division and Mr. Towne took a similar position in South Dakota. At the close of the biennium the personnel consisted of A. H. Wieters, Chief Engineer, W. R. Mark, P. J. Houser, R. B. McAllister and E. G. Fiala, Assistant Engineers. H. H. Black was employed for three months during 1929 on water supply and tourist camp work.

Seranton—New well—Currie Engineering Co. Approved May 22, 1926.
 Sutherland—Town well—W. E. Buell & Co. Approved Jan. 20, 1926.
 Waverly—City well No. 2—Barber & Schenk. Approved Dec. 11, 1925.

SEWERS AND SEWAGE DISPOSAL

Albia—Sewage treatment plant—Brown & Cook. Approved May 2, 1926.
 Ames—Sanitary sewers—John H. Ames. Approved July 22, 1925.
 Applington—Sewer system and treatment plant—Barber & Schenk. Approved June 24, 1925.
 Boone—Sewer extensions—Geo. A. Nelson. Approved Aug. 20, 1925.
 Cedar Rapids—East side intercepting sewer. Approved Dec. 11, 1925.
 Charles City—Sanitary sewers—Jas. S. Dawson. Approved July 12, 1925.
 Charles City—Sewer extensions—Jas. S. Dawson. Approved July 30, 1925.
 Charles City—Sewer extensions—J. H. Curtis. Approved June 11, 1926.
 Creston—First section of the west end relief sewer—E. K. DeVoe. Approved April 11, 1926.
 Dubuque—Sewer extensions—W. H. Cullen. Approved Feb. 26, 1926.
 Fort Madison—Sewer extensions—R. J. Lewis. Approved Aug. 23, 1925.
 Greene—Sanitary sewers and sewage disposal plant—Barber & Schenk. Approved July 19, 1925.
 Guttenberg—Sanitary sewers—M. Tschirgi & Sons. Approved June 7, 1926.
 Independence—Sewage treatment plant for State Hospital—Lafayette Higgins. Not approved.
 Iowa City—Sewer extensions—Allen Wallen. Approved Oct. 24, 1925.
 Iowa City—Sewer extensions—Allen Wallen. Approved April 17, 1926.
 Lake City—Sewage treatment plant—W. E. Buell & Co. Approved March 22, 1925.
 Mason City—Industrial waste disposal plant—Currie Engineering Co. Approved July 9, 1925.
 Newton—S. E. Sewage disposal plant—Lafayette Higgins. Approved March 11, 1926.
 Oelwein—Sanitary sewer extension—Barber & Schenk. Approved July 26, 1925.
 Orange City—Sewage disposal plant—W. E. Buell & Co. Approved Sept. 11, 1925.
 Perry—West side sewer outlet—R. C. Lutze. Approved June 2, 1925.
 Portsmouth—Sanitary sewer system—Nixon & Reynolds. Not approved.
 Remsen—Sewage disposal plant—W. E. Buell & Co. Approved Jan. 15, 1925.
 Waterloo—Sewer extension—N. B. Barber. Approved July 3, 1925.

SWIMMING POOLS

Algona—Swimming pool and bath house—A. E. Michel. Approved March 7, 1925.
 Atlantic—Swimming pool—Geo. A. Spooner. Not approved.
 Boone—Swimming pool—Wetherell & Harrison. Not approved.
 Clarinda—Swimming pool—The Perkins Laboratories. Not approved.
 Clinton—Swimming pool and bath house—B. R. Anderson—Walter E. Bort. Approved April 12, 1925.
 Ida Grove—Swimming pool—Frank B. Heilman. Approved May 13, 1925.
 Ottumwa—Swimming pool—Brown & Cook. Approved June 3, 1925.
 Vinton—Swimming pool—Howard R. Green. Not approved.
 Webster City—Swimming pool—G. J. Long. Approved Jan. 2, 1926.
 West Liberty—Swimming pool—Howard R. Green. Approved Sept. 24, 1925.

PUBLIC WATER SUPPLIES

On July 1st, 1929, was instituted a comprehensive sanitary water survey of the state. The two part time men were used for this work and regular staff members made some inspections from time to time.

The entire water works was rigidly inspected and defects pointed out to the local officials both verbally and by written report. Samples were collected for analyses. Under this new scheme, municipalities, where the water works meets the requirements of the department and where analyses indicate satisfactory water, are permitted to erect roadside signs showing approval by the State Department of Health.

The large number of defects found indicate the value of this

work. This work has proven quite popular with most of the municipalities and has already resulted in great improvements. A longer time than is desirable, will be required to complete the survey due to the lack of personnel. However, the work will be continued until completed.

Following is a list of the cities and towns rated during the last year of the biennium. On the approved list are those towns and cities whose supplies have definitely been approved. To be of utmost value routine inspections should be continued with varying regularity depending upon type of supply. Supplies depending upon treatment should be inspected at least twice annually, whereas approved deep well supplies perhaps would not require an inspection more frequently than once each two or three years.

On the "Provisionally Approved" list are those cities and towns where repairs of a minor nature, more frequent analyses or better operation are required before approval is given, while the "Not Approved" list includes those places where a condition exists which will require some major repair or reconstruction, or treatment.

APPROVED		
Adel	Clinton	New Hampton
Ames	Colfax	Oskaloosa
Belle Plaine	Council Bluffs	Sioux City
Boone	Des Moines	Spirit Lake
Burlington	Dubuque	Storm Lake
Cedar Falls	Port Dodge	Stuart
Cedar Rapids	Leon	University Park
Clarinda	Marshalltown	Waterloo
PROVISIONALLY APPROVED		
Ackley	Charles City	Everly
Alnsworth	Chelsea	Fairfield
Albia	Clarence	Glenwood
Alden	Clarion	Grand Junction
Algona	Clear Lake	Grand Mound
Anita	Corning	Hamburg
Applington	Correctionville	Hampton
Arnolds Park	Corydon	Hubbard
Auburn	Creston	Iowa City
Audubon	Dakota City	Iowa Falls
Avoca	Davenport	Jefferson
Bancroft	Denison	Kellogg
Belmond	DeWitt	Keokuk
Bettendorf	Dexter	Knoxville
Britt	Doon	Ladora
Brooklyn	Dow City	Lewis
Burt	Dunlap	Lisbon
Carlisle	Durant	Lytton
Carroll	Eagle Grove	Manchester
Centerville	Eldora	Manly
Chariton	Emmetsburg	Marengo

PROVISIONALLY APPROVED—Continued

Marquette	Oakland	State Center
Mason City	Osage	Tama
Mechanicsville	Ottumwa	Valley Junction
Mitchellville	Red Oak	Walcott
Mondamin	Rockwell City	Washington
Mt. Ayr	Scranton	Waverly
Mt. Pleasant	Sheffield	Webster City
Mt. Vernon	Sheldon	Wesley
Moville	Shenandoah	West Side
Muscatine	Sioux Rapids	Woodbine
Nashua	Sloan	Zearing
Nevada	Spencer	
Newton	Stanwood	

NOT APPROVED

Adair	Indianola	Prairie City
Afton	Janesville	Redfield
Arion	Jessup	Riceville
Atlantic	Kensett	Rock Rapids
Boyd	Keota	Rockwell
*Calamus	Lamoni	Rudd
Casey	Ledyard	Ruthven
Clermont	LeMars	Sac City
Columbus Junction	Logan	Salix
Cushing	Lowden	Sanborn
Davis City	Low Moor	Schaller
Duncombe	McGregor	Schleswig
Dyersville	Macedonia	Sidney
Earlville	Malvern	Sigourney
Early	Maurice	Sioux Center
Emerson	Mediapolis	Solon
Epworth	Merrill	Stacyville
Exira	Milford	St. Ansgar
Farley	Missouri Valley	Sully
Forest City	Monona	Tabor
Fort Madison	Monroe	Templeton
Fredericksburg	New Hartford	Vail
Galva	New London	Victor
Garner	New Sharon	Villisca
Glidden	Nora Springs	Wall Lake
Gowrie	Northwood	Wapello
Grinnell	Ogden	West Burlington
Guthrie Center	Onawa	West Liberty
Guttenberg	Osceola	West Union
Hinton	Parkersburg	Wheatland
Holstein	Pella	Whittemore
Holy Cross	Pisgah	Williams
Homestead	Pleasantville	Wilton Junction
Humboldt	Plymouth	Winterset
Independence	Postville	Winthrop

*Not a city supply.

RAILROAD WATER INSPECTIONS

Under the co-operative agreement with the U. S. Public Health Service, the inspection of water supplies used on railroad coaches was continued as previously. The reason for the large number of provisional certificates is the higher requirements set up by the U. S. P. H. S. and the State Department of Health. Those sup-

plies certified provisionally will be given one year in which to meet the higher requirements. If these requirements are not met after a year the supplies will be unfavorably certified.

The U. S. P. H. S. allots \$200 per annum to be used for travel expense by the Division for this work.

Following is a tabulation of the number of inspections made with total number following in each classification.

Railroad water supplies inspected	202
Railroad water favorably certified	154
Railroad water unfavorably certified	4
Railroad water provisionally certified	32
Railroad water not certified	12

STREAM POLLUTION SURVEYS

The stream pollution surveys were continued as previously with considerable elaboration of the scope of the laboratory work, partly in the field and partly in the laboratory at Iowa City. Two engineers devoted most of their time to stream pollution studies and even other division employees devoted some time to this work. It is a conservative estimate that one-half of the time of the entire division is devoted to this phase of the work.

Resurveys were made of Lime Creek both in the fall of 1928 and 1929. As the result of this work the Decker Packing Co., the American Beet Sugar Co., both at Mason City, have installed waste treatment plants at a total expense of about \$200,000, which should go a long ways towards relieving the situation. The city of Mason City has designed additions to their existing plant which will be constructed late in 1930 or early in 1931.

Studies were made on the Iowa River above Iowa Falls in both years of the biennium with the result that the Sugar Plant at Belmond has installed a huge pond covering 65 acres for storing all wastes during the critical stages in the stream. These wastes will be discharged at high stages of the stream and the discharge will be controlled by laboratory tests.

A two years survey of the Des Moines River from a point above Des Moines to a point below Farmington is being completed, and a report will be ready this fall.

Studies on the Upper Cedar River were instituted in October, 1929, and continued through the winter. Under a co-operative agreement the Minnesota State Board of Health is conducting a similar study of the stream in Minnesota, as the source of most of the pollution seems to be Austin, Minn. As a result of this action

experimental work is well under way for the ultimate treatment of packing house wastes at Austin.

Several studies of minor streams were carried on during the biennium where local pollution was evident.

One major lake survey was made where death of fish and obnoxious odors resulted from the decay of profuse algae growths.

The work in stream pollution studies is handicapped by (1) the lack of central laboratory facilities and (2) by lack of properly trained personnel. A chemist and a biologist, both specially trained, should augment the engineering staff for the carrying out of these studies. So much is yet to be learned about stream pollution and the various factors entering into the problem, that the work necessary to arrive at a fair and logical conclusion is tedious, time consuming and expensive.

The algae situation in many of the Iowa lakes is also becoming alarming and something should be done to combat the harmful algae. So little is known of this problem that any control work attempted should be coupled with complete biological, physical and chemical studies so that definite and logical conclusions can safely be drawn.

In view of the fact that possibly 85% of the stream pollution does not involve public health in its strictest sense but rather is a conservation or fish and game problem, it is believed that administration of the present law should be placed under a sanitary water board representing the Health Department, the Fish and Game Department, and the Board of Conservation. The technical studies should be made as at present by the existing staff of this Division, augmented by a biologist and chemist, and a specific appropriation should be made for this type of work as differentiated from the other work of the Division.

SEWAGE DISPOSAL PLANT INSPECTIONS

Efficiency tests on sewage disposal plants were instituted during the biennium. An engineer, with field laboratory, makes a complete test of all units of the plant. Experiments on odor control with chlorine were conducted on several plants with gratifying results. This service is a very important adjunct to the stream pollution studies in that many of the existing plants in the state are not giving satisfactory results due to the lack of knowledge on the part of the operator. This work should be expanded, as fast

as personnel becomes available, and should be made a part of the work of the technical staff on stream pollution studies.

INDUSTRIAL WASTE DISPOSAL

Economical methods of disposal of some types of industrial wastes, are unknown and to arrive at satisfactory means of disposal experimental work and research work is necessary. The Division has tried to organize various industries for the purpose of attacking their various problems. So far actual experimental work has been instituted by the meat packing and beet sugar industries with gratifying results. The canneries, the creameries and gas plants are the other major industries who are facing acute problems and who are undertaking experimental work. The Division has attempted to co-operate with the industries in their experimental work and this phase of the work could be greatly expanded to the benefit of the state as well as the industries.

TOURIST CAMPS

In connection with the water surveys tourist camps were inspected and rated during the last year of the biennium. Location, drainage, water supply, sewerage, sewage and garbage disposal were the bases on which the ratings were made. Those complying with the department regulations were placarded with an approval. This work should be expanded to include all types of summer and vacation camps. This need was particularly demonstrated by the serious typhoid outbreak in a girls' camp in Monona county this summer. As the county units are established routine inspection of camps can be turned over to the County Department. In the meantime, however, the State Department should expand this feature of sanitation and inspect, rate and make public the ratings of every tourist, vacation and other semi-public camp in the state.

Tourist Camps Inspected	192
Approved	46
Not approved	146

SWIMMING POOLS

In addition to approval of plans for new swimming pools under a new regulation, swimming pool work has included a survey of existing pools in connection with water supply and tourist camp surveys. Aside from recommendations following the inspections further swimming pool control has not been attempted. Swimming pools have increased greatly in number during the biennium. The public is awakening to the dangers of drowning in the streams as

well as the danger to health of swimming in polluted waters. A modern swimming pool is an excellent facility for safe, healthful recreation, provided it is properly constructed, safeguarded and operated. On the other hand, a carelessly operated pool may become a focus of infection and thus swimming pool sanitation becomes a public health problem. The personnel and laboratory facilities of the Division should afford an expansion of this work.

NUISANCES

Many nuisance complaints are handled daily by the division. All are first referred to the local board of health having jurisdiction, and inspections are made only at the request of the local board, or upon petition of five or more citizens as required by law. The number of inspections as compared with the complaints received has been reduced during the biennium. It is hoped that the number of inspections of nuisances can in this way be still further reduced leaving more time for other work more important from a public health standpoint and requiring the more technical guidance furnished by the division.

HOUSING AND PLUMBING

Time spent on housing and plumbing work has been held to the minimum requirements of the law. No routine work in either of these branches has been attempted due to the lack of personnel. Only in cases where local authorities called for assistance or in cases of disputes between local authorities and buildings or owners, has the department taken any action. It was possible to handle most of this work by correspondence.

The State Department of Agriculture, the Labor Department and the Department of Health have concurrent jurisdiction in some phases of this work. The various laws should be revised eliminating this conflict of authority.

RURAL SANITATION

Rural sanitation work has been confined largely to preparation and distribution of bulletins and plans for water supplies and sewerage facilities. Requests for such information are increasing greatly in number and the division can render a distinct service in this connection. It is contemplated to devise a standard sanitation code for rural schools, covering water supply, sewerage, heating, lighting and ventilation.

STATE PARKS

At the request of the Board of Conservation, routine inspection of the thirty-six state parks was instituted this year. Water supplies, sewerage facilities and garbage disposal facilities were the principal features stressed. Samples of all water supplies were collected for analyses. This work should be continued by all means and the State should set an example in park sanitation. All of the parks have picnic and camp grounds and in some parks enormous crowds gather particularly on Sundays and Holidays, thus making proper sanitation in these parks an important public health measure. The work possible in this phase of sanitation is limited by the personnel available and should be expanded.

STATE INSTITUTIONS

In connection with the public water supply surveys State Institutions were included and inspections were made routinely of the water supplies and sewerage facilities. The State Board of Control is setting an example and during the biennium have provided sewage disposal to two additional institutions. The Division could be of much greater service to the Institutions on water supply and sewerage work and could with an additional engineer, do all of the sanitary engineering design and construction supervision for the institutions.

LAKES AND LAKE RESORTS

Sanitary surveys in the principal lake areas and lake resorts were continued during both summers of the biennium and a very gratifying improvement in the principal resorts has been noted since this work was started. Whole time county health units in the counties where the principal resorts are located will be the only ultimate solution to these problems, as the personnel of the State Department is not sufficiently large to continue the detailed inspection work necessary to secure the best results. With the enormous transient crowds and with the more or less temporary nature of the improvements proper sanitation in a vacation resort is attended with greater difficulties than in a permanently established community and this requires closer supervision. Whole time county units for these areas are necessary.

TALKS AND PAPERS

The Chief has been called upon to deliver nineteen papers before technical groups and address five mass meetings during the biennium, to say nothing of the many meetings and conferences

with city councils, industrial groups, conservation groups, etc., both in the office and in the field. The assistants have delivered eight papers and have had hundreds of meetings with city councils, etc. in connection with the field surveys.

BULLETINS, PLANS

Bulletins issued during the biennium include "Public Water Supplies," "Cross Connections with Public Water Supplies," "Sewerage Systems and Disposal Plants in Iowa," "Activities of the Sanitary Engineering Division," besides several issues of the quarterly Department bulletins which were devoted largely to the work of the Division as well as a number of the weekly health messages.

General plans and specifications have been prepared and distributed on rural water supplies, rural sewage disposal, public water supplies, tourist camp water supplies, sewerage and sewage and garbage disposal systems.

OFFICE ROUTINE

Office duties keep the Chief in the office the greater part of the time, and during the period of the additional summer surveys the principal assistant also spends most of his time in the office. The other assistants spend most of their time in the field, except for the time in the office spent in preparing reports on the field work. No attempt has been made to compile the number of letters written, the number of office conferences, etc., but this work is very heavy and time consuming. As a matter of record, a detailed report is prepared on each field inspection and a copy sent to the local officials in charge. This procedure, while time consuming, has been found to be very valuable. It has been the aim of the Chief to keep a complete record of all field investigations which will prove of great value in future work of the Division and will greatly reduce further traveling.

LABORATORY

The present laboratory arrangements are very unsatisfactory. All samples must be shipped to Iowa City and much time is lost in shipping the samples and getting the returns by mail. The engineers, as well as the laboratory technicians are also handicapped in not being able to confer on interpretation of results. A further great advantage of having a central laboratory at Des Moines, would be the outfitting and preparation of supplies for the portable field laboratories. It is impractical to carry all of the

necessary materials and equipment for making up standard solution media, etc. in the field laboratories and thus the field men are handicapped.

There is now no state laboratory where a municipality or industry or individual may procure a complete mineral analyses of water. While mineral analyses are not important from a health standpoint, they are very important from an economic standpoint. By combining the general water and sewage laboratory with a chemical laboratory, such analyses could be made at a cost of from one-fourth to one-third of the prices commonly charged by the private laboratories. Even though not primarily a public health measure, it is a service badly needed and could be most economically handled in this way.

MILK SANITATION

Control of sanitary production and handling of milk is primarily and always a public health measure. In Iowa milk has assumed a position of first import from a public health viewpoint. During the last year of the biennium five serious milk borne epidemics occurred in the state resulting in some twenty deaths. By virtue of the great amount of routine inspection involved, it is not practical that the state should adopt any measure contemplating the complete routine milk control of the state. This should be left to the local communities. Two sanitary engineers with special milk sanitation training, however, could do a lot towards assisting and stimulating better local control working in co-operation with the local authorities.

RECOMMENDATIONS

It is recommended that

1. A budget for stream pollution work be set aside specifically for this purpose, and administered by the Chief of the Division.
2. That the budget be large enough to include two engineers, one chemist and one biologist.
3. That administrative control of stream pollution be placed under a Sanitary Water Board consisting of the Commissioner of Health, Chairman of the Board of Conservation and the Fish and Game Warden.
4. That all algae control measures be carried out under the proposed Sanitary Water Board, all technical work necessary to be done by the Stream Pollution Section of this Division.
5. That the general budget provide for the continuation of the

public water supply survey program and be increased so that the camp sanitation program may be expanded and that the division may do more sanitary engineering work for other state departments, particularly the Board of Control and the Board of Education.

6. That a central laboratory be established in Des Moines for water and sewage analyses, including mineral analyses of water.

7. If fees for water analyses are continued, that a scheme for an annual fee regardless of number of samples to be analyzed replace the present fee for each individual sample.

8. That the budget include salaries and traveling expense for two sanitary engineers with special milk training, for state-wide milk control work.

DIVISION OF VITAL STATISTICS

R. L. McLAREN, Director

INTRODUCTION

Each year since 1921, the Biennial Report of the State Department of Health has contained a yearly report of the Division of Vital Statistics compared with the statistics of the year previous. In this 1930 Biennial only the final figures for 1928 will be given.

ACTIVITIES

1. General supervision of the registration of Vital Statistics—i. e., the reports of births, deaths, marriages and divorcees.

2. Supervisory power over local registrars, deputy registrars, and sub-registrars, and clerk of the district court in the enforcement of the law relative to the disposal of dead bodies and the registration of Vital Statistics.

3. Furnishes blank certificates of birth, death and other forms and record books required, to all persons concerned with the administration of the Vital Statistics Law.

4. Carefully examines the certificates received from local registrars and clerks of district court and if any are incomplete or unsatisfactory, requires additional information to be supplied.

5. Systematically arranges, binds and deposits in the State Historical Building, at the seat of government, the original certificates of births, deaths and marriages; also the duplicate divorce records.

6. Prepares and maintains a comprehensive and continuous card index of all births and deaths. Marriage and divorce records are arranged alphabetically.

7. Compiles and publishes statistical reports deemed of public interest.

8. Issues disinterment permits to licensed embalmers for the removal and re-interment of dead bodies.

9. Investigates irregularities or violations of the law relative to Vital Statistics and the disposal of dead bodies.

10. Prepares and issues, upon application, certified copies of all records in the custody of the division.

11. Sends to the mother of each child born in the state of Iowa a "Notification of Birth Registration" certificate and a copy of a bulletin on "Care of the Infant."

FUNCTION

The Division of Vital Statistics was created to keep a perpetual record of every BIRTH, DEATH, MARRIAGE and DIVORCE reported to the division, so that they may be preserved for legal, sanitary and statistical purposes.

IMPORTANCE OF RECORDS

A certificate of BIRTH may be needed:

To prove legal age:

For inheritance of property,

For claims of widow and orphans,

For settlement of insurance,

For settlement of pensions,

For right to serve on a jury,

For entering military service,

For entrance to school,

For right to vote,

For right to marry,

For legal dependency,

For irresponsibility of children,

For employment.

To prove American Citizenship:

For passports,

For exemption of military service in foreign countries,

For criminal courts in foreign countries,

For immigration,

For right to hold certain offices,

For right to admission to certain professions,

For collecting compensation from the Government.

A certificate of DEATH may be necessary to:

- Establish facts in court,
- Establish fact and cause of death for life insurance,
- Establish rights to a pension,
- Establish rights to an inheritance,
- Establish property rights.

IOWA RECORDS ARE OFFICIAL

Iowa was admitted into the Death Registration Area of the United States in 1923 and in 1924 was admitted into the Birth Registration Area. Since the above dates, statistics for Iowa have been officially accepted as being comparable with the Vital Statistics' figures released by other states in the Birth and Death Registration Area.

THE REGISTRATION AREAS

The Birth Registration Area of the United States in 1928 constituted all of the States excepting Nevada, New Mexico, South Dakota and Texas. The states of Colorado, Georgia and Oklahoma were admitted in 1928.

The United States Registration Area for Deaths consisted of all the states excepting Nevada, New Mexico, South Dakota and Texas. The state of Oklahoma was admitted in 1928.

ACKNOWLEDGMENT

To the Director and Employees of the United States Department of Commerce, Bureau of the Census, Washington, D. C., we are greatly indebted, for without their assistance the state department would be unable to furnish the Notification of Birth Registration Certificates.

Without the cooperation and untiring efforts of the Local Registrars, the operation of this division would be severely handicapped. The department has long been aware that it has the full support of the registrars.

The Physicians, Coroners and Licensed Embalmers have also given of their time in no small degree. Their response to queries pertaining to birth and death certificates has been most gratifying and their continued support and cooperation is desired.

The Department of Health wishes to thank the clerks of the district courts for their promptness in forwarding the returns of marriages and divorces.

POPULATION

The estimated mid-year population for the state of Iowa for 1928 was 2,428,000, based upon the arithmetical method, using

the 1910-1920 federal census. The estimated population for the counties and the eighteen cities over 10,000 population was computed by the same method.

CLASSIFICATION OF CAUSES OF DEATHS

The classification of causes of deaths used in this report has been tabulated in accordance with the Manual of the International List of Causes of Death, Third Revision—Paris, 1920, and in conjunction with the Manual of Joint Causes of Death, Second Edition, 1925.

ALLOCATION OF BIRTHS AND DEATHS NOT ATTEMPTED

As no allocation of births, deaths and deaths of infants under one year of age was attempted, the rates for the state, counties and eighteen cities over 10,000 population are based upon the total number reported according to the actual place of occurrence, irrespective of residence of parents at time of birth or residence of deceased at time of death. This will increase the birth, death and infant mortality rates of those counties and cities having state institutions or hospitals.

SUMMARY OF PROVISIONAL BIRTH, DEATH AND INFANT MORTALITY FIGURES IN THE BIRTH REGISTRATION AREA—1928

The birth rate for the Registration Area (exclusive of Massachusetts and Utah) for 1928 was 19.7, as compared with 20.7 for 1927. In 33 of the 38 states for which figures for the two years are available, the birth rates were lower in 1928 as compared with 1927. The highest birth rate in 1928 (27.5 per 1,000 population) is shown for North Carolina and the lowest (14.4) is for Washington.

The same states shown in the Birth Registration Area have for 1928 a death rate of 12.3 as compared with 11.4 for 1927 and increases were reported in 36 of the 38 states. The highest 1928 death rate (14.5 each per 1,000 population) is shown for California and Mississippi and the lowest rate (7.4) is for Idaho.

The infant mortality rate for 1928 represents an increase as compared with 1927, the rates being 68.0 for 1928 and 64.6 for 1927. The highest infant mortality rate (142.2) is for Arizona and the lowest (46.9) for Oregon.

For 39 of the 54 cities of 100,000 population or more in 1920, the 1928 infant mortality rates were higher than those of the previous year, the highest 1928 rate (99.3) being for Nashville, Tennessee, and the lowest (42.7) for Seattle, Washington.

SUMMARY OF DEATH RATE AND PERSONAL PARTICULARS.
STATE OF IOWA—1928

DEATH RATE

The death rate for the state of Iowa for 1928 was 10.4 per 1,000 population, there being 25,315 reported.

Sex

The greatest number of deaths for 1928 occurred in the male sex, there being 13,630 male deaths and 11,685 female deaths. The excess of male deaths over female deaths was 1,945.

Color

Out of the 25,315 deaths for 1928, there were 24,995 white, 307 black, 9 reds, 3 Chinese, 1 colored not specified.

DEATHS (EXCLUSIVE OF STILLBIRTHS) IN IOWA BY AGE, SEX, COLOR, AND NATIVITY OF WHITE, 1928

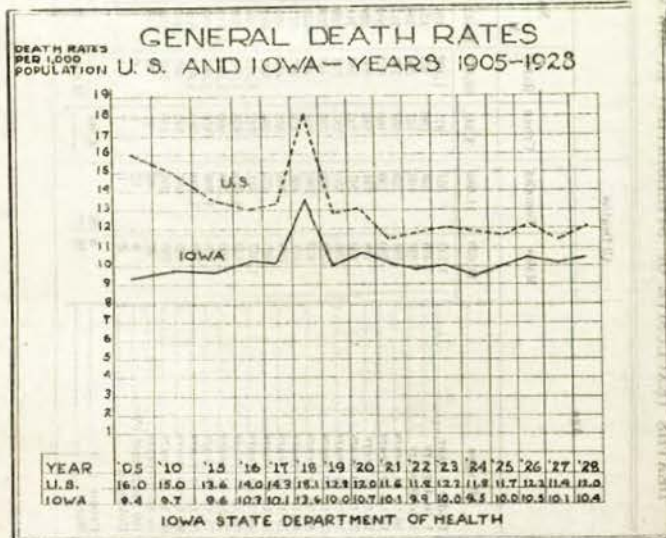
Age	All Deaths		White								Colored							
			Urban	Rural	Native		Foreign		Un-known		Ur-ban	Rural	Negro		Indian	Chinese	Jap-ane-se	Other Colored
	Males	Females			M.	F.	M.	F.	M.	F.			M.	F.				
All ages	13,630	11,685	8,944	16,051	10,342	9,168	2,845	2,287	270	83	229	81	167	140	3	6	3	1
Under 1 year	1,343	957	871	1,402	1,328	945					18	9	15	10				
1 to 4 years	428	326	286	468	423	329					5	2	4	4				
5 to 9 years	212	166	167	266	208	163					2	2	3	2				
10 to 14 years	164	139	104	196	161	134					1	1			1	1		
15 to 19 years	230	190	160	257	209	181					1	1						
20 to 24 years	248	244	183	296	229	224					8	5	4	2				
25 to 29 years	360	367	245	384	244	253					17	10	3	2				
30 to 34 years	323	327	231	369	261	255					15	22	7	4				
35 to 39 years	308	307	217	328	230	217					11	9	2	2				
40 to 44 years	384	362	212	415	328	330					12	11	2	1				
45 to 49 years	410	396	262	436	333	333					14	12	2	1				
50 to 54 years	471	458	430	487	371	395					28	62	1	1				
55 to 59 years	639	598	522	650	505	482					72	12	4	1				
60 to 64 years	865	673	586	911	682	557					97	86	5	2				
65 to 69 years	1,037	811	722	1,127	780	673					129	31	6	1				
70 to 74 years	1,429	1,044	878	1,391	1,008	796					265	36	11	2				
75 to 79 years	1,369	1,300	900	1,344	1,115	945					339	11	14	6				
80 to 84 years	1,328	1,208	816	1,005	950	861					436	49	11	12				
85 to 89 years	1,182	1,000	585	1,028	633	690					287	17	8	4				
90 to 94 years	685	687	242	597	367	411					255	207	8	6				
95 to 99 years	233	268	128	362	122	181					98	110	4	5				
100 years and over	37	12	9	6	1	5					3	6						
Unknown	2	1		1							1	1						
Urban	9,183		8,944		7,047	1,701			196	229			295		1	3		
Rural	16,132		16,051		15,468	8,871			217	81			72					1

NUMBER OF DEATHS WITH RATES (PER 1,000 POPULATION)
STATE OF IOWA—1923-1928

Year	Number of Deaths	Rate Per 1,000 Population
1923	25,378	10.3
1924	23,774	9.8
1925	24,294	10.0
1926	25,466	10.4
1927	24,532	10.1
1928	25,315	10.4

TEN PRINCIPAL CAUSES OF DEATH IN IOWA 1928

Cause	Number of Deaths	Rate Per 100,000 Pop.	Per Cent of Total Deaths
Diseases of the heart.....	4,283	176.4	16.87
Cancer (All Forms)	2,735	112.6	10.80
Cerebral Hemorrhage and Softening	2,494	102.7	9.85
Pneumonia (All Forms)	1,714	70.6	6.77
Nephritis	1,636	67.4	6.47
Accidental and unspecified external causes	1,558	64.2	6.15
Congenital malformations and diseases of early infancy....	1,421	58.5	5.61
Influenza	1,395	57.5	5.51
Tuberculosis (All Forms)	850	35.0	3.35
Diseases of the arteries	537	22.1	2.11
Total.....	18,623	767.0	73.49



DEATHS (EXCLUSIVE OF STILLBIRTHS) IN IOWA AND DES MOINES FROM IMPORTANT CAUSES, BY MONTHS, AND IN THE URBAN AND THE RURAL PART OF THE STATE, FROM ALL CAUSES, BY MONTHS: 1928
(Numbers after causes of death correspond to those of the 1926 revision of the detailed International List)

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DEATHS (EXCLUSIVE OF STILLBIRTHS) IN IOWA AND DES MOINES FROM IMPORTANT CAUSES, BY MONTHS, AND IN THE URBAN AND THE RURAL PART OF THE STATE, FROM ALL CAUSES, BY MONTHS: 1923—Continued (Numbers after causes of death correspond to those of the 1920 revision of the detailed International List)

Area and Cause of Death	All Deaths	Jan- ary	Febr- ary	March	April	May	June	July	August	Sep- tember	Octo- ber	No- vember	Decem- ber
Des Moines, all causes.....	1,725	154	118	153	141	147	127	135	119	136	140	142	204
Typhoid and paratyphoid fever (1).....	2	2								1			
Measles (7).....	5	5	5	5	10	7	1	1	2	2	1	4	36
Smallpox (6).....	4	1	1	1	1	1			1				
Scarlet fever (8).....	13	13	13	13	11	7	7	1	8	9	5	4	5
Whooping cough (9).....	37	37	4	5	4	2	2	11	1	21	15	20	15
Diphtheria (10).....	130	12	9	7	9	15	16	11	8	19	14	10	15
Influenza (11).....	204	32	27	22	17	19	12	6	1	12	15	30	31
Whooping cough (12).....	45	4	3	3	6	7	2	5	2	3	4	5	12
Lethargic encephalitis (23).....	78	15	7	9	9	4	5	5	1	2	4	5	13
Meningococcus meningitis (24).....	6	6	1	1	1	1			1				
Other forms of tuberculosis (31).....	36	3	3	3	11	1	7	5	1	9	5	4	5
Diabetes mellitus (37).....	37	37	4	5	4	2	2	11	1	21	15	20	15
Cerebral hemorrhage and softening (74, 83).....	204	32	27	22	17	19	12	6	1	12	15	30	31
Other diseases of the heart (60).....	45	4	3	3	6	7	2	5	2	3	4	5	12
Bronchopneumonia (100).....	78	15	7	9	9	4	5	5	1	2	4	5	13
Pneumonia (101).....	6	6	1	1	1	1			1				
Diarrhea and enteritis (113).....	109	12	10	14	7	5	10	12	4	13	11	11	8
Nephritis (128, 129).....	1	1											
Pericarditis (140).....	31	31	4	2	6	6	1	2	1	4	4	4	1
Other external causes (170-187, part of 188a, b, 188c).....	25	25	2	1	2	1	1	3	2	4	4	4	1
Suicide (186-174).....	4	4	1	1	1	1	1	1	1	1	1	1	1
Automobile—street car collision (part of 188a).....	6	6	1	1	1	1	1	1	1	1	1	1	1
Automobile—railroad collision (part of 188a).....	3	3	1	1	1	1	1	1	1	1	1	1	1
Other external causes (170-187, part of 188a, b, 188c).....	97	10	6	9	4	11	5	14	7	6	11	5	9
All other causes.....	728	66	46	53	53	58	64	62	60	66	71	66	64

*Excluding collision with railroad trains and street cars.

SUMMARY OF DISEASES CAUSING GREATEST NUMBER OF DEATHS WITH RATES (PER 100,000 POPULATION) STATE OF IOWA, 1923

Increase in rates (per 100,000 population) from those of the preceding year were from the following principal causes: diseases of the HEART (166.4 to 176.4), CANCER (110.9 to 112.6), and DIABETES MELLITUS (17.9 to 19.6). The rate from INFLUENZA was more than doubled (26.7 to 57.5); other increases were from PNEUMONIA, all forms (62.2 to 70.6), HERNIA, INTESTINAL OBSTRUCTION (11.0 to 12.6), SCARLET FEVER (1.7 to 2.3), LETHARGIC ENCEPHALITIS (0.7 to 1.2), MENINGOCOCCUS MENINGITIS (0.9 to 1.2), and SYPHILIS (9.9 to 10.2).

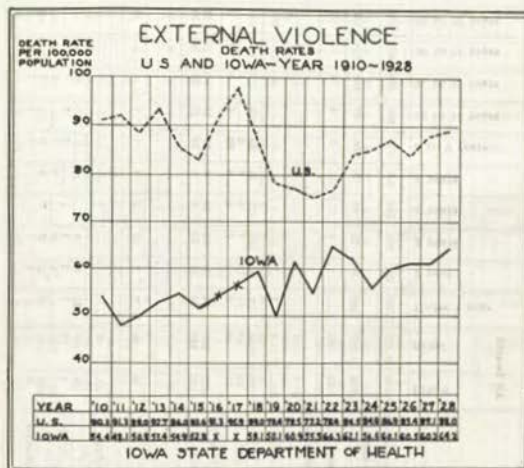
The death rate from ACCIDENTAL CAUSES increased from 60.2 to 64.2, the types of accidents showing the greatest increases being automobile accidents (excluding collisions with railroad trains and street cars), (11.7 to 13.6) and railroad accidents (4.9 to 6.5).

Significant among the decreases in rates from 1927 to 1923 were those from the following principle causes: NEPHRITIS (69.7 to 67.4) and TUBERCULOSIS, all forms (36.0 to 35.0). Other decreases were from MEASLES (9.3 to 0.6), CONGENITAL MALFORMATIONS AND DISEASES OF EARLY INFANCY (62.4 to 58.5), DIPHTHERIA (5.0 to 2.8), WHOOPING COUGH (4.3 to 3.5), DIARRHEA AND ENTERITIS, under 2 years (8.0 to 7.3), and ACUTE ANTERIOR POLIOMYELITIS (1.2 to 0.6). The rate from SUICIDE decreased from 17.4 to 16.4.

PRINCIPLE CAUSES OF DEATH STATE OF IOWA 1928

Causes of Death	Number	Rate Per 100,000 Pop.
All Causes (1).....	25,315	1,042.6
Typhoid and Paratyphoid Fever.....	54	2.2
Malaria.....	3	0.1
Smallpox.....	4	0.2
Measles.....	14	0.6
Scarlet Fever.....	55	2.2
Whooping Cough.....	84	3.5
Diphtheria.....	67	2.8
Influenza.....	1,395	57.5
Dysentery.....	34	1.4
Erysipelas.....	65	2.7
Acute Anterior Poliomyelitis.....	14	0.6
Lethargic Encephalitis.....	28	1.2
Meningococcus Meningitis.....	28	1.2
Tuberculosis (all forms).....	850	35.0
Of the Respiratory System.....	731	30.1
Of the Meninges and Central Nervous System.....	28	1.2
Other forms.....	91	3.7
Syphilis (2).....	247	10.2
Cancer and other Malignant Tumors.....	2,735	112.6
Rheumatism.....	89	3.7
Pellagra.....	1-(3)	....
Diabetes Mellitus.....	477	19.6
Meningitis (nonepidemic).....	48	2.0
Cerebral Hemorrhage and Softening.....	2,494	102.7
Paralysis without Specified Cause.....	104	4.3
Diseases of the Heart.....	4,283	176.4
Diseases of the Arteries, Atheroma, Aneurysm, etc.	537	22.1
Bronchitis.....	92	3.8
Pneumonia (all forms).....	1,714	70.6
Respiratory diseases other than Bronchitis and Pneumonia (all forms).....	203	8.4
Diarrhea and Enteritis.....	300	12.4
Diarrhea and Enteritis (under 2 years).....	177	7.3
Diarrhea and Enteritis (2 years and over).....	123	5.1
Appendicitis and Typhlitis.....	397	16.4
Hernia, intestinal obstruction.....	307	12.6
Cerebrosis of the liver.....	139	5.7
Nephritis.....	1,636	67.4
Puerperal septicemia.....	78	3.2
Puerperal causes other than puerperal septicemia.....	132	5.4
Congenital Malformations and diseases of early infancy.....	1,421	58.5
Suicide.....	397	16.4
Homicide.....	56	2.3
Accidental and unspecified external causes.....	1,558	64.2
Burns (conflagration excepted).....	70	2.9
Accidental drowning.....	99	4.1
Accidental shooting.....	44	1.8
Accidental falls.....	423	17.4
Mine accidents.....	21	0.9
Machinery accidents.....	40	1.6
Railroad accidents.....	159	6.5
Collision with automobiles.....	47	1.9
Other railroad accidents.....	112	4.6
Street car accidents.....	11	0.5

Collision with automobiles.....	7	0.3
Other street car accidents.....	4	0.2
Automobile accidents (excluding collision with railroad trains and street cars).....	329	13.6
Injuries by vehicles other than railroad trains, street cars, and automobiles (4).....	43	1.8
Excessive heat (burns excepted).....	12	0.5
Other external causes.....	307	12.6
Unknown or ill-defined causes.....	3,046	125.5
(1) Exclusive of stillbirths.	129	5.3
(2) Includes tabes dorsalis (locomotor ataxia) and general paralysis of the insane.		
(3) Less than one-tenth of 1 per 100,000 population.		
(4) Includes airplane, balloon, and motorcycle accidents.		



CAUSE OF DEATH, BY RURAL AND URBAN, AND BY AGE GROUPS—STATE OF IOWA, 1928

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TWENTY-FOURTH BIENNIAL REPORT OF THE

IOWA STATE DEPARTMENT OF HEALTH

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List No.	Cause of Death	All Deaths																		Age unknown
		Urban	Rural	Under 1 year	1 year	2 years	3 years	4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	30 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over	
	All causes	9,183	16,132	2,300	301	205	149	109	378	303	410	492	536	631	1,592	2,146	3,406	5,363	7,031	
	I.—Epidemic, endemic and infectious diseases	1,024	1,877	260	87	72	49	28	106	72	108	158	157	171	274	237	285	329	506	
1	Typhoid and paratyphoid fever	13	41			1			3	4	4	7	8	3	9	5	7	3		
2	Typhus fever																			
3	Relapsing fever (spirochete)																			
4	Malta fever	1	1														1	1		
5	Malaria	1	2										1							
6	Smallpox	3	4	1		3	3		3		1								2	
7	Measles	3	11	3	1	3	3		3		1									
8	Scarlet fever	19	36	4	5	5	7	1	15	3	2	5	3	1	3				1	
9	Whooping cough	25	59	51	12	7	8	2	3		1									
10	Diphtheria	27	40	3	5	7	4	4	20	7	3	1	2	3	3	2	3			
11a	Influenza (with pulmonary complications)	272	522	84	29	15	10	8	19	17	30	17	17	32	64	43	69	129	211	
11b	Influenza (other and unspecified)	152	449	59	17	12	8	3	19	10	15	14	16	17	35	34	41	78	225	
12	Millary fever																			
13	Mumps		1															1		
14	Asiatic cholera																			
15	Cholera nostras		3	2	1															
16	Dysentery	8	26	2	1	7	5	1	3	1			1		1			3	9	
17	Plague																			
18	Yellow fever																			
19	Spirochetal hemorrhagic jaundice		2				1											1		
20	Leprosy																			
21	Erysipelas	18	47	15	1	1					1	2	1		1	12	10	12	9	
22	Acute anterior poliomyelitis	4	10	1	2	1	1		2	2	2	1	1	2	5	1	8	3	2	
23	Lethargic encephalitis	12	16	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	
24	Menigeococcus meningitis	13	15	5	2	2	2	3	3	1	2	1	4	1		2	1			
25	Other epidemic and endemic diseases	2	3		1	1			1	1	1									
26	Glanders																			
27	Anthrax																			
28	Rabies	3																		
29	Tetanus	15	21	2	1	2		1	10	4	2		2	2	2	4	3	1		
30	Mycoses	1	3																	
31	Tuberculosis (all forms)	362	488	8	6	5		1	4	17	43	98	97	102	120	110	104	88	45	2
32	Of the respiratory system	311	426	1	2	2			4	13	33	88	88	93	108	87	93	80	41	
33	Of the meninges, central nervous system	15	13	7	4	2		1	3	3	3	1			3	1				
34	Of the intestines, peritoneum	14	18						1	4	3	5		3	3	6	2	2	2	
35	Of the vertebral column	10	9							2	1		2	1		4	7	2	2	
36	Of the joints	4	14													2				
37a	Of other organs	7	9						1	1		2	2	2	6	4				
37b	Disseminated (acute)	1	3																	
38	Disseminated (chronic or unspecified)	54	63	14	1	1		1	2		5	2	7	24	30	1	31	8	1	
39	Syphilis	9	2	1					1	2	2	1		3			1			
40	Soft chancre	11	11	2	1				1	2	2	1		3			1			
41	Gonococcus infection	1	1						1	2	2	1		1	4	3	4	2	1	
42	Purulent infection, septicemia																			
43	Other infectious diseases																			
	II.—General diseases not included in Class I	1,435	2,406	38	11	11	14	6	20	23	21	28	38	64	252	515	854	1,116	829	
44	Cancer and other malignant tumors	998	1,737			6	2	1	4	1	6	11	14	35	172	377	622	824	660	
45	Of the buccal cavity	36	59										1	1	7	8	20	30	28	
46	Of the stomach, liver	281	692											5	28	101	227	343	256	
47	Of the peritoneum, intestines, rectum	180	247									1	2							
48	Of the female genital organs	149	183					1				2	3	5	26	56	96	128	103	
49	Of the breast	95	162									1	3	11	42	77	81	62	35	
50	Of the skin	19	53									1	1	7	28	63	62	53	42	
51	Of other or unspecified organs	238	361			6	2		4	1	5	4	5	6	37	70	118	176	165	
52	Tumors, benign and unqualified (tumors of the female genital organs excepted)	8	10																	
53	Acute rheumatic fever	12	37		1	1		1		1		1	1	3	2	1	2	3		
54	Chronic rheumatism, osteoarthritis, gout	11	29					2		7	2	3	5	1	2	7	5	2	11	
55	Scurvy																			
56	Pellagra		1												1	1	2	7	11	18
57	Beriberi																			
58	Rickets	1	1	2													1			
59	Diabetes mellitus	166	311	1																
60a	Pernicious anemia	42	75	1		2	2	6	8	1	4	6	5	7	19	35	108	180	94	
60b	Other anemias and chlorosis	5	19	1				1	1	1			3	5	14	29	44	17		
61	Diseases of the pituitary gland	2	2							1	1		1		2	1	5	6		
62	Exophthalmic goiter	72	50					1								2				
63	Other diseases of the thyroid gland	11	12			1				1	3	6	5	15	28	36	21	7		

CAUSE OF DEATH, BY RURAL AND URBAN, AND BY AGE GROUPS—STATE OF IOWA, 1928—Continued

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TWENTY-FOURTH BIENNIAL REPORT OF THE

IOWA STATE DEPARTMENT OF HEALTH

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List No.	Cause of Death	All Deaths		Under 1 year	1 year	2 years	3 years	4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	30 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over	Age unknown
		Urban	Rural																	
61	Diseases of the parathyroid glands.....	1	3	1	1			1			1								1	
62	Diseases of the thymus gland.....	8	9	12	2				1				1							
63	Diseases of the adrenals (Addison's disease).....	5	4											1	2	2	1	2		
64	Diseases of the spleen.....	27	22	1	3	3	4	1	3	3			1	1	7	14	11	6	7	
65a	Leukemia.....	11	16		1				1											
65b	Hodgkin's disease.....	22	29										1	4	15	18	16	5	2	
66	Alcoholism (acute or chronic).....		3																	
67a	Chronic lead poisoning.....		1															1		
67b	Other chronic mineral poisoning.....		2												1	1			1	
68	Chronic poisoning by organic substances.....	13	21	18	3	1	1		1	1	3		2	1		1	2	1		
69	Other general diseases.....	1,041	2,292	56	13	8	5	9	28	18	22	31	27	48	150	272	536	935	1,185	1
	III—Diseases of the nervous system and of the organs of special sense.....																			
70	Encephalitis.....	15	28					1	4	1	5	3		5	8	7	4	4	3	
71a	Simple meningitis.....	15	23	8	1		3		4		5		1	3	1	2	4	2	2	
71b	Nonepidemic cerebrospinal meningitis.....	5	5	1		1					1	2	2					6	5	
72	Tuber dorsalis (locomotor ataxia).....	10	15														9	22	24	21
73	Other diseases of the spinal cord.....	26	72	1	2				2	1	2	1	2	3	5	51	154	387	770	1,001
74a	Cerebral hemorrhage.....	737	1,654			1														
74b	Cerebral embolism and thrombosis.....	34	59		1			1												
75	Paralysis without specified cause.....	17	87																	
76	General paralysis of the insane.....	16	89																	
77	Other forms of mental alienation.....	9	56								1	1	2	1	7	13	16	15	8	1
78	Epilepsy.....	12	47						3	1	2	5	8	6	2	10	7	9	6	
79	Convulsions (nonpuerperal; 5 years and over).....		1							1										
80	Infantile convulsions (under 5 years).....	11	15	21	3	2														
81	Chorea.....																1	9	5	
82	Neuralgia and neuritis.....	3	6																	
83	Softening of the brain.....	11	9									1					1	4	14	
84	(Other diseases of the nervous system).....	46	101		8		1		1	1	5	7	1	4	3	19	32	25	29	28
85	Diseases of the eye and annexa.....	1	2																2	1
86a	Diseases of the ear.....	31	15	11	3				8	2		2	1	2		4	2	3	4	4
86b	Diseases of the mastoid process.....	43	8	8	3	3	2	4	5	4	2	3	3	3	5	2	2	2		
	IV—Diseases of the circulatory system.....	1,674	3,347	18	2	7	1	4	18	20	31	26	44	50	174	334	769	1,458	2,065	
87	Pericarditis.....	13	6						1	1	1	1		1	2	2	1	3	3	3
88	Endocarditis and myocarditis (acute).....	59	85	7	2	3	1	1	2	5	7	6	12	10	31	5	16	19	17	
89	Angina pectoris.....	146	309										2	2	10	36	94	187	123	
90	Other diseases of the heart.....	1,214	2,432	5		2		2	14	14	22	19	28	29	113	251	564	1,061	1,542	
91a	Aneurysm.....	14	12												3	4	4	8	6	
91b, c	Other diseases of the arteries.....	150	361			1					1			1	3	13	47	127	319	
92	Embolism and thrombosis (not cerebral).....	64	58	2		1						1	3	10	18	34	48	45		
93	Diseases of the veins.....	8	11									1	3	2	4	5	1	3		
94	Diseases of the lymphatic system.....	4	3	4					1									1	1	
95	Hemorrhage without specified cause.....	1	4													1	1		3	
96	Other diseases of the circulatory system.....	2	6													1	1	3	8	
	V—Diseases of the respiratory system.....	717	1,292	267	73	36	13	15	29	26	29	32	25	51	106	106	178	338	684	
97a	Diseases of the nasal fossae.....		4	1															3	
97b	Diseases of the nasal fossae annexa.....	7	10	1		1			1		1	1	1		3	3	4	1	1	
98	Diseases of the larynx.....	5	2	2	1	1			2											
99a	Acute bronchitis.....	8	15	5														2	13	
99b	Chronic bronchitis.....	14	38		1	1							1	1		1	4	9	34	
99c, d	Bronchitis (unspecified).....	10	9	4	1													4	9	
100a	Broncho-pneumonia.....	248	451	169	29	14	6	5	6	6	4	6	6	9	19	23	28	92	247	
100b	Capillary bronchitis.....	6	7	5	2	1		1											3	
101a	Lobar pneumonia.....	345	635	66	27	14	7	5	17	17	21	21	15	36	71	67	118	199	279	
101b	Pneumonia (unspecified).....	16	36	6	1	1					1	1	1	1	3	7	4	4	19	
102	Pleurisy.....	14	31	3		3		3	2	2	1	1	1	2	7	5	4	7	4	
103	Constitution and hemorrhagic infarct of the lung.....	21	41	2	1				1			1				1	5	6	45	
104	Gangrene of the lung.....	1	3															1	2	1
105	Asthma.....	13	31						1		1			2	1	3	7	9	20	
106	Pulmonary emphysema.....		6												1			2	4	
107	Other diseases of the respiratory system (tuberculosis excepted).....	5	5	3								1	1		1	1	3	1	2	

CAUSE OF DEATH, BY RURAL AND URBAN, AND BY AGE GROUPS—STATE OF IOWA, 1928—Continued

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TWENTY-FOURTH BIENNIAL REPORT OF THE

IOWA STATE DEPARTMENT OF HEALTH

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List No.	Cause of Death	All Deaths																over 75 years and over	Age unknown
		Urban	Rural	Under 1 year	1 year	2 years	3 years	4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	30 to 34 years	35 to 39 years	40 to 44 years	45 to 49 years		
	V.—Diseases of the digestive system	879	923	191	68	40	28	26	84	62	49	40	67	57	152	210	236	265	304
108	Diseases of the mouth and annexa	11	8						1			1		2	3	2	2	5	3
109a	Adenoid vegetations																		
109b	Other diseases of the pharynx, tonsils	44	36	4	6	3	1	1	12	6	4	4	9	4	8	5	5	2	1
110	Diseases of the esophagus	3	1																
111a	Ulcer of the stomach	57	51								1	3	3	4	17	28	17	24	11
111b	Ulcer of the duodenum	28	20								1			2	3	11	14	6	3
112	Other diseases of the stomach (cancer excepted)	15	45	16	3	1	1			1					1	3	6	13	14
113	Diarrhea and enteritis (under 2 years)	76	101	135	42														
114	Diarrhea and enteritis (2 years and over)	23	90			27	17	8	13	5			1	1	2	1	9	14	25
115	Amebomatiasis																		
116	Diseases due to other intestinal parasites		1														1		
117	Appendicitis and typhlitis	226	171	3	2	7	2	14	43	46	35	30	27	17	44	49	38	33	7
118a	Hernia	69	46										1	1		15	21	40	19
118b	Intestinal obstruction	96	305	28		2	5	1	8	1	6	4	9	9	24	17	24	32	29
119	Other diseases of the intestines	9	18		1							1	1	1	1	5	4	4	7
120	Acute yellow atrophy of the liver	3	8																
121	Hydatid tumor of the liver																		
122	Cirrhosis of the liver	62	77						1						5	6	20	39	44
123	Biliary calculi	62	44							1				4	5	12	19	22	24
124	Other diseases of the liver	78	81	1	1				1	1		1	2	4	12	19	23	34	29
125	Diseases of the pancreas	5	6												1	1	3	3	2
126	Peritonitis without specified cause	21	13	2	1		1	2	3	2	1	1	5	1	1	3	7	2	1
127	Other diseases of the digestive system (cancer and tuberculosis excepted)																		
	VII.—Nonvenereal diseases of the genitourinary system and annexa	791	1,273	10		1	2	1	10	6	17	22	22	35	124	202	240	266	736
128	Acute nephritis (including unspecified under 10 years)	30	48	2		1	2		4	4	3	5	1	6	14	9	8	12	7
129	Chronic nephritis (including unspecified 10 years and over)	548	1,010						5	2	11	9	16	20	55	149	246	481	564
130	Chyluria																		
131	Other diseases of the kidneys and annexa	34	30	7				1			1	1	2	10	7	6	9	30	
132	Calculi of the urinary passages	9	8												1	12	2	9	3
133	Diseases of the bladder	7	10												1	1		3	
134	Diseases of the urethra, etc.	1	2												1	1		3	12
135	Diseases of the prostate	89	116												2	1		1	1
136	Nonvenereal diseases of the male genital organs	1		1												22	70	111	
137	Cysts, other benign tumors of the ovary	10	10						1		1	1			4	5	3	2	2
138	Salpingitis and pelvic abscess (female)	15	11							3	5	1	1	13	2	1	1	1	
139	Benign tumors of the uterus	31	17								1	1	3	16	19	1	4	3	
140	Nonpuerperal uterine hemorrhage	1																	
141	Other diseases of the female genital organs	15	11										2	3	8	7		3	3
142	Nonpuerperal diseases of the breast (cancer excepted)																		
	VIII.—The puerperal state	58	122							22	36	44	47	60	1				
143	Accidents of pregnancy	11	14							3	2	5	8	6	1				
144	Puerperal hemorrhage	9	13							1	1	3	5	10					
145	Other accidents of labor	10	18							2	6	6	4	10					
146	Puerperal septicemia	35	43							7	20	14	15	19					
147	Puerperal phlegmasia alba dolens, embolus, etc.	6	6							1	1	4	3	3					
148	Puerperal albuminuria and convulsions	16	28							8	5	10	9	12					
149	Following childbirth (undefined)	1									1								
150	Puerperal diseases of the breast																		
	IX.—Diseases of the skin and the cellular tissue	24	43	2	1		1		1		1	1	1	7	2	5	10	35	
151	Gangrene	10	31																
152	Furuncle	8	2	1											2	1	2	7	29
153	Acute abscess	5	2	1		1			1		1	1	1	3	1	1	1	2	1
154	Other diseases of the skin and annexa	1	7	1											1	1	1	1	4

CAUSE OF DEATH, BY RURAL AND URBAN, AND BY AGE GROUPS—STATE OF IOWA, 1928—Continued

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TWENTY-FOURTH BIENNIAL REPORT OF THE

List No.	Cause of Death	All Deaths		Under 1 year	1 year	2 years	3 years	4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	30 to 34 years	35 to 39 years	40 to 44 years	45 to 49 years	50 to 54 years	55 to 59 years	60 to 64 years	65 to 69 years	70 years and over	Age unknown
		Urban	Rural																				
155	X—Diseases of the bones and of organs of locomotion.....	21	15		1	1	2		7	7	3	1		1	5	1	1	4	2				
156	Diseases of the bones (tuberculosis excepted).....	19	13		1	1	2		7	7	3	1		1	5			3	1				
157	Diseases of the joints (tuberculosis and rheumatism excepted).....	2	2														1	1	1	1			
158	Amputations.....																						
159	Other diseases of the organs of locomotion.....																						
160	XI—Malformations.....	128	206	299	11	4	6	3	3	1	1	1	1	1	2								
160a	Congenital hydrocephalus.....	17	26	35	3	1		2	2														
160b	Congenital malformations of the heart.....	72	110	165	3	2	5	1	1	1	1	1	1	1	1								
160c	Other congenital malformations.....	39	69	99	5	1	1		1						1								
161	XII—Early infancy.....	406	682	1,088																			
161a	Congenital debility, leturus, sclerema.....	34	69	103																			
161b	Premature birth.....	269	443	712																			
161c	Injury at birth.....	71	125	196																			
162	Other diseases peculiar to early infancy.....	31	49	79																			
163	Lack of care.....	1		1																			
164	XIII—Old age (senility).....	111	358																	46	423		
165	XIV—External causes.....	826	1,183	36	40	24	28	16	73	65	107	119	106	103	239	254	238	215	345				
165a	Suicide.....	160	237			1				1	10	30	18	31	72	90	72	63	30				
165b	By poisons (gas or corrosives excepted).....	8	17																				

166	By corrosive substances.....	18	10							3	1	1	3	3	3	11	7	2	1			
167	By poisonous gas.....	37	3								2	3	3	9	11	7	8					
168	By hanging or strangulation.....	38	1						1	2	4	3	5	26	30	25	22	12				
169	By drowning.....	5	1							1	1	1	3	2	3	2	3	1				
170	By firearms.....	45	8								8	10	14	23	29	21	19	4				
171	By cutting or piercing instruments.....	5	2											2	3	4	3					
172	By jumping from high places.....	5	2												2	1	2					
173	By crushing.....	1	1								1				1	1						
174	By other means.....	3																				
Homicide.....		38	18	1		1		3		3	7	10	3	12	9	5	5	2				
197	By firearms.....	27	13	1		1		1		2	6	7	3	10	5	5		1				
198	By cutting or piercing instruments.....	5	2							2	1	1		1	3	2						
199	By other means.....	6	3							1	1	2		1	1							
Accidental, other, or undefined.....		628	890	35	40	23	27	16	70	64	94	92	78	69	155	155	161	156	323			
175	Poisoning by food.....	6	6	1		1	1	1						1	4		1	1	1			
176	Poisoning by venomous animals.....	1	1													1						
177	Other acute poisonings (gas excepted).....	16	17	2	5	3		1	1	2	3		1	3	6	4	2	2				
178	Conflagration.....	6	11				2			1	3		1	2	3	1	2					
179	Burns (conflagration excepted).....	36	34	1	5	2	3	5	10	3	2	2	5	7	1	4	5	10				
180	Mechanical suffocation.....	3	23	16							1		1	3	2	1						
181	Absorption of irrespirable, irritating, or poisonous gas.....	21	21								2	2	1	1	3	9	9	6	8			
182	Drowning.....	27	72	2	10	3	1		11	13	15	10	5	4	6	8	9	1	1			
183	Traumatism by firearms (except in war).....	13	31		1				3	7	7	3	3	5	3	4	5	2	1			
184	Traumatism by cutting or piercing instruments.....	10	2			2	1							1		2	1	4	1			
185	Traumatism by fall.....	183	240	3	2	1	2	2	5	3	3	5	3	4	18	21	33	67	251			
186a	Traumatism in mines.....	4	17									2	5	1	4	6	2	1				
186b	Traumatism in quarries.....	1	1																			
187	Traumatism by machines.....	18	32			1	1				3	1	3	3	6	10	6	5				
188a	Railroad accidents.....	59	100		1	1			4	5	14	11	13	9	32	24	18	16	9			
	Collision with automobiles.....	21	26			1			4	3	8	4	3	4	10	5	2	2	1			
	Other railroad accidents.....	38	74		1	1			2	6	7	10	5	23	19	16	14	8				
188b	Street-car accidents.....	9	2			1			1	2				3	1	2	1					
	Collision with automobiles.....	6	1						1	1				3	1	1						
	Other street-car accidents.....	3	1								1											
188c	Automobile accidents (excluding collision with railroad trains and street cars).....	142	187	1	8	3	5	6	25	25	33	35	15	16	31	31	40	30	25			
188d	Airplane and balloon accidents.....	8	7					1		1	4	3	3	1	1	1						
188e, f	Injuries by other vehicles.....	10	18		1	1	1		1	2	3	3	3	1	4	3	3	2				
188g	Landslide, other crushing.....	2	7				1							1	2	2	2	1				

IOWA STATE DEPARTMENT OF HEALTH

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List No.	Cause of Death	All Deaths		Under 1 year	1 year	2 years	3 years	4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	30 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over	Age unknown
		Urban	Rural																	
189	Injuries by animals (not poison- ing)	16	1																	
190	Wounds of war																			
191	Starvation (deprivation of food or water)																			
192	Excessive cold	2	1																	
193	Excessive heat	3	9																	
194	Lightning	3	8																	
195	Other accidental electric shocks	11	13																	
196	Fracture (cause not specified)	1	4																	
197	Violent external violence	36	50	8	7	5	4	1	4	5	1	3	7	3	13	13	11	6	3	
198	Violent deaths of unknown causa- tion																			
199	XV—ill-defined diseases	18	111	36	4	1		1		2		1	3	2	5	7	14	29	24	
200	Sudden death	16	1																	
201	Ill-defined	50	9	9	3	1		1		2		1	2	1	3	1	4	5	1	
202	Not specified or unknown	9	46	26	1															
203																				

SUMMARY OF DEATH RATES BY COUNTIES AND CITIES (OVER 10,000 POPULATION) 1928

Counties—The death rate per 1,000 population in the State of Iowa for the year 1928 was 10.4, or 0.3 higher than for 1927 which was 10.1. The three counties with the highest rates for 1928 are: Johnson*—21.0, Cherokee*—18.4 and Henry*—17.3. The counties with the lowest rates for 1928 are: Lyon and Winnebago—6.1, Worth—6.4, and Sioux 6.7.

*There is a state institution located in each of these counties and as a result, they have a higher death rate than other counties with like population. If the deaths occurring in the institutions were charged back against the county from which patient was admitted, these three counties would have a normal average death rate.

Cities—The cities having the highest death rates for 1928 are Iowa City (27.9), Keokuk (17.7), Davenport and Marshalltown each with (15.3). The three cities with the lowest rates are: Des Moines (11.5), Cedar Rapids and Fort Dodge (11.7) each, and Sioux City (11.8). Of the total number of 25,315 deaths reported for the year 1928, 9,183 occurred in the 18 cities for which the returns are kept separate. The death rate (per 1,000 population for these cities for 1928 is (13.5).

The death rate for the counties (exclusive of the 18 cities for 1928 is (9.2).

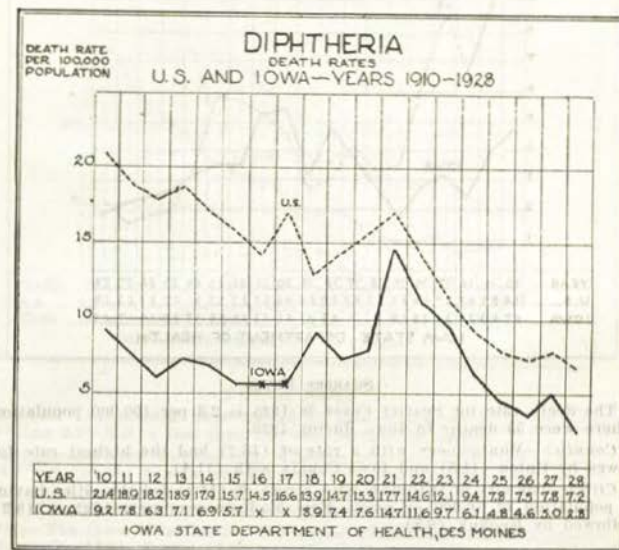
NUMBER OF DEATHS (EXCLUSIVE OF STILLBIRTHS) WITH RATES (PER 1,000 POPULATION) BY COUNTIES, YEAR 1928

(Cities Included Within Counties)

Area	Deaths	Death Rate Per 1,000 Population
TOTAL FOR STATE	25,315	10.4
Adair	91	6.8
Adams	110	10.9
Allamakee	153	9.5
Appanoose	281	10.2
Audubon	92	7.9
Benton	234	10.3
Black Hawk	617	10.7
Boone	299	10.3
Bremer	172	10.2
Buchanan	294	17.1
Buena Vista	175	9.5
Butler	143	7.9
Calhoun	124	7.0
Carroll	226	10.3
Cass	188	9.9
Cedar	164	9.9
Cerro Gordo	389	10.0
Cherokee	292	18.4
Chickasaw	128	8.6
Clarke	112	11.5
Clay	123	8.0
Clayton	208	8.7
Clinton	555	11.9
Crawford	151	7.5
Dallas	246	9.7
Davis	91	7.8
Decatur	120	8.2
Delaware	174	9.8
Des Moines	483	12.3
Dickinson	92	8.4
Dubuque	757	12.5
Emmet	119	8.9
Fayette	275	9.3
Floyd	171	9.8

Area	Deaths	Death Rate Per 1,000 Population
Franklin	130	8.1
Fremont	168	11.4
Greene	120	7.5
Grundy	105	7.7
Guthrie	166	9.8
Hamilton	204	9.6
Hancock	99	6.9
Hardin	229	10.3
Harrison	180	7.8
Henry	286	17.3
Howard	119	9.2
Humboldt	99	7.9
Ida	95	8.3
Iowa	168	9.5
Jackson	232	12.2
Jasper	296	10.2
Jefferson	194	11.9
Johnson	671	21.0
Jones	181	10.5
Keokuk	183	9.3
Kossuth	174	6.9
Lee	542	14.3
Linn	865	10.3
Louisa	109	9.6
Lucas	129	8.3
Lyon	94	6.1
Madison	125	8.7
Mahaska	286	10.7
Marion	241	9.8
Marshall	395	11.8
Mills	159	12.6
Mitchell	124	8.5
Monona	156	9.5
Monroe	166	8.9
Montgomery	169	10.4
Muscatine	348	12.0
O'Brien	128	7.2
Osceola	97	9.7
Page	359	15.7
Palo Alto	127	8.5
Plymouth	214	8.9
Pocahontas	104	6.9
Polk	1,939	10.8
Pottawattamie	818	13.6
Poweshiek	178	10.4
Ringgold	106	9.2
Sac	161	9.4
Scott	960	13.9
Shelby	174	14.3
Sioux	180	6.7
Story	273	8.6
Tama	180	8.1
Taylor	165	11.1
Union	177	10.5
Van Buren	122	9.2
Wapello	508	11.1
Warren	156	9.1
Washington	175	9.3
Wayne	133	9.2

Area	Deaths	Death Rate Per 1,000 Population
Webster	397	9.5
Winnebago	80	6.1
Winneshiek	202	9.6
Woodbury	1,121	11.1
Worth	71	6.4
Wright	153	7.5



SUMMARY OF DEATH RATES FOR DIPHTHERIA, SCARLET FEVER AND TYPHOID FEVER IN THE STATE OF IOWA, 1928

DIPHTHERIA

As there were 67 deaths reported in Iowa during the year 1928, the death rate for this disease is 2.8 per 100,000 population.

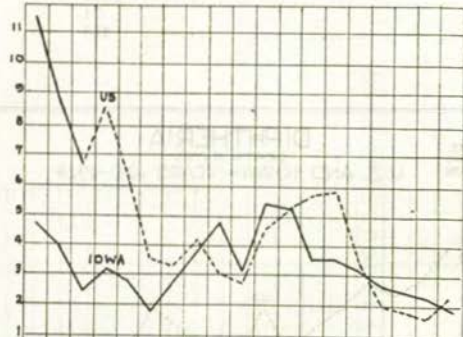
Counties—The three counties with the highest death rates from Diphtheria are: Jasper (20.4), Sac (11.5) and Clinton (10.7).

Cities—The three cities with the highest rates are: Clinton (18.0) Council Bluffs (14.2) and Waterloo (13.5).

SCARLET FEVER

DEATH RATE
PER 100,000
POPULATION

U. S. AND IOWA—YEAR 1910-1928



IOWA STATE DEPARTMENT OF HEALTH

SCARLET FEVER

The death rate for Scarlet Fever in 1928 is 2.3 per 100,000 population. There were 55 deaths in Iowa during 1928.

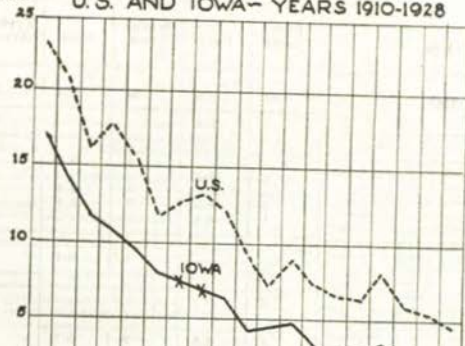
Counties—Montgomery with a rate of (12.2) had the highest rate followed by Union (11.8) and Iowa County with (11.4).

Cities—The city of Ottumwa with a rate of (14.0) led the cities having a population of 10,000 or over. Fort Madison was next highest (9.3), followed by Keokuk (6.8).

TYPHOID FEVER

DEATH RATES
PER 100,000
POPULATION

U. S. AND IOWA—YEARS 1910-1928



IOWA STATE DEPARTMENT OF HEALTH

TYPHOID FEVER

Fifty-four (54) deaths were caused by this disease in 1928, the death rate being 2.2—just .1 less than the rate for Scarlet Fever.

Counties—Jefferson County with 4 deaths reported, shows a death rate of 24.0 per 100,000 population, followed in order by Appanoose with 4 deaths and a death rate of 14.0. Lucas county was third highest with a rate of 12.8. There were two deaths in Lucas county.

Cities—The three cities having the highest death rate from this disease are Keokuk (13.6), Boone (7.7) and Marshalltown (5.7).

NUMBER OF DEATHS, WITH DEATH RATES (PER 100,000 POPULATION) FOR DIPHTHERIA, SCARLET FEVER AND TYPHOID FEVER, STATE OF IOWA—YEAR 1923
(Cities included within Counties)

Area	Diph- theria	Rate	Scarlet Fever	Rate	Typhoid Fever	Rate
Total for State.....	67	2.8	55	2.3	54	2.2
Adair.....	1	7.5			1	7.5
Adams.....						
Allamakee.....			1	2.8	4	19.4
Appanoose.....	1	8.5				
Audubon.....			1	4.4	1	4.4
Benton.....	6	10.3	2	5.4	1	3.4
Black Hawk.....	1	3.4			1	3.4
Boone.....						
Bremer.....	1				1	3.4
Buchanan.....			1	5.4	1	3.4
Buena Vista.....						
Butler.....						
Calhoun.....	2	9.1			2	9.1
Carroll.....					1	3.2
Cass.....					1	4.0
Cedar.....	1	2.6	2	5.2	1	2.6
Cerro Gordo.....						
Cherokee.....						
Chickasaw.....			1	10.3		
Clarke.....						
Clay.....						
Clayton.....	3	12.6				
Clinton.....	5	10.7				
Crawford.....	1	4.9				
Dallas.....	3	2.8	4	3.9		
Davis.....					1	3.4
Decatur.....					1	3.4
Delaware.....						
Des Moines.....	3	7.5	2	5.0		
Dickinson.....	1	3.1			1	3.1
Dubuque.....	1	1.6	1	1.6	1	1.6
Emmet.....	1	7.5				
Fayette.....	2	6.8	1	3.4	1	3.4
Floyd.....	1	5.7				
Franklin.....			2	6.5		
Fremont.....	2	6.5				
Greene.....						
Grundy.....						
Guthrie.....						
Hamilton.....						
Hancock.....						
Hardin.....						
Harrison.....	2	8.6	2	8.6	1	4.3
Henry.....	1	7.7				
Howard.....						
Humboldt.....	1	7.7				
Ia.....						
Iowa.....	2	10.5			1	5.7
Jackson.....	6	20.4	2	6.8		
Jasper.....			1	6.9	4	24.0
Jefferson.....						
Johnson.....			1	5.0	1	5.0
Jones.....			1	3.9		
Keokuk.....			2	5.2	3	7.9
Kossuth.....						
Lee.....	1	1.1				
Linn.....						
Louis.....			1	6.4	2	12.8
Lucas.....			1	6.4		
Lyon.....					1	4.9
Madison.....					1	3.7
Mahaska.....					1	4.9
Marion.....					1	3.0
Marshall.....	2	6.9	2	6.0		
Mills.....	1	7.9			1	6.8
Mitchell.....			1	6.8		

NUMBER OF DEATHS, WITH DEATH RATES (PER 100,000 POPULATION) FOR DIPHTHERIA, SCARLET FEVER AND TYPHOID FEVER, STATE OF IOWA—YEAR 1923—Continued
(Cities included within Counties)

Area	Diph- theria	Rate	Scarlet Fever	Rate	Typhoid Fever	Rate
Monona.....						
Monroe.....					1	0.3
Montgomery.....			2	12.2		
Muscatine.....						
O'Brien.....						
Osceola.....						
Page.....			1	4.3	1	4.3
Palo Alto.....						
Plymouth.....					1	4.2
Pocahontas.....						
Polk.....	1	5	6	3.0	2	1.1
Pottawattamie.....	6	8.4	1	1.4	5	7.0
Poweshock.....			1	1.8		
Ringgold.....						
Sac.....	2	11.6			1	3.8
Scott.....	2	3.9			1	1.5
Shelby.....			2	8.1		
Sioux.....						
Story.....	2	6.2	1	3.1		
Tama.....						
Taylor.....						
Union.....			2	11.8	1	3.9
Van Buren.....						
Wapello.....	2	4.6	4	8.8	3	6.6
Warren.....					1	5.8
Washington.....						
Wayne.....	1	2.2				
Webster.....						
Winnebago.....						
Winneshek.....	1	4.7				
Woodbury.....	1	1.0			2	2.0
Worth.....						
Wright.....			1	4.9		

NUMBER OF DEATHS (EXCLUSIVE OF STILLBIRTHS) WITH RATES (PER 1,000 POPULATION) FOR CITIES OVER 10,000 POPULATION, 1923

Area	Deaths (per 1,000 population)
Total for Cities.....	9,183
Boone.....	159
Burlington.....	398
Cedar Rapids.....	625
Clinton.....	410
Council Bluffs.....	648
Davenport.....	815
Des Moines.....	1,725
Dubuque.....	649
Fort Dodge.....	271
Fort Madison.....	160
*Iowa City.....	494
Keokuk.....	257
Marshalltown.....	278
Mason City.....	292
Muscatine.....	243
Ottumwa.....	375
Sioux City.....	937
Waterloo.....	447

*State University Hospital located at Iowa City.
Estimated population for 18 cities for year 1923 was 678,663.

NUMBER OF DEATHS FROM PRINCIPLE CAUSES, 18 CITIES OVER 10,000 POPULATION, STATE OF IOWA, 1928
PART I

Area and Color	All causes										Typhoid fever	Malaria	Smallpox	Measles	Scarlet fever	Whooping cough	Diphtheria	Influenza	Krysiopias	Meningococcus meningitis	Tuberculosis of the respiratory system	Tuberculosis of the meninges, etc.	Other forms of tuberculosis	Cancer and other malignant tumors	Rheumatism	Diabetes mellitus	
	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.																	
Iowa	24,966	2,330	53	3	4	14	55	81	67	1,383	63	27	685	396	87	2,713	473	18	1	1	1	1	1	1	1	1	1
Urban	8,330	1,033	13	1	1	3	19	25	27	415	18	12	287	14	4	282	981	21	1	1	1	1	1	1	1	1	
Rural	16,636	1,300	40	2	3	11	36	56	40	968	47	15	398	25	83	1,732	452	17	1	1	1	1	1	1	1	1	
Boone	159	1	1	1	1	1	1	1	1	4	1	4	1	1	1	18	1	1	1	1	1	1	1	1	1	1	
Burlington	398	1	1	1	1	1	1	1	1	2	1	2	14	1	1	55	1	1	1	1	1	1	1	1	1	1	
Cedar Rapids	625	1	1	1	1	1	1	1	1	3	1	3	9	1	1	30	1	1	1	1	1	1	1	1	1	1	
Clinton	575	1	1	1	1	1	1	1	1	15	1	15	1	1	1	30	1	1	1	1	1	1	1	1	1	1	
Council Bluffs	648	1	1	1	1	1	1	1	1	10	1	10	1	1	1	22	1	1	1	1	1	1	1	1	1	1	
Davenport	815	1	1	1	1	1	1	1	1	10	1	10	1	1	1	263	1	1	1	1	1	1	1	1	1	1	
Des Moines	1,725	1	1	1	1	1	1	1	1	22	1	22	1	1	1	583	1	1	1	1	1	1	1	1	1	1	
Dubuque	649	1	1	1	1	1	1	1	1	7	1	7	1	1	1	25	1	1	1	1	1	1	1	1	1	1	
Fort Dodge	271	1	1	1	1	1	1	1	1	1	1	1	1	1	1	32	1	1	1	1	1	1	1	1	1	1	
Fort Madison	169	1	1	1	1	1	1	1	1	11	1	11	1	1	1	52	1	1	1	1	1	1	1	1	1	1	
Iowa City	494	1	1	1	1	1	1	1	1	6	1	6	1	1	1	39	1	1	1	1	1	1	1	1	1	1	
Keosauqua	257	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29	1	1	1	1	1	1	1	1	1	1	
Marshalltown	278	1	1	1	1	1	1	1	1	11	1	11	1	1	1	24	1	1	1	1	1	1	1	1	1	1	
Mason City	292	1	1	1	1	1	1	1	1	24	1	24	1	1	1	34	1	1	1	1	1	1	1	1	1	1	
Muskegon	245	1	1	1	1	1	1	1	1	14	1	14	1	1	1	42	1	1	1	1	1	1	1	1	1	1	
Ottumwa	375	1	1	1	1	1	1	1	1	1	1	1	16	1	1	42	1	1	1	1	1	1	1	1	1	1	
Sioux City	325	1	1	1	1	1	1	1	1	1	1	1	21	1	1	56	1	1	1	1	1	1	1	1	1	1	
Stearns City	447	1	1	1	1	1	1	1	1	70	1	70	1	1	1	6	1	1	1	1	1	1	1	1	1	1	
Waterloo	367	1	1	1	1	1	1	1	1	1	1	1	4	1	1	4	1	1	1	1	1	1	1	1	1	1	

NUMBER OF DEATHS FROM PRINCIPLE CAUSES, 18 CITIES OVER 10,000 POPULATION, STATE OF IOWA, 1928
PART II

Area and Color	All other causes										Cerebral hemorrhage and softening	Diseases of the heart	Bronchitis	Pneumonia (all forms)	Diarrhea and enteritis (under 2 years)	Appendicitis and typhlitis	Hernia, intestinal obstruction	Cirrhosis of the liver	Nephritis	Puerperal eclampsia	Other puerperal causes	Congenital malformation and diseases of early infancy	Suicide	Homicide	Primary*	Automobile Accidents			Other external causes	Unknown or ill-defined diseases	All other causes
	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.																					
Iowa	2,470	4,233	92	1,684	374	396	301	139	1,411	78	130	1,411	396	51	324	47	7	1,166	128	102	33	35	33	33	33	33	33	33	33	33	33
Urban	1,387	1,387	52	825	229	229	139	62	625	35	55	625	229	35	139	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Rural	1,083	2,846	40	859	145	167	162	77	786	43	73	786	167	26	185	34	1	1,153	115	69	20	22	22	22	22	22	22	22	22	22	22
Boone	14	24	0	15	4	5	4	1	11	1	1	11	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Burlington	44	74	1	135	10	10	10	4	110	1	1	110	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cedar Rapids	49	94	1	125	10	10	10	4	110	1	1	110	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Council Bluffs	57	89	1	155	10	10	10	4	110	1	1	110	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Davenport	84	156	1	189	10	10	10	4	110	1	1	110	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Des Moines	156	114	0	249	10	10	10	4	110	1	1	110	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fort Dodge	22	24	0	40	4	4	4	1	34	1	1	34	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fort Madison	14	16	0	20	3	3	3	1	17	1	1	17	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Keokuk	30	42	1	35	3	3	3	1	28	1	1	28	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Marshalltown	30	42	1	35	3	3	3	1	28	1	1	28	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mason City	22	24	0	28	2	2	2	1	20	1	1	20	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Muskegon	25	43	0	32	2	2	2	1	27	1	1	27	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sioux City	27	27	0	29	2	2	2	1	25	1	1	25	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Waterloo	30	37	0	41	2	2	2	1	30	1	1	30	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

*Excluding collision with railroad trains and street cars.

DEATHS BY PRINCIPLE CAUSES BY AGE GROUPS, CITY OF DES MOINES, 1928

Area and Cause of Death	All deaths	Under 1 year	1 year	2 years	3 years	4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	30 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over	Age unknown
Des Moines, Iowa, all causes.....	1,725	144	20	5	8	5	34	17	28	39	52	55	134	208	268	346	360	
Typhoid and paratyphoid fever (1).....	2												1	1				
Measles (7).....	5	1					3				1							
Scarlet fever (8).....	12	1			1													
Whooping cough (9).....	1																	
Diphtheria (10).....	1													1				
Influenza (11).....	76	5	6		1	1	1	2	3	2		1	6	8	7	12	21	
Meningococcus meningitis (24).....	5		1				1				1				1			
Tuberculosis of the respiratory system (31).....	86							1	4	9	14	7	21	14	4	6	1	2
Other forms of tuberculosis (32-37).....	14	1					1		1		1				5	1	1	
Cancer and other malignant tumors (43-49).....	208									1		7	30	36	52	55	58	
Diabetes mellitus (57).....	27												3	12	10	15	7	
Cerebral hemorrhage and softening (74, 83).....	130												2	12	16	48	49	
Other (organic) diseases of the heart (90).....	204							2	3	2	1	3	8	24	55	48	58	
Bronchitis (99).....	4	1															3	
Bronchopneumonia (100).....	45	10	1				1				1	3		2	1	5	21	
Pneumonia (101).....	78	13	4				3	1	2	3	1	3	5	6	7	12	18	
Diarrhea and enteritis (113, 114).....	13	8			1	1					1				1			
Appendicitis and typhilitis (117).....	33	1			1		3	3	2	1	2	2	6	8	3	1		
Hernia, intestinal obstruction (118).....	22								1		1			5	2	3	8	1
Cirrhosis of the liver (122).....	5												2	1	1		1	
Nephritis (128, 129).....	169						1		1		1	3	5	16	14	40	38	
Diseases of the female genital organs (137-141).....	18						1				1	2	4	6	1	2	1	
Puerperal septicemia (146).....	1									1								
Other puerperal causes (143-145, 147-150).....	4																	
Suicide (160-174).....	31										4			6		5	1	
Homicide (175-200).....	15												3	5		3		
Automobile accidents* (188).....	25						4	2	1				1	9	9	3	4	
Automobile and railroad train collision (part 188).....	6						1											
Automobile and street-car collision (part 188).....	3						1											
Other external causes.....	408	101	7	9	9	2	2	2	2	2	2	2	2	2	2	2	2	
All other causes.....	408	101	7	9	9	2	2	2	2	2	2	2	2	2	2	2	2	

118 TWENTY-FOURTH BIENNIAL REPORT OF THE

NUMBER OF DEATHS WITH DEATH RATES (PER 100,000) POPULATION FOR DIPHTHERIA, SCARLET FEVER AND TYPHOID FEVER, CITIES OVER 10,000 POPULATION, YEAR, 1928

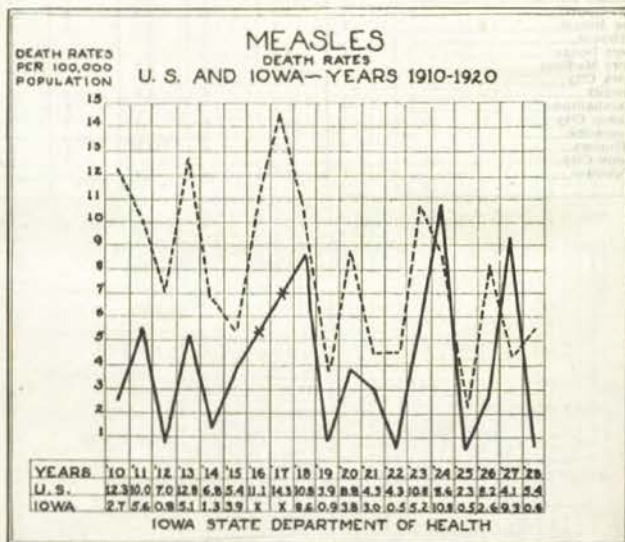
Area	Diph- theria	Rate	Scarlet fever	Rate	Typhoid fever	Rate
Total for cities.....	27	2.9	19	2.8	13	1.8
Boone.....	1	7.7				
Burlington.....	3	10.8	1	3.6	1	7.7
Cedar Rapids.....	3	18.0				
Clinton.....	2	14.3	1	2.4	1	4.8
Des Moines.....	1	14.3	2	3.6	1	1.9
Dubuque.....	1	9.2	1	9.2		
Fort Dodge.....	1	4.2				
Fort Madison.....			1	9.3		
Iowa City.....						
Knox.....			1	6.8	1	13.6
Keosauqua.....	2	11.4				
Mason City.....			1	4.1	1	3.7
Mechanicsville.....	2	7.0	4	14.0		
Okmura.....						
Sioux City.....			2	5.4	1	3.5
Waterloo.....	3	13.5				

IOWA STATE DEPARTMENT OF HEALTH

SUMMARY OF DEATH RATES FOR SMALLPOX AND MEASLES,
STATE OF IOWA, 1928

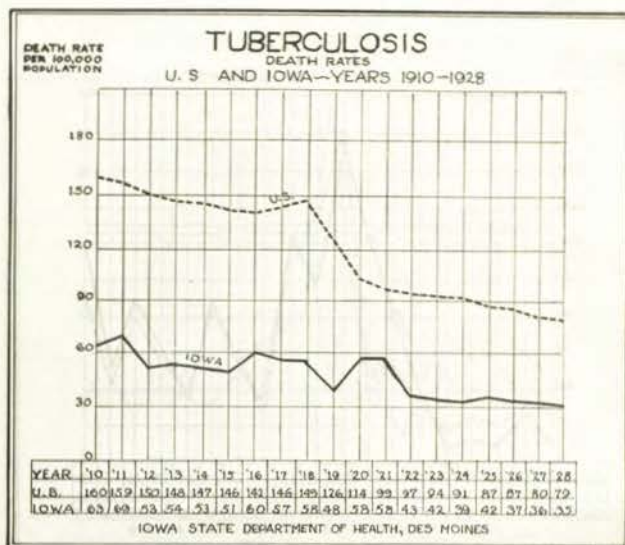
SMALLPOX

It is most gratifying to note that only four (4) deaths were charged to smallpox in 1928, the death rate being .2 per 100,000 population. Not a death occurred in any one of the cities over 10,000 population. The four counties having deaths from smallpox are—Crawford (1) death with rate of 4.9 per 100,000 population; Green (1) death with a rate of 6.3; O'Brien (1) death and a rate of 5.6, and Page with (1) death and a rate of 4.3.



MEASLES

Measles is a disease the spread of which is subject to cyclical influences. One year the mortality is high, while the next year or two a large decline in the death rate appears. During the year 1928, only 14 deaths were reported from this cause. The Counties with the number of deaths and the death rate per 100,000 population, follow: Boone (1)—6.2; Clayton (1)—4.2; Dubuque (1)—1.6; Emmett (1)—7.5; Henry (1)—6.0; Lucas (1)—6.4; Pocahontas (3)—20.0; Ringgold (1)—8.7; Story (1)—3.1; Taylor (1)—6.7; and Woodbury (2)—2.0. The one death from Dubuque County was reported from Dubuque City, the rate for Dubuque city being 2.3 per 100,000 population. One of the deaths from Woodbury County was reported from Sioux City, the death rate for Sioux City being 1.3.

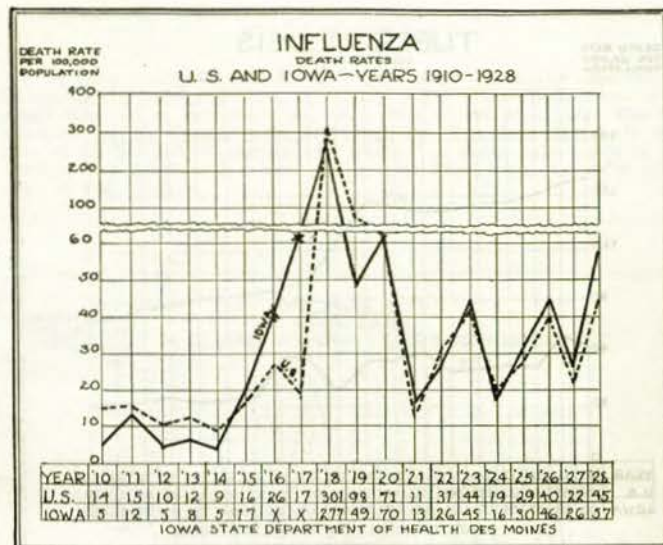
SUMMARY OF DEATH RATES FOR TUBERCULOSIS (ALL FORMS),
INFLUENZA AND WHOOPING COUGH, STATE OF IOWA, 1928

TUBERCULOSIS

The tuberculosis death rate in Iowa since records have been available, has shown a steady decline until a new low mark rate of 35.0 per 100,000 population was reached in 1928.

Counties—Johnson County, the home of the Iowa State Sanatorium for Tuberculosis, of course had the highest death rate with 294.3 per 100,000 population. Cherokee County with a rate of 113.2 was second, followed by Mills with a rate of 111.1. The rate for Johnson County, exclusive of Iowa City, is 514.0.

Cities—The three cities with the highest rates are: Iowa City (118.7); Fort Madison (102.8) and Dubuque, with (89.7).

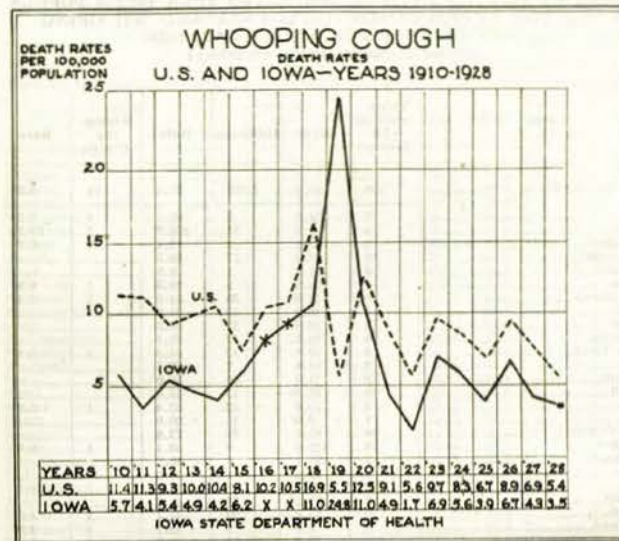


INFLUENZA

The death rate from Influenza for the year 1928 was 57.5 per 100,000 population. There were 1,395 deaths reported from this disease as compared with 648 deaths in 1927, the death rate for 1927 being 26.7. Every county in the state reported one or more deaths from Influenza.

Counties—The counties with the highest death rates are: Shelby (178.2); Adams (108.9) and Sac (104.4).

Cities—The City of Fort Madison, with a rate of 102.3, had the highest rate from Influenza. Council Bluffs and Mason City, with rate of 98.4 each, were next in order, followed by Burlington with 75.6.



WHOOPIING COUGH

This disease was responsible for 84 deaths during 1928 compared with 101 deaths for the previous year, the death rate per 100,000 population being 3.5 for 1928, while the rate for 1927 was 4.3.

Counties—Adams county, with a death rate of 29.7, led the counties with the highest rate. Guthrie county was second, with 17.7, and Ringgold third, with 17.3.

Cities—The three cities with the highest rates are: Mascatine 11.6; Council Bluffs 9.6 and Fort Madison 9.3.

NUMBER OF DEATHS WITH DEATH RATES (PER 100,000 POPULATION) FOR TUBERCULOSIS, INFLUENZA AND WHOOPING COUGH, STATE OF IOWA, YEAR, 1928
(Cities included within Counties)

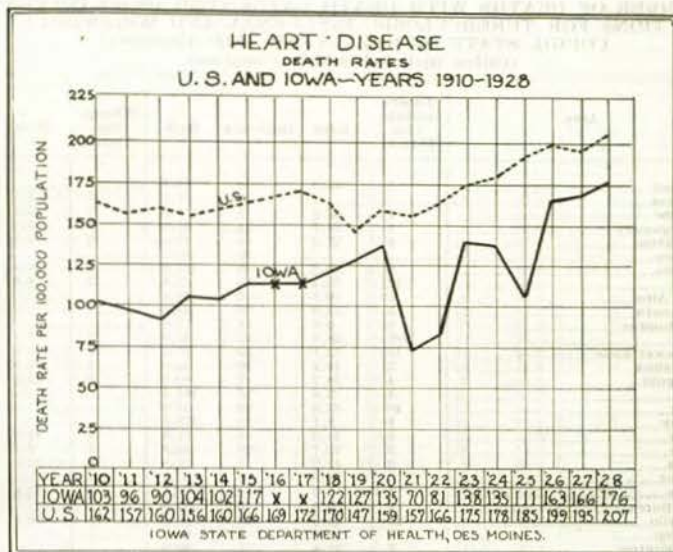
Area	Tuber- culosis (All Forms)	Rate	Influenza	Rate	Whoop- ing Cough	Rate
Total for State	850	35.0	1,395	57.5	84	8.5
Adair	2	14.9	8	60.0	1	7.5
Adams	1	9.9	11	108.9	3	29.7
Allamakee	2	12.4	2	15.4	1	6.2
Appanoose	12	40.0	17	50.5		
Audubon	2	17.1	1	8.5		
Benton	6	26.5	6	26.5	2	8.8
Black Hawk	8	13.8	38	64.6	2	3.4
Boone	7	23.9	15	51.0		
Bremser	5	29.7	12	64.8		
Buchanan	16	16.0	12	69.1		
Buena Vista	3	16.2	12	64.8		
Butler	2	11.1	7	38.6	1	5.4
Calhoun	2	11.2	10	56.0		
Carroll	5	22.8	12	54.0		
Cass	3	15.0	12	62.4	1	5.2
Cedar	1	6.0	15	90.0		
Cerro Gordo	19	25.7	28	72.8		
Cherokee	18	113.2	8	50.4	1	6.3
Chickasaw	3	20.1	6	40.2		
Clarke	4	41.2	1	10.3		
Clay	2	13.1	5	32.5	1	6.5
Clayton	7	29.4	11	46.2		
Clinton	12	25.8	22	47.4	2	4.3
Crawford	1	4.9	9	45.1	1	4.9
Dallas	6	19.6	15	38.5	2	7.8
Davis	7	59.7	3	25.3		
Decatur	2	13.7	12	79.2		
Delaware	4	22.6	15	84.0	1	0.6
Des Moines	21	53.4	26	55.0	1	2.5
Dickinson	1	3.0	4	36.4		
Dubuque	29	62.4	24	35.4	1	1.6
Emmet	2	14.9	10	75.0		
Fayette	10	33.9	12	40.8		
Floyd	6	34.4	14	79.8		
Franklin	1	6.2	10	62.0	1	6.2
Fremont	5	40.8	13	88.2		
Greene	3	18.8	7	44.0		
Grundy	1	7.8	7	51.1	1	7.3
Guthrie	4	23.6	8	47.2	3	17.7
Hamilton	4	18.2	18	83.7		
Hancock	1	6.9	5	34.7		
Hardin	6	26.9	13	58.5	3	13.4
Harrison	6	25.8	24	109.2		
Henry	15	90.9	7	42.0	1	6.0
Howard	6	46.1	4	39.8		
Humboldt	2	16.0	8	64.9		
Iowa	2	17.3	1	9.7	1	9.7
Jackson	5	28.4	6	34.2	1	5.7
Jasper	6	31.5	16	88.2		
Jefferson	13	41.2	21	71.4	1	3.4
Johnson	1	6.1	8	48.0	1	6.0
Jones	294	62.7	20	62.7		
Keokuk	2	11.6	13	75.4		
Kossuth	4	20.3	7	35.0	1	5.0
Lee	5	19.9	8	31.2		
Linn	23	60.6	26	67.6	2	5.2
Louis	19	22.6	35	38.5	3	3.5
Lucas	4	35.1	10	82.0	1	8.8
Lyons	1	32.3	1	6.4		
Lyon	2	12.9	9	57.6	1	6.4
Madison	5	34.7	5	34.5		
Mahaska	6	22.4	20	74.0		
Marion	10	40.8	21	84.0		
Marshall	9	51.3	16	48.0	1	3.0
Mills	14	111.1	11	86.9	1	7.9

NUMBER OF DEATHS WITH DEATH RATES (PER 100,000 POPULATION) FOR TUBERCULOSIS, INFLUENZA AND WHOOPING COUGH, STATE OF IOWA, YEAR, 1928—Continued
(Cities included within Counties)

Area	Tuber- culosis (All Forms)	Rate	Influenza	Rate	Whoop- ing Cough	Rate
Mitchell	5	34.2	8	54.4		
Monona			11	67.1	1	6.1
Monroe	7	37.5	2	19.6	2	10.5
Montgomery	4	24.7	14	85.4	1	6.1
Muscatine	8	27.4	14	47.6	2	6.9
O'Brien			10	56.1		
Osceola	2	20.2	10	101.0	1	10.1
Page	12	52.4	16	68.8	2	8.6
Paoli Alto	3	20.1	12	80.4		
Plymouth	5	21.0	20	84.0		
Pocahontas	1	6.6	11	72.6		
Polk	101	56.6	87	43.5	2	1.1
Pottawattamie	13	22.1	59	82.6	7	9.8
Poweshiek	3	17.5	10	58.0	1	5.8
Ringgold	4	34.7	7	60.2	2	17.3
Sac	1	5.8	18	104.4		
Scott	49	61.8	39	58.5		
Shelby	1	8.1	22	178.2		
Sioux	3	11.2	14	51.8	3	11.2
Story	5	15.7	18	55.8	1	3.1
Tama	9	45.2	5	22.5	3	13.5
Taylor	3	20.9	5	33.5		
Union	1	5.9	12	70.8	2	11.8
Van Buren	4	30.0	5	37.5		
Wapello	21	45.8	23	50.6	3	6.6
Warren	4	23.2	5	29.0		
Washington	7	37.4	17	90.9		
Wayne			8	55.5		
Webster	10	22.9	17	37.4	2	4.4
Winnebago	3	22.7	5	37.8		
Winneshek	7	88.1	6	27.6		
Woodbury	30	30.9	75	75.0	4	4.0
Worth	3	27.0	5	45.0		
Wright	4	19.7	10	49.0		

NUMBER OF DEATHS WITH DEATH RATES (PER 100,000 POPULATION) FOR TUBERCULOSIS, INFLUENZA AND WHOOPING COUGH, CITIES OVER 10,000 POPULATION, STATE OF IOWA, 1928

Area	Tuber- culosis (All Forms)	Rate	Influenza	Rate	Whoop- ing Cough	Rate
Total for Cities	361	55.2	424	62.4	24	3.5
Boone	2	15.4	4	39.8		
Burlington	16	57.6	21	75.6	1	2.6
Cedar Rapids	17	31.8	27	48.6	2	3.7
Clinton	9	32.4	16	57.6	1	3.6
Council Bluffs	13	31.2	41	98.4	4	9.6
Davenport	43	81.7	35	66.5		
Des Moines	100	60.0	76	45.6	2	1.2
Dubuque	36	89.7	22	59.6		
Fort Dodge	6	35.8	7	39.1	2	8.6
Fort Madison	11	102.3	11	102.3	1	9.3
Iowa City	71	118.7	11	56.0		
Keokuk	11	74.8	6	49.8	1	6.8
Marshalltown	9	51.3	11	62.7	1	5.7
Mason City	9	36.9	24	58.4		
Muscatine	6	24.9	8	46.4	2	11.6
Ottumwa	17	49.5	14	49.0	2	7.0
Sioux City	28	85.9	70	91.0	3	3.9
Waterloo	4	10.8	20	54.0	2	5.4



**SUMMARY OF DEATH RATES FOR DISEASES OF THE HEART,
CANCER (ALL FORMS) AND PNEUMONIA (ALL FORMS)
STATE OF IOWA, 1928**

DISEASES OF THE HEART

The death rate per 100,000 population for Diseases of the Heart increased from 166.4 in 1927 to 176.4 in 1928. There were 4,036 deaths in 1927, compared with 4,283 in 1928.

Counties—The counties with the highest rates for 1928 are Henry (354.0), Shelby (324.8), and Scott (286.5).

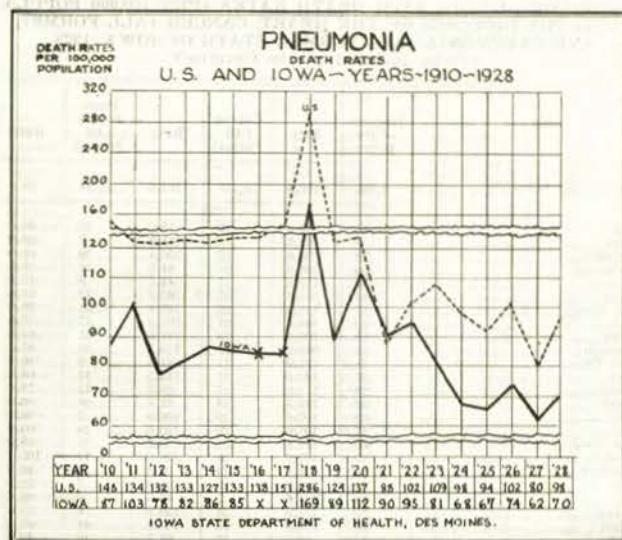
Cities—The three cities with the highest death rates for 1928 are: Marshalltown (319.2), Davenport (296.4) and Keokuk (285.6).

CANCER (ALL FORMS)

There were 2,735 deaths reported for Cancer (all forms) giving a rate of 112.6 per 100,000 population for 1928 as compared with 2,689 and a rate of 110.9 for 1927.

Counties—Johnson county with a rate of 297.8 had the high rate for 1928, followed by Jackson (228.8) and Iowa (153.9).

Cities—Iowa City with a rate of 468.9, had the highest rate for the 18 cities. Keokuk with a rate of 197.2 was next highest followed by Dubuque with a death rate of 190.9.



PNEUMONIA (ALL FORMS)

During the year 1928, 1,714 deaths were reported from Pneumonia (all forms) as compared with 1,508 deaths the year previous. The death rate for Pneumonia in 1928 was 70.6 per 100,000 population against 62.2 for 1927.

Counties—The three counties with the highest rates for 1928 are Jefferson (114.0), Webster (107.8), and Cherokee (107.1).

Cities—The three cities having the highest rates for 1928 are Fort Dodge (172.0), Fort Madison (140.1) and Council Bluffs (127.2).

NUMBER OF DEATHS WITH DEATH RATES (PER 100,000 POPULATION) FOR DISEASES OF THE HEART, CANCER (ALL FORMS), AND PNEUMONIA (ALL FORMS), STATE OF IOWA, 1928
(Cities included within Counties)

Area	Diseases of the Heart	Rate	Cancer (All Forms)	Rate	Pneumonia (All Forms)	Rate
Total for State.....	4,288	176.4	2,785	112.6	1,714	70.6
Adair.....	12	90.0	10	75.0	12	90.0
Adams.....	9	89.1	12	118.8	7	69.3
Allamakee.....	29	179.8	22	136.4	10	62.0
Appanoose.....	56	196.0	24	84.0	16	56.0
Audubon.....	14	119.0	5	144.5	5	42.5
Benton.....	48	211.2	37	162.8	12	52.8
Black Hawk.....	57	147.9	68	106.4	58	98.8
Boone.....	49	166.6	31	105.4	17	57.8
Bremer.....	18	106.2	24	141.6	11	64.9
Buchanan.....	52	265.2	21	119.7	15	85.5
Buena Vista.....	28	151.2	17	91.8	8	16.2
Bulwer.....	36	143.0	21	115.5	12	68.0
Calhoun.....	30	112.0	17	95.2	14	78.4
Carroll.....	39	175.5	18	81.0	20	90.0
Cass.....	38	197.0	20	104.0	7	36.4
Cedar.....	17	102.0	20	120.0	15	90.0
Cerro Gordo.....	66	171.6	32	88.2	25	65.0
Cherokee.....	33	207.9	20	126.0	17	107.1
Chickasaw.....	36	174.2	14	96.8	7	46.9
Clarke.....	23	286.9	10	102.0	7	72.1
Clay.....	26	234.0	7	45.5	4	26.0
Clayton.....	29	121.8	31	130.8	8	33.6
Clinton.....	109	228.9	48	100.8	44	92.4
Crawford.....	17	83.3	13	63.7	10	49.0
Dallas.....	42	163.8	21	81.9	19	74.1
Davis.....	11	35.5	7	59.5	8	68.0
Decatur.....	17	112.2	11	72.6	11	72.6
Delaware.....	37	207.2	18	100.8	7	39.2
Des Moines.....	93	232.5	54	135.0	17	42.5
Dickinson.....	11	100.1	11	100.1	7	63.7
Dubuque.....	136	217.6	91	145.6	43	68.8
Emmet.....	14	105.0	15	112.5	5	37.5
Fayette.....	62	214.2	30	102.0	11	37.4
Floyd.....	35	199.5	17	96.9	9	51.8
Franklin.....	33	204.6	12	74.4	6	37.3
Fremont.....	33	112.2	9	30.6	7	23.8
Greene.....	17	106.1	10	62.0	13	81.9
Grundy.....	12	87.6	14	102.2	8	58.4
Guthrie.....	25	165.2	17	106.0	13	79.7
Hamilton.....	27	129.6	27	112.5	19	89.3
Hancock.....	19	131.1	13	89.7	6	41.4
Hardin.....	34	149.6	16	72.0	14	61.6
Harrison.....	29	124.7	19	81.7	10	49.0
Henry.....	59	354.0	25	150.0	16	25.6
Howard.....	18	138.6	19	146.3	8	61.6
Humboldt.....	24	192.0	4	32.0	7	56.0
Ia.....	15	145.5	9	87.3	5	48.5
Iowa.....	39	222.3	27	153.9	11	62.7
Jackson.....	35	182.0	44	228.8	30	104.0
Jasper.....	63	214.2	31	105.4	27	91.8
Jefferson.....	40	240.0	23	136.0	19	114.0
Johnson.....	70	219.4	95	297.8	20	90.6
Jones.....	46	268.8	18	104.4	11	63.8
Keokuk.....	32	160.0	26	130.0	16	80.0
Kossuth.....	30	117.0	20	78.0	12	46.8
Lee.....	90	224.0	49	127.4	34	88.4
Linn.....	147	175.4	85	101.4	47	51.7
Louis.....	13	158.4	9	79.2	5	42.5
Lucas.....	30	192.0	18	115.2	8	51.8
Lyon.....	11	70.4	6	38.4	10	64.0
Madison.....	15	108.5	13	89.7	11	75.9
Mahaska.....	62	229.4	36	138.2	18	66.6
Marion.....	34	136.0	33	132.0	23	92.0
Marshall.....	84	252.0	42	126.0	30	60.0

NUMBER OF DEATHS WITH DEATH RATES (PER 100,000 POPULATION) FOR DISEASES OF THE HEART, CANCER (ALL FORMS), AND PNEUMONIA (ALL FORMS), STATE OF IOWA—Continued

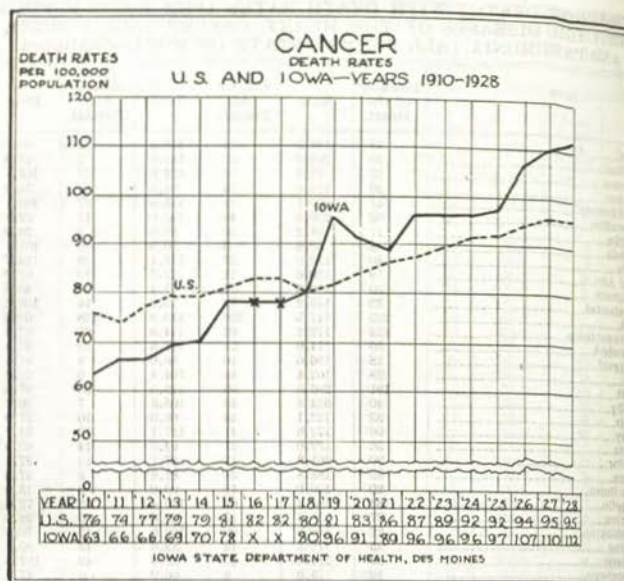
Area	Diseases of the Heart	Rate	Cancer (All Forms)	Rate	Pneumonia (All Forms)	Rate
Mills.....	18	142.2	15	118.5	11	86.9
Mitchell.....	30	204.0	22	149.6	7	47.6
Monona.....	13	79.3	20	122.0	17	108.7
Monroe.....	30	159.0	16	84.8	14	74.2
Montgomery.....	41	220.1	19	115.9	17	108.7
Muscatine.....	62	210.5	49	136.9	11	37.4
O'Brien.....	17	95.2	16	89.6	5	28.0
Osceola.....	8	80.8	5	50.5	10	101.1
Page.....	40	122.0	27	116.1	29	134.7
Palo Alto.....	18	126.6	11	73.7	10	67.0
Plymouth.....	50	210.0	17	71.4	11	46.2
Pocahontas.....	22	145.2	12	79.3	16	105.6
Polk.....	226	147.5	226	113.0	138	69.0
Pottawattamie.....	123	172.2	82	114.8	67	93.8
Poweshiek.....	30	174.0	21	121.8	16	92.8
Ringgold.....	18	155.6	10	80.0	5	43.0
Sae.....	28	162.4	18	104.4	9	52.2
Scott.....	191	285.5	96	142.5	65	97.5
Shelby.....	40	324.8	15	105.2	7	56.7
Sioux.....	33	122.1	18	66.6	10	37.9
Story.....	56	173.5	41	127.1	17	52.7
Tama.....	36	162.0	21	94.5	14	65.0
Taylor.....	39	261.3	13	87.1	13	87.1
Union.....	82	188.8	24	81.6	8	47.2
Van Buren.....	20	150.0	12	90.0	2	15.0
Vasello.....	82	180.4	62	136.4	33	72.6
Warren.....	27	156.6	17	98.6	9	52.2
Washington.....	22	115.5	20	106.0	15	79.5
Wayne.....	25	172.5	12	82.8	13	89.7
Webster.....	33	115.6	40	88.0	49	107.3
Winnebago.....	10	75.9	8	60.0	6	45.4
Winneshek.....	36	169.2	24	112.5	17	79.7
Woodbury.....	168	168.0	105	105.0	86	86.0
Worth.....	5	45.0	17	153.0	4	36.0
Wright.....	31	151.9	26	127.4	10	49.0

NUMBER OF DEATHS WITH DEATH RATES (PER 100,000 POPULATION) FOR DISEASES OF THE HEART, CANCER (ALL FORMS), AND PNEUMONIA (ALL FORMS), BY CITIES OVER 10,000 POPULATION, STATE OF IOWA, 1928

Area	Diseases of the Heart	Rate	Cancer (All Forms)	Rate	Pneumonia (All Forms)	Rate
Total for Cities.....	1,431	210.9	906	122.3	615	90.6
Boone.....	24	184.8	18	138.6	7	53.9
Burlington.....	74	296.4	51	183.6	15	54.0
Cedar Rapids.....	94	175.7	55	102.8	27	48.6
Clinton.....	76	273.6	30	108.0	29	101.4
Council Bluffs.....	89	212.6	72	172.8	53	197.3
Davenport.....	156	296.4	82	165.8	59	112.6
Des Moines.....	254	192.4	208	121.8	123	73.8
Dubuque.....	114	262.2	83	190.9	34	78.2
Fort Dodge.....	34	146.2	25	107.5	49	172.0
Fort Madison.....	27	251.7	7	65.4	15	146.1
Iowa City.....	49	274.4	83	468.91	29	102.0
Keokuk.....	42	285.6	29	197.2	13	88.4
Marshalltown.....	56	319.2*	29	165.3	13	74.1
Mason City.....	47	192.7	24	98.4	17	69.7
Muscatine.....	43	249.4	32	185.6	5	29.0
Ottumwa.....	62	217.0	42	147.0	29	102.5
Sioux City.....	133	172.9	86	111.8	69	89.7
Waterloo.....	57	153.9	47	126.9	47	136.9

*Old Soldiers' Home located at Marshalltown.

†State University of Iowa Hospital located at Iowa City.



SUMMARY OF DEATH RATES FOR PUERPERAL CAUSES, STATE OF IOWA, 1928

There were 43,378 live births reported in Iowa during 1928. Puerperal diseases were responsible for 210 deaths. The death rate for these causes is 4.8 per 1,000 live births.

Counties—Green county with a rate of 12.0 had the highest rate followed in order by Pottawattamie (10.9) and Keokuk (10.8).

Cities—The three cities with the highest rates are Council Bluffs (15.3), Sioux City (12.2) and Boone (12.1).

County	No. of Births	No. of Deaths	Rate per 1,000	County	No. of Births	No. of Deaths	Rate per 1,000
Adair	1	0	0.00	Waukegan	1	0	0.00
Adams	21	0	0.00	Webster	1	0	0.00
Allamakee	75	0	0.00	Winnebago	1	0	0.00
Appanoose	67	0	0.00	Woodbury	1	0	0.00
Audubon	34	0	0.00	Wright	1	0	0.00
Benton	40	0	0.00	Yamanchick	1	0	0.00
Black Hawk	224	0	0.00				
Boone	100	12	12.00				
Bremet	37	0	0.00				
Buchanan	37	0	0.00				
Buena Vista	23	0	0.00				
Butler	23	0	0.00				
Calhoun	23	0	0.00				
Carroll	23	0	0.00				
Cass	23	0	0.00				
Cedar	23	0	0.00				
Cerro Gordo	23	0	0.00				
Cherokee	23	0	0.00				
Chickasaw	23	0	0.00				
Clarke	23	0	0.00				
Clay	23	0	0.00				
Clayton	23	0	0.00				
Clinton	23	0	0.00				
Crawford	23	0	0.00				
Dallas	23	0	0.00				
Davis	23	0	0.00				
Decatur	23	0	0.00				
Delaware	23	0	0.00				
Des Moines	23	0	0.00				
Dickinson	23	0	0.00				
Dubuque	23	0	0.00				
Emmet	23	0	0.00				
Fayette	23	0	0.00				
Floyd	23	0	0.00				
Franklin	23	0	0.00				
Fremont	23	0	0.00				
Green	23	12	12.00				
Grundy	23	0	0.00				
Guthrie	23	0	0.00				
Hamilton	23	0	0.00				
Hancock	23	0	0.00				
Hardin	23	0	0.00				
Harrison	23	0	0.00				
Henry	23	0	0.00				
Howard	23	0	0.00				
Humboldt	23	0	0.00				
Ida	23	0	0.00				
Iowa	43,378	210	4.80				
Jackson	23	0	0.00				
Jasper	23	0	0.00				
Jefferson	23	0	0.00				
Johnson	23	0	0.00				
Jones	23	0	0.00				
Keokuk	23	10	10.80				
Kossuth	23	0	0.00				
Lee	23	0	0.00				
Linn	23	0	0.00				
Louis	23	0	0.00				
Lucas	23	0	0.00				
Lyon	23	0	0.00				
Madison	23	0	0.00				
Mahaska	23	0	0.00				
Marion	23	0	0.00				
Marshall	23	0	0.00				
Mills	23	0	0.00				
Mitchell	23	0	0.00				

NUMBER OF DEATHS WITH DEATH RATES (PER 1,000 LIVE BIRTHS) FOR PUERPERAL CAUSES, STATE OF IOWA, 1928 (Cities included within Counties)

Area	Number of Births	Number of Deaths Puerperal Causes	Death Rate Per 1,000 Live Births
Total for State	43,378	210	4.8
Adair	231	2	8.7
Adams	197	1	5.1
Allamakee	295		
Appanoose	415		
Audubon	215		
Benton	391		
Black Hawk	1,138	4	3.5
Boone	485	5	10.3
Bremet	301	1	3.3
Buchanan	299	1	3.0
Buena Vista	333	1	3.0
Butler	308	1	3.2
Calhoun	340	2	5.9
Carroll	499	2	4.0
Cass	284	2	7.0
Cedar	235		
Cerro Gordo	640	4	6.2
Cherokee	351	1	2.8
Chickasaw	285	1	3.5
Clarke	199		
Clay	315		
Clayton	416	1	2.4
Clinton	739	4	5.4
Crawford	320	2	6.6
Dallas	408	1	2.5
Davis	169	1	5.9
Decatur	267	2	7.5
Delaware	333	1	3.0
Des Moines	579	4	6.9
Dickinson	193		
Dubuque	1,115	6	5.4
Emmet	226	2	7.8
Fayette	527	3	5.7
Floyd	316	2	6.3
Franklin	321	2	6.2
Fremont	311	2	6.4
Green	250	3	12.0
Grundy	248	1	4.0
Guthrie	291	2	6.9
Hamilton	389	2	5.6
Hancock	271	1	3.7
Hardin	396	1	2.5
Harrison	427	2	4.7
Henry	249	2	8.0
Howard	228	1	4.4
Humboldt	212	2	9.5
Ida	213	1	4.7
Iowa	286	1	3.5
Jackson	334	3	8.9
Jasper	589	2	3.4
Jefferson	280	2	7.1
Johnson	797	5	7.1
Jones	336		
Keokuk	279	10	10.8
Kossuth	652	2	3.2
Lee	795	7	8.8
Linn	1,284	8	6.2
Louis	175	1	5.8
Lucas	229	1	4.3
Lyon	224		
Madison	228		
Mahaska	446	2	4.5
Marion	343	8	8.7
Marshall	601	1	1.7
Mills	218	1	4.6
Mitchell	260		

NUMBER OF DEATHS WITH DEATH RATES (PER 1,000 LIVE BIRTHS) FOR PUERPERAL CAUSES, STATE OF IOWA, 1928

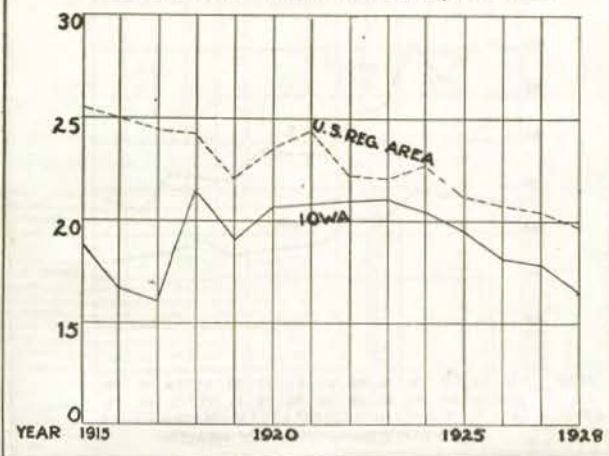
—Continued
(Cities included within Counties)

Area	Number of Births	Number of Deaths Puerperal Causes	Death Rate Per 1,000 Live Births
Monona.....	308	2	6.5
Monroe.....	256	2	7.8
Montgomery.....	288		
Muscatine.....	520	1	1.9
O'Brien.....	319	3	9.4
Osceola.....	201	1	4.9
Page.....	419	4	9.5
Palo Alto.....	333	1	3.0
Plymouth.....	444	3	6.8
Pocahontas.....	335		
Polk.....	8,047	3	2.3
Pottawattamie.....	1,289	14	10.9
Poweshiek.....	833	2	6.0
Ringgold.....	211	1	4.7
Sac.....	351	1	2.8
Scott.....	1,084	4	3.7
Shelby.....	315	1	3.2
Sioux.....	634	2	3.1
Story.....	525		
Tama.....	396		
Taylor.....	165		
Union.....	276		
Van Buren.....	217		
Wapello.....	738	5	5.8
Warren.....	322	3	9.3
Washington.....	306		
Wayne.....	211	1	4.7
Webster.....	735	4	5.2
Winnebago.....	286		
Winneshiek.....	562	1	2.8
Woodbury.....	2,094	21	10.0
Worth.....	216	1	4.6
Wright.....	375	1	2.7

NUMBER OF BIRTHS, DEATHS FROM PUERPERAL CAUSES, WITH DEATH RATES PER 1,000 LIVE BIRTHS FOR 18 CITIES OVER 10,000 POPULATION, STATE OF IOWA, 1928

Area	Number of Births	Number of Deaths Puerperal Causes	Death Rate Per 1,000 Live Births
Total for Cities.....	13,180	95	7.2
Boone.....	248	3	12.1
Burlington.....	454	4	8.8
Cedar Rapids.....	975	6	6.1
Clinton.....	472	4	8.3
Council Bluffs.....	888	14	15.8
Davenport.....	874	4	4.6
Des Moines.....	2,744	5	2.9
Dubuque.....	794	4	5.0
Fort Dodge.....	442	3	6.8
Fort Madison.....	277	3	10.8
Iowa City.....	478	5	10.5
Keokuk.....	339	4	11.8
Marshalltown.....	358	1	2.8
Mason City.....	431	1	2.3
Muscatine.....	322	1	3.1
Ottumwa.....	533	5	9.4
Sioux City.....	1,724	21	12.2
Waterloo.....	820	4	4.9

COMPARATIVE BIRTH RATES FOR THE REGISTRATION AREA OF THE UNITED STATES AND STATE OF IOWA 14 YEARS, 1915-1928



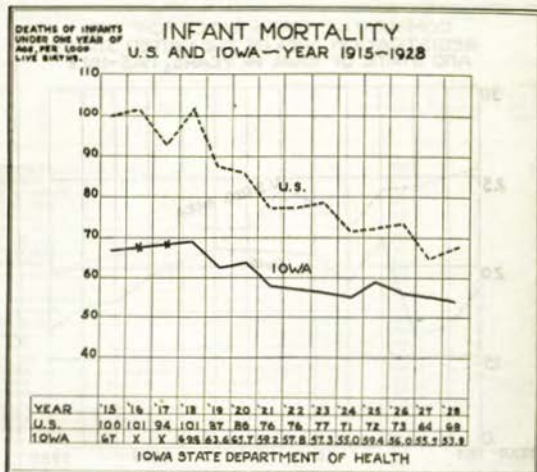
SUMMARY OF BIRTH AND INFANT MORTALITY RATES, STATE OF IOWA, 1928

BIRTH RATES

The birth rate for the State of Iowa (exclusive of stillbirths) is 17.8 (per 1,000 population) compared with a rate of 18.3 for 1927. There were 43,378 births reported in 1928 against a total of 44,296 reported in 1927.

Counties—The three counties with the highest birth rates for 1928 are Shelby (25.8), Sioux (23.7) and Carroll (22.8).

Cities—Iowa City with a rate of (27.0) had the highest birth rate. This, of course, is due to the University Hospital located at Iowa City. Fort Madison had the second high rate (25.9) followed by Keokuk with a rate of 23.3.



INFANT MORTALITY

Out of every 1,000 live births occurring in the State of Iowa during 1928, 53 of them died before reaching the age of one year.

Counties—The three counties with the highest infant mortality rates for 1928 are Woodbury (78.8), Dubuque (73.5) and Jefferson (71.4).

Cities—Dubuque City having a rate of 90.7 led the 18 cities for the highest infant mortality rate. Mason City was a close second with a rate of 90.5 followed by Sioux City with 84.1.

NUMBER OF BIRTHS, DEATHS UNDER ONE YEAR OF AGE WITH BIRTH RATES (PER 1,000 POPULATION) AND INFANT MORTALITY RATES, DEATHS UNDER ONE YEAR OF AGE (PER 1,000 LIVE BIRTHS), BY COUNTIES, STATE OF IOWA, 1928
(Cities included within Counties)

Area	Number of Births	Number of Deaths Under 1 Year	Birth Rate Per 1,000 Population	Infant Mortality Rate Number of Deaths Per 1,000 Live Births
Total for State.....	43,378	2,300	17.8	53.0
Adair.....	251	7	17.4	30.8
Adams.....	197	3	19.5	15.2
Adams.....	250	14	18.3	44.1
Adams.....	416	29	15.1	69.9
Appanoose.....	218	8	18.6	26.7
Arden.....	391	27	17.3	60.1
Benton.....	1,138	56	19.8	49.2
Black Hawk.....	485	29	16.6	49.8
Boone.....	301	18	17.9	59.8
Bremer.....	259	17	17.4	36.8
Buchanan.....	331	17	18.0	51.1
Buena Vista.....	308	16	17.1	51.9
Butler.....	340	12	19.2	35.3
Calhoun.....	34	3	22.5	68.1
Carroll.....	284	10	15.0	35.5
Cass.....	233	13	14.4	51.1
Cedar.....	645	45	16.6	67.6
Cedar.....	251	10	22.1	38.5
Cherokee.....	285	7	19.3	24.6
Chickasaw.....	199	8	20.4	49.2
Clarke.....	315	13	20.5	41.5
Clay.....	416	19	17.3	45.7
Clayton.....	729	40	15.9	54.1
Clinch.....	408	27	15.9	68.8
Crawford.....	408	27	15.7	68.8
Dallas.....	169	6	14.4	35.5
Decatur.....	327	9	18.3	34.7
Delaware.....	333	19	18.8	67.1
Des Moines.....	579	40	14.7	68.1
Dickinson.....	191	8	17.5	41.4
Dubuque.....	1,115	82	18.4	73.6
Dubuque.....	256	4	19.3	34.9
Emmet.....	327	29	17.8	55.0
Fayette.....	316	9	18.1	38.6
Floyd.....	321	12	20.1	70.7
Franklin.....	311	22	21.1	70.7
Frederick.....	250	13	15.7	58.0
Greene.....	248	10	18.1	46.8
Grundy.....	291	13	17.5	49.1
Hamilton.....	289	23	18.3	58.1
Hancock.....	271	13	18.8	47.9
Hancock.....	296	19	17.7	47.9
Hardin.....	427	14	18.4	82.8
Harrison.....	249	10	15.1	49.2
Henry.....	228	12	17.5	52.6
Howard.....	212	16	16.9	33.9
Humboldt.....	213	4	18.5	18.8
Ia.....	286	10	16.3	34.9
Iowa.....	324	16	17.6	47.9
Jackson.....	249	25	20.2	42.4
Jefferson.....	289	20	17.2	71.4
Johnson.....	707	40	22.2	57.6
Jones.....	316	14	18.5	44.3
Kearney.....	379	18	14.2	64.5
Keokuk.....	323	25	25.2	39.6
Kossuth.....	315	47	20.9	59.1
Lee.....	1,384	78	15.8	60.7
Linn.....	175	12	15.3	68.6
Louis.....	259	14	15.4	56.6
Lucas.....	254	16	15.1	68.4

NUMBER OF BIRTHS, DEATHS UNDER ONE YEAR OF AGE WITH
BIRTH RATES (PER 1,000 POPULATION) AND INFANT MORTAL-
ITY RATES, DEATHS UNDER ONE YEAR OF AGE (PER
1,000 LIVE BIRTHS), BY COUNTIES, STATE OF
IOWA, 1928—Continued
(Cities included within Counties)

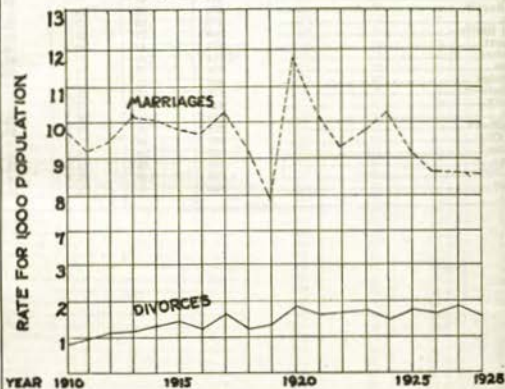
Area	Number of Births	Number of Deaths Under 1 Year	Birth Rate Per 1,000 Population	Infant Mortality Rate Number of Deaths Per 1,000 Live Births
Madison.....	238	9	16.5	37.8
Madaska.....	446	19	16.6	42.6
Marion.....	343	13	14.0	37.9
Marshall.....	601	33	18.0	58.2
Mills.....	318	7	17.3	32.1
Mitchell.....	360	13	17.5	50.0
Monroe.....	308	18	18.7	58.4
Monroe.....	255	12	13.7	47.1
Montgomery.....	288	15	17.7	52.1
Muscatine.....	529	30	17.9	57.7
O'Brien.....	319	8	17.8	25.1
Oceola.....	201	13	20.3	64.7
Page.....	419	18	18.3	42.9
Palo Alto.....	333	11	22.3	30.0
Plymouth.....	444	30	18.7	67.6
Pocahontas.....	335	15	22.3	44.8
Polk.....	3,047	162	17.1	53.1
Pottawattamie.....	1,280	83	19.0	64.1
Poweshiek.....	333	16	19.5	48.0
Ringgold.....	211	13	18.3	61.6
Sac.....	351	24	20.5	69.0
Scott.....	1,084	50	15.7	51.7
Shelby.....	315	16	25.8	50.8
Sioux.....	634	26	23.7	41.0
Story.....	325	19	16.6	36.2
Tama.....	306	21	17.9	53.0
Taylor.....	165	6	11.0	36.4
Union.....	276	13	16.3	47.1
Van Buren.....	217	6	16.3	27.6
Wapello.....	738	32	16.1	70.5
Warren.....	322	9	18.7	27.9
Washington.....	306	11	16.3	35.9
Wayne.....	211	14	14.7	67.3
Webster.....	735	38	17.7	72.1
Winnebago.....	280	11	21.7	38.5
Winneshiek.....	362	20	17.2	55.2
Woodbury.....	2,004	165	19.7	78.8
Worth.....	216	7	19.4	32.4
Wright.....	375	14	17.5	37.3

NUMBER OF BIRTHS, DEATHS UNDER ONE (1) YEAR WITH BIRTH
RATES (PER 1,000 POPULATION) AND INFANT MORTALITY
RATES (DEATHS UNDER ONE (1) YEAR PER 1,000 LIVE
BIRTHS). CITIES OVER 10,000 POPULATION, STATE
OF IOWA, 1928

Area	Number of Births	Number of Deaths Under 1 Year	Birth Rate Per 1,000 Population	Infant Mortality Rate Number of Deaths Per 1,000 Live Births
Total for Cities.....	13,180	889	19.4	67.5
Boone.....	348	17	19.1	68.5
Hurlington.....	454	36	16.4	79.3
Cedar Rapids.....	975	60	18.2	61.5
Clinton.....	479	33	17.2	68.9
Davenport.....	888	61	21.1	68.7
Des Moines.....	874	49	16.9	56.1
Dubuque.....	2,744	144	18.2	52.5
Fort Dodge.....	794	72	18.9	90.7
Fort Madison.....	442	35	19.1	79.2
Iowa City.....	277	18	25.9	65.0
Keokuk.....	478	28	27.0	66.9
Marshalltown.....	339	19	23.3	56.0
Mason City.....	358	25	20.5	67.8
Muscatine.....	431	39	17.8	90.5
Ottumwa.....	322	20	18.7	62.1
Sioux City.....	533	38	18.8	71.3
Waterloo.....	1,724	145	21.7	84.1
	820	46	22.2	56.1

SUMMARY OF MARRIAGE AND DIVORCE RETURNS FOR
STATE OF IOWA, 1928

According to the returns received from the Clerk of the District Court of each county, there were a total of 20,529 marriages performed and 4,076 divorces granted in Iowa during 1928. The number of marriages per 1,000 population is 8.5. The divorce rate per 1,000 population is 1.63. There were 26 annulments granted during 1928. As the divorces are granted in the county seat and marriages may be performed any place in the county, the State Department tabulates the information for the county as a whole and does not attempt to separate the 18 cities over 10,000 population from the rest of the county.

MARRIAGE AND DIVORCE RATES PER 1000 POPULATION
STATE OF IOWA 1910-1928NUMBER OF MARRIAGES PERFORMED, DIVORCES GRANTED AND
ANNULMENTS FOR STATE OF IOWA, YEAR, 1928

Area	Number of Marriages Performed	Number of Divorces Granted	Annul- ments Granted
Total for State.....	20,529	4,076	26
Adair.....	79	10	.....
Adams.....	64	10	.....
Allamakee.....	108	3	.....
Ansonia.....	212	7	.....
Audubon.....	46	7	.....
Benton.....	128	20	.....
Black Hawk.....	610	143	1
Boone.....	230	63	1
Bremet.....	139	16	.....
Buchanan.....	179	7	1
Buena Vista.....	119	10	.....
Butler.....	90	8	.....
Calhoun.....	102	14	.....
Carroll.....	177	20	.....
Cass.....	164	23	.....
Cedar.....	74	9	.....
Cerro Gordo.....	339	86	.....
Cherokee.....	105	22	.....
Chickasaw.....	653	5	.....
Clarke.....	98	9	.....
Clay.....	159	17	.....
Clayton.....	162	16	1
Clinton.....	325	96	2
Crawford.....	149	12	1
Dallas.....	331	21	.....
Davis.....	99	13	.....
Decatur.....	97	11	.....
Delaware.....	131	7	.....
Des Moines.....	273	79	.....
Dickinson.....	91	11	.....
Dubouque.....	330	68	.....
Emmet.....	82	17	.....
Fayette.....	375	22	.....
Floyd.....	148	45	1
Franklin.....	96	10	1
Fremont.....	190	73	.....
Greene.....	148	11	.....
Grundy.....	94	14	.....
Guthrie.....	181	31	.....
Hamilton.....	98	5	.....
Hardin.....	136	28	.....
Harrison.....	202	28	.....
Henry.....	111	28	.....
Howard.....	83	6	.....
Humboldt.....	90	14	.....
Ia.....	65	10	.....
Iowa.....	95	13	.....
Jackson.....	308	18	.....
Jasper.....	392	50	.....
Jefferson.....	146	13	.....
Johnson.....	314	50	.....
Jones.....	113	19	.....
Keokuk.....	96	18	.....
Kossuth.....	162	12	.....
Lee.....	307	107	.....
Linn.....	731	206	1
Louis.....	38	8	.....
Lucas.....	110	14	.....
Lyon.....	120	5	.....
Madison.....	114	19	.....
Mahaska.....	223	54	.....
Marion.....	163	29	.....
Marshall.....	196	78	.....
Mills.....	303	14	.....
Mitchell.....	76	11	.....
Monroe.....	106	15	.....
Montrose.....	194	14	.....

NUMBER OF MARRIAGES PERFORMED, DIVORCES GRANTED AND ANNULMENTS FOR STATE OF IOWA, YEAR, 1928—Continued

Area	Number of Marriages Performed	Number of Divorces Granted	Annulments Granted
Montgomery.....	150	18	
Muscatine.....	285	71	
O'Brien.....	104	6	
Osceola.....	65	4	
Page.....	231	57	
Palo Alto.....	119	14	
Plymouth.....	187	12	
Pocahontas.....	82	13	
Polk.....	1,608	778	8
Pottawattamie.....	1,239	206	
Potosi.....	99	13	
Ringgold.....	90	9	
Sac.....	78	24	
Scott.....	664	251	
Shelby.....	105	7	
Sioux.....	176	12	
Story.....	257	32	
Tama.....	102	19	
Taylor.....	84	11	
Union.....	144	30	
Van Buren.....	55	13	1
Wapello.....	395	60	1
Warren.....	278	7	
Washington.....	123	14	
Wayne.....	71	11	
Webster.....	332	86	
Winnebago.....	84	7	
Winneshiek.....	117	15	
Woodbury.....	842	304	
Worth.....	97	8	
Wright.....	100	15	

NUMBER OF CERTIFIED COPIES, FREE AND PAID, ISSUED DURING 1928

NUMBER OF CERTIFIED COPIES, DEATHS AND BIRTHS, ISSUED, 1928

	January	February	March	April	May	June	July	August	September	October	November	December	Total
DEATHS													
Paid.....	42	32	48	44	36	57	42	62	50	65	51	33	561
Free.....	35	47	57	42	28	56	53	26	21	34	31	42	472
Total (1).....	77	79	105	86	64	113	95	88	71	99	82	74	*1,033
BIRTHS													
Paid.....	3	1	3	2	4	4	2	4	5	4	6	5	43
Free.....	15	19	17	14	17	22	21	12	20	22	14	19	212
Total (2).....	18	20	20	16	21	26	23	16	25	26	20	24	*255
Grand Total (1 and 2).....	95	99	125	102	85	139	118	104	96	125	102	98	*1,288

NUMBER OF DISINTERMENTS ISSUED, YEAR, 1928

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
15	18	30	69	96	63	43	42	60	113	51	23	623

NUMBER OF PIECES OF FIRST CLASS MAIL HANDLED BY THE DIVISION OF VITAL STATISTICS, YEAR, 1928

	January	February	March	April	May	June	July	August	September	October	November	December	Total
*Loc. Reg.	739	840	840	840	829	816	835	827	840	840	817	814	9,877
*N. B. R. C.	2,800	3,000	2,949	2,780	2,989	3,176	3,362	3,549	3,763	3,570	3,468	3,792	39,778
*Comm.	689	800	1,014	500	635	871	910	843	950	721	800	703	9,526
Total ..	4,228	4,640	4,803	4,120	4,453	4,863	5,607	5,219	5,553	5,131	5,105	5,309	60,181

*Loc. Reg.—Local registrars returns.

*N. B. R. C.—Notification of Birth Registration Certificates to Mothers.

*Comm.—General, letters, etc.

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