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ILLINOIS HISTORICAL SURVEY

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The Rise *and* Fall of Disease

in

Illinois

VOLUME II

Local Health Conditions and Public Health Work



ISAAC D. RAWLINGS, M.D., Director of Public Health

The Rise *and* Fall *of* Disease *in* Illinois

by

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ILLUSTRATED WITH GRAPHS DEVELOPED AND DRAWN
BY A. F. DAPPERT, AND WITH PICTURE REPRODUCTIONS
OF MANY PERSONS ASSOCIATED IN ONE WAY
OR ANOTHER WITH THE STORY

INDEXED BY CLARA BREEN

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INTRODUCTION

By W. A. Evans

In this volume there has been gathered as much of the histories of local departments of health as could be found. The more general history of health in the State should be supplemented by the health histories of the larger and more important communities. This has been done insofar as was possible. The history of local health departments has been more uneven than that of the State health department. The curves of those histories run parallel to a surprising degree and in doing so illustrate some of the motives which originate health department work.

The Chicago health department was organized after a fashion about as soon as that of any local government. This organization came about as a measure of protection against some form of contagion. As the years went by the type of organization, the degree of organization and the support rose and fell with prevalence of contagion. In most cases the health department was little more than a paper organization during times of comparative safety and was either revamped and electrified into life or discarded and replaced once the town woke up to the presence of contagion. These sporadic outbreaks of health work were sometimes governmental exclusively, sometimes they were wholly voluntary, a resumption of the basic rights of a people to protect themselves, and sometimes they were combinations of the two in varying proportions.

As a rule these outbreaks of interest in health followed the spread of epidemics. However, in the case of cholera and smallpox in a few instances the community recognized the danger before it arrived and organized in advance of the coming of the epidemic. Such sanitation as was done was usually closely related to the prevention of the disease that then threatened, according to the ideas of causation of disease which then prevailed.

This is a brief statement of the health work done in Chicago and the philosophical basis thereof between 1833 and 1860, one-third of a century.

It is the basis of such other local health department work as was done in the State during that period. The State had no health department but many cities, towns and villages did have—albeit such departments alternately slept and worked. The work periods were principally the result of epidemic disease waves such as cholera waves and smallpox waves. There was something of a revival of local health work subsequent to the Civil War. The returning army surgeons and even soldiers of the line had learned something

of sanitation from their army experiences and they were influential to some extent in galvanizing their local health departments into work.

Fortunately the great philanthropic agency which had functioned as a civilian aid in Illinois during war time had incorporated the word sanitary into its name. This had a marked effect in creating a substitution for health work.

Chicago at this time came under two strong influences, one was the personal and professional influence of Dr. John H. Rauch, a returned army surgeon and other ex-army surgeons. The other was the example set by New York City where Dr. Stephen Smith, ex-army surgeon, and his associates had persuaded the people to scrap their existing health department and form a metropolitan board of health.

The Chicago health department report of 1869 remains an outstanding public document. Few if any, equalling it are found in the field of public health of the period.

From that time until the early eighties local public health work in the State, when there was any, followed the Chicago lead. About 1880 Dr. John H. Rauch transferred his services from Chicago health department to the Illinois Board of Health. Soon thereafter he made a health survey of Illinois. This survey was in part, by way of preparation for an epidemic. It followed the lines of the periodic health surveys made in the face of epidemics in Chicago several decades previously. However, it had great merit of its own and was no inconsiderable measure since never before nor since has a health survey comparable in magnitude to it been made in Illinois. The State Department of Public Health survey made in 1926 was far more complete and detailed, in so far as it provided data upon which to appraise local public health facilities, but it related to only fifteen cities. The 1882-1885 survey of housing was much more complete so far as it went, but it related to housing only and it extended to but few communities. Other surveys, such as the Springfield and Chicago surveys, have been limited each to one community.

Thus followed a period of revival of local health work in the State partly as a result of stimulation from the State Board of Health. By the early nineties the movement for local health work had begun to wane. Some revival after the World's Fair of 1893 is noticeable. This was partly a result of an epidemic of smallpox in that year. It was also partly the result of the awakening in many lines which resulted from the World's Fair.

From the waning of that wave until 1908 local public health work in the State did not prosper. Some local health departments were abandoned and some were starved into innocuous desuetude. Smallpox, malaria and cholera had decreased to the point where the people were no longer afraid

and therefore unwilling to pay for protection. At the same time the new standards and new concepts out of which present day health departments grow had not been born.

Soon after the revival of the Chicago health department in 1907 the influence of that department on local health departments elsewhere in the State was noticeable. The year 1908 inaugurated the third era of domination of the Chicago influence in local health work in Illinois. Throughout the State a noticeable tendency to reorganize health departments, to build contagious disease hospitals, to fight consumption and other contagion and to protect the milk supply is recognizable.

This third Chicago era lasted until about 1922 or 1923. About this time was begun the second period of State influence—the first having been the Rauch era of the early eighties.

For about five years now the tendency toward the growth of local health departments along fairly uniform lines can be seen. These departments are establishing divisions of vital statistics, securing laboratory facilities, having work of sanitary engineering done, building contagious disease and tuberculosis hospitals, doing infant welfare work, promoting school inspection and in other ways building up health departments along lines proven to be right by large experience. The formation of county health departments has begun.

Without in any way belittling the courage, brains and initiative of the local communities in these matters the fact remains that this is a period in which the leadership is at Springfield, rather than in Chicago. The State Department of Public Health finds its source of strength in well-developed local health departments. It will not stop until every city and every county separately or in effective combinations will have efficient local health work. When that day arrives the State Department will be a coordinating agency, but as matters now stand it must function as a local health department over most of the State and for most of the people.

This is true at least in times of emergency. For a State agency to function as a local agency and often as the only local agency is unscientific and makes for inefficiency and waste.

The incompleteness of this treatise as a series of local histories of health and public health service in the State is recognized. It is hoped that one good effect of the publication will be the stimulation of local interest in local health history and conditions to an extent that will make available many facts that are not now available and a splendid improvement in health conditions.

GENERAL VIEW

Public health service is found in every degree of efficiency in Illinois. Chicago, Evanston, Rockford and a district embracing LaSalle, Oglesby and Peru have health departments that compare favorably in organization, personnel and activities with the best municipal health departments in the world. A few communities elsewhere in the State provide too meagerly for health protection to escape the other extreme in efficiency and adequacy. Most of the incorporated municipalities maintain official public health organizations strong enough to function with reasonable satisfaction under stress of emergency but not many are provided with health departments commensurate with the constant public needs and qualified to apply modern sanitary and hygienic principles on a scale that approaches the maximum for profitable returns.

There are several types of municipal health departments in the State. Some cities have boards of health authorized under the general laws. Usually these boards function only as technically legal agents leaving administrative matters largely in the hands of an executive officer employed for that purpose. Other cities have the commission form of government where the city council has supreme authority in all municipal matters and public health service comes under the jurisdiction of one of the commissioners. In still other places, Berwyn and Quincy at present, public health districts embracing the township have been erected by popular vote and while the districts are coextensive with the city boundaries they are managed independently of the municipal government. There is one privately endowed health department, the Hygienic Institute, which serves LaSalle, Oglesby and Peru. In Jacksonville the city public health service is provided by an organization jointly supported by the city and the county, a single health officer directing activities for both.

Rural health service is not so well developed as the municipal. At this particular time three counties, Cook, Morgan and Pulaski, are maintaining full time, well manned health departments capable of serving to a satisfactory degree all of the rural population in each. Three or four other counties have undertaken to do likewise but have abandoned the project after brief periods. A lack of legal authority to appropriate funds for whole time permanent public health organizations seems to be one of the main reasons why rural Illinois is backward in providing a reasonably adequate public health service for itself.

There is, however, legally established public health machinery in every rural political unit in the State. A law enacted in 1901 prescribes that the board of county commissioners in counties not under township organization, and the supervisor, assessor and town clerk of every town in counties under township organization, constitute boards of health for all territory outside the corporate limits of incorporated cities and villages. This system, manifestly weak in that the personnel is subject to frequent changes and depend for office upon political success rather than upon technical knowledge of sanitation, hygiene and public health practices, does nevertheless provide a definite means of contact between the State Department of Public Health and the rural population. This contact makes notification of communicable diseases from rural districts possible. It permits State officials to render timely service in emergencies. It provides a local organization that can be brought into useful action under medical supervision in times of stress.

The 1,107 cities and villages in the State are all authorized by law to maintain either boards of health or commissioners of public health and safety where the commission form of government prevails. When the local officials fail to appoint a board of health then the duties and responsibilities thereof fall upon the mayor or village president. Out of the 1,107 cities and villages only 300 or 400 have medical health officers. Health officers in all the others are non-medical.

There are 16 counties which have the commission form of government. In these the 3 county commissioners constitute the board of health and under them are designated certain other officials like the overseer of the poor to act as precinct health officer. In the 16 counties there are 175 precincts.

In the other 86 counties there are 1,448 local officials who constitute the legal health machinery for the unincorporated territory. Practically all of these are non-medical.

Thus we find that Illinois has 2,720 local health officers, less than 400 of whom are trained in medical or sanitary science. This volume is concerned chiefly with the story of how the municipal health organizations of today came into being.

There are, of course, a number of other important organizations, both official and voluntary, at work in the State in the field of public health. Among the officials are the municipal and county tuberculosis sanitariums and the sanitary districts. There are now two municipal and 17 county tuberculosis sanitariums operating in the State at public expense and several other counties that collect taxes under the sanitarium law but use it to rent sanitarium space as needed. These sanitariums have had a very important influence over local health conditions.

In nearly every municipality there are voluntary organizations of various character which contribute to the local public health service. Indeed these

agencies are usually responsible for a larger volume of work than that done by the official organization. Often the voluntary agency has initiated activities that later were turned over to the local government for continuity.

The municipal histories included in this volume are presented in two groups. Those concerned with communities of less than 100,000 and those with larger communities. Each group appears in alphabetical order, the smaller communities coming first.

DOWN-STATE MUNICIPALITIES

Alton

One of the oldest communities in Illinois, Alton is located in Madison County on the eastern bank of the Mississippi River just above the junction with the Missouri. It stretches from the water's edge back across the bluffs that skirt the river. It was organized as a city in 1821, although settlers arrived there much earlier, and it has lived through many experiences of rich historical and romantic interest to the State. It was there that the Lovejoy tragedy was perpetrated. There Lincoln and Douglas held one of their famous debates. It was across the river from Alton that Lincoln made a hoax of a duel in which he was involved to the great relief and satisfaction of all concerned.

Even so Alton never grew to be a very large city. It lies within one of the most densely populated counties in the State, excepting Cook, but its own municipal boundaries encompass something less than 30,000 people. Beginning with 1890 the decennial census returns showed the population to be 10,294, 14,210, 17,528, 24,682 respectively, the last figure being that for 1920. Of the 1920 population 21,302 were native born whites, 1,670 or something over 5 per cent were foreign born whites while 1,707 or nearly 7 per cent were negroes. There were 5,695, a little more than 23 per cent, in the age group of 45 years and over, suggesting a longer average span of life than prevails in many other municipalities of Illinois.

HEALTH MACHINERY.

Official attempts to control and prevent sickness in Alton began as a result of emergency epidemic conditions that provoked sufficient public concern to stimulate action on the part of local officials. The situation was first met, at some early date in the city's history, by creating from the membership of the city council a committee on health. This committee was given power to perform work and to order activities ordinarily vested in a board of health but its range of service was limited by lack of funds, which could be secured only upon action by the council since there were no appropriations for health work, by lack of popular interest except during epidemic outbreaks or rumors of outbreaks and withal by a lack of the fundamental knowledge of preventive medicine. From time



A. P. Robertson, M. D.
Health Officer, 1917-1920

to time the committee exerted its influence through quarantine powers and by ordering the abatement of nuisances and the cleaning of streets but these activities were limited largely to times of epidemic stress when public alarm demanded something as a palliative.



Mrs. Daisy C. Rice
Inspector of Hygiene
Alton Public Schools
1916 to date

Later an ordinance was adopted which created a board of health. It consisted of a number of aldermen, appointed by the mayor, and of the chief of police and the police matron who were made ex-officio members. The health officer, designated by the ordinance to be a regularly licensed physician, is not a member of the board.

A peculiar feature of the health machinery in Alton is the part played by the police. A number of ordinances, purely public health in character, are placed under the jurisdiction of the police department. An ordinance provides for a milk and food inspector, for example, and makes him a part of the police department. The board of health ordinance itself makes two of the police department members and leaves the health commissioner off. A more understandable practice would be to make a part of the police department responsible to the health commissioner.

Voluntary agencies and such public agencies as the school board and the county tuberculosis board have provided Alton with a larger volume of health service than the city government itself. The facilities for doing health work in Alton, as they existed at the close of 1925, and very little change has since occurred, are summed up very well in a report of a survey made by the State Department of Public Health in the early part of 1926. It reads, in part, as follows:



Mrs. Anna Most
School Nurse, 1919 to date

"With the score of only 420 or 42 per cent of what is regarded as standard, it is manifestly apparent that according to the findings of the survey, Alton provides less than one-half of the public health services which might be reasonably expected from that city.

"The health department normally consists of a part time physician. Under pressure of epidemic conditions, it is permitted to employ temporarily professional and untrained assistants. In addition to this the city pays \$1,200 a year toward the support of a social hygiene clinic. No public health laboratory work is done in the city at all, the State furnishing the only services of this sort to be utilized.



Serving Milk to Undernourished Children, Alton Public Schools

"The board of education employs two full time nurses and a part time dentist. The State, county and city jointly employ a part time physician for the social hygiene clinic. The associated charities employ two full time nurses but their function is more largely bedside than public health nursing. Two full time nurses on the staff of the county tuberculosis board spend part of their time in Alton. The only clinical service of any character consists of a general clinic at the local hospital where indigent patients of all kinds are admitted, and a dental clinic for indigent school children. The county operates a tuberculosis clinic in Edwardsville to which patients from Alton are admitted.



Mrs. Oscar Becker
(nee Frances Robertson)
School Nurse, 1916-1919

"The city normally spends directly about \$3,000 per year for public health service. All other agencies including the board of education, the county and State and the Visiting Nurse Association spend about \$12,000 a year. Last year (1925) the city actually expended about \$5,500 for public health work, a matter of 21 cents per capita, while the combined expenditures of all the other agencies brought the total to some \$18,500 or a little more than 68 cents per capita.

"The city clerk acts as the local registrar of vital statistics. While he does his work with great care and thoroughness, he attempts nothing more than the law requires—the collection and recording of reports and their transmission to the county and State officials.

"The total personnel in the city employed in any way directly with the public health activities, consists of 12 persons, 8 of whom are part time and 4 full time. Two of the four, however, are nurses of the associated charities and spend only part of their time in actual public health work."

This quotation comes from a report of survey of health service facilities made in 1926. More detailed surveys that embraced sanitary inspections in considerable detail were made on two former occasions, once in 1886 and again in 1919. Both were supervised by the State health officials. The first was undertaken with a view of educating the public in the importance of sanitary matters of supplying the State officials with data valuable in efforts to combat threatened invasions of cholera. The 1919 project which involved a house-to-house inspection and a very careful inquiry into every health feature of the city was a preliminary effort toward improving the local health service. Its purpose



Mrs. Geo. D. Pfeifferberger
(nee Charlotte Todd)
Director, Visiting Nurse
Association 1915



Public School Dental Clinic at Garfield School, Alton

was to provide accurate data on the sanitary problems of the city and thereby supply tangible grounds for a program and for creating a service commensurate with the needs. Local economic conditions prevented the carrying out of the recommendations based upon the 1919 survey.

One unusual feature of the voluntary public health activities in Alton has been the interest manifested and the service rendered by the medical profession. This is particularly true of the Madison County tuberculosis program. The county medical society has from the beginning taken a very active part in the anti-tuberculosis work and has been in a large measure responsible for the splendid success of the movement in the county. Alton, of course, has profited by the county work against this disease. The great interest and activity of the medical profession in tuberculosis work was largely inspired and cultivated by Dr. Edward W. Fiegenbaum, of Edwardsville, long time secretary of the Madison County Medical Society.



D. F. Duggan, M. D.
Health Officer, 1920 to date

The list of health officers who have served Alton include:

1885-1887	Dr. Robert Gibson	1903-1917	Mrs. Sophia Demuth
1893-1895	Dr. J. H. Fiegenbaum	1917-1920	Dr. A. P. Robertson
1901-1903	Dr. W. R. Smith	1920 to date	Dr. D. F. Duggan

WATER SUPPLY.

The Alton public water supply has always been obtained from the Mississippi River and the waterworks system has always been privately owned. The Alton Water Company was formed and the original waterworks built in 1898. In 1906 the franchise of the company was extended for 25 years and provided simply that the water must be filtered and sufficient pressure maintained at the highest point in the city. Because of the considerable range in elevation in different portions of Alton the pressures in the lower portion are higher than normal if adequate usable pressures are maintained in the higher portions of the city. The Alton Water Company is now controlled by the American Water & Electric Company with headquarters in New York City.

The original plant, which included tub filters and appurtenances, was not very efficient and improvements to the plant have been made from time to time. At the close of the period covered by this history there are still some further improvements necessary if the plant is to be made equal to modern water-purification plants. The pumping station and filter plant are located in a narrow strip between the river and the limestone bluffs and the restricted site has made additions and improvements to the plant difficult.

The waterworks now comprises two intakes extending a little over 200 feet from the shore, mixing and settling basins, filters, chlorination equipment, clear-water basin, low- and high-lift pumping equipment and appurtenances, and a distribution system which extends to practically all the built-up portions of the city. At different times difficulty has been experienced with the intakes because of the formation of sand bars or ice.

There is no municipal sewer outlet into Mississippi River for a considerable distance above the intakes. During the past decade land outside city limits on the bluffs upstream from the waterworks has been developed for residential purposes and private sewers from these properties discharge into limestone sink holes, which on the basis of geological studies, it is known connect or discharge into the river above the waterworks intake. This is an important item of possible local pollution which at the close of this period was still being studied.

Lime and iron were originally used as a coagulant and later a change was made to alum and lime. Local laboratory control was established during the last decade.

Because of the location of the clear-water basin immediately adjoining Mississippi River and the non-water type construction, the water has always been considered as subject to possible contamination after filtration and, therefore, the chlorine used as a sterilizing agent is applied to the water as it is drawn from the clear well and pumped to the distribution system.

Although the water-purification plant has never been a good example of a well planned, efficient purification plant and there have been periods when the water supply has been of questionable quality, there has never been any definite record of any illness caused by the public water supply, and the waterworks system has been an important factor toward better sanitary and health conditions in the city.

SEWERAGE.

The city is served with a combined system of sewers, additions and changes to which have been made from time to time so that public sewers were available at the close of the period in most of the built-up portions of the city. Many of the city sewers were installed to provide for immediate needs without full regard of future needs and the growth of the city. Consequently some of the sewers have from time to time proved inadequate and in addition to the need of public sewers in the remaining areas not now sewered there is need of other sewers to relieve some of the existing overloaded sewers.

Through the city Piasa Creek flows to Mississippi River, portions of which creek have been covered. This creek receives sewage at several points and has for many years been more or less polluted and the subject of con-

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria	Influenza	Poliomyelitis	Typhoidosis (All forms)	Pneumonia (All forms)
1907	194	6			2		1	1	7		27	41
1908	194											
1909	247											
1910	248											
1911	248											
1912	239											
1913	222	7			8	1		1			26	
1914											29	
1915											28	
1916											33	
1917											41	
1918	499	4	1			1	7	8	86		49	59
1919	374	2	2	1		3		1	22		39	36
1920	351	1	1		5	2	2	9	22		25	49
1921	260	4					3	6	8		11	17
1922	308				1	2		5	14		23	15
1923	367	2			1	1	12	4	14		14	21
1924	385	1	3				1	4	24		13	26
1925	390	4	1	1	1	2	3	3	9	1	13	18
1926	397				2	3	1		29		20	25

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria	Influenza	Poliomyelitis	Typhoidosis (All forms)	Pneumonia (All forms)
1907	11.7	36.2			12.0		24.0	6.0	42.3		163.3	66.5
1908	11.5											
1909	12.6											
1910	14.1											
1911	13.6											
1912	12.6											
1913	11.3	36.5			10.6	5.0		15.9			132.1	
1914											142.2	
1915											132.7	
1916											151.2	
1917											182.5	
1918	20.7	16.6	4.1			4.1	29.1	33.1	35.3		204.1	245.8
1919	15.1	8.0	8.0	4.0		16.0		16.0	89.0		157.8	145.7
1920	14.1	4.0	4.0		2.0	8.0		36.0	88.0		100.0	160.0
1921	10.3	15.8					11.9	25.8	31.7		43.6	67.3
1922	12.0				3.9	7.8		19.5	66.7		89.7	58.5
1923	14.1	7.6			3.8	3.8	16.1	15.3	50.0		53.8	80.7
1924	14.6	3.8	11.4				3.8	15.2	92.3		50.0	100.0
1925	11.5	14.9	3.7	3.7	3.7	7.5	11.1	11.1	31.5	3.7	48.5	67.1
1926	14.6				7.3	11.1	3.7		107.3		73.5	91.9

Note.—The rate from all causes is per 1,000 population; all others, per 100,000 population.

siderable complaint. Projects for enclosing the creek through practically the entire city so as to make it a large combined sewer have been proposed and discussed several times, but without any definite action having been taken.

The sewage is discharged into Mississippi River, below the waterworks intake, through two main outlets and several smaller outlets. At the close of the period there was need at Alton of an inventory of all existing sewers and the development of a comprehensive plan for additional sewers to relieve some existing sewers and to serve unsewered areas so as to abate local nuisances, especially along Piasa Creek. Because of the large dilution available by the river, treatment of the sewage at Alton has not been necessary and probably will not be necessary at least for a great many years.

Table 3.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1917				95.3
1918			58	96.2
1919			34	
1920	583	23.3	47	80.6
1921	695	25.6	30	45.5
1922	665	23.8	36	59.5
1923	645	25.1	55	84.1
1924	680	25.7	62	91.2
1925	655	24.5	60	91.6
1926	728	26.8	60	82.4

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

HEALTH CONDITIONS.

The earliest references to health conditions in Alton center around the "pest house." That implies smallpox. For some reason not easily understood people in Alton, like those who inhabit the rest of North America, calmly accepted as more or less a part of normal life such costly diseases as typhoid fever, tuberculosis and diphtheria but shrank in mortal fear from smallpox and doubtless cholera too. Of course, smallpox is dramatic and sudden in its action. Folks knew positively that it spread by contact. Accordingly patients and those who had been exposed were regarded with the utmost apprehension.

Thus we find the "pest house" in service as late as 1905. In that year several hundred cases of smallpox occurred in the city. This, it seems, was not particularly unusual however. In 1901 a malignant outbreak so alarmed

the public that it was and still is referred to as the "black-smallpox epidemic." Again in 1903 the disease reached epidemic proportions and then the big outbreak of 1905 followed. This has been the history of smallpox since that time and doubtless was prior to 1900. As late as the winter of 1918-1919 there were some four or five hundred cases in the city and again in 1925 there were one hundred and seventy-two cases reported.

Typhoid fever has been another of the chronic problems and it remains to be banished from the community. Prior to 1900 the disease reached epidemic proportions almost annually and since that time the prevalence and mortality has been high until 1926. Periodically epidemics occurred. The year of 1901 and 1905 are designated as dates of typhoid epidemics of particular severity.



D. D. Monroe, M. D.
Director Madison County
Tuberculosis Sanitarium

The problem of tuberculosis was attacked on a county basis and carried out with success enough to culminate in the building of a sanitarium at Edwardsville. Results appear to have fully justified the effort. The work got well underway about 1920. Since then the number of deaths from tuberculosis, down to 1927, has averaged 17 per year. For seven years prior to 1920, the average number per year was 35. Statistics for earlier years are available but it seems

probable that tuberculosis was one of the major causes of death and sickness over a long period.

The sanitarium was opened on May 6, 1926, under the able supervision of Dr. D. D. Monroe who is not only carrying forward the fight against tuberculosis with the same spirit and sound judgment that animated Dr. Fiegenbaum in starting it but he follows Dr. Fiegenbaum also as secretary of the Madison County Medical Society. Prior to the opening of their own sanitarium the county secured for its tuberculous citizens sanitarium care which it paid for at prescribed rates.

The influenza-pneumonia epidemic of 1918 was moderately severe in Alton, relatively speaking. Mortality from both diseases amounted to 145, of which 86 were attributed to influenza, giving a rate of 604 per 100,000 population. About 15 municipalities of the State had higher rates and a dozen experienced less loss.



E. W. Fiegenbaum, M. D.

Infant mortality in Alton runs higher than in many other places and higher than for the State at large. In 1926 the rate was 82.4 per 1,000 births reported in Alton and only 69.2 in the State. The rate in Alton was higher than that in 28 of the 44 cities of Illinois with 10,000 or more inhabitants.



Helen Heighway, R. N.
Tuberculosis Nurse, Madison County, 1919 to date

The general mortality rate is somewhat higher in Alton than in some of the other communities. This is due partly to the fact that Alton is an old city with a larger percentage of old people than a lot of mid-western municipalities. Young, rapidly growing communities are populated with young, active people among whom the death rate is very naturally low. Alton is old, compared with most communities of Illinois, and has experienced a slow growth. Consequently, the city has a relatively large number of people who have passed middle age and therefore contribute to a

higher mortality rate than prevails in younger, more rapidly growing municipalities.

Table 4
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	13	4	3	6		13	8	6	9	22	3	8
Malaria				1		1	4			5		2
Smallpox	18	70	720	18	4	13	3	1	82	172	2	1
Measles	283	99	225	10	109	131	14	460	14	38	84	453
Scarlet Fever	32	12	25	56	77	77	79	35	45	104	195	86
Whoop, Cough	20	21	19	34	90	25	5	160	40	85	44	49
Diphtheria	44	52	72	32	63	76	135	98	88	31		16
Influenza			1200	66	235	3	172	10	13	10	23	8
Poliomyelitis		1	3	1		6	1	1		1		
Meningitis		1	5	3								
Tuberculosis*			10	12	38	75	47	39	49	35	42	42
Pneumonia*	20	12	18	15	69	35	45	36	38	36	47	31
Syphilis			4	87	123	166	201	218	69	79	132	92
Gonorrhea			20	110	209	229	197	203	165	135	173	123
Chancroid				9	16	18	10	12	9	11	14	7

*All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

REFERENCES.

Data furnished by Dr. A. P. Robertson, Alton, Illinois.
Annual Reports, State Department of Public Health, Springfield, Illinois, various dates.
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Aurora

Settlement first started at Aurora in 1834. A year later the first physician to permanently locate in the new community arrived in the person of Dr. Daniel Eastman. He found the rolling terrane watered by the beautiful Fox River a pleasant place for a home and he felt that the fertile alluvial soil well drained by the river and its tributaries would furnish an ample basis for prosperity through agricultural and industrial development.

Doubtless he discovered also that the underlying strata of rock overlaid with gravel would make a solid foundation for the thrifty city that now spreads itself upon both banks of the river.

Aurora like all of the towns on the Fox River in that vicinity suffered severely from the cholera epidemic of 1849-52. Public concern that grew into alarm and culminated in panic followed the first appearance of the disease which prevailed more or less until 1854. It is "estimated that from 300 to 350 victims yielded to the cold embrace of the destroyer in that period of time." This was the opinion of a Kane County historian who adds that "it seemed to be much more fatal to foreign immigrants among whom two-thirds of the cases occurred."

Dr. Nicholas Hard, who located in Aurora in 1845 delivered an address on cholera at the meeting of the Fox River Medical Association at Elgin, February 1st, 1850. He emphasized the contagious character it manifested in the Aurora epidemic of 1849, pointed out the fallacy of specific cures and described the unusual symptoms that characterized many patients whom he saw.

In the summer of 1851, he contracted cholera and with impaired health, an attack of dysentery caused his death on October 16, 1851. A colleague wrote of him: "Professor Hard maintained a good character as a pleasing and instructive lecturer during his connection with the medical schools at LaPorte, Indiana, and Keokuk, Iowa, and enjoyed a high reputation as a practitioner in Aurora. He has been cut down in the prime of life and in the midst of usefulness."

Other physicians who served the community of that time were Doctors S. G. Hubbard, P. D. H. Goff and A. R. Gilman.

Aurora was incorporated as a city on February 11, 1857 and on March 7th, 1887 was reorganized under the general incorporation law governing cities and villages.

During the ten years beginning with 1850, the population of Aurora jumped from 1,895 to 6,011 and by the end of the next decade (1870) it had risen to 11,162. The 1920 U. S. census gave it a population of 36,397 of which 29,289 were native born whites and 6,476 foreign born whites.

HEALTH MACHINERY.

Any organized public efforts at sanitation and hygiene during the early life of the community is either shrouded in oblivion or buried in the dusty council records of that period. We may surmise that the cholera epidemic in the middle of the nineteenth century inspired an almost religious zealotness for clean streets and premises, the usual precautionary methods employed in those days, and that some sort of an organization, probably official, was created and functioned during the emergency. It is altogether probable that a board or committee of health was appointed.

However that may be, the best records available show that the first regularly established board of health which became a permanent part of the city government was appointed on March 2, 1863. It consisted of three members, L. W. Gray, E. R. Allen and Charles Earle. From that time forward until 1894 there was constantly maintained a board of health, usually with three members, sometimes including a physician. Then came a lapse of 12 years during which there apparently was no board of health, the health officer performing the functions of the board as well as those of his own position.

In 1906 the board of health was revived with F. J. Fenton, John P. Kartheiser and J. H. Pompa as members. From that year until 1920 the board never lacked a full membership of three.

With a change from the aldermanic to the commission form of government in 1920 the board of health went out of existence and its duties, functions and responsibilities fell automatically upon the city council and upon the department of public health and safety. Under this change W. E. Barclay was elected to a commissioner's place on the city council and was assigned to the department of public health and safety. He was re-elected in 1927 and assigned again to the same department.

During the early period of its existence the board of health spent about \$300 annually, \$100 of which went to the chairman who, by virtue of his capacity as chairman, was also health officer. Like most boards of health this one was endowed with the broad if vaguely expressed power "to do what it may deem necessary to preserve the public health." Likewise in common with similar boards elsewhere the great possibilities implied in that blanket authority so unreservedly thrust upon it was practically vetoed by a carefully inserted purse-string clause. No budget was provided and all expenses incurred had to have the approval of the council.

The ordinance under which the board functioned at that time required it to investigate alleged nuisances that were reported, to quarantine or remove to the "pest house" every case of smallpox, to require the registration of births and deaths in the office of the city clerk, who was also the clerk of the board, and to prevent the pollution of the river. Apparently notification for no disease except smallpox was required because no other one was mentioned in the ordinance.

Apparently the fortunes of the board of health provoked very little public thought until rather recently. There is no evidence that it did. Ordinances relating to it and its duties are few. Detailed history of activities is wanting. Expenditures were meagre. As late as 1913, for example, in the course of a year the health department spent \$8,715 of which \$7,488 went for garbage removal, \$408 to the health officer, \$6.30 for laboratory service and the remainder to two part-time inspectors and for such ordinary miscellaneous matters as fumigation, quarantine, etc.

The next year, 1914, a laboratory was established, however, with C. R. Hixson in charge and an automobile was provided for the use of the department.

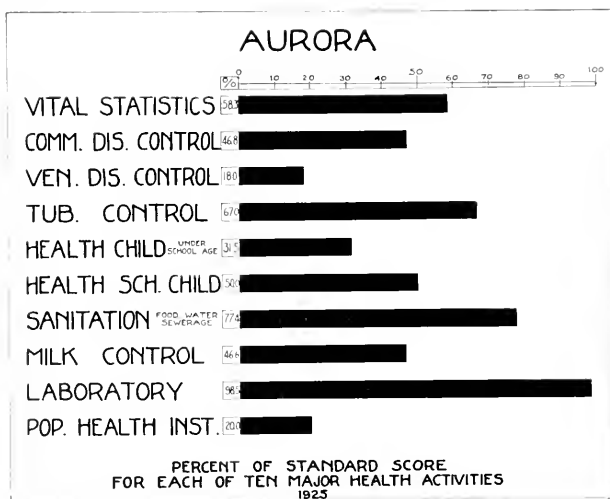


Fig. 1. This graph illustrates the strong and weak points in Aurora's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Aurora was 52 per cent of the standard perfection requirement.

A severe outbreak of scarlet fever in the winter of 1917, coming as it did upon the heels of an epidemic of whooping cough, and accompanied by an unusual amount of pneumonia led to the employment of a school nurse. The personnel of the health department was also strengthened at the same time by the addition of a full time meat inspector. The same influences operating to strengthen the health department at this time were doubtless responsible for the building of an isolation hospital that was started in 1917 and opened the following year.

By 1926 the health department had grown into an organization involving the full time services of a nurse, a laboratory technician and an inspector and the part time service of a director (the medical health officer), a veterinarian and a clerk. In addition to the activities provided by this staff the city was at that time enjoying the services of two nurses employed by the two school boards and four nurses supported by the Visiting Nurse Association.

At the beginning of the public health movement in Aurora, the idea of making the community disease proof or rather epidemic proof was completely divorced from the idea of practicing medicine. Sanitation was regarded as a matter of physical and environmental cleanliness in the most superficial meaning of that word and the functions of the health officer were principally concerned with clean streets, garbage removal and the like.

Consequently health officers were not chosen because of any knowledge of medicine or hygiene. Once in a while a physician happened to be selected for the office but his professional equipment was coincidental and not the cause of his appointment.

This continued to be the situation in Aurora until 1888. By that time sufficient knowledge of bacteria and disease germs had been discovered and disseminated and medical knowledge had progressed far enough to give leading citizens the notion that disease prevention depended upon the application of technical knowledge. This created popular distrust in the capacity of laymen to render effective service as health officers and led to a demand for physicians to fill that post. As a result Dr. G. F. Allen was appointed health officer of Aurora in 1888 and since that time the position has always been filled by a member of the medical profession. Dr. George W. Haan, present incumbent, has the distinction of having served the city as health officer over a longer period than any other person who ever held the position.



George W. Haan, M. D.
Health Officer, 1918 to date

The list of health officers of Aurora, together with the dates when each filled the office, follows:

March 2, 1863 to 1865	A. A. Dexter	1889-1891	Dr. H. Reder
1865-1866	Dr. W. Young	1891-1891	Dr. W. S. Johnson
1866-1871	Geo. O. Fish	1894-1902	Dr. J. W. MacDonald
1871-1872	E. S. Day	1902-1906	Dr. F. J. Conghlin
1872-1873	Geo. O. Fish	1906-1908	Dr. C. W. Geyer
1873-1874	J. D. Andrus	1908-1909	Dr. A. L. Anderson
1874-1878	J. D. Andrus	1909-1910	Dr. A. R. Reder
1878-1881	A. C. Graves	1910-1911	Dr. W. H. Uehren
1881-1884	Dr. C. Smith	1911-1918	Dr. G. B. Schwachtgen
1884-1888	H. G. Gable	1918 to date	Dr. Geo. W. Haan
1888-1889	Dr. G. F. Allen		

The local dental society has established the practice of making gratuitously an annual dental examination of all school children while a group of local physicians give their services in diagnostic conferences of infants and preschool children. The city also benefits by clinical services and sanitarium care provided by the Kane County Tuberculosis Sanitarium Board which was established by popular vote under the Glackin law.

A clear picture of present facilities for doing public health work is found in a report of a survey made in 1926 by the State Department of Public Health. In it, we read:

"Earning 521 points out of a possible 1,000, Aurora takes ninth place among the fifteen cities on the health service score sheet. Operating under the commission form of government, the mayor and commissioners constitute the municipal board of health. The part time health officers get \$1,000.00 per year plus an allowance on about the same scale toward clerk hire. He provides official quarters in his own office where vital statistics and morbidity records are handled. A diagnostic laboratory with a full time technician is maintained. There is a full time nurse employed who works in the private school and a part time veterinarian who inspects food handling establishments.

"Each of the two school boards employs a school nurse. Tuberculosis diagnostic clinics are held by the staff of the county sanitarium. The Public Health Nursing Association is responsible for infant health clinic, tuberculosis, prenatal, infant and preschool age field nursing service. There is no public clinic for indigent venereal disease patients.

"The official expenditures amount to 26 cents and the total, including those of voluntary agencies, to 60 cents per capita per year.

"Complete tabulations of vital statistics data are not made, although some rates are determined and published in the local papers.

"No communicable disease nurse is employed. A policeman, who is detailed as a quarantine officer, placards premises and releases all cases. Complete epidemiological information is not collected. When an unusual prevalence of disease occurs the health officer himself visits cases in an effort to determine the source. Only a small proportion of

diphtheria and scarlet fever cases are hospitalized. The health officer estimates that about 500 children received toxin-antitoxin, given by private physicians, last year (1925). Only about 33 per cent of the grade school children are vaccinated against smallpox.

"Two new cases of tuberculosis were reported last year for each death. The personnel of the Public Health Association is insufficient to render as much field nursing service as is desirable. Tuberculosis clinics are held twice each month, total attendance for the year being 225, which is much less than the standard. Hospitalization of tuberculous patients is up to standard and approximately one-half of the cases admitted were in the incipient stage. This is a much higher percentage than the average in similar institutions. One open air classroom with an attendance of about sixteen children is in operation.

"There are two school boards in town. The grade school population is about equally divided between the private schools and each of the two public school districts; one nurse works in each of these groups. The nurses weigh, measure, test vision and make physical inspections. Each of the nurses operates independently of the other with no uniformity of records or reports. The public school nurses cooperate with the health department in the control of contagion, but more satisfactory routine procedures should be worked out. Local dentists made a complete dental inspection in the public schools last year. There is no medical supervision of school children.

"It was estimated that about 94 per cent of the dwellings are connected with the city sewers. A sanitary district has been voted, which will provide treatment of the city's sewage.

"Food handling establishments are not licensed, but are inspected by a part time veterinarian.

"The health officer who personally inspects the milk depots estimates that 98.5 per cent of the milk supply is pasteurized. No laboratory examinations are made of milk before pasteurization and the bacterial counts after pasteurization are high. Only one producing farm is regularly inspected.

"A very good laboratory is maintained by the health department with a full time technician. The examinations made approximated or exceeded the standard quotas except for tuberculosis and venereal diseases.

"The health officer has done a considerable amount of educational work."

WATER SUPPLY.

The public water supply, installed in 1886 at a cost of \$137,000, comprised an infiltration gallery on an island in Fox River about $1\frac{1}{2}$ miles north of the center of the city. The original pumping station constructed on the east bank of the river, although substantially enlarged, is still in service.

In 1902, due to repeated contamination, the infiltration gallery was abandoned and four deep wells bored in the vicinity of the main pumping station, penetrating Potsdam sandstone at a depth of 2,250 feet. These wells

are all operated by air lift. A collecting reservoir was also constructed, into which the output of the wells was discharged.

In 1911 a fifth well but of somewhat larger bore was constructed at the same site.

In 1914 the increased demand for water made it necessary to develop the abandoned Esser quarry pit, located in the south part of the city, as an auxiliary source of supply. A hypochlorite treatment plant was installed to treat the water thus secured. In the meantime, the city had adopted an isolated deep-well system to meet the ever-increasing water demands, and during 1915 two wells were completed, one in the southeast and the other in the southwest part of the city. A third well located on an island in the river near the central part of the city was placed in service in 1917.

Since the three additional wells were placed in service the quarry supply was entirely abandoned. An additional well was constructed in 1923 and another in 1925.

In 1913 the waterworks were investigated and attention called to several possible sources of contamination, namely, in the open shallow discharge basins of the several wells and in the leaky and open collecting reservoir. Due to the close proximity of the collecting reservoir to Fox River, there was danger of seepage into the reservoir. The open condition of the reservoir further made it possible for the supply to be accidentally or maliciously contaminated.

On later investigations attention was called to the existence of several dangerous cross connections between the city and river supplies.

The present supply comprises the first five drilled wells constructed near the main pumping station and the five drilled wells that have been progressively constructed between 1915 and 1925. In 1919 a concrete covered collecting reservoir was constructed to supplant the old open and leaky reservoir. An emergency chlorinator is kept available. One cross connection is still in existence, but the cross connection involves an artesian well and is not regarded as particularly dangerous although such cross connections are regarded as objectionable. The water supply is regarded as being of a safe sanitary quality.

In 1921 there were 84 miles of 4- to 16-inch mains, 8,325 services, and the average daily water consumption was 71 gallons per capita.

SEWERAGE.

In 1880 there were no sewers and liquid sink wastes were discharged through cesspools. The houses depended on privies, with but few exceptions.

Prior to 1893 some sewers were installed and from time to time additional areas were sewerred.

The present system is of the combined type carrying both sanitary sewage, industrial wastes and storm water. There are four major outlets serving about 85 per cent of the population and nine minor outlets which serve the remaining 15 per cent. These outlets are located along Fox River.

The discharge of the present sewers, particularly during low-water periods creates a nuisance in Fox River which has been the occasion for several complaints.

In 1926 the Aurora Sanitary District was organized, embracing the city of Aurora, and with boundaries following in general the boundaries of the city. Thorough investigation and study of the sewerage needs of the city were made in 1927 and recommendations made for the construction of an intercepting sewer to carry the dry-weather flow to a point well below the city and the construction of sewage-treatment works comprising grit chambers, sedimentation tanks, separate sludge-digestion tanks, pumping station, sludge beds, sprinkling filters and secondary sedimentation tanks. A bond issue was recently passed which assures that the improvement will be installed in the immediate future.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria and Comp.	Influenza	Tetanus	Epidemic (All forms)	Pneumonia (All forms)
1895	285	19	..	8	12	9	..	12	..	..	18	..
1896	..	..	..	..	..	..	..	..	..	..	..	..
1897	280	10	..	..	6	33	..	13	..	..	10	..
1898	272	5	..	..	..	2	4	23	..	..	33	..
1899	..	..	..	..	..	..	..	..	..	..	..	..
1900	384	17	1	..	..	1	..	6	6	..	32	39
1901	370	12	1	..	6	6	..	5	5	..	12	36
1902	319	10	..	..	..	1	2	..	..	..	28	27
1903	322	4	1	..	..	..	1	1	..	..	29	33
1904	553	12	..	1	..	..	..	13	2	..	31	69
1905	..	..	..	..	..	..	..	..	..	..	..	..
1906	368	1	..	..	1	4	1	4	2	..	35	29
1907	410	5	..	..	..	11	1	5	4	..	25	44
1908	379	4	..	..	..	..	2	9	12	..	45	29
1909	422	6	..	..	3	3	1	6	1	..	37	34
1910	433	5	..	..	..	1	..	2	1	..	36	36
1911	413	7	..	..	..	1	..	7	3	..	32	32
1912	462	1	..	..	3	1	5	7	2	..	35	43
1913	461	7	1	..	4	2	7	3	4	..	40	39
1914	466	11	..	..	..	1	1	5	..	..	37	45
1915	471	7	..	..	3	1	..	6	3	..	41	53
1916	471	4	1	..	..	1	1	1	8	..	15	36
1917	516	3	..	..	4	3	11	5	8	..	37	60
1918	740	3	..	..	4	..	5	2	125	..	55	158
1919	603	1	1	..	..	..	..	3	32	..	43	58
1920	576	3	..	..	9	..	1	2	38	..	35	64
1921	493	6	..	..	..	2	1	14	4	..	25	34
1922	529	5	..	..	4	2	3	12	7	..	39	34
1923	521	1	..	..	1	..	..	9	5	..	29	44
1924	499	1	..	..	1	2	..	..	6	..	29	43
1925	527	3	..	..	1	1	1	4	1	1	25	59
1926	594	1	..	..	10	4	1	2	7	..	46	50

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1895	11.4	86.7	...	36.4	54.7	41.0	...	54.7	...	...	82.0	...
1896	...	...	...	...	...	...	...	...	...	...	...	...
1897	16.0	43.7	...	...	26.3	13.1	...	56.8	...	...	43.7	...
1898	9.7	21.4	...	...	...	8.6	17.2	98.9	...	...	141.9	...
1899	...	...	...	...	...	...	...	...	...	...	...	...
1900	15.9	70.4	4.4	...	...	4.1	...	21.8	24.8	...	132.5	161.5
1901	14.9	18.8	4.0	...	12.2	24.4	20.3	20.3	...	...	170.7	146.4
1902	12.7	39.9	...	...	...	3.9	7.9	...	...	...	111.8	107.8
1903	12.6	15.7	3.9	...	...	...	3.9	...	...	...	113.8	129.5
1904	13.6	46.3	...	3.0	...	...	...	50.1	7.2	...	134.9	111.8
1905	11.5	7.4	...	...	...	...	14.8	14.8	7.4	...	125.7	77.6
1906	13.7	14.9	...	...	3.7	14.9	3.7	14.9	7.5	...	130.5	108.1
1907	14.5	17.7	...	...	...	39.6	3.5	17.7	14.2	...	88.6	156.0
1908	13.7	14.4	...	...	...	...	7.2	32.5	43.4	...	162.3	72.2
1909	14.4	20.4	...	...	10.2	10.2	3.4	20.4	3.4	...	126.1	115.8
1910	14.5	16.7	...	...	...	...	16.7	6.7	...	...	120.2	120.3
1911	13.2	22.4	...	...	...	3.2	...	22.4	9.6	...	102.4	102.4
1912	14.5	3.1	...	...	9.4	3.1	15.7	22.0	6.3	...	110.0	135.1
1913	14.2	21.6	3.1	...	12.3	6.2	21.6	9.3	12.3	...	123.3	120.3
1914	14.1	33.3	...	...	...	3.6	3.0	15.1	...	...	112.0	136.3
1915	14.0	20.8	...	...	8.9	3.0	...	17.9	8.9	...	122.0	157.7
1916	13.7	11.7	2.9	...	...	2.9	2.9	2.9	23.4	...	131.5	105.3
1917	14.8	8.6	...	...	2.9	8.6	31.6	14.4	23.0	...	106.3	172.4
1918	20.8	...	...	...	11.1	...	13.8	9.5	347.2	...	152.7	383.3
1919	15.6	2.7	2.7	...	...	...	...	13.8	88.8	...	119.4	161.1
1920	13.7	8.1	...	...	3.4	...	2.7	5.4	102.7	...	94.5	172.9
1921	13.2	16.1	...	...	...	5.4	2.7	37.5	16.7	...	67.0	83.1
1922	13.9	13.2	...	...	10.5	5.3	7.9	31.4	18.4	...	58.0	89.6
1923	13.5	2.5	...	...	2.5	...	...	23.3	12.9	...	57.1	144.5
1924	12.6	2.5	...	...	2.5	5.0	...	12.5	12.5	...	55.0	107.5
1925	13.0	7.5	...	...	2.5	2.5	2.5	9.9	9.9	2.5	62.1	96.7
1926	12.9	2.1	...	...	21.0	8.4	2.1	4.3	14.7	...	34.8	108.9

HEALTH CONDITIONS.

Of prevailing health conditions in Aurora subsequent to the devastating cholera epidemic of 1849-50 there is little or no record until 1881. In that year a severe wave of smallpox crossed the State but Aurora escaped with only eleven cases and two deaths. Dr. Courtney Smith, president of the board of health at the time, had vigorously enforced the regulation of the State Board of Health that required all school children to be successfully vaccinated. This work provided the whole community with a degree of immunity sufficient to almost escape the deadly epidemic entirely although the infection was introduced into the population on seven different occasions.

At the opening of the twentieth century typhoid fever was endemic in the community on a scale that gave Aurora one of the highest mortality rates in the State from that cause. Typhoid fever was charged with 17 deaths in 1900, giving the unusually high rate of 70.4 per 100,000 population. There were probably about 170 cases that year (this estimate being calculated upon the usual experience of 10 cases per death), a severe and costly volume

of illness for a city of 24,000 people. That one season of typhoid probably cost the community at least \$1,000 per capita in economic losses without regard to the expense of life itself.

This is a fair sample of what the people in Aurora doubtless went through with from year to year for a decade or so prior to 1900 and for five years afterward. Typhoid came and went like the seasons and was regarded as almost inevitable. Shallow wells furnished a large percentage of the local water supply and the absence of extensive sewer facilities made an ideal situation for the perpetuation of the infection. After 1905 the number of deaths in the city from typhoid never reached 10 in any one year except 1911 when an epidemic carried off 11 souls, and in 1926 only one fatality was recorded, giving a rate of 2.1 per 100,000 population.

Few places in the State have had more happy results from efforts directed against tuberculosis. Only six out of the 44 municipalities of 10,000 or more population had a lower mortality rate from tuberculosis in 1926 whereas Aurora suffered one of the highest rates in 1900. During that period the rate in Aurora fell from 132.5 to 34.8 per 100,000 population and the actual number of deaths went down from 32 to 16. In 1927 the number of deaths climbed back up to 26 but even so the rate was only 55.8, a figure far below that for earlier years and equalled but twice before.

With the other ordinary infectious diseases, Aurora has had her ups and downs like other communities. Epidemics have come and gone in the mys-

Table 3.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1906			51	
1907			73	
1908				
1909				
1910			77	
1911			83	
1912				
1913			84	
1914			72	
1915			59	
1916			55	
1917			82	
1918			97	
1919			75	
1920	827	22.5	58	70.1
1921	894	23.9	68	76.1
1922	881	23.1	64	72.6
1923	928	24.1	57	61.4
1924	1062	25.3	55	54.9
1925	1025	25.5	73	71.2
1926	1091	23.8	62	56.8

*Deaths of infants under 1 year of age per 1000 live births reported.

**Per 1000 population.

Table 4.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	24		5	36	16	24	22	5	10	9	4	3
Smallpox	9		16	19	15	9	6	3	6	3	13	103
Measles		95	515	52	151	187	367	374	68	342	995	93
Scarlet Fever	101	231	22	90	116	43	53	110	281	93	124	62
Whoop Cough						101	44	164	42	107	112	86
Diphtheria	45	45	31	31	17	263	287	287	95	53	29	15
Influenza			2500	268	266	1	20	16	3	3	16	7
Pohomycetis	1	2	1		1	5	2	1	5	4		1
Meningitis			10		8	2	1	2	2		1	3
Tuberculosis*	2		4	41		88	94	83	109	112	118	105
Pneumonia*					162	66	92	100	125	109	189	141
Syphilis			1			30			30	60	38	126
Gonorrhea			4			112			50	60	48	85
Chancroid						1						1

* All forms.

Note.—Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

terious cycles peculiar to themselves, now fierce and deadly, now mild and harmless. The general trend of diphtheria has been down although the mortality rates in 1921, 1922 and 1923 soared to 37.5, 31.4 and 23.3 respectively, figures far in excess of the State rates for those years. Lately, a rather determined campaign against the disease has been conducted in the city with the end in view of preventing the recurrence of such heavy fatalities. Apparently the efforts are bearing fruit. The number of deaths in 1926 was only two and the same for 1927.

The great influenza epidemic of 1918 hit Aurora hard. Only seven others of the 44 chief cities in the State suffered losses so heavy. Influenza and pneumonia together accounted for 263 deaths in that year, giving a rate of 730 per 100,000 population, a figure that stood from 200 to 300 points higher than the rates in many other communities. It is estimated that 5,000 people had the disease during the epidemic which hovered over the city from September to December.

The general mortality rate of the city suggests distinct improvement in the prevailing health during recent years but the average is still above that of the State and somewhat higher than a number of other comparable municipalities.

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Belleville

Belleville owes its very existence to the unfortunate location of another community. If Cahokia had escaped the frequent inundations that periodically flooded the American Bottoms, leaving marshes, boggs, mosquitoes and malaria to make life miserable for the hardy settlers, and if choice of space for a house or a city had not been almost as free as the air that bathed the lungs of the pioneers, a commission would likely never have been appointed by the court of common pleas to select a more advantageous and satisfactory piece of ground upon which to build the county seat of St. Clair County. Having made a mistake, however, in choosing a site for a town and a seat of their county government the people now corrected their error by choosing a piece of rolling territory, known as Compton Hill and lying midway between the Kaskaskia and Mississippi Rivers, for a new home and city. The transaction took place in 1813, five years before Illinois became a state, and the new community was christened Belleville.

But even the new location was not spared from ponds and boggs. Occasional overflows of Richland Creek, which cuts through the southwestern part of the city, left low places filled with water and the wells generously diluted with seepage. The terrane could be drained, however, and this subsequently took place, leaving the community less apt to suffer from the vagaries of the weather.

A court house was built in 1814 and the community was incorporated as the town of Belleville in 1819.

When the community was incorporated as a city in 1850 the population was 2,941. The end of the next decade found the municipality with 7,520 people and this number grew to 8,146 in the next ten years and rose to 10,683 by the time of the census in 1880. During the next forty years the population increased to 24,823 and was made up in 1920 of 22,250 native born whites, 2,393 foreign born whites and 180 negroes.

HEALTH SERVICE MACHINERY.

Just when Belleville first passed an ordinance creating a board of health is not clear from available records. It is probable that steps to that end were taken at an early date. If so, no particular vigor was attached to the health service organization for there is practically no record of its activities. If a board was actually organized it doubtless fell promptly into a dormant paper institution, a common custom at the time.

There is evidence of a board of health existing in the place about the time of the Civil War. It appears to have had seven members, plenty of power, no money and no executive officer except its chairman. Its chief function seems to have been the investigation of nuisances, findings being referred to the mayor when action was deemed necessary.

According to Dr. Charles H. Starkel,* who made a careful sanitary survey of the community under the supervision of the State Board of Health in 1885, there were practically no facilities for carrying on public health service at that time. In his description of the situation we read:



Charles H. Starkel, M. D.
Health Officer, 1892-1915

"There is no special board of health; the aldermen in each ward act as health officers. The bounds of their authority are confined to the city limits. The aldermen receive no pay for such service. There are no physicians among them, and they have no executive health officer. The police act also as inspectors. All of them have police powers. Inspections are seldom made unless complaint is filed. No meetings of the aldermen are held as a health body. Their powers are not specifically defined or limited by law and have no authority independent of the city council. They can only define a nuisance, but have no authority to abate. No notice is taken of defective house drainage unless complaint is made, and so of all insanitary conditions.

"In cases of contagious diseases, especially smallpox, patients are isolated, more, however, through the influence of the attending physician than that of the ex-officio health board. It has power to remove persons sick with contagious diseases to a special hospital. Vaccination is not compulsory. Births, marriages and deaths become matters of record only through reports to county clerk's office."

A few years later things began to mend, however, for in the autumn of 1892 an ordinance creating a board of health was passed and Mayor Herman A. Weber appointed Louis Kemp and John Green to serve as members of the board until May 1, 1893 and Casimir Audel and M. W. Wier to serve until May 4, 1894. These gentlemen constituted what is now regarded by local officials as Belleville's first board of health.

From that date on to the present Belleville has had a definitely organized board of health but the practice of appointing members to overlapping terms gave way to the custom of annual appointments in all cases and the city council now exercises the appointive privilege instead of the mayor.

Soon after the organization of the board of health in 1892 Dr. C. H. Starkel became health officer and continued in the capacity until 1915. He was succeeded in office by Dr. B. H. Portuondo who has filled the place

* From Sanitary Survey of Belleville, in Ninth An. Rpt. 1886: Ill. St. Bd. H., page 28-41, by Dr. Charles H. Starkel.

continuously to date. No other municipality in Illinois has allowed the health officer to remain in office over so long a period. Even in those places where the power of the office is not particularly attractive and the remuneration small there have been more frequent changes, perhaps for that very reason.



B. H. Portuondo, M. D.
Health Officer, 1915 to date

The very fact that the health officers tenure has escaped the whims of political spoilsmen suggests that neither the remuneration nor the duties of that position are such as to excite envy or become burdensome. Indeed there is little done in the way of public health service, the only extragovernmental activity being a nurse who works in the public schools.

Subsequent to the board of health ordinance in 1892 there appears no further legal references relating to health until 1923 when an ordinance regulating the sale and sanitary quality of milk supplies was adopted. At the same time there was some sort of executive interest manifested in the general health affairs because we find Belleville listed in the United States registration area for deaths in 1900. Few cities in the State were keeping vital statistic records carefully enough at the time to share this distinction. Consequently, we have carefully compiled mortality records for Belleville over a longer period than for most of the other cities in Illinois.

Another factor of influence over the health machinery in Belleville is that this city was made the headquarters for State public health activities in the southern section of the State. Here a district health superintendent on the field medical staff of the State Board and later the State Department of Public Health, has been located. Dr. Henry Reis was active as a State district health superintendent from 1920 to 1925, inclusive. Dr. E. P. Stiehl was appointed in 1926 and still holds the position.

WATER SUPPLY.

A waterworks was established about 1875. The supply was obtained from Richland Creek, which is supplied by springs and surface water. The water was first delivered into a large pond, where it was allowed to settle. From the reservoir, the water passed through a large filter composed of drain tiling and gravel, into a smaller pond from which it was conducted about one-quarter of a mile to the distributing pond. Here



Henry Reis, M. D.
District Health Superintendent, 1920-1925

it was pumped into a stone tower 125 feet high from which it passed through two Hyatt pressure filters and then to the distributing system. These filters were installed in 1886 and constituted the first water-purification plant in the State.

A majority of the inhabitants continued the use of well or cistern water. These private wells were from 20 to 60 feet in depth.

The waterworks installed in 1890 were dependent upon Christine Lake, a small body of water east of the city, for its source of supply. This proving unsatisfactory, a number of tubular wells 400 feet deep were sunk at the south edge of the city. These wells supplemented by the lake constituted the source of supply until 1908, but the yield was always more or less inadequate.



E. P. Stiehl, M. D.
District Health Superintendent,
1926 to date

About this time, the waterworks was taken over by the American Water Works & Guarantee Company, which company owned and operated the waterworks in the near-by cities of East St. Louis and Granite City. The company sank five wells in the Mississippi River bottoms at Edgemoat, about seven miles northwest of the city. The water from these wells was harder and contained considerable iron, consequently it did not prove very popular.

In 1912, the supply became inadequate and a 16 inch pipe was laid from East St. Louis to Edgemoat, a distance of about five miles. After this the pumps at Edgemoat pumped filtered Mississippi River water from the East St. Louis supply. Since that time the supply has been adequate and safe for drinking purposes.

SEWERAGE.

There was no general system of sewerage in 1880. Small drains were laid in a few streets in the lower part of the city to drain the cellars. These emptied into Richland Creek and its branches. They were built and paid for by the owners of property on the streets in which they were laid.

In 1886 underground drains constructed by the owners drained about one-fourth of the city's area. There was one outlet sewer discharging into Richardson Creek below the waterworks. Main Street had the only underground sewer, and the surface drainage passed into it.

Ninety per cent of the houses depended wholly on privy vaults. They were required to be water-tight and cleaned at the householder's expense. About 25 per cent of the houses had cesspools into which kitchen and laundry waste water was drained.

In the fall of 1910, the State Water Survey made an investigation of Richland Creek. At the time of inspection, pollution by sewage was noticeable for six miles below the city. Septic tanks installed at the main sewer outlets removed only a part of the suspended solids. It was also found that industrial wastes played only a minor part in the pollution of the creek.

Since that time the septic tanks have been abandoned, and many nuisances have been reported downstream from the city.

In a report on sewerage by Pearse, Greeley & Hansen in 1924, complete treatment of the sewage was recommended.

HEALTH CONDITIONS.

As may be surmised, malaria was an important health problem in Belleville during its early history and continued to be a source of considerable annoyance and economic loss in that community long after it had ceased to be a problem in most of the places further north. This, of course, was due to the more salubrious climate that prevails in that section, the low, flat terrane that favors stagnant pools which encourage mosquito breeding and the lack of adequate drainage facilities. Malaria was noticeable enough in the early days to bring from Governor Reynolds, in his *Pioneer History of Illinois*, this statement:

"The disease (bilious fever with the ague) attacked the people in the latter part of the summer and in the fall, and was very common but not often fatal."

As late as 1923 we find malaria prevailing in Belleville to an extent sufficient to impel local civic organizations to join in a voluntary mosquito abatement project which has practically cleared the community of both a nuisance and an expensive disease.

Cholera managed to complicate health matters in Belleville as it did in so many other places during the nineteenth century. It introduced itself to the community in 1832 through the agency of a traveller who was attacked while camping near the town and who was compelled to find refuge and shelter in the court house after being refused accommodations at local inns and hotels.

The incident brought out the fine spirit of the medical profession which has for so long a time made that calling one of the noblest and most admirable of the human family. While the public generally shunned the poor stranger like a leper, Dr. William H. Mitchell of Virginia, who had settled in Belleville, gave to him every care and comfort that his training and skill permitted. The patient died, however.



William Henry Mitchell, M. D.

Thus the unwelcomed stranger soon vexed them no more but the disease lingered to plague the people for many months. Indeed the epidemic lasted until late in 1833, carrying off, among others, Governor Ninian Edwards. Here again we find a vivid description of conditions from the pen of an eye witness, Governor Reynolds, whose personal knowledge of Belleville and Governor Edwards led him to say:

"While the cholera was raging at Belleville he (Governor Edwards) was out attending night and day to the afflicted with the scourge. With his knowledge of medicine and his true benevolence, he was a kind and efficient friend to the sick. It was his great anxiety and exertions in time of the cholera to save the distressed that caused him to take the disease. He was aged and his constitution some shattered, so he fell a victim to the disease a few hours after it seized him. He died in Belleville, July 20, 1833."

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria and Croup	Influenza	Gonorrhea	Tuberculosis (All forms)	Pneumonia (All forms)
1877	..	..	1	..	..	..	..	1	..	..	..	3
1878	..	5	4	..	..	3	..	38	..	..	21	7
1879	..	4	4	..	..	..	1	11	..	..	18	13
1880	..	3	6	..	..	..	..	10	..	..	11	7
1881	..	9	3	..	..	..	..	9	..	..	..	6
1882	..	1	1	..	1	..	..	1	..	..	22	22
1883	..	8	1	..	1	..	..	8	..	..	323	323
1884	..	5	..	..	..	1	..	..	..	..	..	4
1885	..	12	4	..	..	..	..	..	..	..	4	12
1894	269	..	..	..	..	..	..	..	..	..	..	..
1895	187	9	..	..	..	..	1	..	..	..	13	..
1896	269	12	..	..	3	..	4	12	..	..	26	..
1897	204	7	..	..	..	..	..	1	..	..	19	..
1898	248	27	..	..	..	..	..	13	..	..	25	..
1899	..	..	..	..	..	..	..	..	..	..	..	..
1900	267	12	4	..	..	1	1	10	..	..	27	17
1901	276	10	1	..	1	2	..	8	1	..	24	12
1902	284	7	..	..	..	5	1	10	4	..	31	16
1903	318	14	3	6	8	4	1	2	1	..	29	24
1904	377	9	2	46	1	..	4	1	12	..	36	22
1905	..	..	..	..	..	..	..	..	..	..	..	..
1906	342	5	..	..	..	..	5	4	2	..	28	15
1907	334	8	..	..	1	1	1	7	..	..	32	15
1908	333	10	..	..	7	1	3	1	4	..	39	19
1909	272	13	..	..	..	..	..	3	2	..	33	14
1910	312	4	..	..	..	3	4	1	3	..	33	16
1911	310	6	2	..	1	2	2	1	4	..	34	14
1912	276	12	..	..	..	..	1	3	1	..	26	8
1913	326	10	..	..	8	..	2	3	1	..	32	16
1914	304	8	1	..	1	13	..	4	2	..	26	14
1915	260	2	..	..	..	2	1	8	1	..	30	16
1916	312	4	..	..	1	..	..	..	15	..	29	29
1917	351	9	..	..	1	3	..	10	..	2	35	20
1918	481	5	..	..	1	..	3	6	11	..	47	20
1919	317	0	3	..	..	..	..	12	12	..	28	22
1920	321	2	1	..	6	..	..	7	20	..	29	23
1921	317	4	..	..	..	..	1	3	1	..	21	23
1922	317	4	..	..	..	1	..	3	7	..	18	21
1923	373	2	1	..	1	..	4	5	20	..	15	27
1924	332	1	..	..	..	1	2	2	2	..	22	15
1925	345	1	..	..	..	2	..	..	10	..	10	16
1926	372	1	..	..	1	2	..	2	1	..	16	15

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1877	..	..	10.0	..	..	..	..	10.0	..	..	..	30.0
1878	..	50.0	40.0	..	..	30.0	10.0	380.0	..	..	210.0	70.0
1879	..	36.3	63.6	..	..	..	..	100.0	..	..	163.6	118.1
1880	..	27.3	54.5	..	..	..	..	90.0	..	..	100.0	63.6
1881	..	81.8	27.2	..	9.0	18.1	..	81.8	..	..	72.7	34.5
1882	..	9.0	36.3	..	..	..	..	9.0	..	..	200.0	43.4
1883	..	72.7	9.0	..	9.0	9.0	..	72.7	..	..	200.0	63.6
1884	..	63.6	16.6	..	..	9.0	..	18.1	..	..	72.7	36.3
1885	..	16.6	33.3	..	..	..	..	..	..	..	58.3	16.6
1894	12.8	..	..	..	..	..	..	..	..	..	..	..
1895	11.8	57.0	..	..	..	..	6.3	..	..	..	82.3	..
1896	16.6	74.4	..	..	18.6	..	24.8	74.4	..	..	161.2	..
1897	12.3	42.5	..	..	..	..	..	6.0	..	..	115.4	..
1898	14.7	163.1	..	..	..	..	..	77.3	..	..	148.7	..
1899	..	..	..	..	..	..	..	..	..	..	..	..
1900	15.2	68.7	22.0	..	..	5.7	5.7	57.2	5.7	..	154.5	97.2
1901	15.3	57.0	5.6	..	5.6	11.3	..	45.2	11.3	..	135.6	67.8
1902	15.9	39.1	..	..	..	28.0	5.6	55.9	22.3	..	173.1	89.3
1903	17.6	77.3	16.6	34.3	16.6	22.1	5.5	11.0	11.0	..	160.1	132.5
1904	20.1	49.1	10.9	262.9	10.9	..	21.8	5.5	10.9	..	196.4	129.0
1905	16.9	31.1	..	11.4	..	..	5.7	28.6	..	..	125.7	57.1
1906	18.2	26.7	10.7	..	..	..	26.7	21.3	10.7	..	149.3	85.7
1907	15.8	37.9	..	..	4.7	4.7	4.7	33.2	9.5	..	151.5	71.1
1908	14.6	43.8	..	..	30.7	4.4	14.1	4.4	17.5	..	170.8	83.2
1909	12.9	61.6	..	..	..	..	..	14.2	9.5	..	156.3	66.3
1910	14.7	18.9	..	..	14.2	14.2	18.9	4.7	14.2	..	156.2	75.7
1911	14.4	28.4	9.5	..	4.7	9.5	9.5	4.7	18.9	..	160.9	66.3
1912	12.6	56.8	..	..	..	..	4.7	14.2	4.7	..	122.0	37.9
1913	14.6	47.3	..	..	37.9	..	9.5	14.2	4.7	..	151.4	75.7
1914	13.4	37.8	4.7	..	4.7	61.5	..	18.9	9.5	..	123.0	66.2
1915	11.3	9.5	..	..	..	9.5	4.7	37.8	4.7	..	141.9	75.7
1916	13.3	19.0	..	..	4.7	..	..	38.0	23.6	..	137.2	137.1
1917	14.7	42.5	..	..	4.7	14.2	..	47.3	9.5	..	165.5	137.1
1918	19.8	23.8	..	..	4.7	..	14.2	28.5	30.9	..	119.0	333.3
1919	12.9	..	12.1	..	..	..	..	48.0	48.0	..	113.3	89.0
1920	12.8	8.0	4.0	..	34.6	..	..	28.0	80.0	..	116.0	92.0
1921	12.5	11.8	..	..	..	..	3.9	11.8	3.9	..	82.7	90.6
1922	12.2	15.5	..	..	..	3.9	..	11.6	27.2	..	69.9	81.5
1923	14.3	7.6	3.8	..	3.8	..	15.3	10.2	76.9	..	57.6	193.8
1924	12.3	3.7	..	..	..	3.7	7.5	7.5	7.5	..	81.4	55.5
1925	12.8	3.7	..	..	..	7.4	..	..	37.0	..	37.0	59.2
1926	13.6	3.6	..	..	3.6	7.2	..	7.2	3.6	..	58.4	54.7

NOTE: The rate from All Causes is per 1,000 population; all others per 100,000 population.

Cholera invaded the city again during the epidemic wave that swept over the country during the middle years of the nineteenth century. This outbreak was no less severe than the one twenty years earlier, causing fully fifty deaths and making so harrowing an impression upon the popular mind that the idea of public health service became synonymous with the idea of cholera prevention for many years in that community. That outbreak, which occurred during the period of 1849-52 was the last disastrous experience of the community with cholera and it is probable that this deadly infection will never again sadden the households of that or any other American city so long as the present standard of civilization remains.

While the rest of the State was distressed from time to time by loathsome and deadly epidemics from smallpox Belleville enjoyed a rather distinct freedom from that disease up to 1900. Intelligent foresight led the local school board to adopt a ruling in 1858 which required all children to present a certificate of successful vaccination before being admitted to the class rooms. This regulation remained in force for more than thirty years and while it did not prevent smallpox from gaining entrance into the community it did establish a degree of public immunity sufficient to prevent an outbreak of the serious magnitude common elsewhere, especially during the eighties.



A. L. Reuss, M. D.

In spite of this early immunity, however, a lapse in the practice of vaccination made possible the advent of a most fatal and alarming outbreak of smallpox in 1903. The outbreak raged for three years. There were 6 fatalities during the first year and 46 the second, the mortality rate from smallpox climbing from 34.3 per 100,000 in 1903 to the extraordinarily high point of 262.9 in 1904. The next year the rate fell to 11.4, marking the last fatality from smallpox in that city to date.

Belleville was one of the cities in Illinois where the influenza-pneumonia epidemic of 1918 played grim and deadly havoc on a grand scale. Mortality from the two causes combined amounted to 895 per 100,000 population, a figure surpassed in only three other cities of the State. Influenza was charged with 118 deaths and pneumonia with 70. Never before nor since has any other communicable disease approached such fatal proportions in that municipality as did influenza in 1918.

With regard to other diseases, Belleville has gone through no particularly unusual experiences. Tuberculosis was bad enough up to about 1920, since which time it has steadily declined. Typhoid fever has been and still remains an endemic problem although the annual mortality rate has declined from a maximum of 81.8 per 100,000 population to an average of about 3.5. Scarlet fever and diphtheria have visited the city in epidemic cycles peculiar to those diseases, sometimes virulent and fatal, sometimes mild and less mortal. Both infections exacted a considerably heavier toll of life in Belleville in 1926, in proportion to the population, than they did in the State at large.

The general mortality rate in Belleville now averages considerably higher than that for the State at large and for many of the comparable cities but it must be remembered that Belleville is one of the oldest communities in Illinois. This gives it a higher ratio of elderly people than the State but

Table 3.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1877			2	20.6
1878			41	410.0
1879			61	354.5
1880			51	463.6
1881			52	472.7
1882			48	436.3
1883			42	381.8
1884			25	208.3
1906			85	
1907			51	
1908				
1909				
1910			47	
1911			58	
1912				
1913			56	
1914			35	
1915			22	
1916			39	
1917			28	
1918			45	
1919			35	
1920	479	19.1	31	64.7
1921	540	21.3	38	70.4
1922	493	19.1	26	40.6
1923	501	19.2	46	91.8
1924	465	17.5	37	79.6
1925	504	18.7	22	43.6
1926	501	18.3	31	61.9

*Deaths of infants under 1 year of age per 1000 live births reported.

**Per 1000 population.

Table 4.
CASES OF CERTAIN DISEASES REPORTED.

	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	6	2	6	3	10	6	7
Smallpox	26	1		1	3	3	
Measles	2	1	30		1	30	28
Scarlet Fever	46	25	6	45	153	127	55
Whooping Cough	10			2		9	33
Diphtheria	39	63	68	38	30		24
Influenza		15	10	1	7	2	4
Poliomyelitis				1			
Tuberculosis*	7	10	11	18	24	23	26
Pneumonia*	4	9	27	9	21	19	14
Syphilis	12			14	7	9	13
Gonorrhea	31			98	31	22	10
Chancroid							1

*All forms.

Note. Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

the difference in age distribution is not as great as the difference in the mortality rate. According to the 1920 United States census report, 21.5 per cent of the population in Illinois was over 45 years old, while in Belleville 23.2 per cent fell into that age group. In 1920, the general mortality rate in Illinois was 11.8 while that for Belleville was 13.6. About the same difference has prevailed for several years.

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Bloomington

One of the largest and finest of the isolated groves in the great prairie region of the Sangamon basin adorned the hills of what later became McLean County. Early settlers called it Blooming Grove. It covered between 40 and 50 square miles of land area, making the locality very attractive. As the settlers pushed back from the vicinity of the navigable rivers, they very naturally gravitated to this beautiful spot and made their abode in its vicinity. The community grew into the thriving municipalities of what are now called Bloomington and Normal.

One of these early settlers was Dr. Isaac Baker, a veteran of the War of 1812, who came to McLean County in 1827. This versatile physician, who was doctor, architect and civil engineer by turns, helped to lay out the town of Bloomington on July 4, 1831, locating it on the north edge of the Blooming Grove.

Dr. Baker was clerk of the county commissioner's court for fifteen years. During this time a young man wished to secure a marriage license and having no money offered to pay for it in maple sugar the following year. A historian who says that the doctor accepted the proposition adds the comment that it was a "sweet transaction for all concerned." This incident suggests the scarcity of cash during the days when Bloomington was in the making.

The community was organized into the town of Bloomington in 1843 and incorporated as a city in 1850. To show their temper and disposition to manage public affairs the board of trustees at its first meeting in 1843 passed an ordinance requiring a license fee of \$25.00 each from grocery stores doing business within the town limits.

During the twenty years between 1850 and 1870 the population grew from 1,594 to 14,500, an average increase of 650 per annum. That was the period of most rapid growth. In 1880 the number of people was 17,180 and in 1890 it was 20,484. The 1920 United States census report shows a total population of 28,725 which was made up of 25,053 native born whites, 2,831 foreign born whites, 799 negroes and 42 persons of other races. Persons 45 years of age and over constituted 27.6 per cent of the population in 1920.

HEALTH MACHINERY.

It is probable that the people in Bloomington were among the first in the State to realize in a significant way, the possibilities of what we understand today as public health service. Dr. Elias W. Gray lived there during the seventies and he was exceptionally active as an advocate of sanitation

and hygiene. His efforts (see volume 1 of this history) were an important factor in causing the legislature to establish the first permanent State Board of Health in Illinois. Doubtless his influence was felt in Bloomington. It may even be that his conceptions and activities were inspired by citizens of Bloomington and that his championship of the public health cause was but a reflection of mature sentiment among thinking citizens there.



Benjamin F. Funk,
Mayor

In either event there must necessarily have been no inconsiderable sentiment there in favor of organized public health service of a high order for that day. This attitude was manifested in 1885 when the Mayor Benjamin F. Funk of Bloomington exercised a pronounced personal interest in the house to house sanitary survey inaugurated by the State Board of Health, taking time enough to visit Springfield for a conference on the subject with Dr. John H. Rauch, secre-

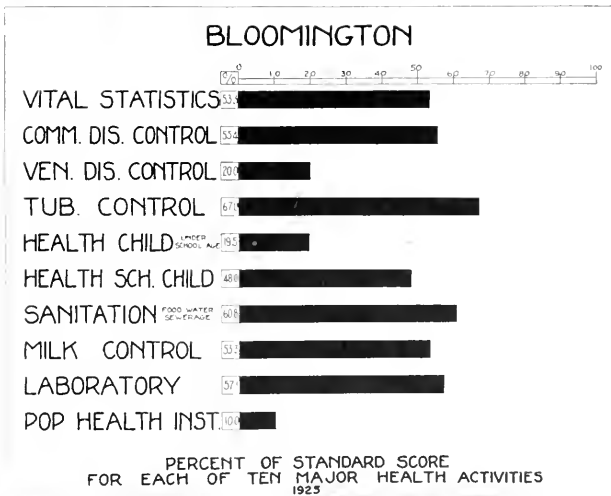


Fig. 1. This graph illustrates the strong and weak points in Bloomington's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Bloomington was 46 per cent of the standard perfection requirement.

tary of the board, and causing the project to be carried out with great thoroughness in his city.

Again, in later years we find a legislator from Bloomington, leading a successful movement in the General Assembly to enact a law permitting counties to establish and maintain tuberculosis sanitariums and that McLean County, with the help of Bloomington, took advantage of this law rather promptly.



Hiram Greenwood
Health Officer, 1885

Furthermore, there was, in 1880, a health committee of the city council. It consisted of three aldermen and the mayor and functioned as a board of health. It employed a health officer at \$40.00 per month whose chief duties were the abatement of nuisances and the enforcement of garbage removal regulations. He had police powers and he was responsible for removing to the "pesthouse" persons found in the community with smallpox. It is interesting to observe that the medical profession was not represented on

the committee nor did it participate officially in the sanitary efforts of the public.

The list of health commissioners who have served Bloomington include:

1885-	Hiram Greenwood	
1898-1901	Dr. Dwight O. Moore	
1901-	Dr. F. J. Welch	
1901, 1906,		
1912	Dr. A. W. Meyer	
1902-1904	Dr. J. E. Kundler	
1913-1915	Dr. H. H. Griffin	
1915-	Dr. J. J. Condon	
1915-	W. T. Williams	
1915-1919	Dr. F. C. Vandervoort	} Served together
"	Dr. H. H. Griffin	
"	Dr. F. H. Godfrey	
1919-	Jacob Meeth	
1919-1921	Dr. James M. Furstman	
1922-1923	Dr. Harold B. Wood	
1923-1927	Dr. Charles E. Schultz	

By 1898 the board of health had grown to include fourteen aldermen in its membership and the influence of the medical profession had caused the appointment of Dr. Dwight O. Moore to the position of health commissioner, the title of the board's executive officer. Under Dr. Moore was a sanitary policeman in the person of John F. Anderson. The expenditures of the board of health in 1898 amounted to \$11,991.55 but \$10,473.81 went for scavenger service.

Dr. Moore died in 1901 and was succeeded by Dr. F. J. Welch who remained in office for a short time only but he appears to have been re-



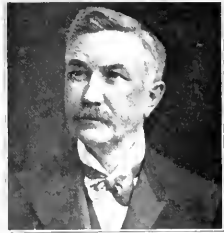
Dwight O. Moore, M. D.
Health Commissioner
1898-1901



John F. Anderson
Sanitary Policeman, 1898

sponsible for inaugurating the keeping of vital statistics in the city. Prior to that time reports of births and deaths had been recorded by the county clerk only. The city clerk now began to exercise that function and continued to do so under Dr. A. W. Meyer who became health commissioner before the end of 1901. Dr. J. E. Kundler followed Dr. Meyer as health commissioner and drew a salary of \$600.00 per year for his services in that capacity.

In 1915, when the city adopted the commission form of government, an important and unique change was made in the administrative organization of the health department. By ordinance the public health activities were placed in the hands of three men, known as health commissioners, under the commissioner of public health and safety. Three physicians, Doctors F. H. Godfrey, H. H. Griffin and F. C. Vandervoort, were appointed to these positions and they, in turn, employed two inspectors, one for foods and one for sanitation.



F. H. Godfrey, M. D.
Health Commissioner
1915-1919

The commissioner of public health and safety and the three health commissioners constituted a board of health while the food inspector acted as its secretary. Three men on one job apparently worked out but little better than the proverbial effort of one man to serve two masters for we find the triumvirate abandoned by 1919 when arrangements were completed for reverting to the one man system and he was placed on a full time basis.



H. H. Griffin, M. D.
Health Commissioner
1915-1919

Public confidence in the potential benefits of public health service had grown too, so that appropriations to the health department had soared to \$12,600.00 for the fiscal year ending April 30, 1921 and the matter of garbage disposal had been transferred to another department. At that time Dr. J. M. Firstman was the full time health commissioner, one of the first to be employed in Illinois outside Chicago, and he was assisted by three nurses and one or two inspectors.



James M. Furstman, M. D.
Health Commissioner
1919-1921

In 1922 the city abandoned the commission form of government but the full time health commissioner was retained, Dr. Harold B. Wood succeeding Dr. Furstman in that capacity. His budget amounted to \$10,830.00 per year and his staff included one food and one sanitary inspector and one public health nurse. He maintained a small amount of laboratory equipment which enabled him to make tests for diphtheria and examine samples of water and milk.

The strength of the health department staff in 1925 had changed but little, embracing the commissioner, Dr. C. E. Shultz, three nurses and two inspectors, all on a full time basis. A clear picture of public health administrative machinery in the city at that time, which still prevails in much the same character, is found in the report of a survey and appraisal made by the State Department of Public Health.

It reads, in part, as follows:

"The public health services carried out in Bloomington during 1925 were evaluated at 461 points, giving to that city twelfth place among the fifteen included in the appraisal study.

It so happened that the position of full-time health officer was vacant during several months last year (1925), causing a lower score than might otherwise have been the case. All of the health department personnel, consisting of the health officer, three nurses, two inspectors, and a clerk are appointive by the mayor except for one nurse who is employed by the school board. The county tuberculosis board employs a nurse whose travel expenses are paid by the county tuberculosis association. Volunteer agencies do less in Bloomington than in any of the other fifteen cities. Last year (1925) a board of health was organized, an emergency measure brought on by a smallpox outbreak.

"The city spends thirty cents per capita per year for public health work, funds from other sources raising this figure to 47 cents.

"Notification of contagious diseases measure up satisfactorily to the standard required. A good system of epidemiological record keeping is in use although the cards are not completely executed and no spot maps or charts of contagion are kept. No communicable disease nursing service is provided. The sanitary inspector quarantines and releases all cases not seen by the health officer. The health officer himself devotes much of his time to visiting cases of contagion. There are no communicable disease hospital facilities in the city or county. Very little has been done to stimulate the immunization of children against diphtheria. Due to an epidemic of smallpox last year, however, it is estimated that more than one-



Harold B. Wood, M. D.
Health Commissioner
1922-1923

half of the population, including 98 percent of the school children of the city was vaccinated against that disease.

"There is no venereal disease clinic. Case reports are not up to standard appraisal requirements.

"Cases of tuberculosis are well reported. The tuberculosis clinics are well attended although the total number of visits is slightly less than the quota. A county tuberculosis sanatorium is maintained. At this institution a total of nearly 14,000 patient days treatments were given. About 14 percent of the cases were in the incipient stage of the disease on admission. There are no open-air classrooms or preventoria.

"There are no prenatal, infant or preschool clinics. Only about 300 home visits were made by nurses in behalf of this age group. There is a very active Day Nursery with a trained public health nurse as director. She has done a considerable amount of educational work in prenatal and infant hygiene through mothers clubs. Tonsil clinics are held occasionally at the Day Nursery.

"There is no medical inspection of school children. The nurses weigh and measure all children and test the vision and hearing of some. The only correction of defects of which there is a record is the tonsil and adenoid operations at the Day Nursery. The nurses made a large number of home visits in behalf of school children, the numbers being about double the standard appraisal requirement. Considerable attention is given to the teaching of hygiene in the schools, fifty minutes per week being devoted to it in all grades. Health classes are also held at the Day Nursery.

"A good sanitary and food inspection service is maintained although food establishments are not licensed. The city water supply is of good quality and is distributed, it was estimated, to 85 per cent of the homes. It was estimated also that 80 per cent of dwellings are connected with sewers. An accurate survey of the privies in the city was made three years ago.

"Ninety per cent of the milk supply is pasturized, one plant supplying 80 per cent and the two others 10 per cent of the total. No inspections are made of dairy farms except of 13 which are located close to the city. Periodic inspections of distributing plants, and a large number of sediment tests are made of both raw and pasteurized milk. Shipments of dirty milk when discovered are excluded from the market. These tests give a fair index as to the sanitary quality of raw milk but are of little use in determining the quality of pasteurized milk. Bacterial counts are not made.

"A small laboratory is maintained by the health department, the city health officer himself making the examinations. About the only tests made last year were for diphtheria and gonorrhea, the remainder of the laboratory credit being due to the examinations made at the Springfield State Laboratory."

WATER SUPPLY.

The public water supply was installed in 1875 and comprised one dug well 40 feet in diameter and 38 feet deep, located on the banks of Sugar Creek within the city of Normal, which adjoins Bloomington. The main water supply has ever since been derived from wells penetrating the glacial-drift deposits in that vicinity, but different wells have been installed from time to time.

In 1885 the dug well was enlarged and deepened by installing an elliptical pit 26 by 32 by 16 feet deep below the bottom of the original well, making the total depth 56 feet. The yield became inadequate to meet increased demands and in 1894 twelve 10-inch tubular wells were installed and the water pumped from them by air lift into the original well, which then served as a receiving reservoir until the installation of the present 10-million-gallon reservoir about 1905.

The supply again proved inadequate and in 1910 the former tubular wells were replaced by three shafts about 42 feet deep in the bottom of each of which several tubular wells with strainers were extended 30 feet deeper into water-bearing glacial drift. At the same time the pumping station was rebuilt, electric pumps replaced air-lift equipment for the wells and direct pumping pressure in the distribution system was established.

During warm weather when the use of water increased and the yield of the wells decreased the supply continued to be inadequate to meet the growing needs of the city and the inadequacy of the supply has continued to be a topic of discussion and consideration up to the close of the period covered by this history. In 1915, one of the 1910 wells was abandoned, the others were improved, and one additional well and unit was developed by installing in the bottom of the original dug well eight tubular wells and a pumping unit.

In 1920, after a study of possible ground-water resources by the local officials, it was decided to install additional wells at some distance from the main pumping station in the vicinity of which all the previous wells were located. One tubular well with strainer was sunk into the glacial drift about $1\frac{1}{2}$ miles southwest of the main station and a pump house and 188,000-gallon concrete collecting reservoir built. This well was also along Sugar Creek which flows westerly through the northern portion of the city. In 1921 two more tubular wells were sunk at the western station where ten acres of land had been secured for water-works purposes and another high-service pumping unit installed.

About 1921, consulting engineers were engaged to make a study of water resources, possible impounding reservoir sites, the mineral and sanitary quality of the various possible supplies and the costs of development. The engineers recommended the development of a surface-water supply by means of a dam on the lower portion of Money Creek. There had already been local differences as to whether the future supply should come from wells or a stream, and following the consulting engineer's report this controversy among the residents of the city continued. Some contended an adequate well supply could be developed; others that a well supply would always be inadequate as it had been most of the time since the original waterworks was installed; still others that even though an adequate well supply could be de-

veloped the water would continue to be very hard and of unsuitable mineral quality for domestic as well as for industrial purposes, as in the past, and, therefore, an adequate softer filtered surface-water supply was the best project for the city.

The supply, continuing to be inadequate and of unsatisfactory mineral quality, in 1926 a group of men and their consulting engineers favoring an impounding reservoir on Mackinaw River submitted a project to the city which included the development of such a supply and the wholesaling of the water to the city. Another group and its consulting engineers made a somewhat similar proposition to the city, but the source proposed was an impounding reservoir on Money Creek. A citizen's Water Committee was organized to make a comprehensive study of the development of an adequate satisfactory water supply for Bloomington and Normal, which committee comprised officials of both cities, representatives of the chambers of commerce, civic organizations, etc. This committee held many hearings, reviewed the two projects submitted, studied the question of softening a well-water supply and studied the possibility of other impounding reservoirs.

The work of the Citizen's Committee convinced practically everybody that the softening of the well-water supply was impracticable because the water would still be highly mineralized after it was softened even though it could be made adequate, which was very doubtful. About everyone was agreed that the only suitable sites for an impounding reservoir were either on Mackinaw River or Money Creek, but an agreement as to which was the better could not be reached, and the Citizen's Committee closed its activities by submitting the facts gathered to the city councils of Bloomington and Normal but without recommendations as to impounding reservoir sites. At the close of the period covered by this report, a water company to develop an impounding reservoir had been formed by local persons subscribing stock, and the officials of this Citizen's Water Company had undertaken the task of deciding whether to develop the Mackinaw River or Money Creek projects and then to make plans to develop and finance the project decided upon.

The original distribution system comprised about $3\frac{1}{2}$ miles of mains which were put in by bond issue. Since then additional mains have been laid from time to time by special assessment, and at the close of this historical period practically all the property in the city has access to the public water supply.

The water obtained from the wells has been of varying quality and after drawn from the wells it is subject to contamination in the open storage reservoir. No epidemic has been caused by the public water supply, but the State Department of Health has for the last several years at least regarded it as of doubtful quality, especially because of possible contamination in the reservoir. Analyses have at times shown contamination.

A water-borne epidemic did occur in 1920 when a contaminated industrial supply maintained by the Chicago & Alton railroad entered through a cross connection the piping carrying the city water within the Chicago & Alton railroad yards. Fortunately the consumption within the railroad yards was sufficient to take care of the polluted water that was passing through the cross connection, and thus the polluted industrial supply did not get out into the street main and cause any primary typhoid cases among those not working and drinking water at the railroad shops. This epidemic comprised many hundred cases of diarrhea, about 200 cases of typhoid fever and at least 24 deaths although some of the mortality was returned as due to other causes. This epidemic, in one sense, was the indirect result of the inadequacy and unsuitable mineral quality of the public water supply, because if the public supply had been adequate and suitable for the railroad shops the polluted industrial supply probably would not have been established or at least maintained.

At the close of this historical period the Bloomington supply was being derived from the two groups of glacial drift wells, and storage of the well water until pumping into the mains was furnished by the open 10-million-gallon reservoir and the covered 188,000-gallon reservoir. The water supply was the hardest and one of the most highly mineralized public water supplies in the State, which has tended to keep the consumption low because it is not even satisfactory for general domestic purposes.

SEWERAGE.

Sewers, principally of the combined type, have been installed from year to year in accordance with the immediate demands. Many of the sewers have been built with open joints, resulting in excessive ground-water infiltration. The sewers all drain north and westward into Sugar Creek, there being in 1920 seven such sewers ranging from 15 to 96 inches in diameter. A small section of Bloomington known as the Miller Park district was seweraged on the separate plan and discharges through an Imhoff tank constructed in 1915.

In 1919 the Bloomington and Normal Sanitary District was organized, including all of the corporate area of Normal and most of the city of Bloomington and some adjoining territory. The Miller Park district was not included. An intercepting sewer was constructed to carry the ordinary dry-weather sewage flow and a portion of the storm flow from the area to a point southwest of Bloomington. A sewage-treatment plant designed to serve 54,000 people is under construction, comprising bar screens, grit chambers, pumping station, Imhoff tanks, sludge-drying beds, dosing tanks, sprinkling filters and secondary settling tank. This plant will be placed in operation in the immediate future.

HEALTH CONDITIONS.

What seems to be the very earliest reference concerning health matters among the settlers of Bloomington relates the story of how Dr. John F. Henry, a local physician, took into his own house an eight year old girl who was suffering from smallpox to save her from being exiled by a terrified public. The girl's mother also came down with the disease and shared in the benevolent care of Dr. Henry just as otherwise she would have shared the helpless exile of her daughter, a consummation fraught with the gravest dangers to life itself.



Charles E. Schultz, M. D.
Health Commissioner
1923-1927

Another glimpse at health conditions in and around Bloomington during these early days comes down to us through Dr. Daniel Drake, medical observer, author and traveler, who visited the town in 1844. From Dr. Henry he learned that autumnal fever was both infrequent, relatively and mild in that vicinity. This opinion was shared by a brother practitioner, Dr. Colburn.

These same two physicians described to Dr. Drake an extensive epidemic of erysipelas that occurred during the winter of 1843-44. Strangely enough both doctors stoutly maintained the opinion that this disease was not contagious.

Apparently erysipelas caused no particular alarm, although it swept the community in a rather thorough-going fashion, while smallpox, which could be prevented by vaccination, created such violent fear that a helpless girl and her mother whose only fault was illness, would have been summarily exiled upon the desolate prairie with a sanction of the public that touched upon religious fervor.

Thus we see already in the infant municipality the manifestation of fears and prejudices that will lead Bloomington straight into the "pesthouse" period when smallpox was less welcome than leprosy in the popular imagination while typhoid fever, tuberculosis, scarlet fever, diphtheria and other deadly infections were condoned as unhappy visitations of an angry providence. Accordingly we are not surprised to find a vivid report of a smallpox outbreak that occurred in 1882. Tramps, immigrants and new-comers came under the ban of epidemiological scrutiny at this time and, as usually happened, local officials pinned the blame of starting the epidemic upon a couple of tramps, an immigrant and a family of new comers who happened to be still within the limits of the honeymoon period of their matrimonial experience. The bride and groom escaped the "pesthouse" because of their ad-

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Polymyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1900	340	..	..	..	..	4	..	12	..	..	..	..
1901	333	..	..	..	..	1	..	12	..	..	..	..
1907	425	..	..	..	..	1	..	12	10	..	33	128
1908	395	..	..	..	..	..	..	..	..	..	..	..
1909	399	..	..	..	..	..	..	..	..	..	..	..
1910	425	..	..	..	..	..	..	..	..	..	..	..
1911	408	..	..	..	..	..	..	..	..	..	..	..
1912	445	..	..	..	..	..	..	..	..	..	..	..
1913	415	9	..	..	6	..	4	5	..	..	27	..
1918	527	12	..	..	..	1	..	..	83	..	38	127
1919	467	1	..	..	1	1	..	1	27	..	24	24
1920	460	10	..	..	..	..	6	..	31	..	24	42
1921	430	1	..	..	..	..	..	12	7	..	24	28
1922	412	1	..	1	..	1	1	6	11	..	20	35
1923	403	0	..	..	1	..	..	..	7	..	19	24
1924	406	1	..	..	..	..	..	1	4	..	15	26
1925	434	1	..	1	3	1	12	4	9	..	16	31
1926	432	1	..	..	..	..	..	1	11	..	16	24

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Polymyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1900	14.5	..	..	..	..	17.2	..	8.6	..	..	..	..
1901	14.2	..	..	..	..	17.0	..	8.5	..	..	..	..
1907	16.9	31.9	..	..	8.0	4.0	12.0	8.0	14.2	..	139.0	111.1
1908	15.6	..	..	..	..	..	..	..	..	..	..	..
1909	16.4	..	..	..	..	..	..	..	..	..	..	..
1910	16.4	..	..	..	..	..	..	..	..	..	..	..
1911	15.6	..	..	..	..	..	..	..	..	..	..	..
1912	16.8	..	..	..	..	..	..	..	..	..	..	..
1913	15.6	33.7	..	..	22.5	..	15.0	18.7	..	..	101.1	..
1918	18.6	7.1	..	..	..	3.5	..	17.8	296.4	..	135.7	203.2
1919	14.2	3.1	..	..	3.4	3.4	..	3.1	91.1	..	81.9	83.9
1920	16.0	34.1	..	..	..	..	20.6	6.8	106.8	..	82.0	144.8
1921	14.8	3.4	..	..	17.2	3.4	3.4	10.3	24.0	..	82.3	96.1
1922	14.0	3.1	..	3.1	..	..	..	20.4	37.4	..	68.0	118.9
1923	13.6	..	..	..	3.3	..	..	3.3	25.3	..	63.9	80.8
1924	15.5	3.3	..	..	..	..	..	..	13.2	..	50.0	86.6
1925	14.3	3.3	..	3.5	9.8	3.3	6.6	13.1	29.3	..	52.5	101.9
1926	14.0	..	..	..	..	..	16.0	3.2	35.2	..	52.1	78.1

Note. The rate from All Causes is per 1,000 population, all others per 100,000 population.

vanced convalescence but the unhappy vagabonds paid for their indiscretion by a solitary residence in that isolated institution which probably would have welcomed a thief or burglar as an honored guest.

From the date of that experience down to the present time Bloomington has elected to treat smallpox as an emergency matter rather than as a constant danger that could be averted through the practice of systematic vaccination during quiet years. Consequently the infection has visited the city from time to time, now mild and inconsequential, now loathsome and costly. About 1900 an epidemic cost the municipality about \$400.00 for specific control measures. Another outbreak smouldered in the community during 1921 and 1922. Again in 1925 an epidemic of some 109 cases embarrassed the commercial and business interests of the city by creating a disturbance on the very eve of the holiday shopping season. This led to the vigorous application of control measures, wholesale vaccination, and the happy suppression of the outbreak before irreparable damage had been done to holiday merchandizing. Ordinarily these periodic epidemics result in such general vaccination that smallpox is of no consequence again for several years.

Toward the end of the nineteenth century, in common with forward looking citizens all over the country, the people in Bloomington began to regard scarlet fever, diphtheria, typhoid fever and other infections as communicable from person to person and therefore subject to prevention by quarantine. Accordingly the practice of case notification and the placarding of infected premises came into vogue about that time. More and more frequently do reports of outbreaks appear in the records and doubtless they are more and more complete.

In 1898, for example, 18 cases of scarlet fever and 15 cases of diphtheria were recorded with a notation that all cases had been quarantined and the premises fumigated after termination of the illness. Again, in 1900 seven cases of diphtheria and 20 of scarlet fever were reported. This is about the way these diseases behaved from year to year with but few exceptions, the mortality tending downward with the wider use of antitoxin, the constantly growing improvement in the quality of medical practice and the increasing efficiency of local health service. One outbreak of diphtheria in 1925 is noteworthy because of its extensive proportions, involving 374 cases. It was fortunately of a mild character and the efficiency with which physicians and health officials handled the situation saved all but one of the patients. In an orphanage 14 out of 61 people got the disease but none were lost although the institution went through the inconvenience of a continuous quarantine for three months.

Bloomington, like so many other communities of the State, has had a long and unpleasant experience with typhoid fever but mortality statistics are too meagre to furnish any clear notion of whether the disease has been relatively more severe there than elsewhere. It appears that the city escaped with a loss of from two or three to ten or twelve lives a year without going through any particularly widespread or disastrous outbreak until 1920. In that year a valve that separated the safe public water supply from a contaminated private supply in the Chicago and Alton railway shops sprang a leak and because the water pressure on the private supply side was greater, pollution was driven into the drinking water that quenched the thirst of hundreds of workmen. An epidemic involving about 1,000 cases of severe diarrhea and some 200 or 300 cases of typhoid fever resulted. Public resentment ran high, expressing itself in a belligerent mob attitude that threatened the life of the local health officer. This was a manifestation of radical change in popular sentiment concerning typhoid fever from that which had prevailed twenty-five years earlier. Subsequent to 1920 Bloomington went through one year, 1923, without a fatality from typhoid but lost one person to that infection in each of the others down through 1926.

Influenza struck Bloomington with moderate severity during the pandemic of 1918. The mortality rate per 100,000 population from influenza proper was 296 and that from pneumonia 203, the latter being a trifle more than twice the ordinary per annum. One-half dozen of the other communities embraced in this volume escaped with losses as light as those experienced in Bloomington. Mortality rates from influenza and pneumonia higher than the usual prevailed during the next two years but this was common throughout the State.

Tuberculosis appears to have been the captain of the forces of mortality during the earlier years in Bloomington, ordinarily accounting for more fatalities than any other disease. In 1907 tuberculosis was credited with 35 out of 425 deaths from all causes, a matter of eight per cent. From that time down to 1920 the mortality vacillated between 20 and 40 but subsequently the death rate has declined with splendid continuity. For the three years ended with 1926 the average annual mortality rate was less than 40 per cent of what it was in 1918 while the number of deaths, 47, in three years combined was scarcely 25 per cent higher than that, 38, for 1918 alone. The community appears to be well on the road toward the complete eradication of tuberculosis as a particularly dangerous health hazard.

The general mortality rate in Bloomington has persistently been somewhat higher than that for the State and higher than those for some of the other municipalities. It must be remembered, however, that Bloomington is an old residential community in the center of an agricultural district and that the age distribution of the population is different from that in many of

the younger places and those devoted more to industries which attract young people. A population with a considerable group of elderly people experiences a higher mortality than one with few old people although health conditions may be unusually good.

Table 3.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1918			38	
1919			33	
1920	448	15.5	36	80.4
1921	495	17.0	45	90.9
1922	520	18.2	45	84.9
1923	578	19.5	40	69.2
1924	545	18.1	40	73.4
1925	597	19.6	48	80.4
1926	553	18.0	42	75.9

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

Table 4.
CASES OF CERTAIN DISEASES REPORTED.

	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	7*	17	2	6	3	8	5	7
Smallpox	139	105		1	4	140	2	11
Measles	522	751	7	224	428	771	84	383
Scarlet Fever	181	135	75	99	62	64	46	38
Whooping Cough		48	135	39	68	155	168	139
Diphtheria	18	89	38	20	24	34	10	7
Influenza			31	3	2	3	8	4
Polionymyelitis	2	1		1		4		12
Tuberculosis**	160	111	103	131	93	89	202	199
Pneumonia**			10	38	40	72	53	55
Syphilis		18			13	52	165	58
Gonorrhea		95		35	26	43	58	35

*An outbreak of 130-150 cases of intestinal disturbance which it was possible was typhoid fever, was reported to the city health department.

**All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

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Cairo

Located on the most southern point of land and the lowest above sea level in the State, Cairo faces the Ohio River where her front yard is lined with docks that furnish anchorage for river vessels while her back yard is walled off from the Mississippi by a levee upon which a railroad enters the city. Cairo was incorporated as a city on January 9, 1818, several months before Illinois was admitted to the Union, and was chartered as a city second only to Shawneetown among municipalities within what are now the boundaries of Illinois.

To the south of the community a few acres of swampy marsh land sink down into the waters of the two great rivers. To the north a considerable acreage of reclaimed land protected from Cash Creek and the Ohio River by levees, lends itself splendidly to the cultivation of cotton.

Where Cairo got its name is a matter of some dispute. One theory is that the community was christened for Louis F. Cairo, a man who settled there in 1780 and became the father of the first white person born in that locality. M. B. Harrell, a local historian, contends that the name was taken from the ancient and widely famed city of the Nile delta. At any rate, that whole vicinity is vulgarly known as "Egypt", a term that has gradually come to embrace the whole southern end of Illinois.

Sharing whatever advantages may have accrued from being near the center of population of the State, during the early days, Cairo likewise suffered later, in common with neighboring communities, from a shift in population density that carried with it the great industrial and agricultural interests of the State to the north, centering in Chicago. From 1850 to 1870 Cairo experienced the greatest period of growth in her history. During that time the population increased from some 150 souls to about 10,000. Subsequently, growth has been exceedingly slow and the rate has declined in recent years. For the census years of 1900, 1910 and 1920, the number of inhabitants was 12,566, 14,548 and 15,203 respectively. Of the 1920 population 9,779 were native born whites, 411 foreign born whites and 5,000 negroes. Few, if any, other places in Illinois have such a heavy negro population. There were 3,280 or about 21½ per cent in the age group of 45 years or more. This suggests a relatively short average life span since Cairo is an old community and the percentage of people 45 years of age and over is scarcely greater than that for the State at large.

HEALTH MACHINERY.

Frightened into action by an epidemic of smallpox, Cairo passed an ordinance creating a board of health in 1857. The board membership consisted of the mayor and a committee of aldermen. A little later, provision was made for the employment of a health officer, whose qualifications and duties were those of a sanitary policeman, but this office was abolished in 1869 and the duties were transferred to a policeman.

A revival of interest in health matters took place in 1866 when rumors of an impending outbreak of cholera alarmed the public. Again a board of health was organized, this time composed of three physicians headed by Dr. Horace Wardner, and a health officer in the person of Dr. James Summerwell was appointed. With the subsidence of the outbreak, which arrived on anticipated schedule time, and the return of tranquility in public thought the board of health fell again into a more or less dormant state only to be aroused again in 1869 by another visitation of the smallpox.

These experiences together with the increase in river traffic from the south which opened the community to danger from imported diseases prompted the city to adopt what might be called a sanitary code in 1871. The text of this ordinance or code reads as follows:

"If any person in charge of a boat shall permit any person suffering with a communicable disease to land or come ashore in Cairo or within five miles of the city in Illinois without a permit he shall pay a fine of \$50 to \$500. Such permit shall be passed upon by a physician of respect and standing of city of Cairo. Any captain or master of a boat concealing a passenger subject to same fine.

"Any person having a communicable disease leaving their premises or place of abode without permit shall be subject to a fine of from \$10 to \$100. The city marshal shall post quarantine signs on houses during illness of any person or pay a similar fine.

"The mayor of city and one member of the city council from each ward shall constitute a board of health which shall exercise general supervision of the public health of the city and they may report to the city council from time to time such sanitary rules as may be necessary to promote health and prevent contagious disease. It shall be the duty of the householder or occupant of any house to report any communicable disease to the mayor or city marshal or be liable to a fine of \$25 to \$100. Any medical doctor who shall have any patient within the city of Cairo shall forthwith make report to the mayor or city marshal of all communicable diseases subject to a fine of \$20.

"It is lawful for the board of health to establish a hospital for contagious diseases and to remove patients thereto when necessary in their opinion. Approved Nov. 25, 1871, John M. Lansden, Mayor, M. J. Hawley, City Clerk."

It may be observed from the ordinance that another change was made in the provisions governing membership on the board and that it again became lay in character. For the next year or two we find the board exercising its authority in a number of ways, employing physicians to vaccinate against smallpox all non-immune citizens, hiring special policemen to execute quarantine regulations, constructing a "pest house" for isolating the unfortunate victims of smallpox and participating in many other activities calculated to control diseases, especially smallpox.

From 1871 on there seems to have been no further change in the legal provisions for maintaining an official public health organization until 1913 when the commission form of government was adopted. During that period there were, however, many and at times violent changes in the character, size and activities of the board of health and its employees. The fact that Cairo was an important transportation point in those days, receiving and passing on heavy tonnage by rail and water, brought constantly to the city the hazard of smallpox and this disease was an almost perpetual source of annoyance and even alarm to the inhabitants. Then there was the matter of yellow fever which actually invaded the city once and caused no end of anxiety and apprehension among the natives whenever it prevailed in the South. These factors made busy seasons for the health officials who sometimes dropped out of the public picture for a few months only to come back into action as the most important agency in the city. At one time there were no less than eight mounted guards besides a staff of medical and sanitary inspectors supplemented by medical and sanitary officers of the State Board of Health at work while the mayor closed his business in order to devote his full time to matters of public health. Sometimes appropriations amounted to several thousand dollars and again they fell to a negligible sum. Sometimes a health officer was employed and clothed with arbitrary powers and again there were times when nobody was employed in health work. Sometimes the board of health was made up of physicians and at other times its membership was entirely lay. Now a doctor would serve as health officer and again a sanitary inspector would fill the job.

The barometer that governed health activities was the presence in the city of some dreaded disease—smallpox, yellow fever or cholera—or the fear that one of these diseases might be introduced from areas where it did prevail and with which Cairo maintained commercial communications. This continued to be the case until about 1900 when smallpox, yellow fever and cholera began rapidly to lose their place as alarming diseases and ceased to

give health officials more than casual interest. The men who served Cairo as health officers during this period include the following:

Dr. James Summerwell, 1866—during cholera epidemic

W. W. Wooten—April 22, 1873, also 1879

William Brown

Dr. W. R. Smith, medical quarantine officer—Aug. 1880

January, 1885—board of health employed five assistant health officers

S. M. Orr, 1903, 1905, 1907

George E. Atcher, 1897-1899

Dr. F. J. Fitzgerald, 1911-1912

In 1913 Cairo adopted the commission form of government and that automatically dissolved the board of health, transferring its responsibilities and duties to the commissioner of public health and safety. From that date forward to the present time no further administrative change has been made. A medical health officer on a part time basis has been in office continually during that period while several ordinances relating to sanitation, milk, contagious disease and the like have been adopted. Regular appropriations, ranging from \$5,000 to \$9,000 per year have been made to the health department but these sums included funds for garbage collection and disposal. Charles Fentcher was the first commissioner of public health and safety and the physicians who have filled the position of health officer include:

Dr. W. C. Clark, 1913 to May, 1921

Dr. B. S. Hutcheson, 1921 to May 1927

Dr. Charles Webber, May 1927 to date.



B. S. Hutcheson, M.D.
Health Officer, 1921-1927

Other public health service facilities that have developed in the city include a venereal disease clinic established in 1920, financed jointly by the State and the city and operated by the local medical society; a school nursing service established in 1917 and financed by the school board; a county tuberculosis association organized in 1918; a general clinic for children supported by the Kiwanis Club and a clinic for crippled children maintained by the Rotarians through the Illinois Society for Crippled Children.

WATER SUPPLY.

The public water supply was first installed by the Cairo Water Company in 1886. The supply was obtained from the Ohio River and provision was made for filtering the water. The plant was improved from time to time until the present purification plant was installed about 1903.

The original franchise expired in 1915 and a new one was not granted until 1925. During that period few improvements were made. Since 1925 plans have been made to improve and enlarge the plant which will practically amount to the construction of a new purification plant.

Analyses of samples of water have been made in the laboratory of the State Health Department since 1917 and with few exceptions, these indicate that the water has been safe, although the supply has until recently been classed as doubtful because of cross connections at the waterworks and in industrial plants which cross-connections have now been removed.

SEWERAGE.

The city is served by a combined system of sewers discharging into Ohio River. Because of the large dilution furnished by the Ohio and Mississippi Rivers which join at Cairo no treatment of the sewage is necessary.

HEALTH CONDITIONS.

Nowhere in Illinois have health conditions created greater public excitement, alarm and agitation than in Cairo. Nowhere have more drastic and arbitrary measures been employed to deal with emergency situations. Nowhere have these things been more fully justified by prevailing circumstances.

Subject to inundation and surrounded by swampy territory, Cairo is located in the midst of an area ideal for mosquito breeding. This condition introduced the malaria problem at the time when the very first settlers arrived and was later responsible for a harrowing experience with yellow fever. As early as 1700 Father Jacques Gravier observed that two members of his exploring party came down with "tertian fever" while stopping on the delta at the junction of the Ohio and Mississippi Rivers. Doubtless from that time onward the travellers and settlers who stopped or remained at Cairo was harassed by malarial infections that soon became endemic in that part of the State and remain so to this day. Records on that matter are exceedingly meagre, however, for the reason, perhaps, that malaria was too common a subject to inspire written comment. It was more or less like the weather—a thing to be talked and joked about but never reduced to historical manuscript.

During the middle years of the nineteenth century, Cairo was one of the most important transportation points in the Mississippi Valley. River traffic from the Gulf and intermediate points found Cairo a convenient terminal and transfer station. Railroad facilities were inadequate to handle the freight business and the Mississippi steamboat interests were at the peak of their prosperity. Both passenger and freight service used Cairo as a terminal and transfer point for destinations north and east. Thus the inhabitants of this thriving little port were open to all the hazards of health

that constant contact with the travelling public and with steamboat and railroad crews could provide.

We are not surprised, therefore, to learn that the cholera epidemic that swept the country during 1848-1852 spared not its fatal fury upon the citizens of Cairo. Commercial activities were practically paralyzed while the outbreak prevailed. Even the local newspaper, the Cairo Delta, suspended publication although a half sheet edition, carrying President Taylor's proclamation exhorting the public to pray for relief from the awful cholera plague, was printed and circulated. Just how severe mortality was in Cairo is a matter for conjecture, however, since no statistics relating thereto have been preserved.

Another wave of cholera swept over our country during the sixties and a mild epidemic frightened the people in Cairo and vicinity into strenuous preventive efforts. This experience was followed in 1873 by another outbreak of the disease which carried off a number of persons and resulted in the usual feverish sanitary activities. There is no evidence that cholera

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1918	396	4	6	...	...	...	12	...	76	...	62	44
1919	299	6	3	...	...	...	1	3	19	...	55	12
1920	321	6	1	...	3	...	1	1	19	...	52	28
1921	235	1	4	...	...	...	1	1	...	...	37	15
1922	262	3	...	...	...	...	2	...	35	...	31	24
1923	262	3	...	...	4	...	2	...	17	...	32	16
1924	275	4	1	...	1	1	3	1	11	...	29	23
1925	301	6	3	...	1	...	...	1	6	...	31	19
1926	297	4	1	...	...	...	12	1	11	...	25	29

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1918	26.3	24.6	37.0	...	...	...	12.3	...	169.1	...	382.7	271.6
1919	19.7	40.0	20.0	...	...	...	6.6	20.0	126.6	...	386.6	80.0
1920	21.1	39.3	6.5	...	19.6	...	6.1	6.5	124.6	...	341.2	183.7
1921	15.4	6.5	26.1	...	...	...	6.5	6.5	32.7	...	241.8	98.0
1922	17.0	19.5	...	...	...	...	13.0	...	32.0	...	201.7	156.1
1923	17.6	19.4	...	...	25.0	...	12.9	...	119.3	...	207.7	103.8
1924	17.7	25.7	6.4	...	6.4	19.2	6.4	6.4	70.9	...	187.0	187.0
1925	19.3	38.5	19.2	...	6.4	...	...	...	38.5	...	199.1	83.3
1926	19.6	25.6	6.4	...	...	...	12.8	6.4	70.4	...	160.2	185.2

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

ever again returned to plague and terrorize the citizens of Cairo but a smouldering fear of it, ready to flare up into frank alarm at the slightest rumor, never ceased to repose in the public mind until the generation which had witnessed the disastrous outbreaks had passed on beyond the vale of mortal existence.

Smallpox was another prolific source of public grief in Cairo. It is probable that no other city in the Middle West went through a more exasperating experience with that disease. Year after year the infection was brought to the gates of the community by steamboat and railway crews, by passengers en route to more distant terminals and by new or temporary settlers. Of what occurred during preceding years there is no authentic record but in 1857 an epidemic burst upon the community with fury enough to send local officials scurrying away to the task of organizing and putting into operation a board of health. How fatal or disastrous the outbreak proved to be can only be surmised. It is probable that wholesale vaccination was resorted to and this protected the permanent population, so far as that applied in those early days, for the time being. Rapid growth, an extraordinary temporary character of residents and the rising generation soon built up a heavy unvaccinated element, however, so that in 1869 the disease returned in a virulent character and the scenes of 1857 were again enacted although apparently less extensive and complete.

At any rate we find malignant smallpox again present in 1872 and the city officials, evidently at their wits end to control the disease and calm the public alarm, built a "pest house", employed a special corps of police to maintain rigid quarantine of premises where patients were housed, ordered the disinfection of houses where patients had been and the burning of clothes and bedding, and passed, withal, an ordinance, requiring all susceptible persons to be vaccinated. A year later when the epidemic had subsided a report showed that 71 patients had been sent to the "pest house", 29 of whom died; that 55 were non-residents and 56 colored; that 75 patients had been quarantined in their homes and that 23 of these died; that operating the "pest house" had cost \$2,508.77 and that the city had spent \$1,034.00 in other ways incidental to handling the outbreak. No wonder the citizens were sensitive about epidemics and felt strongly concerning quarantine and immigrant inspection!

Even that experience did not end their troubles with smallpox. Three years later, 1875, a new and malignant epidemic broke out. Two pupils at Loretta Academy died. Judge Baker moved his court into the fire engine house to escape exposure from prisoners among whom the disease had started. What to do again agitated the unhappy minds of mayor and aldermen. Once more they tried everything. An ordinance forbidding anyone to house a patient sick of contagious disease without a permit so to do

was adopted, arrangements were made with St. Mary's Hospital to care for the sick, general vaccination was ordered, the city paying the bills where necessary, and a full time health officer in the person of William Brown was employed. What more could they do? Surely that was enough had the population been stable but the constant shifting and the coming and going made sporadic control measures effective for only temporary periods and soon the disease was up to its mischief making again. Another outbreak occurred in the early eighties, a rather severe epidemic in 1885 and recurrent epidemics more or less severe from year to year down to the present time. Never has the municipality succeeded in ridding itself of this loathsome disease. In 1927 there were 47 cases reported.

But yellow fever was the disease that overshadowed every other human affliction in the public mind. A kind of morbid romance enshrouded the disease. It not only breathed fear, alarm and dread into the hearts of men but it drove them from their homes. Citizens of Cairo lived in constant

Table 3.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1920	233	15.3	25	167.3
1921	247	16.1	26	165.3
1922	220	14.9	34	148.5
1923	210	14.2	34	155.3
1924	262	16.9	37	141.2
1925	225	14.4	29	128.9
1926	251	16.0	29	115.5

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

Table 4.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	2			2		6	10	7	16	30	8	27
Malaria		19		37			5			3		2
Smallpox		35	8	6		41		2	18	88	1	47
Measles	45	665	34	21		1	2	63	4	1	31	17
Scarlet Fever	3	66	5	32		1	5	10	14	4	4	11
Whoop. Cough						6	3	2	4	2	17	8
Diphtheria	9	12	26	35		24	24	15	21	13	8	11
Influenza			1443	64			5	13	7	4	12	2
Polionymelitis												1
Meningitis			2				1	1	1			
Tuberculosis*	16					3	36	35	16	25	36	34
Pneumonia*			242	80		2	15	9	24	25	52	18
Syphilis	42		4			181			45	84	85	43
Gonorrhea			5			56			13	14	17	2
Chancroid						2						

*All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. By comparing the figures in this table with those showing the number of deaths from specific causes it is manifest the notation is even now far from complete in Cairo. This is particularly noticeable in the case of malaria and tuberculosis.

No figures for 1920 available.

dread of yellow fever. Outbreaks that often grew into harrowing epidemics occurred during the late summer and early autumn almost annually in the lower valley. Communications were very close between Cairo and points as far south as New Orleans, the very heart of the yellow fever area.

In 1878 the thing that Cairo greatly feared actually happened. Yellow fever came to town. Death and disaster stalked through the empty streets. Everybody who could deserted the city. Over 100 cases and some 62 deaths were enough to justify the public panic which prevailed. This outbreak, one of the very few if not the only one that ever occurred in Illinois, is described at length in volume I of this history, beginning on page 327.

Other health problems and experiences have cast their lugubrious shadows across the public life of Cairo but those of cholera, smallpox and yellow fever have submerged them into relative insignificance so far as thought and action were concerned. At the same time some of the other diseases cost the people more dearly in health and life than did these three more notorious ones. This is manifested in the general mortality rate which rarely descends below 17 per 1,000 people and frequently rises to 20 or more. Tuberculosis has always been widely prevalent there, causing a mortality rate considerably in excess of what prevails in most communities of Illinois. It was 160.2 per 100,000 in 1926 and 382.7 in 1918. Typhoid fever, likewise, has been endemic in Cairo throughout the years, rarely falling in prevalence to a point even remotely comparable with that in the State at large and that found in municipalities generally. The influenza epidemic of 1918 hit Cairo hard, causing one of the highest mortality rates registered anywhere in the State. Other diseases such as diphtheria, scarlet fever, pneumonia and the like have not overlooked the place but have varied in intensity from time to time.

The fact that Cairo has a heavy negro population explains some of the unfavorable features of health conditions here. It has a bad influence over the infant mortality rate, always high, and it adds a marked increase to the death rate from tuberculosis. In 1924, for example, the 5,000 negroes lost 118 of their number by death, 17 of which were due to tuberculosis, while the 10,000 white people lost only 157 by death and only 12 of these were due to tuberculosis. Even then the mortality rates among the white population appear to be somewhat more unfavorable than that generally found in Illinois. This, however, might be expected in view of the fact that Cairo has grown slowly in recent years, thus causing an age distribution among the whites that would result in a higher death rate than would ordinarily be found in a rapidly growing city of reasonable healthfulness.

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- Dr. Thomas H. Leonard's personal interviews with various citizens of Cairo.

Carbondale

Lying close to the foot of the Ozarks, Carbondale shares with Murphysboro, the county seat, the municipal honors of Jackson County. The railroad shops of the Illinois Central and a State teachers' training college are two of the principal factors in the industrial, commercial and social life of the place. The density of the population is moderate, about 65 per square mile, being less than some of the neighboring coal mining counties and considerably more than the strictly agricultural regions in that vicinity. Coal mining is of no consequence in the immediate vicinity of Carbondale although there are 26 active mines in Jackson County.

Carbondale itself is a small community with about 7,000 inhabitants. It grew up around the railroad station which was located there in 1852 because of the easy access to coal and it owes its name to the terrane which suggested a dale on the one hand and was underlaid with coal on the other.

There is nothing particularly eventful about the health history of either Carbondale or the county except the prevalence of malaria which was responsible for a vigorous anti-mosquito project that started in 1922 and the occurrence of a devastating cyclone in 1925 which resulted in the establishment there of a State public health laboratory. About 1885 the municipality adopted an ordinance creating a board of health and this continued in force until 1911 when the commission form of government replaced the aldermanic, automatically dissolving the board of health and transferring its duties and responsibilities to the commissioner of public health and safety.

Health officers have always been employed on a part time basis. At first a physician was chosen to act in this capacity but later, upon the death of Dr. H. E. Lightfoot while holding the office in 1917, his wife was appointed to fill the place and she was later succeeded by another non-professional woman. A nurse to work in the public schools of the county was employed in 1919, being paid by the county board and the tuberculosis association and later by the Red Cross only and she spends some of her time in Carbondale.

With the exceptions mentioned above, there has been little of an unusual character in the health conditions which have prevailed at Carbondale. Available information centers around outbreaks of smallpox that alarmed the public from time to time. Occasionally somebody has started the rumor that trachoma is rampant there and that a general epidemic of blindness is consequently imminent but careful investigations have never substantiated these alleged facts. Typhoid fever has been endemic for years, providing

one of the most expensive health problems of the community and county. Tuberculosis has run a little higher than for the State but that is perhaps due to the presence of a considerable negro population. Other diseases have come and gone in epidemic cycles of more or less ordinary experience.

Due to the unusual nature of the malaria-mosquito eradication project and the destructive character of the cyclone which led to a concentration of a considerable amount of public health work in the area, the story of these events will be delineated in some detail. An account of the development of a public water supply and sewage disposal system is also included in what follows.

MOSQUITO CONTROL.

In November 1905, Dr. H. C. Mitchell of Carbondale, read a paper before the Southern Illinois Medical Society at Mt. Vernon, entitled "Malaria and Mosquito Control in Illinois".



H. C. Mitchell, M.D.

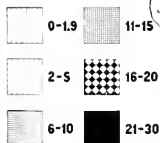
In 1916 attention was called by the State Department of Public Health to the heavy economic losses from malaria in southern Illinois. In 1917, the Southern Illinois State Medical Society, after reflecting upon a paper presented by Dr. J. W. Barrow of Carbondale, adopted a resolution asking that studies of malaria and mosquitoes in southern Illinois be made. In 1918, 1919 and 1920 investigations were carried on by Entomologist S. C. Chandler of the State Natural History Survey and the findings were published.

Simultaneously and following the southern Illinois malarial investigations, the question of systematic malaria-mosquito eradication was presented on several different occasions, as opportunity offered, by the division of sanitary engineering of the State Department of Public Health to the city officials and interested civic organizations and citizens at Carbondale. It was considered that Carbondale presented, for various reasons, the best place to demonstrate what could be done in the way of mosquito eradication and that other cities would benefit by such work.

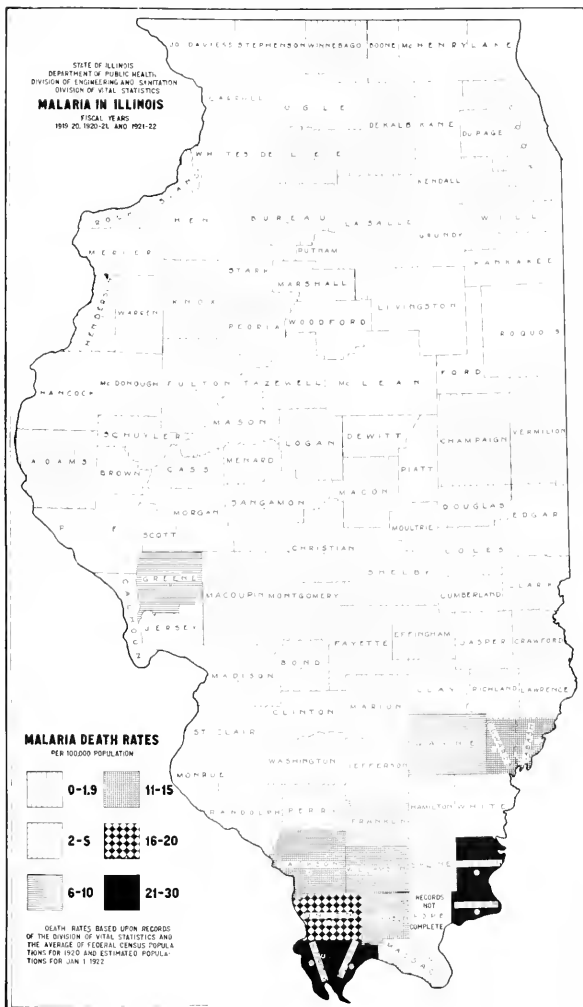
As a result the Lion's Club of Carbondale went on record on January 27, 1922, guaranteeing to raise a fund of \$2,000 in order to carry on systematic malaria-mosquito control during 1922. The International Health Board had previously tentatively agreed to furnish \$1,000 and the Illinois Central Railroad had given favorable consideration to the project of draining many acres of swamp land adjoining the city on the north. The State Department of Public Health had agreed to provide the services of a sani-

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENGINEERING AND SANITATION
DIVISION OF VITAL STATISTICS
MALARIA IN ILLINOIS
FISCAL YEARS
1919-20, 1920-21, AND 1921-22

MALARIA DEATH RATES
PER 100,000 POPULATION



DEATH RATES BASED UPON RECORDS
OF THE DIVISION OF VITAL STATISTICS AND
THE AVERAGE OF FEDERAL CENSUS POPULA-
TIONS FOR 1920 AND ESTIMATED POPULA-
TIONS FOR JAN 1 1922



tary engineer to supervise the work, and the assistance of the State Natural History Survey and the United States Public Health Service was also assured.

Proposed and recommended by the State Department of Public Health, sponsored by the Lion's Club of Carbondale and receiving financial assistance from that club, the International Health Board, and the Illinois Central Railroad, and directed by the sanitary engineering division of the State Department of Public Health, Carbondale carried on systematic mosquito-control work for the season of 1922, and for the first time in the history of the city enjoyed practically complete relief from that pestiferous insect. The results from the standpoint of reduction in malaria cases were equally gratifying. Vital statistics and house-to-house canvasses had shown that prior to 1922 the city suffered an average of over 250 cases of malaria a year (267 during 1921). Following the close of the mosquito-control work for 1922 it was found by a house-to-house canvass that only 19 cases of malaria had occurred during that year in the entire city. It is quite probable that some of those few cases were recurrent or may have received their infections elsewhere.

The results were so satisfactory to the city officials and civic organizations that had participated in the work, and the economic saving to the community was so apparent that arrangements were made to carry on similar control work in 1923. During 1923 the city was again practically free from mosquitoes and only 11 cases of malaria were found by a house-to-house canvass.

The work at Carbondale has comprised major and minor drainage, stream clearing, utilization of top minnows, oiling control of rain barrels, open wells and cisterns, house inspections, paris-green treatment, and educational measures. The control work in Carbondale, by reason of its tremendous success has been repeated annually with profitable results. 1927 marked the sixth year of continuous malaria mosquito control in Carbondale.

The 1927 legislature passed an act permitting the creation of "mosquito-abatement districts" and Carbondale in the fall of 1927 voted by a 10 to 1 majority to create such a district. In the future malaria-mosquito control in Carbondale will be financed by funds collected by tax levy against the properties within the district.

In addition to the Carbondale malaria-control project, campaigns were conducted at Murphysboro and Gorham following the tornado of 1925. These projects were financed jointly by the State of Illinois and International Health Board, and resulted in reduction of 220 cases of malaria at Murphysboro and 33 cases in Gorham, according to estimates based upon cases prevailing in those two cities prior to the introduction of control work.

Table 1.
MORTALITY FROM CERTAIN CAUSES IN CARBONDALE.
FROM LOCAL RECORDS.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1902	43	2	...	...	...	...	...	...	...	...	5	5
1903	29	1	...	3	...	...	...	...	...	...	12	5
1904	64	...	...	...	12	3	...	...	...	...	15	...
1905	60	3	1	...	...	...	...	...	...	...	13	5
1906	51	3	...	...	...	...	1	...	...	...	5	5
1907	63	12	...	...	...	1	...	...	...	...	9	6
1908	60	2	...	...	1	...	...	...	...	...	6	4
Records destroyed from 1909-1916, inclusive												
1917	57	12	...	...	...	...	1	...	...	...	12	10
1918	103	...	...	...	...	...	1	...	5	...	8	32
1919	54	1	...	...	...	...	...	...	...	...	9	...
1920	61	2	...	...	...	...	1	...	...	...	8	7
1921	...	...	...	...	...	...	1	...	1	...	...	...
1922	125	13	...	...	...	...	...	1	6	...	11	8
1923	127	1	...	...	...	...	...	...	2	...	11	13
1924	139	2	1	...	...	1	...	1	2	...	10	16
1925	148	2	...	...	...	...	...	...	...	...	6	20
1926	114	12	...	...	...	1	...	...	6	...	10	14

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES IN CARBONDALE.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1902	11.5	53.5	...	...	...	...	...	...	...	...	134.8	133.8
1903	7.3	25.3	...	76.0	...	...	...	...	...	...	50.6	126.7
1904	15.4	...	...	...	48.1	72.2	...	...	...	...	361.0	120.3
1905	13.7	68.7	22.9	...	...	...	45.8	...	...	...	297.9	114.6
1906	11.1	65.6	...	...	...	...	21.8	...	...	...	174.9	109.3
1907	13.1	41.8	...	...	...	20.3	...	...	...	...	188.2	125.4
1908	12.0	100.2	40.0	...	20.6	...	...	...	...	...	120.2	80.0
Records destroyed from 1909-1916, inclusive												
1917	9.4	33.3	...	...	...	...	16.6	...	...	...	199.8	166.5
1918	16.9	...	...	...	...	...	16.4	...	82.0	...	131.3	525.3
1919	8.7	16.1	...	...	...	...	...	...	...	...	145.7	129.5
1920	9.7	31.9	...	...	...	...	15.9	15.9	15.9	...	105.3	105.3
1921	...	...	...	...	...	...	...	...	...	...	...	...
1922	15.5	42.0	...	...	...	...	...	11.0	84.0	...	151.1	112.1
1923	16.7	15.2	...	...	...	...	...	...	26.4	...	145.5	174.7
1924	17.3	24.9	12.4	...	...	12.4	...	12.4	24.9	...	124.0	199.9
1925	17.5	23.7	...	...	...	...	...	...	...	...	71.1	237.0
1926	12.8	22.5	...	...	...	11.2	...	...	67.6	...	112.7	157.8

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

Recapitulating, the combined expenditures for malaria and mosquito control in Jackson County during 1922-1927 inclusive have been \$12,150, exclusive of the supervisory service of a State sanitary engineer. The expenditure of this sum of money has resulted directly in the prevention of 1,273 cases of malaria according to what appears to be reasonable estimates. If an economic loss of \$100 per case is assumed, the return upon the investment for the county has been \$115,150 or an average of \$19,190 per year.

STORM DISASTER BRINGS LABORATORY.

The cyclonic storm that spent its wrath mainly in Jackson County on March 18th, 1925, was one of the most devastating weather phenomena that ever occurred in Illinois. Homes, barns, school houses, store buildings, automobiles, everything were swept before it, leaving ruin, death and destruction in its path. The death toll reached 850. About 3,000 persons were more or less severely wounded. Twenty thousand were made homeless. The wreckage played havoc with water supply and sewage disposal systems both public and private.

These conditions introduced a very grave public health situation as well as emergency relief problems. With temporary living quarters necessary for the comfort of those made homeless, and with all ordinary means of handling food supplies, securing water and disposing of wastes completely disorganized a condition favorable to disastrous epidemic outbreaks was created. Not only so but the rehabilitation of the homeless presented health problems requiring for solution considerable time and professional skill.

For these reasons the State Department of Public Health promptly joined forces with the relief agencies that established headquarters in Carbondale on the morning following the storm and participated in the relief work, taking particular notice of sanitary and public health conditions and utilizing every possible resource to prevent epidemic outbreaks. Among other things the department established a laboratory for making all the tests ordinarily performed in public health laboratories.

The laboratory proved to be so beneficial to the local medical profession and indirectly to the public that a strong demand for its permanent location there was manifested. Accordingly, arrangements were made for maintaining in Carbondale, in quarters supplied by the Holden Hospital, a branch of the State diagnostic laboratory. A full-time technician is assigned for duty there and the laboratory serves all of southern Illinois, offering facilities for doing all tests ordinarily done in a public health laboratory. The report for

the month of September 1927, given below, suggests the character and volume of the work done at the Carbondale laboratory.

	Positive	Negative	Doubtful	Total
Diphtheria	3	50		73
Tuberculosis	1	15		16
Gonorrhea	5	12		17
Widals (typhoid)	12	78	7	97
Widals (paratyphoid)	7	86	4	97
Kahns	55	245	6	336
Malaria		10		10
Rabies	6	2		8
Typhoid cultures		28		28
Miscellaneous		9		9
				691
				Daily average 23 plus

Urine	38
Miscellaneous blood counts	2
Complete blood count	1
X Ray examinations	7

Containers sent out:

Wassermann	276
Microslides	18
Diphtheria	48
Widals	126
Sputum	18
Fecals	20

The list of health officers who have served Carbondale include:

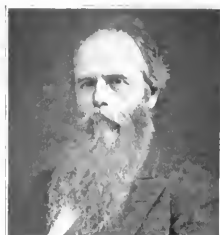
1891	Dr. A. M. Lee
1891-1893	Dr. John Keesee, member and health officer
1893	Dr. J. T. McAnally
1892-1916	Dr. T. C. McKinney
1906-1912	Dr. M. Etherton
1912	Dr. W. A. Brandon
1912-1916	F. M. Hewitt, commissioner of public health and safety
1917-1919	Dr. A. S. Caldwell
1917-1920	Dr. H. E. Lightfoot
1919-1921	Rev. J. S. Merrill
1920-1924	Mrs. H. E. Lightfoot
1921 to date	Mrs. Cora Black

Table 3.
CASES OF CERTAIN DISEASES REPORTED IN CARBONDALE
FROM LOCAL RECORDS.

	1923	1924	1925	1926	1927
Typhoid Fever	15	6	11	8	9
Smallpox	0	13	0	1	0
Measles	5	1	0	31	1
Whooping Cough	0	8	5	3	6
Scarlet Fever	5	19	9	34	36
Diphtheria	7	10	3	4	3
Polionyelitis	1	0	1	0	2
Tuberculosis*	3	4	3	5	11
Pneumonia*	6	9	5	3	4
Syphilis	0	1	3	1	5

* All forms.

NOTE: Manifestly diseases have been more prevalent in Carbondale than figures in this table suggest. Typhoid fever, scarlet fever and diphtheria are more completely reported than any others.



1st row, left to right: General D. H. Brush, plotted the town of Carbondale; Dr. J. Ezra Blanchard; Dr. John Keesee, health officer and member of board of health, 1891-1893;

2nd row: Dr. A. M. Lee, health officer, 1891; Dr. J. T. McAnally, health officer, 1893; Dr. T. C. McKinney, health officer, 1892, 1916.

Table 4.
MORTALITY FROM CERTAIN CAUSES IN JACKSON COUNTY.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Polio-myelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1919	454	...	...	...	...	...	...	...	...	...	...	...
1920	342	...	...	...	...	...	...	...	...	...	...	...
1921	408	10	2	...	...	...	12	16	...	1	41	23
1922	431	12	3	...	...	...	3	11	32	...	42	15
1923	471	3	...	...	...	1	9	4	9	...	41	27
1924	423	2	2	...	...	2	10	3	8	1	44	34
*1925	707	9	4	...	...	1	3	1	13	...	29	44
1926	472	4	1	...	13	3	5	...	20	...	38	31

*High mortality due to cyclone storm.



1st row, left to right: Dr. M. Etherton, health officer, 1906-1912, and member present board of health; Dr. W. A. Brandon, health officer, 1912; Frank N. Hewitt, Commissioner of public health and safety, 1912-1916.

2nd row: Mrs. Cora Black, health officer, 1924 to date; Major Robert W. Davis, president, present board of health; Joseph K. McGuire, member city council, 1920-1923 and publicity director of campaign that made Carbondale the first mosquito abatement district in Illinois.

Table 5.
MORTALITY RATES FROM CERTAIN CAUSES IN JACKSON COUNTY.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Polio-myelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1919	12.3	...	...	...	...	...	...	...	...	...	...	...
1920	9.2	...	...	...	...	...	...	...	...	...	...	...
1921	10.8	26.7	5.3	...	...	...	32.1	42.7	...	2.6	109.6	61.5
1922	11.5	31.9	7.9	...	...	...	7.9	29.2	...	...	111.7	39.9
1923	12.5	7.9	...	...	...	2.6	23.8	10.5	...	...	108.4	71.4
1924	11.1	5.2	5.2	...	...	3.2	26.3	7.9	...	2.6	115.1	89.4
1925	18.5	23.5	10.4	...	...	12.6	7.8	9.6	...	...	75.9	114.2
1926	12.3	10.4	2.6	...	33.8	...	13.0	...	32.0	...	99.0	80.7

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

A public health service is maintained for the benefit of the students in the Southern Illinois State Normal University located in Carbondale. The activities connected therewith, which are and have been under the direction of Dr. Delia Caldwell since 1920, doubtless have an important influence over community health in Carbondale.



Delia Caldwell, M. D.
Medical Advisor, Southern
Illinois Normal University,
1920 to date

WATER SUPPLY.

The waterworks were first installed in 1898 by a private corporation which obtained a franchise in 1902 for a period of thirty years. Water was secured, first from two wells, later from three, four, five and still later six wells. These ranged in depth from 200 to 650 feet, two of which were 410 and 416 feet respectively. The estimated maximum yield of all wells was about 155,000 gallons per day with a reservoir capacity of about 260,000 gallons. The demand for water during the dry season was usually greater than the supply. The supply was considered by the State Department of Public Health to be periodically contaminated. The water had a strong saline taste and on account of the periodic contamination had been chlorinated. There are about ten miles of cast iron pipe ranging in size from ten to four inches.

In 1924, a new water system was proposed and plans for the same were approved by the State Department of Public Health. In 1925, the people of Carbondale voted to install the new system, construction of which was completed in 1926. The present supply consists of the following:—An impounding reservoir of 400,000 gallons capacity, with a drainage area of 2,400 acres, located about one mile south of the city limits, covering an area of sixty acres and ranging in depth from ten to twenty feet, a gravity pipe line to the city, and a modern water-purification plant. The water is treated by coagulation and sedimentation, filtration and chlorination and is distributed through the former water mains. At the present time the water is regarded as of safe sanitary quality and suitable for all domestic and industrial purposes.

SEWERAGE.

Carbondale sewerage system, about twelve miles in length, has been built a portion at a time without any definite plan and mostly for sanitary purposes with only a few storm sewers. The system discharges without treatment northeast of the city into Crab Orchard Creek, a tributary of Big

Muddy River. Sewerage is available for about four-fifths of the population, but not more than one-half of the population are using the system. Improvements to the sewer system are necessary if proper sanitary conditions are to be maintained.

Table 6.
BIRTHS AND INFANT DEATHS IN JACKSON COUNTY.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1919			71	
1920	814	21.4	88	108.1
1921	783	20.9	63	80.5
1922	772	20.5	69	89.4
1923	819	21.7	62	79.7
1924	810	21.3	64	79.6
1925	804	21.0	89	112.2
1926	830	21.6	81	97.6

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

REFERENCES.

- Annual Reports of the State Board of Health, Springfield, various dates.
History of Jackson County, Newsome.
Bulletins of the State Water Survey, Urbana, various dates.
U. S. Census Reports, Washington, D. C., various dates.

Champaign-Urbana

The twin cities, Urbana and Champaign, are officially two separate corporations but in reality they are one community. They are in Champaign County, the third richest agricultural county in the United States (census 1920) and are 126 miles south of Chicago and 187 miles northeast of St. Louis. In Urbana is located the great State university which accommodates more than 10,000 students, a distinguished seat of learning that lends to the community a distinct collegiate atmosphere.

Champaign County was formed from the western part of Vermilion County in 1833. Urbana became the county seat and was organized under a charter in 1855.

The city of Champaign began in the early fifties when the Illinois Central Railway laid a track through that section and built a station about two miles west of Urbana, calling it West Urbana. In 1860 the name was changed to Champaign and a community government set up under the city plan.

The fact that the main line of the Illinois Central ran through Champaign gave that part of the future community a tremendous advantage in potential growing power. Then in 1867 Urbana **managed** to balance thing up somewhat when it succeeded in getting itself chosen as the site for the State university. Urbana has remained under the aldermanic form of government but Champaign changed over to the commission form in 1917.

Both together the two incorporations include a population that compares favorably in size with the leading cities of the State. The census figures for the three most recent decennial periods are:

	1920	1910	1900
Champaign	16256	12421	9698
Urbana	16244	8245	5728
Combined	26500	20666	14826

Eighty-eight per cent of the population are native whites, 5 per cent foreign born and about 7 per cent negroes. So the community is made up principally of a well-to-do middle class American people.

The University has an enrollment of 10,700 students and a faculty of 1,200.



HEALTH MACHINERY.

The first movement toward providing official public health service in the community got under way when Champaign adopted in 1864 an ordinance relating to the abatement of nuisances and to general sanitary conditions. A somewhat similar but more all-inclusive ordinance was adopted by Urbana in 1880.



W. E. Schowengerdt, M.D.
Health Officer, Champaign.
1899-1900; various times
since and present
Health Officer

Since city ordinances like amendments to the Constitution of the United States refuse to enforce themselves, both municipal governments soon found themselves facing the necessity for creating machinery with which to carry into effect the mandates of the city fathers. Thus we find a new ordinance, adopted by Urbana in 1882, creating a board of health made up of the mayor and one alderman from each ward. Champaign followed in 1884 with an ordinance creating a committee of the city council, known as the health and sanitation committee and made up of three members.

Apparently the committee in Champaign was created simply to provide a means for handling sanitary and health problems with greater dispatch and ease whereas the board in Urbana was endowed with all the powers and authority that it might deem necessary for controlling disease and to it was assigned for duty the city marshal as quarantine officer. It even had authority to establish an isolation hospital during emergencies.

In 1888 Champaign went a step further. An ordinance adopted then created a board of health and the position of city health officer. The board was formed by simply transforming the committee into a new legal status and adding to its membership the mayor, the health officer and the city clerk. The ordinance required the health officer to be a licensed physician. These changes came to pass under the influence of Dr. L. S. Wilcox, mayor at the time, and Dr. Chas. B. Johnson, a public spirited physician of the community. The board was endowed with the usual broad powers and authority that have always characterized such official agencies and the police department was made subject to its



H. A. Sims,
Commissioner of Public
Health and Safety.
Champaign, 1927
to date



Charles B. Johnson, M. D.
First Health Officer, Cham-
paign, 1888 Chairman,
County Tuberculosis
Sanitarium Board,
1921 to date

command so far as quarantine, abatement of nuisances and similar activities might require.

The trend toward medical influence in public health matters in Champaign really began with the arrival of Dr. Chas. B. Johnson, still living and active at the age of 84, who located in that community in 1879. In 1888 he was a member of the board of education when reports started coming in about children being absent from school with a rash. Some reports were confusing so Dr. Johnson was appointed by the school board to take the matter up with the mayor, at that time Dr. L. S. Wilcox. He did this and Dr. Wilcox called his attention to the fact that this came under the duties of the health committee of the council.

After Dr. Johnson had talked to the mayor regarding the importance of having a medical man as the health officer, the mayor consented. A few days later Dr. Johnson was notified of his appointment as health officer and instructed to confer with the city attorney on an appropriate health ordinance. (See *"Sixty Years in Medical Harness"* pp. 188-189).

Dr. Johnson is still carrying on as president of the county tuberculosis sanitarium board and an officer of the Champaign County Anti-Tuberculosis and Public Health Association.



Champaign County Tuberculosis Sanitarium, "The Outlook".

Somewhat later Urbana gave up the cumbersome board of health made up of an alderman from each district and put in its stead a board of three members, one a physician or sanitarian who, by virtue of that fact, is chairman of the board and city health officer. The section of the ordinance relating to the personnel of the board reads:

"Section 2. *Appointment.* The Board of Health shall be appointed by the Mayor of said City by and with the advice and consent of the City Council in the same manner and at the same time as other officers are appointed. At the time of the appointment the Mayor shall designate one of said members to be Chairman of said Board, who shall also be Health Officer and said Chairman shall be a legally licensed practitioner of medicine or trained in sanitary science. All of said members shall hold their office from the date of appointment to the end of the municipal year and until their successors are duly appointed and qualified."

The present board in Urbana is made up of Dr. D. T. Cole, chairman and health officer, Mrs. Blanche Gladding and Mrs. Doris Carpenter.

A final change came in Champaign when the commission form of government replaced the aldermanic in 1917. This dissolved the board of health leaving its duties and responsibilities in the hands of George B. Franks, first commissioner of public health and safety. The health department continued to be in medical hands, however, with Dr. W. E. Schowengerdt as health officer.



Mayor George B. Franks
Commissioner of Public
Health and Safety,
Champaign.
1917-1927

In the meantime there developed public demands for various specific types of public health service that were not being supplied by the city government. Consequently we find the board of education in 1910 feeling its way into a new venture by employing a nurse to work among the school children during a month or two. Evidently the experiment was popular for 1911 found Miss Frances North at work as a full time nurse in the schools under a board of education presided over by Dr. W. L. Gray. The immediate inciting cause which led to the full time nursing activities was an outbreak of diphtheria in one of the schools. A doctor at the helm, an epidemic—sick children—a nurse. Nothing could have developed with more logical sequence. A second nurse was employed for full time service in 1918 and both continue in the work to date.



P. W. Wright
President, Urbana-Champaign Sanitary District

Urbana subsequently provided medical supervision over children in the public schools when Dr. Maud E. Nichols was employed in 1918 to do that work. She is still active in that capacity.

Voluntary agencies got busy also in the early part of the second decade of the twentieth century. Thus the Family Welfare Society of Champaign-Urbana was organized in 1911. It did little that could be classed as public health service during its early existence but beginning in 1918 it has participated in such activities as public health nursing, infant hygiene etc. It sponsored an orthopedic clinic for the after-care of infantile paralysis victims. It established an

infant welfare clinic in 1921 with Dr. C. George Appelle in charge and a child guidance clinic, under the direction of the Institute of Juvenile Research, in 1923.

The Champaign County Anti-Tuberculosis League was organized in 1912 and carried on a very active campaign with its field service entrusted first to Dr. Carrie Noble White and later to Dr. Maude E. Nichols. Still later two nurses were employed to do the field work, the construction of the county tuberculosis sanitarium in 1920 and the employment of a medical staff in 1921 making it unnecessary for a voluntary organization to maintain such professional talent. The sanitarium has a capacity of 48 patients.



C. George Appelle, M. D.
Director, Infant Welfare Clinic, Champaign,
1921 to date



Robert G. Bell, M. D.
Medical Director and Superintendent, County Tuberculosis Sanitarium,
1927 to date

A very important factor in the health machinery of the community is the University Health Service. This was organized in 1916 under the able supervision of Dr. J. Howard Beard. This service not only uses every facility provided by modern knowledge of sanitation, hygiene and medicine for the suppression, control and prevention of communicable diseases, but it undertakes to promote positive health by giving to every pupil enrolled a thorough physical examination. It also teaches subjects of importance in personal hygiene and preventive medicine. This it is able to do in a very satisfactory manner because of the happy arrangements which make the

staff of the health service faculty members as well. Valuable data of importance in research have been collected by the health service.

Medical influence was first introduced into the twin-city community with the arrival of Dr. J. G. Saddler who located in Urbana in 1839, the first doctor to settle there.



A. M. Lindley, M. D.
First Health Officer, Ur-
bana, 1891-1922

He was followed the next year by Dr. Winston Somers and Dr. William D. Somers. From that time on the medical profession increased in numbers until 1859 found a dozen doctors there, organizing themselves into the Champaign County Medical Society. While guests of this society in 1876, the Illinois State Medical Society passed a resolution favoring the establishment in Illinois of a State Board of Health. As a consequence the first permanent public health legislation was written into the laws of the State.

The parent-teacher association movement, which involves considerable health activities, was organized in 1914.

The most recent movement took place in 1926 when the various voluntary and official agencies participating in public health activities were brought together into a cooperative organization known as the Champaign County Public Health Association. At first this organization showed signs of inanition but lately it has gained a splendid degree of vigor and under the chairmanship of Dr. W. E. Schowengerdt, Champaign health officer, gives promise of leading to pronounced improvement in the public health affairs of the county.

WATER SUPPLY.

Waterworks were first installed in 1885 by the McKinley interests and operated by them until 1893 when it was taken over by the Union Manufacturing Company. On June 27, 1899 the present company, known as the Champaign & Urbana Water Company, bought the property and was granted a franchise. This franchise called for the installation of filters to remove at least 50 per cent of the iron.

The supply is obtained from a number of wells, all of which are about 150 feet deep. The well water is rather high in iron, but part of it is removed by aeration, chlorination and filtration.



T. C. Sullivan,
Treasurer, Urbana-Cham-
paign Sanitary District



J. C. Dodds, M. D.
Vice-President, Urbana-
Champaign Sanitary
District, 1921 to
date

The University of Illinois campus is about midway between the two business districts and the public supply is available, but it has its own private supply. Water is obtained from wells similar to those of the water company and pumped into the mains without treatment.

SEWERAGE.

The first system of sewers was installed in both cities about 1895. The sewers were designed on the separate plan. Each city had a septic tank and its own outlet into Salt Fork.

The systems soon became inadequate and the flow through the septic tanks exceeded that for which they were designed.

In 1921 the Urbana & Champaign Sanitary District was organized and a new sewage-treatment plant was constructed in 1924. At that time new sewers and interceptors were constructed and at present both cities are adequately sewered.

HEALTH CONDITIONS.

Like the pioneers in general those who settled in Champaign County took the ordinary hardships of life as they came, accepting common diseases as a necessary evil that deserved little discussion and less notice in the record of important events. Perhaps epidemics of common infections were the temporary subject of neighborhood gossip but it took an outbreak of cholera to stir up public fear and alarm sufficient to get the story recorded in the traditions and history of the community.

Thus the earliest reference to unusual health conditions in Champaign-Urbana relate to a cholera epidemic brought back from Chicago by traders who had visited that outpost of civilization. Soldiers garrisoned at Ft. Dearborn had started the disease there. How disastrous the epidemic in Champaign proved to be can be surmised only. The very fact that the story has been preserved suggests that it was bad enough.

Cholera was again the unwelcome visitor in the community in 1854 when introduced by laborers working on the Illinois Central Railroad



W. L. Gray, M. D.
Health Officer, Champaign,
1897-1899; 1911-1913

Table 4.
MORTALITY RATES FROM CERTAIN CAUSES IN URBANA.

YEAR	All Causes	Typhoid Fever	Malaria	Shallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1913	9.0	...	...	...	11.3	...	...	...	...	...	56.4	...
1920	11.7	...	...	...	...	...	19.5	19.5	68.3	...	68.3	48.8
1921	7.5	9.4	...	...	...	...	9.4	9.4	9.4	9.4	85.2	28.4
1922	7.9	18.6	...	...	...	...	9.3	...	18.6	...	37.2	37.2
1923	9.8	...	...	...	9.1	...	...	...	27.4	...	54.8	100.4
1924	13.2	...	...	...	...	...	...	9.6	80.3	...	90.0	116.8
1925	12.9	8.8	...	...	...	...	17.6	8.8	44.1	...	52.7	61.7
1926	11.6	...	...	...	...	...	...	...	17.4	...	87.0	43.4
1927	...	8.5	...	...	8.5	...	...	...	17.0	8.5	76.8	42.7

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

which was under construction at the time. Public alarm and panic prevailed until the disease burned itself out.

Strangely enough the people generally gave little heed to more common disease, less dramatic but far more costly in suffering and life than cholera in the long run. It took a medical observer to remark that:

"The permanent scourge of the people of Champaign County which mowed down its victims, young and old for a period of fifty years was represented by the miasmatic diseases caused largely by undrained sloughs and swamp lands. These troubles largely disappeared with systematic drainage."

Later typhoid fever came under the ban of "suspicious character" as the public learned to believe it a preventable disease. Consequently more and more notice of it found space in tradition and recorded history. Dr. Johnson loves to tell of an outbreak that disturbed the tranquility of health conditions in Champaign in 1884. A young man came home sick from Kansas and presumably infected his relatives and friends. Shortly thereafter the disease had attacked 17 persons, leaving 6 dead. The absurd notions that even the medical profession entertained about the disease during those days is set forth in a quotation that appears in Johnson's *Sixty Years in Medical Harness*. It reads:



George Way, M.D.
Health Officer, Urbana,
1923-1925

"Typhoid fever is never communicated from person to person.
"The disease never comes up spontaneously; no amount of filth and no degree of decomposition can originate the disease.

"Typhoid fever is a miasmatic infectious disease. The poison from within the body of a person suffering with typhoid must pass through, in the process of development, a nidus outside of the body before it becomes capable of propagating the disease.

"The discharges from the bowels of a patient affected with typhoid in a few hours after they are voided pass through some process by which they become infectious and when allowed to enter wells or cisterns cause those who drink the water to have the disease.

"The susceptibility to typhoid depends largely upon the age of the person exposed, those under thirty being most liable to contract it."

The last two paragraphs expressed ideas that proved to be true under scientific observation.

Another illustration of how disastrous typhoid fever was prior to 1900 took place near Urbana in 1890 when every member of a family of 11 came down with the disease and nine never recovered. In another family of 9, seven cases developed with two fatalities.

Twenty-five years later, in 1915, medical and bacteriological knowledge had progressed far enough to enable the chief sanitary engineer of the State Department of Public Health, Paul Hansen, to trace an outbreak of typhoid

fever in Champaign to the consumption of contaminated raw oysters. This outbreak, involving some 25 cases, is apparently the first instance on record when typhoid was traced to contaminated oysters and it led to investigations which uncovered three more epidemics at widely scattered points, all of which originated with oysters shipped out of Baltimore.

More recently typhoid has practically disappeared from the community. No death was registered in Champaign in either 1926 or 1927 and only one in Urbana.

Statistics of all mortality are meagre but it is safe to presume that tuberculosis inflicted heavy losses upon the population in days before

modern methods of control came into vogue. At any rate the citizens saw fit to organize a campaign against it and under the splendid leadership of Professor Stephen A. Forbes and Dr. Johnson erected a sanitarium in 1920. The disease continues to be a problem of no insignificant magnitude, as may be observed from Tables I and 3, but the campaign against it is progressing in the right direction and perseverance will surely result in ultimate success. The mortality rate in the whole community is no less favorable than that for the State at large.

Diphtheria has carried many children to an untimely grave in Champaign-Urbana but happily it is now yielding to preventive measures



Professor Stephen A. Forbes,
Member, Champaign County
Tuberculosis Sanitarium
Board, 1921 to date

Table 5.
CASES OF CERTAIN DISEASES REPORTED IN CHAMPAIGN.

	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	5	3	4	13	5	4	4
Smallpox	11	4	3	1	..	21	23
Measles	134	10	223	20	182	52	115
Scarlet Fever	63	12	41	16	22	31	29
Whooping Cough	29	56	25	27	40	41	34
Diphtheria	8	30	33	12	5	3	4
Influenza	4	11	5	..	2	1	2
Poliomyelitis	2	..	..	..	1	..	2
Meningitis	..	..	..	1	..	..	..
Tuberculosis*	45	34	28	56	41	100	56
Pneumonia*	9	28	46	30	21	22	31
Syphilis	21	48	..	32	46	50	55
Gonorrhea	50	16	..	26	8	3	50
Chancroid	4	..	..	..	..	..	1

*All forms.

Note.—Case reports are never complete, but notification in Champaign and Urbana is sufficiently so to give a fairly good index to prevailing health conditions.

Table 6.
CASES OF CERTAIN DISEASES REPORTED IN URBANA.

	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	16	7	2	6	1	..	4
Smallpox	17	1	1	1	1	35	2
Measles	14	5	269	17	178	75	15
Scarlet Fever	47	20	9	5	38	12	12
Whooping Cough	21	24	12	87	22	22	35
Diphtheria	9	4	15	21	2	1	5
Influenza	9	1	20	6	13	1	1
Poliomyelitis	..	..	2	..	..	..	1
Meningitis	..	1	..	..	..	..	1
Tuberculosis*	1	10	16	57	37	63	23
Pneumonia*	..	9	7	45	24	8	14
Syphilis	2	10	20	9	4	2	1
Gonorrhea	17	4	26	26	8	3	4

*All forms.

Table 7.
BIRTHS AND INFANT DEATHS.
CITY OF CHAMPAIGN.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1918	..	..	25	..
1919	..	..	23	..
1920	291	18.4	32	109.9
1921	368	22.4	26	70.6
1922	331	19.3	25	75.5
1923	376	20.3	21	58.9
1924	300	21.8	36	92.3
1925	409	22.4	236	92.9
1926	407	23.0	23	56.5

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.



Judge J. O. Cunningham,
President, Champaign County
Anti-Tuberculosis
League, 1912

which have been pushed lately in the community and county. The whole county escaped without a single fatality in 1926 and lost but one citizen to diphtheria in 1927.

Smallpox seems to have avoided this university community in general. At least there are no traditions or written accounts filled with vivid stories and comments about "pest houses" and heroic regulations that make up the principal early health history of other municipalities in the State. Recently the disease has ventured to put in its appearance once or twice but the university and municipal health machinery went into action with such prompt thoroughness that the out-

breaks amounted to little except a general vaccination of susceptible people.

The influenza epidemic of 1918 was severe in the community. Mortality from this cause alone rose to 375 per 100,000 population while combined with pneumonia it soared to 631. These losses stood well up toward the top of the list of municipal rates.

The general mortality rate of Champaign County was among the most favorable in the State in 1927. It was a trifle higher for Urbana than Champaign. The rate in neither place was high for the combined community it was unusually favorable, compared with other municipalities.



W. W. Earnest
Sec.-Treas. Champaign County
Tuberculosis League,
1912-1927



Mayor W. F. Burres, M. D.
Acting Health Officer, Ur-
bana, 1925-1927

Infant mortality, considered by many sanitarians as a sensitive index to health conditions in general, suggests favorable public health conditions in the community. For the county, the rate was 57.4 infant deaths per 1,000 live births in 1926, a figure nearly 18 per cent below that for the State. The rate in Champaign was even lower than that for the county, but in Urbana it was considerably higher. Of course the loss of one infant more or less makes a very pronounced difference in the rate of a community where the total number of births is 165. It appears, furthermore, from the rather high birth rate attributed

to Champaign that a good many babies of Urbana parents are born in Champaign. This would give Champaign the advantage in calculating rates. At all events the combined rate for the two municipalities was but little more than 62, relatively quite favorable.

Table 8.
BIRTHS AND INFANT DEATHS.
CITY OF URBANA.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1920	Not available, prior to 1924.		Included in county.	
1921	162	15.4	30	61.7
1922	126	11.7	7	55.6
1923	162	14.8	9	55.6
1924	210	18.8	14	66.6
1925	207	18.2	147	12.9
1926	165	14.3	13	78.7

*Deaths of infants under 1 year of age per 1000 births reported

**Per 1000 population.

REFERENCES.

- Ordinances and Reports, City of Urbana, various dates.
 Ordinances and Reports, City of Champaign, various dates.
 History of Champaign County—J. R. Stewart (Lewis Pub. Co., N. Y. & Chicago, 1918).
 Medicine of Champaign County—Chas. B. Johnson, M. D.,
 Sixty Years in Medical Harness—Chas. B. Johnson, M. D.,
 Reports of Trustees & Officers of Urbana and Champaign Sanitary District, various dates.
 Reports of Board of Education, various dates.
 U. S. Census Reports, various dates.
 Personal interviews by Mr. Thomas J. Brophy, who collected the data, with various officials, university faculty members, physicians and others in Champaign Urbana.

Cicero

Cicero is one of the largest communities in Illinois, except Chicago, but technically it is not a city. It has retained the township form of government, never having been incorporated under the Cities and Villages Act. In 1920 the census returns showed a population of 44,995 but there is evidence of very rapid growth since that time so that current estimates vary from 70,000 to 100,000. The estimate for 1927 made by the federal bureau of the census is 68,500. It is one of the newer communities, suburban to Chicago. There were only 1,272 inhabitants in 1860 and only 16,310 in 1900.

Even in 1920 the character of the population was distinctly that of a rapidly growing community and it was unique in other ways. There were, for example, only 5,770 persons or a little more than 12 per cent, in the 45 years and over age group. This is scarcely more than one-half the ratio in other municipalities of the State. Then the number of men was greater than the number of women by a wider margin than prevails in the State at large. There were but four negroes listed in the 1920 census but the foreign born whites accounted for 34.4 per cent of the whole population.

Furthermore, Cicero is really a part of the great metropolitan area of Cook County, enjoying and utilizing many of the municipal facilities of Chicago so that the mortality and morbidity rates returned for Cicero do not reflect actual conditions as accurately as might be desired.

HEALTH MACHINEFY.

The story of public health service in Cicero is simple and complete. One day in August, 1904 Dr. J. J. Hood, the only resident practicing physician in the community at the time, happened to be walking down the main street.



J. J. Hood, M. D.
Health Commissioner
1904-1912; 1924 to date.

In front of the old Weare building he met George Comerford, town president, and George Engel, police magistrate. They greeted each other and fell into conversation. Somebody remarked that Cicero needed a health officer. Comerford rather banteringly put in: "Dr. Hood is our health officer from now on". And he was.

The matter was no more complicated than that because no salary was attached to the job and the work required and done was about equal to the emoluments of the office. When for any reason it was necessary to call upon the health officer for service he was paid a fee on time basis.

This continued to be the policy until 1912 when Dr. B. Sladek was appointed to succeed Dr. Hood but the former quit after a year in office on the plea that the health officer's duties interfered with his practice. Then followed a couple of years where Cicero managed to get along without a health officer but in 1916 the officials decided that the community needed a health officer badly enough to make some contribution toward the livelihood of the one chosen for that position and, attracted by the small remuneration, if not by the honor, Dr. James Shinglmen accepted the place. For two years he exercised some active interest in efforts at controlling communicable diseases.

Then came a radical change. A new town administration headed by Joseph Z. Klenha came into office in 1918. It made a substantial appropriation for public health work, appointed Dr. Bert L. Vilna as health officer and instructed him to organize an effective health department. He did so and gave to the community its first health service of consequence.

The administration went further. It adopted an ordinance creating a board of health made up of the health officer or commissioner of health as he was now called, town president, supervisor, attorney and captain of police. This board was clothed with all the power and authority ordinarily vested in such bodies and with the health commissioner as ex-officio chairman it concentrated the official public health service in a very workable shape.

Dr. Vilna kept things growing and expanding until his death in 1924 when he was succeeded as health commissioner by Dr. J. J. Hood who has continued to date the splendid work inaugurated by Dr. Vilna.

Ordinances relating to sanitation, hygiene and other matters of health interest were adopted from time to time so that the board and commissioner of health have been able to execute such policies and plans as their financial resources and initiative have permitted.

Shortly after the reorganization of the municipal health department that inaugurated a new day in health service for Cicero, voluntary agencies became active. On January 28th, 1919, the Cicero Welfare Center was organized. Its prime object was to afford emergency relief to the distressed and to hold weekly clinics where mothers might receive proper instructions as to the diet and care of their babies.

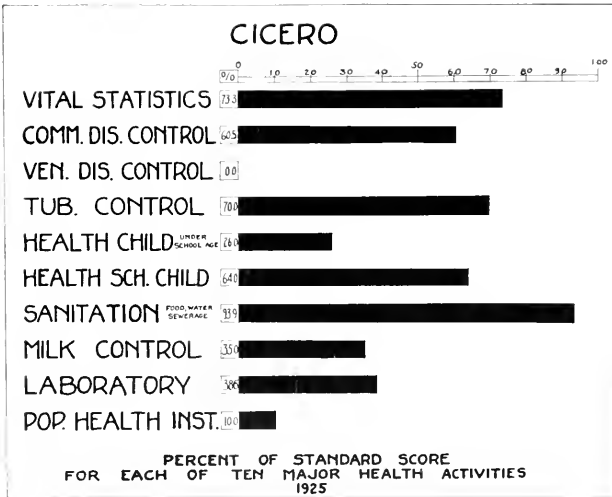
Through and with the cooperation of the health department this work has steadily increased until today it ranks with the best services of that type found in Illinois. With the added cooperation of the Chicago Tuberculosis Institute, the anti-tuberculosis program has developed in a no less satisfactory way.

The scope of work covered by the Center, including its social service department and baby clinics both at the Center and in the Hawthorne section, has necessitated the employment of two full time nurses, a clerk and

an executive secretary besides the services of the physicians in attendance at the clinics. Over one hundred babies a week attend these clinics.

The Cicero day nursery was ordinarily for the purpose of affording to the children of wage earning mothers the proper environment and care during the absence of their mothers. An average of twenty-seven children are taken care of daily.

These efforts gave to Cicero in 1925, a public health service that occupied a commendable place among the fifteen leading communities of the



This graph illustrates the strong and weak points in Cicero's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Cicero was 53 per cent of the standard perfection requirement.

State. This fact was determined by a study of the municipal facilities present in these places which was carried out by the State Department of Public Health. The report on Cicero, which gives a good conception of facilities then, reads, in part, as follows:

"A total of 526 points gives Cicero eighth place on the health service appraisal schedule of the fifteen cities ranging from 30,000 to 100,000 in population.

"With a part-time health commissioner this city enjoys a coordination of public health activities that is rare in Illinois. Practically all

such work attempted is directed and supervised by the health department, to which, for example, the board of education pays \$8,000 per year for application on the costs of school hygiene service. A clinic at the infant welfare center maintained by the Infant Welfare League is under the direction of a physician paid by the city. One half of the salaries of two nurses engaged in tuberculosis work is also paid by the city, the remainder coming from the Chicago Tuberculosis Institute. These financial connections give the municipality a directing influence in all the public health affairs which results in harmonious coordination.

"There are no contagious disease hospital facilities nor public clinics for treating venereally infected indigents. Nor is there a public health laboratory. Proximity to Chicago, with an abundance of all sorts of medical and public health advantages, seems to make less acute the need for some services indispensable elsewhere.

"Expenditures in the city for public health work amount to 51 cents per capita per year, 35 cents of which comes out of the municipal treasury.

"The health commissioner acts as local registrar. Records are checked for completeness and a brief statistical report is published.

"A comprehensive system of epidemiological record keeping is maintained, cards of different color being used for each disease on which are entered all essential data. An up to date spot map is kept of the major contagions but there are no chronological charts showing the current prevalence. Communicable disease control practices are excellent. All cases of contagion are placarded by an inspector. A physician from the health department visits all doubtful and all other cases of contagion except measles, whooping cough and mumps in order to establish definitely the correctness of diagnosis. A communicable disease nurse also visits each reported case as a matter of routine, the record of each visit being entered on the case card. There are no local facilities for the hospitalization of cases, although some patients are sent to Cook County Hospital. No immunizations against diphtheria are performed by the health department. A survey of the school children shows 80 per cent vaccinated against small pox.

"Three cases of tuberculosis were reported for each annual death from that cause in Cicero. This ratio would be lower if cases of tuberculosis from Cicero who die in outside sanatoria could be computed. The two nurses made a total of nearly 1,700 visits to tuberculous patients and contacts. The attendance at clinics both as regards number of patients and number of visits made is satisfactory. Information as to the number of hospital days of Cicero patients could not be accurately determined, although 40 cases were sent to various nearby sanatoria. There are no open-air classrooms or preventoria.

"The Infant Welfare League sponsors the hygiene program for these age groups. The infant clinics are well attended, 370 babies making a total of 2,257 visits last year. There is practically no field nursing visits to prenatal, infant or preschool cases and there are no prenatal or preschool clinics. Many births are attended by midwives, it being estimated at 60 per cent of the total occurring within the city. The midwives are not supervised locally.

"Routine weighing and measuring of all children is done by the nurse once each year. Four part-time school physicians are employed to examine all grade school children every year. No records of this work, however, are assembled. Each physician uses his own standards as to what constitutes a defect, and in general, there is no uniformity of procedure.

"The regular staff of sanitary and food inspectors is supplemented by the school nurses during summer months. Food establishments are visited and scored on their sanitary conditions. The city water supply is secured from Chicago and is distributed to 100 per cent of the homes. It was stated, also that all of the dwellings in the city are connected with the sewer system.

"The health officer states that 100 per cent of the milk supply is pasteurized although no inspection records of any kind are available to verify this assumption. Most of the milk comes through the Chicago market.

"No local laboratory service is maintained, although many diphtheria cultures are examined at the State branch laboratory in Chicago."

WATER SUPPLY.

Cicero owns and operates the distribution system and booster pumping stations, but water is obtained from the city of Chicago. A description of the supply will be found under Chicago.

SEWERAGE.

The town is in the Chicago Sanitary District. Sewers are built on the combined plan and discharge into an interceptor which will take the sewage to the West Side sewage-treatment plant, now under construction.

HEALTH CONDITIONS.

Health conditions in Cicero are difficult to appraise. The general death rate is very low. Doubtless the very low percentage of old people in the population is one important factor in this situation.

The infant mortality, on the other hand is rather high. Deaths among children less than one year of age averaged about 87 per 1,000 births reported during the seven years ended with 1926. This is a higher figure than that for the State during the same period and considerably higher than that of several other suburban communities in Cook County. A good many sanitarians regard infant mortality as a more sensitive and accurate index to health conditions than the general death rate.

It is probable that Cicero enjoys good average health for a young, rapidly growing community. It is doubtful that health there is as superior as the exceedingly low mortality rate might suggest.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Euphonia	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1918	412	...	...	...	...	...	2	7	50	...	38	87
1919	397	...	...	...	...	...	...	18	17	...	14	38
1920	331	...	...	...	...	...	4	13	12	...	30	36
1921	321	...	...	...	...	...	4	23	1	...	22	35
1922	328	1	...	...	...	1	1	14	5	...	23	32
1923	295	...	...	...	...	7	3	4	9	...	33	29
1924	282	...	...	...	1	1	...	6	3	...	20	35
1925	349	...	...	...	...	...	...	8	11	...	23	27
1926	360	...	...	...	1	...	...	1	11	...	25	28

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1918	10.5	...	...	...	...	...	5.1	17.9	143.9	...	97.6	213.3
1919	7.3	...	...	...	4.7	4.7	...	42.9	40.5	...	33.3	90.5
1920	6.2	...	...	...	4.4	...	8.8	28.8	75.5	...	66.6	80.0
1921	6.5	...	...	...	4.0	4.0	8.0	46.3	2.0	...	47.1	70.4
1922	6.2	1.9	...	...	...	1.9	1.9	26.5	9.5	...	41.6	60.6
1923	5.3	...	...	...	12.5	3.5	5.3	7.1	16.1	...	58.9	51.8
1924	4.8	...	...	...	1.6	1.6	3.3	10.1	5.1	...	33.8	59.2
1925	5.6	...	...	...	...	8.0	3.2	12.8	17.6	...	36.9	...
1926	5.5	...	...	...	1.5	3.0	...	1.5	16.5	...	38.2	42.8

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	5	1	2	3	2		
Smallpox			1	1			
Measles	333	102	798	62	267	289	423
Scarlet Fever	117	67	64	95	158	95	120
Whoop, Cough	173	103	96	164	79	45	53
Diphtheria	257	185	105	61	69	35	78
Influenza	4	41	71	3	14	59	4
Poliomyelitis	2		1				1
Meningitis	1	2	2			1	
Tuberculosis*	62	113	66	99	69	77	76
Pneumonia*	70	95	97	93	87	105	73
Syphilis	5	11	1	1	3		4
Gonorrhea	8	3	5	18	3	5	3
Chancroid		1		1			

* All forms.

Note: Case reports are never complete, but those shown in this table probably give a fairly accurate idea of how prevalent the diseases listed were during the period covered.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1918			100	
1919			80	
1920			76	
1921			73	
1922	681	12.9	68	100.0
1923	695	12.4	62	90.6
1924	617	10.4	74	87.8
1925	608	9.8	50	84.0
1926	522	8.0	39	74.7

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

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Health Survey of Fifteen Illinois Cities in 1925, Health News, May-June 1926.
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U. S. Census Reports, various dates.

Danville

Danville was incorporated as a city in 1839 and the United States census returns listed 503 inhabitants in the community the next year. During the ensuing decade that number increased to 736 and grew to 1,632 by 1860. Between that date and 1870 the population nearly doubled, reaching 4,751, and then the community settled down to a gradual, substantial growth that brought to the city 33,776 inhabitants by 1920. Of this number 29,471 or 87 per cent were native born whites, 1,916 or nearly 6 per cent were foreign born whites and 2,366 or about 7 per cent were negroes. There were 8,192 or about 24 per cent whose age was 45 years or more.

HEALTH MACHINERY.

The development of a public health organization to combat epidemic diseases has been very gradual in Danville. Emergency situations like epidemic waves of cholera and smallpox, made imperative some sort of official agency to require quarantine, sanitation and vaccination. This need was met at first by giving to a committee or board of health power to perform whatever functions a given situation seemed to require. Often it was necessary at such times to employ professional and non-professional persons to carry out plans regarded as necessary in the control and prevention of epidemic infections.



William C. Dixon, M.D.
Health Commissioner, 1918-
1922; 1924 to date

This practice continued until rather recently when the size of the city and the tremendous advancement of the possibilities of preventive medicine made it necessary as well as desirable to secure the services of a qualified physician to act as health officer and as such to be subject to duty at any time.

The list of medical health officers who have served Danville include:

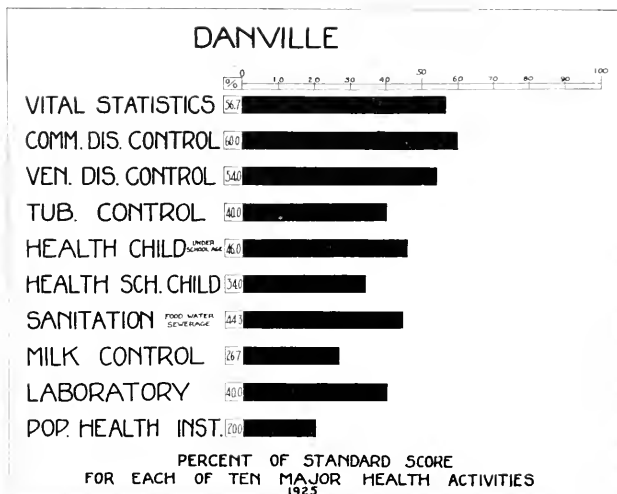
1895-1900	Dr. S. W. Jones	1916-1918	Dr. George Cass
1900-1906	Dr. F. A. Baumgart	1918-1922	Dr. William C. Dixon
1906-1910	Dr. H. F. Becker	1922-1924	Dr. J. B. Hundley
1910-1916	Dr. S. L. Lauder	1924 to date	Dr. William C. Dixon

In the meantime public demands for health service outran the official facilities for supplying it so that voluntary organizations sprang up and began to function. Indeed, they soon overshadowed, in volume of work accomplished, the city health department. Accordingly, we find, at the close

of 1925 a situation described in the quotations below taken from a report of a survey made by the State Department of Public Health in 1926:

"With a score of 448 points, corresponding to an efficiency rating of 44.8 per cent, Danville ranks thirteenth among the 15 cities in which public health activities were appraised.

"In some respects the health work in Danville is unusually well organized although many important activities have either not been undertaken at all or are incompletely developed.



This graph illustrates the strong and weak points in Danville's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Danville was 45 per cent of the standard perfection requirement.

"The health officer is on a part-time schedule, drawing \$1,200 per year as salary. He is assisted by two sanitary inspectors, appointed by the mayor, and a part-time clerk. It is necessary for him to provide quarters for the health department in his own office. He acts as registrar of vital statistics, handles quarantine and sanitary problems through the inspectors and exercises some supervision over pasteurization plants. The Vermillion County Tuberculosis Association is supported partly by the city. It does field nursing service, prenatal and infant hygiene work and bedside nursing. The board of education employs two nurses.

"Last year (1925) the city government contributed 15 cents per capita toward the expenditures for public health work, funds from other

sources making a total of 36 cents per capita for such purposes. Danville and one other city were the only two out of the fifteen that spent so little for public health service."

WATER SUPPLY.

Waterworks were first installed at Danville in 1883 by the Danville Water Co. The original plant consisted merely of a pumping station, distribution system and elevated tank. Raw water from the North Fork of Vermilion River was used.

As the river water was found to be very turbid at times, a 6,000,000 gallon settling pond was excavated near the station, and the water stored in this pond was used only when the river was very muddy.

In 1902 very extensive changes were made including new mains, construction of a concrete dam to replace the wood dam, increase in pumping capacity and the installation of a rapid sand filtration plant. The filtration plant comprised 8 units only 4 of which were equipped at the start but in 1915 all 8 filters were in service.

In 1912 a laboratory was provided and treatment with calcium hypochlorite was begun. In 1913 the name of the company owning the plant was changed to the "Inter-State Water Co."

The impounding capacity of the dam was found to be inadequate even with flash-boards raised to the maximum height and a ground-water supply was investigated. In 1913 six wells were drilled but the water was not considered satisfactory and a new dam was constructed about four miles above the old dam. The new reservoir was put in service in 1915.

In 1916 chlorine replaced hypochlorite as a sterilizing agent.

In 1920 another shortage of water caused the company to use the wells previously drilled. A new and much larger dam was constructed in 1925 forming Lake Vermilion which now furnishes an ample supply of water.

SEWERAGE.

The sewerage system of Danville is built part on the combined plan and part on the separate plan. The first sewers were installed in 1885, and have been extensively added to since. At present there are 5 outlets, varying from 36 to 84 inches in size, discharging along creeks and into the Vermilion River.

HEALTH CONDITIONS.

Cholera arrived in Danville before the community was organized into an incorporated municipality. It appeared in epidemic form in 1832 when there were fewer than 500 people in the village and again during the great national wave in the late forties. Very likely it struck the city again during the sixties.

"Milk sickness" appears to have made a more vivid impression upon the minds of early settlers than any other disease. Old inhabitants still talk of it and refer to it as a disease greatly feared.



E. B. Cooley, M. D.
Active in promoting local
health service

Malaria seems to have been very common in the early days, old residents still recalling that in the years of their youth everybody expected to have chills and fever. Epidemics of meningitis locally known as "spotted fever" or "spinal fever" also left unpleasant memories upon the minds of some citizens who are still alive.

Like every other city in the State smallpox appeared at intervals sometimes frequent, sometimes less often, depending upon the vaccinal status of the population and the exposure to the disease from outside sources. Diphtheria, scarlet fever, whooping cough, measles and other common infections have run a course similar to that elsewhere in the State. Each came and went in epidemic cycles peculiar to itself and varying in virulence with factors that even now are no less mysterious than formerly.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Epidemic Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whooping Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1900	293	10	3	...	1	1	...	7	...	...	42	10
1901	400	9	...	...	1	1	...	3	...	...	40	15
1902	366	12	...	...	3	1	...	3	...	...	38	18
1903	368	1	...	...	2	1	...	1	...	...	37	20
1904	370	1	...	...	1	1	...	1	...	...	35	22
1905	563	...	...	...	1	...	...	1	...	...	35	24
1906	574	1	...	...	2	2	...	1	...	...	30	25
1907	541	16	...	...	1	1	...	9	6	...	70	23
1908	552	4	...	...	2	3	...	3	...	...	40	27
1909	489	2	...	...	2	3	...	3	4	...	42	30
1910	487	1	...	...	1	2	...	6	...	...	40	28
1911	469	...	...	...	2	3	...	1	8	...	37	29
1912	480	1	...	...	2	1	...	4	10	...	35	...
1913	492	11	...	...	4	1	...	12	...	...	47	...
1914	443	4	...	...	2	1	...	7	4	...	43	31
1915	446	2	...	...	2	3	...	3	6	...	35	33
1916	524	12	...	...	3	2	...	2	186	...	34	30
1917	512	1	...	...	1	1	...	2	250	...	28	43
1918	710	9	1	...	2	...	7	4	147	...	45	39
1919	515	4	1	...	...	...	...	1	71	...	40	36
1920	583	7	1	...	6	...	8	3	38	...	30	33
1921	531	6	...	...	...	1	...	3	6	...	34	24
1922	498	2	...	...	...	1	...	4	11	...	51	39
1923	607	3	...	...	1	2	...	8	49	...	28	46
1924	519	9	...	...	1	...	5	...	10	...	26	20
1925	571	2	...	...	3	1	...	1	15	...	36	31
1926	620	2	...	...	...	2	7	1	26	...	28	56

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1900	17.9	61.2	18.3	...	6.1	6.1	...	42.8	...	...	256.8	61.2
1901	22.8	51.4	...	...	5.7	11.4	12.4	17.1	...	...	228.5	85.6
1902	19.6	10.9	...	...	16.0	10.7	5.3	10.7	...	...	203.6	96.4
1903	18.5	5.0	...	...	10.1	10.1	10.1	5.0	...	...	186.7	100.9
1904	17.6	4.7	...	...	4.7	4.7	4.7	4.7	...	...	167.0	104.9
1905	25.4	...	...	...	4.5	9.0	9.0	9.0	...	...	158.3	108.5
1906	24.6	4.2	...	...	8.4	12.8	12.8	4.2	...	...	128.9	107.1
1907	22.1	65.5	...	...	4.1	4.1	8.1	36.8	24.5	...	286.7	94.2
1908	21.6	15.6	...	...	7.8	11.7	7.8	11.7	...	...	156.4	105.6
1909	18.3	7.4	...	...	7.4	11.2	11.2	7.4	29.6	...	157.2	112.3
1910	17.4	3.5	...	...	3.5	7.0	7.0	7.0	21.5	...	147.1	100.4
1911	16.4	...	...	...	7.0	10.5	10.5	3.5	28.2	...	150.0	101.8
1912	16.5	3.3	...	...	6.8	3.3	6.8	13.7	34.4	...	120.4	...
1913	16.5	37.1	...	...	13.4	6.7	3.3	40.0	...	...	158.5	...
1914	14.6	13.2	...	...	6.6	3.3	6.6	23.1	13.2	...	142.2	102.5
1915	14.6	6.4	...	...	6.4	9.7	9.7	9.7	19.4	...	113.5	107.0
1916	16.6	6.3	...	...	9.5	6.3	6.3	6.3	592.0	...	108.2	95.4
1917	15.9	3.1	...	...	3.1	6.2	3.1	6.2	781.1	...	87.1	134.3
1918	21.6	27.2	3.3	...	6.6	...	21.2	12.1	445.4	...	136.3	178.7
1919	16.3	11.8	2.9	...	...	...	...	2.9	210.6	...	118.6	106.8
1920	17.2	20.6	2.9	...	17.6	5.8	23.5	...	111.7	...	88.2	155.8
1921	15.4	17.3	...	...	...	2.9	23.1	8.7	17.3	...	98.3	69.4
1922	14.1	5.7	...	...	...	2.8	...	11.4	31.3	...	144.9	116.8
1923	17.0	19.5	...	...	2.7	5.5	...	22.3	134.0	...	78.2	128.4
1924	14.3	24.7	...	...	2.7	5.4	13.5	...	27.4	...	71.4	54.9
1925	15.4	5.4	...	...	8.1	2.7	5.4	2.7	40.5	...	97.2	83.7
1926	16.5	20.8	...	...	...	5.2	18.2	2.6	67.6	2.6	74.4	148.9

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

Typhoid fever has been a more stubborn health problem in Danville than in many other places. As late as 1926 there were eight deaths from the disease there, yielding a mortality rate of 20.8 per 100,000, a figure far in excess of that for the State at large. Only twice since 1918 has the rate dropped below 10 and it stood above 20 in four of the years of that period.

Tuberculosis, on the other hand, has yielded ground in the face of an aggressive program at a very satisfactory rate. In 1900 the community lost 42 inhabitants to tuberculosis, making a mortality rate of 256.8 per 100,000 from that cause. The number of deaths in 1926 was 28 and the rate 74.4, a remarkable improvement.

Influenza struck Danville moderately in 1918. It caused 147 deaths, yielding a rate of 445.4 per 100,000. This was heavier than the rate attributed to influenza in most other municipalities of Illinois but there were only 59 deaths charged against pneumonia that year, bringing the combined mortality rate to 624 which stood about midway between the high and low rates in the State.

The general death rate in Danville has averaged considerably higher than that for the State.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	43		36	No records available		7	10	5	10	19	13	4
Smallpox	173	168	29		12	47	116	6	2	9	16	37
Measles	2211	361	694		83	31	12	121	21	226	62	33
Scarlet Fever	40	41	10		23	324	125	47	49	55	92	109
Whoop, Cough						128	32	20	85	51	101	14
Diphtheria		15	47		8	144	54	33	17	14	14	18
Influenza	1560		1121		2	156	437	28	9	12	25	8
Poliomyelitis	2	1			1	9	1	2			1	2
Meningitis			1		2	2					1	
Tuberculosis*	70		99			44	38	95	52	31	172	38
Pneumonia*			250			11	39	40	23	33	73	46
Syphilis			1			38			77	82	157	189
Gonorrhea						57			51	72	117	199
Chancroid						6						3

*All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else. In 1926, for example, there were 8 deaths reported from typhoid fever and only 13 cases. The average is 10 cases per death.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1916	651	20.7		
1917	634	19.8		
1918	715	21.9	80	111.8
1919	808	24.3	68	84.1
1920	771	22.6	70	90.8
1921	787	22.7	78	99.1
1922	816	22.9	63	77.8
1923	855	23.9	69	86.7
1924	768	21.1	58	75.3
1925	837	22.6	88	105.1
1926	870	23.1	81	93.1

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

REFERENCES.

- Municipal Records of Danville, Illinois.
 Personal Interviews with Dr. William C. Dixon, Health Commissioner.
 Health Survey of Fifteen Illinois Cities in 1925, Rawlings, Isaac D., Director of Public Health, State of Illinois. Health News, May-June, 1926.
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 U. S. Census Reports, various dates.

Decatur

A namesake of the famous American naval officer, the city of Decatur, seat of justice in Macon County, is one of the youngest of the more important municipalities in Illinois. Laid out about 1825 the community became the county seat in 1829 by an act of the General Assembly and was organized into a village in 1836.

Mingled with the early history of this prairie settlement are stories of romance and leadership involving the immortal Lincoln and such well known names as Oglesby, Hanks, Love, Crissey and Chenoweth. Lincoln is said to have nursed a pair of frozen feet which detained him for several days at the Warnick home where he went a courting, thus connecting him with the health history of the place. Richard Oglesby, uncle of the war governor, was the first village president, while Andrew Love, who later became a bishop in the Mormon Church at Salt Lake City was the first town clerk. Dr. William Crissey, one of the first physicians to locate in the vicinity, was a member of the first board of trustees. The character of these men who accepted the responsibilities of leadership in the infant city doubtless gave birth to the principle or policy of denying license to liquor dealers. At any rate Decatur never in its history permitted saloons to operate within her limits and this fact had a profound influence over health conditions there.

Decatur is located near the banks of the Sangamon River in the very heart of the great prairie region of Illinois. Slightly rolling in the immediate vicinity of the city the terrane is characteristically flat and fertile.

The city has never experienced a phenomenal growth but the rich agricultural resources of the surrounding country and the substantial character of the industries that have been established there have provided a solid foundation for the community that might well be the object of envy in less favored places. Thus the population which numbered about 1,000 in 1854 when Dr. J. W. Chenoweth, lately graduated from the University of Louisville, settled there has increased steadily. It had grown to 3,839 by 1860 and went up to 7,161 during the next decade. In 1880 it was 9,547 and reached 16,841 by 1890. The new century found 20,754 souls residing in Decatur and these had increased to 31,140 ten years later. In 1920 the population returns of the United States bureau of the census showed 43,818 people in the city and of these 40,041 or 91 per cent were native born whites. There were 2,590 or about 6 per cent, foreign born whites and 1,178 or a little less than 3 per cent negroes. About 23½ per cent, a total of 10,309, were listed as being 45 years old or over. In Illinois 21½ per cent of the population was in the 45 and over age group.

HEALTH MACHINERY.

Although not a public health organization, the Macon County Medical Society, organized in 1853, doubtless had an influence over public health in that it afforded the medical profession a medium through which to exchange experiences and information concerning successful therapeutic and preventive practice and the nature and prevalence of disease. It also provided an official mouthpiece for the medical profession, giving a legitimate outlet to the expression of their professional influence.

The first legislative step taken by the city government toward creating a public health organization came on July 9, 1886, when an ordinance creating a board of health was adopted. Prior to that time a committee of the board of aldermen managed the public health affairs which consisted chiefly of investigating and abating nuisances. Evidently the committee had been called upon to face a number of complicated problems associated with epidemic outbreaks for the ordinance reads like an instrument conceived by grave experiences. The new board, for instance, was clothed with the broad powers implied in the term "general supervision over the health and welfare of the people." Specifically, the board was invested with authority to abate nuisances; to establish hospitals for the prevention of communicable diseases; to employ nurses to work in such hospitals; to require all citizens to be vaccinated against smallpox under penalty of fines ranging from \$5 to \$25; to require reports of all communicable diseases; to require the quarantine of patients suffering from contagious diseases; to exercise sanitary control over food, milk, slaughter houses, soap factories and the city generally.

The first board, which began at once to exercise vigorously its sanitary regulatory powers, was made up of the mayor, the town clerk and three commissioners including Dr. C. Chenoweth, Ira N. Barnes and B. F. Lilley. It was, however, like so many similar organizations elsewhere, reduced to the necessity of doing its work principally through the force of moral suasion because of the paralyzing complex always introduced by an empty exchequer. In times of emergency the board could and did get money by special acts of the city council and thus it employed inspectors and technical talent from time to time as occasion required.

This practice appears to have prevailed throughout the life of the board of health system, which expired in 1909 with the adoption of the commission form of government by the city, and even continued until 1911 when W. J. Harding was employed as full time health officer. Four years later a milk inspector was appointed and in 1916 a full time sanitary inspector was added to the staff. Then in 1919 a social hygiene clinic, financed jointly by the city and State, was established and Dr. L. H. Neece was employed as its medical director and at the same time he was given general supervision

over the public health activities of the city. The lay health officer and the two inspectors were retained but Dr. Neece was given general supervision over all medical and technical activities and engaged personally in such things as the examination of school children, the investigation of epidemiological problems and the like.

The year 1924 marked the beginning of distinct advancement in the public health organization of Decatur. In March of that year arrangements were made by the State Department of Public Health to establish a laboratory service in the local hospital for doing diphtheria tests. It was but a step from that point to a rather complete local laboratory service and the city took advantage of the opportunity in October of that year, paying the hospital a contract price for public health work done for the local physicians. Early in the year Dr. Neece gave up the health superintendency, opening the way for a full time man in that capacity.

After a lapse of several months, the public grew restive, provoking a pronounced sentiment in favor of a well organized modern health department manned and equipped in a way commensurate with the needs and dignity of a thriving up-to-date community. Accordingly the officials looked about until they struck upon Dr. William S. Keister of Charlottesville, Virginia, a man of superior training and considerable experience in public health work, who was tendered and accepted the position of full time medical director of health on September first, 1924. Under him a splendid cooperative program unifying all public health service in the city, both voluntary and official, under his direction was worked out and put into operation. A picture of the public health machinery that was functioning under Doctor Keister at the close of 1925 is found in a report of a study and appraisal



William S. Keister, M.D.
Medical Director of Health,
1924 to 1927

of the service conducted by the State Department of Public Health in 1926. By consulting that report we learn:

"Appraised on the basis of the 1925 records of public health service, Decatur, with a score of 695, ranks third among the fifteen cities surveyed. Much progress has been made in this field of community effort since 1924 when the municipal health department was reorganized. Enjoying an excellent relative standing, of even greater interest is the spirit of progress that permeates public health activities in Decatur, a demonstration of which is found in the addition of new activities and the extension of existing ones during last year.

"The health work in this city is unique in demonstrating the excellent coordination which is possible between the city, board of educa-

tion, county tuberculosis sanatorium board and the volunteer health agencies under the leadership of a city health officer. While many influences may have been present to bring about this coordination, that of the county medical society deserves special mention. In 1924, a central committee of public health was formed, composed of the president of the county medical society, superintendent of Decatur-Macon County Hospital, superintendent of schools, city commissioner of health and safety, the directors of the venereal, orthopedic, tuberculosis and other clinics, the president of the Visiting Nurse Association and other interested persons. One of the first results of this committee's efforts was the appointment of a full-time health officer by the city, part of whose salary is paid by the board of education. In addition to occupying these two positions the health officer also directs the work of the Visiting Nurse Association. The health department conducts communicable disease control, sanitation, food and milk control activities. The city clerk is local registrar. A venereal clinic is held at the hospital, the expense being borne jointly by the city and the State. Tuberculosis clinics are held by the medical superintendent of the county sanatorium, but the field work for these clinics is done by the Visiting Nurse Association. This same organization also renders bedside care and field service for prenatal and infant hygiene.

"School health work is under the direction of the city health officer (as noted above), who is assisted by three nurses and a part-time dentist. Laboratory work for the city is done by contract in the Decatur-Macon County Hospital. Two baby welfare clinics are maintained and one nurse divides her time between these several clinics.

"The city itself spends \$13,310 for health service or 26 cents per capita and expenditures by all agencies totals \$29,679 or 50 cents per capita. Seven cities spend more than Decatur for its health department and in seven the total expenditures by all agencies exceed Decatur's total.

"Facilities for the hospitalization of contagious disease patients are not present.

"A special tax for anti-tuberculosis work has been voted by the county under the tuberculosis sanitarium law. A sanitarium has been built and is operated under contract with the Decatur-Macon County Hospital. The sanitarium board pays the Visiting Nurse Association for field tuberculosis service throughout the county. Decatur takes first place among the fifteen cities in its field nursing service for tuberculosis. The amount of hospital service provided is adequate.

"No prenatal clinic was in operation in 1925 although one has been started recently at the Decatur-Macon County Hospital. Two infant clinics were operated but the total attendance in these was low.

"School hygiene work is financed by the board of education, which employs three nurses and a part-time dentist and pays one thousand dollars per year to the city health officer who acts as director of hygiene. Decatur is surpassed only by Peoria in its school health work.

"The sanitary inspection service is conducted by two full-time inspectors.

"Prior to October 1925, there was no free public health laboratory service except that furnished by the State Laboratory at Springfield and facilities for the diagnosis of diphtheria at the Decatur-Macon County Hospital. Since that date, however, the city is paying \$100 per month to the hospital for laboratory service."

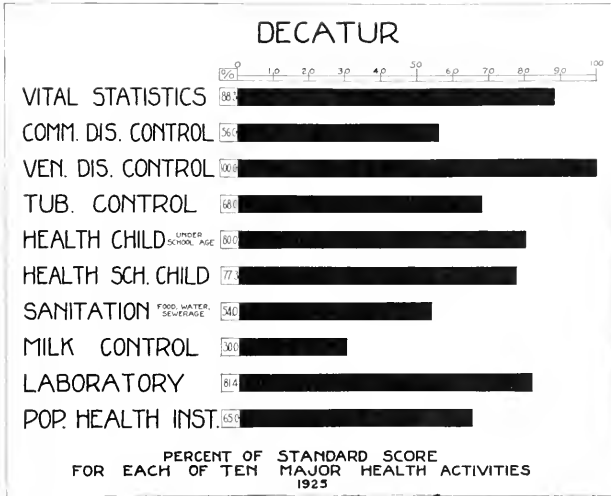


Fig. 1. This graph illustrates the strong and weak points in Decatur's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Decatur was 70 per cent of the standard perfection requirement.

With a change in the political fortunes of the municipality that took place in 1927, Dr. Keister resigned and Dr. Geo. W. Haan, Jr., was appointed in his place. The official personnel of the health department remained the same in strength but some of the voluntary agencies as well as the school board withdrew from the cooperative agreement that previously prevailed and began again to plan and direct their activities independent of the health department.

VOLUNTARY AND OTHER AGENCIES.

Public health nursing, which began in 1908 through resources provided by the Civic League and the Woman's Club, has been an important factor in the health services of Decatur. During the second year of this work the

school board paid one-half of the salary of the one nurse employed because a considerable amount of her time was spent in the schools. Later the school board undertook to pay all of the nurse's salary and in 1911 employed two nurses. This beginning ultimately led to the employment by the school board of three full time nurses, a part time dentist and a contribution toward the salary of the health officer during the tenure of Doctor Keister and gave Decatur one of the finest school health services in Illinois.

In 1917 the Macon County Tuberculosis and Visiting Nurse Association was organized and began at once to function. It participated in the health activities of the city and county in a large way, exercising a predominating influence in the successful campaign that resulted, through popular vote, in the opening of a splendid tuberculosis sanitarium during the summer of 1923. This sanitarium proved to be the nucleus about which has sprung up that remarkable institution known as the Decatur and Macon County Hospital which concentrates under one administrative head a very large percentage of the medical and public health facilities of the city and county. All of the dispensary and clinic activities of a public character, except those carried on in the schools, are conducted in the institution and supervised by it.

A clinic for crippled children was started in the city in 1919 by Dr. George Lyon. Later it was affiliated with the hospital and upon the death of the orthopedic surgeon in charge it was turned over to the Illinois Society for Crippled Children in 1926.

WATER SUPPLY.

The first water supply for Decatur was placed in service in December 1870, drawn from a well in the city. Scarcely a month later it proved to be inadequate. In 1871, therefore, a pumping station was built on the bank of Sangamon River.

It was soon found that the river water was too turbid for use during high water and in 1874 an infiltration gallery was constructed.

In 1877 the supply again became inadequate. The gallery was enlarged and a dam constructed to raise the water level at the gallery.

Later it became necessary to pump water directly from the river to meet the demand and the supply was again unsatisfactory. In 1894 a filter plant was constructed.

In 1910 and 1911 a new pumping station was built and the wooden dam was replaced by one of concrete. In 1914 a new and modern filter plant was built. This plant is still in use.

In 1920 and 1921 another dam was constructed which formed what is now called Lake Decatur. This lake will supply ample water to meet the needs of the city for many years.

The Sanitary District has adopted an ordinance for the sanitary control of the lake. The outline for the ordinance was prepared by the State Department of Public Health, and it was the first ordinance of its kind to be adopted in Illinois. An inspector is maintained to police the lake and its tributaries. With this control of the lake and proper operation of the treatment plant the water should be of excellent quality.

SEWERAGE.

Sewers were constructed as needed until by 1912 the city was rather completely sewered on the separate plan. There were four outlets, all of which were below the water-supply intake on Sangamon River.

Soon after the Sanitary District was organized in 1917, an interceptor was constructed to collect the sanitary and storm sewage.

In 1922 a modern sewage-treatment plant was constructed. The plant receives wastes from the Staley starch works. After the plant was finished the wastes from the starch works increased enough to overload the plant. An agreement was reached whereby the starch works would decrease its flow and the city would enlarge the treatment plant.

HEALTH CONDITIONS.

References to prevailing health conditions and even to epidemics in Decatur prior to 1900 are particularly meagre. If the community suffered extensively from cholera during the outbreaks of 1833 or 1849 it kept the matter to itself. If smallpox ever alarmed the public or carried off any considerable number of citizens, those facts were likewise regarded as private affairs. If these two notorious diseases escaped historical mention we are not surprised to find no records of other and less spectacular factors in the community health.

On the other hand the city introduced an effective vital statistics system at an early date, the city clerk being the local registrar. The system was working well enough in 1900 to justify the United States bureau of the census in admitting Decatur along with one-half a dozen other Illinois cities into the United States registration area for deaths which was established at that time. Requirements for admission into that area include an effective law or ordinance and proof that at least 90 per cent of all deaths are being reported and recorded.

Just when the ordinance was passed in Decatur is not clear from material available. The mortality statistics for these early years are doubtless preserved somewhere but they were never analyzed and compiled and they are not accessible for a study of the kind herewith attempted. Accordingly we must be contented here to surmise that conditions prevailing after 1900

were but a continuation of those that existed before that time and thus conclude that the city experienced its full share of epidemic visitations which came and went in periodic waves peculiar to infectious disorders. The constantly high mortality rates from tuberculosis, typhoid fever and diphtheria during the first decade of the twentieth century leads to the reasonable presumption that these diseases as well as diarrheal and other communicable disorders were severely endemic for some considerable time before 1900.

Scanning the mortality sheets we observe an unmistakable evidence of distinct improvement in the public health measured by the impeccable terms of declining fatality rates from specific causes. Deaths from typhoid fever, for instance, fell from 48.2 per 100,000 population in 1900 to 1.8 in 1926. The progress of this descent was not unbroken but rather it was interrupted by fluctuations which varied in intensity with the changing combination of the innumerable factors involved in the spread of this disease. At the same time the downward trend was pronounced, the marked increases grew more infrequent and the public conscience became more and more sensitive to outbreaks of typhoid fever.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Small-pox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Pulmonaryitis	Tuberculosis (All forms)	Pneumonia (All forms)
1897	30	3	...	...	...	1	...	2	...	...	2	...
1898	245	5	...	...	...	2	...	1	...	...	41	...
1899	332	4	...	...	1	1	...	1	10	...	37	36
1900	351	10	...	...	1	2	...	9	5	...	40	28
1901	303	9	...	...	2	...	...	1	2	...	33	23
1902	331	3	...	...	...	11	...	10	2	...	37	21
1903	280	4	...	...	5	...	...	10	5	...	28	13
1904	322	9	...	1	1	...	...	1	3	...	43	18
1905	271	3	...	...	...	...	3	...	7	...	29	26
1906	360	3	1	...	...	...	...	7	4	...	37	20
1907	344	3	...	...	...	...	1	...	4	...	30	23
1908	315	3	...	...	...	1	...	...	3	...	28	23
1909	327	7	...	...	1	2	...	6	2	...	36	15
1910	412	5	...	...	7	4	...	3	7	...	45	32
1911	400	3	...	...	...	4	...	4	12	...	32	14
1912	433	10	1	...	...	1	...	5	5	...	39	25
1913	476	2	...	...	1	1	...	4	1	...	45	23
1914	460	7	...	...	...	1	...	4	...	...	47	29
1915	458	3	...	...	1	...	...	3	1	...	31	13
1916	500	4	...	...	13	8	...	6	2	...	35	37
1917	581	17	...	1	...	1	...	3	4	...	46	57
1918	686	3	1	...	...	...	...	4	7	103	42	73
1919	556	4	...	...	1	...	...	4	11	29	43	22
1920	619	4	1	...	6	2	...	4	7	47	52	50
1921	601	9	1	...	...	...	...	3	20	9	33	44
1922	594	2	...	...	...	3	...	3	13	...	38	45
1923	647	2	...	...	1	3	...	4	7	26	32	38
1924	609	2	...	...	2	2	...	2	3	5	38	40
1925	660	6	...	...	...	2	...	1	9	...	36	55
1926	755	1	...	...	...	1	9	1	14	1	35	40

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1897	1.5	15.3	...	...	...	5.1	...	10.2	...	...	20.4	...
1898	12.3	25.0	...	...	...	10.0	10.0	5.0	...	...	205.2	...
1899	16.3	19.6	...	...	4.9	4.9	4.9	4.9	49.1	...	181.7	176.8
1900	16.9	48.2	...	...	19.3	9.6	...	43.4	24.1	...	192.7	134.9
1901	14.1	42.8	9.5	...	...	23.8	34.2	1.7	38.0	...	156.7	109.2
1902	15.4	14.0	...	...	9.3	51.2	9.3	46.6	9.3	...	172.3	97.8
1903	12.8	18.4	...	...	36.7	...	9.2	45.9	23.0	...	128.6	59.7
1904	14.6	40.8	9.0	4.5	4.5	...	22.6	4.5	13.6	...	194.6	81.5
1905	10.8	18.5	...	...	...	...	11.1	11.1	29.6	...	111.0	74.0
1906	12.1	12.1	3.6	...	20.2	...	20.2	28.3	16.2	...	149.7	80.9
1907	12.0	10.5	...	...	...	...	3.7	27.9	14.0	...	104.7	80.3
1908	13.6	11.8	...	...	...	3.9	19.7	...	11.8	...	110.3	90.1
1909	10.7	23.0	...	...	3.3	6.6	...	19.7	6.6	...	118.1	49.2
1910	13.1	16.0	...	...	22.4	12.8	9.6	22.4	12.8	...	143.8	102.2
1911	12.4	9.3	...	...	...	12.3	12.3	37.0	12.3	...	58.8	43.2
1912	12.3	28.1	2.8	...	...	2.8	5.6	14.1	14.1	...	109.7	70.1
1913	13.1	21.9	...	...	2.7	2.7	11.6	2.7	8.2	...	123.2	90.3
1914	12.4	18.7	...	...	...	2.7	10.7	10.7	...	...	125.2	77.3
1915	12.0	7.8	...	...	2.6	20.8	20.8	7.8	2.6	...	80.5	111.6
1916	13.0	10.1	5.0	...	32.8	2.5	15.1	5.0	5.0	...	88.3	93.4
1917	14.2	41.0	...	2.4	...	2.4	7.2	9.6	7.2	...	110.8	137.4
1918	16.3	6.8	2.2	...	...	...	9.0	15.9	234.0	...	95.4	165.9
1919	12.8	9.1	...	...	2.2	...	9.1	25.1	66.2	...	98.1	50.2
1920	14.6	8.8	2.2	...	13.6	4.1	8.8	15.8	106.8	...	118.1	122.7
1921	12.9	19.3	2.1	...	...	...	6.4	43.0	19.3	...	70.9	94.6
1922	12.5	4.2	...	...	...	...	6.3	27.4	...	...	80.0	94.8
1923	13.4	4.1	...	...	20.6	6.1	8.2	14.4	53.7	...	66.1	78.5
1924	11.5	3.7	...	...	3.7	3.7	5.7	5.6	9.4	...	71.7	75.4
1925	13.1	11.9	...	...	3.9	4.0	...	2.0	17.8	...	71.6	102.0
1926	13.7	1.8	...	...	...	1.8	16.2	1.8	23.2	1.8	63.6	72.7

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	27	99	22	22	12	31	18	15	18	15	23	34
Smallpox	163	81	33	33	34	10	1	31	5	13	6	12
Measles	956	181	183	188	927	51	13	24	6	662	242	286
Scarlet Fever	57	56	30	30	33	217	62	121	204	78	156	135
Whoop, Cough		58	75	133	168	102	7	2	3	140	341	174
Diphtheria		21	35	30	132	309	139	77	60	47	53	70
Influenza			1566	1763	919		60	77	16	52	66	24
Poliomyelitis	15	1			2	6		1	1	1	8	23
Meningitis		6	2			2		1				2
Tuberculosis*		95	55	37	73	61	133	218	133	110	232	188
Pneumonia*						10	132	179	115	154	178	123
Syphilis			26			188		8	136	172	150	141
Gonorrhea			154			248		112	202	195	188	189
Chancreoid								2		3		3

* All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois and they are more complete in Decatur than in many other communities and cities of the State. This table indicates improvement in notification more than anything else.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1900	206	9.9	57	276.6
1901	250	11.4	57	228.0
1902	502	21.9	70	139.4
1903	549	23.0	51	92.8
1904	535	21.4	59	110.2
1905	615	23.7	34	55.2
1906	635	23.5	51	80.3
1907	1004	35.8	46	45.8
1908	929	31.9	58	62.4
1909	1015	32.7	47	46.3
1910	1047	33.6	54	51.5
1911	1081	33.3	58	53.6
1912	1114	33.1	57	51.1
1913	1115	31.9	61	54.7
1914	1183	32.6	68	57.4
1915	1150	29.6	58	50.4
1916	907	23.1	75	82.6
1917	840	20.9	74	85.2
1918	971	23.5	79	78.1
1919	968	22.7	78	80.5
1920	1089	24.5	71	65.2
1921	1124	24.6	90	80.1
1922	1045	22.2	76	72.7
1923	1068	22.0	91	85.2
1924	1091	22.1	84	77.0
1925	1126	21.3	74	65.7
1926	1275	23.2	93	72.9

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

Experience with tuberculosis has been no less favorable than that with typhoid fever. Mortality declined from 192.7 in 1900 to 63.6 in 1926. The resources and energy utilized in fighting this disease appear to have produced results of the most satisfactory character.

Several unhappy epidemics have marred the story of general improvement in health conditions during the first quarter of the twentieth century. Scarlet fever, for example, reached alarming proportions in 1915. Conditions were regarded with sufficient gravity to lead the State Board of Health to go into the city and by virtue of authority vested in it by law take complete charge of the situation. Some 300 cases and 8 deaths occurred during the epidemic. Never before nor since, so far as the records disclose, has scarlet fever caused such disastrous havoc in the city.

Likewise diphtheria cast its unwelcomed shadow across the community on more than one occasion but its wide prevalence and fatal character in 1921 makes it particularly noteworthy for that year. There were 309 cases and 20 deaths reported. Somewhat similar outbreaks occurred in 1900, 1902, 1903 and 1911.

Again, 1917 marked the occurrence of the worst typhoid fever epidemic which the city has experienced since 1904. About 120 cases, 17 of which

terminated fatally, followed the contamination of a milk supply by a typhoid carrier who was at work on a dairy farm.

Again, Decatur felt the grievous sting of the influenza pandemic which spared not the State in 1918. Fatalities from that disorder jumped from an average of 4 or 5 per year to 103 while deaths from pneumonia went up from an annual average of about 25 or so to 73. Even so the mortality rate from these two causes combined was quite moderate compared with what it was in most of the other municipalities in Illinois. The rate in Decatur was 400 per 100,000 population while Elgin alone out of all the other cities embraced in this volume reported a lower rate. It has been suggested that the sobriety of Decatur may have been an important factor in the moderation of the epidemic there.

The periodicity of these epidemics in recent years and the very fact that they cause profound public concern which expresses itself in the application of sound preventive measures are evidences of substantial advancement against the communicable diseases. Public concern over the presence of a preventable disease and public support of preventive programs are manifestations of a healthy public mind and so long as that condition continues the interruptions in health improvement caused by epidemic outbreaks will serve only to stimulate the city to more adequate and more vigorous efforts against the invasion of disease.

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East St. Louis

Reckoned from the date when the white man first settled in that vicinity, East St. Louis is one of the oldest communities in Illinois. French missionaries, arriving from the north by way of Canada and the Maumee-Wabash portage, established themselves there in 1700, calling the settlement Cahokia. After surviving many vicissitudes of fortune a plan for building a city was evolved in 1817 when the site was platted and given the name of Illinois City. Instead of adding his benediction to the project, Lewis Beck, a prominent citizen and sagacious observer of the day, prophesied that the land laid out would never be valuable except for cornfields and potato patches because it had no advantages.

This gloomy forecast, notwithstanding, the community had acquired sufficient importance by 1859 to secure a charter from the General Assembly in which it was called Illinois Town. Two years later, April 1, 1861, the name was changed to East St. Louis and a new charter was granted by the legislature.

The city is located almost in the very center of the "American Bottoms", the extensive low-lying area that beguiled pioneers by its fertility but complicated its marvelous harvests of grain with great crops of mosquitoes which carried malaria to rob the settlers of their blessings. East St. Louis is separated from St. Louis by the Mississippi River from which both municipalities have always drawn their water supplies.

When Illinois became a sovereign state in 1818, East St. Louis was a community of about 500 souls and was still known as Cahokia. The community never grew very rapidly until late in the nineteenth century, bidding fair for a long time to live out the doleful forecast of Lewis Beck. By 1870, however, the population had reached 5,644 and a decade later it was 9,185. During the ten years between 1890 and 1900 the population grew from 15,169 to 29,655 and then to 58,549 by 1910. Reports of the United States census show that there were 66,767 people in East St. Louis in 1920. Of this number 52,522 or 79 per cent, were native born whites while 7,437, or about eleven per cent, were negroes. There were 12,212 or about 18.2 per cent, who were 45 years old or over.

HEALTH MACHINERY.

If the original community of Cahokia is included in the history of East St. Louis, to that city falls the distinction of having had the first health officer and quarantine regulations in Illinois. Strangely enough this first

health officer was a woman, Madame Beulieu, of whom Governor Reynolds in *The Pioneer History of Illinois*, says:

"She was the director-general in moral and medical matters (at Cahokia). This lady was educated and intelligent. She possessed a strong, active mind and was a pattern of morality and virtue. She was the doctress in many cases and the sage femme general for many years. She was extremely devout and an exemplary member of the Catholic church. This, together with her merit generally, enabled her to fix up many of the male and female delinquencies of the village. She was sincerely entitled to the praise due a peacemaker. * * * * She lived a long and useful life, and died in Cahokia in 1826, eighty-four years of age, much lamented by all classes".

Reference to the first quarantine regulation of which we have record appears in the minutes of the court of quarter sessions of Cahokia, July 2, 1799. It reads:

"Ordered in order to keep off the plague of the smallpox, that now rages on the Spanish Side, that any one crossing (the river) to be fined \$6.00 for the first offense, \$12.00 and ten days imprisonment for the second offense and remain in prison until he or they shall pay the final fine. Goods brought from the Spanish Side shall be confiscated."

These good beginnings failed to provoke popular support, however, because they soon fell by the wayside. At any rate the records are singularly free from further references to any kind of official public health activities until June 3, 1867, when a board of health made up of Edward Barrett, Alex Fekete, Patrick McCormick and Augus Gillis, one from each ward of the city, was established by ordinance. Just how the board functioned, if at all, is not clear since evidence of an executive officer is wanting. Not only so but in 1881 reports of smallpox cases were transmitted by the mayor to the State Board of Health, a fact that there was no health officer active at that time.



M. R. Doyle, M. D.,
Health Commissioner,
1901-1903

From the annual reports of the State Board of Health, it appears that medical and sanitary inspectors and nurses were employed from time to time to handle emergency situations arising in East St. Louis as the result of epidemic outbreaks and floods. Frequently these inspectors were temporary employes of the State Board of Health and the State Board paid for nursing services rendered in the city on at least one occasion prior to 1900. These records suggest that the local public health facilities were either quite unorganized or too meagre to be of particular value under stress of emergencies.

Later it became the practice to employ a health inspector who investigated nuisances, placarded premises and fumigated sick rooms. He seemed to have worked under the police department. About 1900, however, there was a revival of local interest in the public health requirements of the city and it became the practice to employ a physician as health officer on a part time basis. The first to serve in this capacity was Dr. M. R. Doyle, who filled the office during the period of 1901-1903. He was succeeded by Dr. A. A. McBrien who retained the position until 1911 when he was replaced by Dr. L. B. Short. In 1915 Dr. Short was succeeded by Dr. R. X. McCracken who



L. B. Short, M.D.
Health Commissioner,
1911-1915

turned the office over to Dr. C. W. Lillie in 1919.

East St. Louis adopted the commission form of government in May 1919 so that Dr. Lillie was after that date responsible for his duties to the commissioner of public health and safety who had fallen heir to all the powers, duties and responsibilities formerly vested in the local board of health. Dr. Lillie continued as health officer until his death in 1922 when the commissioner of public health and safety undertook to manage personally the administrative functions of the health service. This executive custom has prevailed to date.

Apparently the health officer made up the entire staff of the health department in East St. Louis during the early years of the twentieth century but assistants in the capacity of inspectors were added from time to time until we find the personnel including the health officer, and assistant health officer in charge of garbage collection, a sanitary inspector, a hospital matron and a bacteriologist (part time) in 1919.

About this time a wave of enthusiasm for health improvement flooded the city. Through the interest manifested by the War Civics Committee, which found itself with considerable unexpended funds after the Armistice had stopped World War hostilities, an exhaustive sanitary and health study involving a house to house canvass and a careful analysis of the statistics, laws, facilities for health work, etc., was undertaken in 1919. This task, supervised by the State Department of Public Health was initiated with the view of discovering the exact nature and magnitude of the sanitary and hygienic problems of the city and then creating a public health organization commensurate with the needs.



R. X. McCracken, M.D.
Health Commissioner,
1915-1919



Charles W. Lillie, M.D.
Health Commissioner,
1919-1922

The project turned out to be a case of the "Spirit is willing but the pocket book is empty". Everything went fine until the question of financing an adequate health department came up but for this problem there seemed no solution. The municipality was already taxed to the legal limit and no other financial resources were open to the officials.

Although no general reorganization of the health work followed fast upon the heels of the survey, improvements and new activities were added to the service from time to time. Scarcely before the study was completed in 1919 a social hygiene clinic with Dr. W. C. Wilhelmj in charge, was established under the joint financial support of the State and county. Shortly afterward a medical examination system was inaugurated in the schools.

Subsequently two other studies of an entirely different type were made of the public health equipment in East St. Louis. One was carried out in 1925 by the American Child Health Association and the other in 1926 by the State Department of Public Health. Each was initiated by the agency that did the work. In each case the object was to discover how much public health service was actually being done in the city by all official and voluntary agencies and to relate the whole volume of such service to the needs of the municipality as measured by the practices found profitable in a hundred American cities. The findings in each case were reduced to an arithmetical value based upon 1,000 possible points and in each case the results were much the same. Quotations from the report made by the State Department of Public Health give a clear conception of the public health services available in East St. Louis at the close of 1925. We read:



A. P. Lauman
Commissioner of Public
Health and Safety,
1927 to date

"As indicated by a score of only 415 out of a possible 1000 points, public health activities in East St. Louis fall far short of what may be regarded as standard practice. Although the city commissioner under whose supervision the health department falls, manifests a keen interest in and devotes a considerable part of his time to this department, the health service is poorly organized and not well balanced. The city employs no nurses. The field staff consists of one quarantine officer and three inspectors, the latter devoting their attention chiefly to grocery

and meat stores, restaurants and nuisance complaints. A part-time physician does the laboratory work and is available for settling questionable diagnoses although his actual field activity is negligible. Vital statistics are collected and compiled by cause and by groups for the local registration area which is larger than the city but no rates are computed and no analyses made. The principal short-coming of the health department under the present budget is a lack of trained personnel. As organized it functions well.

"Four part-time physicians employed by the school board, a medical director of a social hygiene clinic supported from state and county funds, a nurse employed by the tuberculosis association and seven nurses on the staff of the Visiting Nurse Association make up the remainder of the city's public health workers. In so far as recreation may be considered a public health activity, the park board does a splendid service. The Visiting Nurse Association is easily the most vigorous and best organized of the health agencies. Between the various agencies there seems to be no close contact.

"East St. Louis spends money enough, through official and voluntary agencies combined, to enjoy a much more satisfactory health service than it obtains. The city, however, spends directly only 16 cents per capita per year, other agencies contributing enough to bring the grand total up to about 51 cents per capita per year. A reasonably adequate city health department requires at least 50 cents per capita per year and this must be supplemented by a considerable voluntary agency strength in order to provide a service commensurate with minimum needs.

"The records collected and compiled by the health department are for the local registration area, which is larger than the city and no analysis showing the city proper is made. None of the records are indexed and while tabulations by cause are made, these compilations are in alphabetical order without reference to the International Classification.

"Activities directed toward the control of communicable diseases are handled by the city commissioner under whose supervision the health department comes. He is assisted in this by a quarantine officer who placards premises and fumigates at the termination of quarantine. No nurses are employed and the part-time physician on the staff does very little field work. Smallpox cases are usually isolated in a 'pest house' but there are no hospital facilities for isolating contagious disease patients. Advantage is always taken of epidemics to stimulate vaccination against smallpox.

"Efforts directed at combating venereal diseases constitute the most efficient official public health service in East St. Louis and as such stand out in strong contrast to the weakness in other activities. A clinic is operated under first class supervision and patients are kept under good control.

"A county tuberculosis nurse spends a considerable part of her time in the city and the Visiting Nurse Association does a limited amount of tuberculosis work. No tuberculosis clinics are held in the city nor are there any hospital facilities for tuberculous patients.

"The Visiting Nurse Association conducts two baby welfare clinics per week, one for white and the other for colored. Last year the total number of visits to these clinics was 952. The same organization did a large volume of field nursing work. There is no prenatal or preschool clinic. With limited strength and financial resources, the Visiting Nurse Association is doing a splendid service in a broad field.

"Because of intense interest in health matters on the part of the city superintendent of schools, some very good work is being done among the pupils. The good points are the systematic weighing and measuring and the use of this procedure to stimulate interest of the children, the regular use of text book instruction and the splendid recreational system. Four physicians devote time each school day morning to the examination of pupils. A fairly complete examination is given to all children during their first year. Those with gross defects are kept under more or less supervision. Examinations are made of other pupils only when some manifestation of departure from the normal is observed by the teacher and reported to the physician when he pays his routine visits to the school. There was some evidence that these physical examinations result in considerable good.

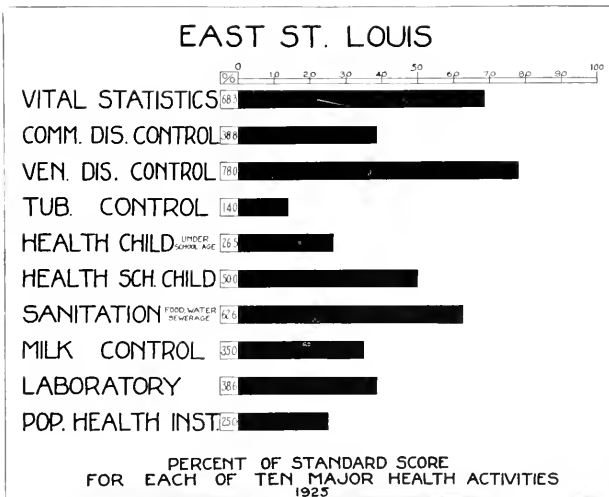


Fig. 1. This graph illustrates the strong and weak points in East St. Louis' public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in East St. Louis was 42 per cent of the standard perfection requirement.

"The water supply is good and appears to be on tap in most homes and all business houses. While no actual, up-to-date records are available, there appear to be grounds for believing that a considerable number of dwellings have no sewer connections. Three sanitary inspectors pay especial attention to food establishments, nuisances and the like so that this phase of public health work is more adequately covered by official activity than most others.

"About 85 per cent of the milk supply is pasteurized. This is distributed by three large concerns while the raw milk, none of which is certified, is handled by 14 small producers. License is required of all milk dealers and satisfactory ordinance provisions for adequate control supervision are in force. No bacterial analyses of samples are made, however, and no systematic inspection activities prevail. Perhaps it is not amiss to add that the estimated daily consumption of milk, about one-half pint per capita, is the lowest of the 15 cities studied."

While not a part of the health machinery in the narrower sense, there were two other official organizations the work of which resulted in considerable public health improvement. First came the organization of the sanitary district in 1900. It caused the strengthening of old levees and the building of new ones which have protected the city from periodic inundations so common during earlier years. These improvements relieved the locality from marshy areas and stagnant pools which had once been the prolific breeding grounds of mosquitoes. Malaria disappeared also with the passing of the mosquito.

Then came the park district organization in 1908. Including a part of adjacent townships under its jurisdiction this organization has built numerous parks, playgrounds, one open air swimming pool and promoted in other ways wholesome outdoor life. Doubtless these activities have contributed to the health assets of the community.

Furthermore, there was an isolation hospital authorized and purchased by the city in 1904. It was somewhat superior to what was ordinarily referred to as "pest house" but it did not measure up to the modern conception of an isolation hospital. At any rate, it provided a place where patients suffering from contagious diseases might be cared for in a way to prevent spreading the infection.

WATER SUPPLY.

The waterworks were established in 1885, when a 30-year franchise was granted to certain St. Louis interests. The properties were later bought by the American Water Works & Guarantee Company (now American Water Works & Electric Co., Inc.) a holding company with headquarters in New York City, which also now supplies Granite City, Belleville, Venice, and Madison from the East St. Louis plant. The old local company name of East St. Louis & Interurban Water Company is still used.

The supply has always been from the Mississippi River. The first water-works included a settling basin. Later a secondary settling and coagulating basin was added and eighteen Jewell pressure filters installed to operate under a low head as gravity filters with an outlet to a filtered-water basin. The next addition was ten steel tub gravity filters, and four concrete gravity filters were added in 1913, and eight more in 1918.

At present the water is taken from the river, allowed to settle for about $5\frac{1}{2}$ hours, then agitated to mix it with the coagulants, and allowed to settle again for $5\frac{1}{2}$ hours before filtration. After filtration, chlorine is added as a sterilizing agent before it is pumped to the distribution system.

Since filtration and chlorination of the river water was started, the supply has been considered as a safe sanitary quality and no illness has ever been attributed to the water supply. Improvements to assure water of good sanitary quality have been made from time to time and a local laboratory was established at the plant for bacterial and chemical analyses in 1914. In addition to the local analyses, check analyses have been made in the engineering laboratories of the State Department of Public Health since June 1918.

In the East St. Louis industrial district there are a large number of private water supplies that obtain water from the alluvial sand and gravel deposits in Mississippi River bottom land known as the American Bottoms. This water is harder than the public water supply but during warm weather is cooler and thus better for certain purposes, such as for condensers.

Although at the close of the period covered by this history there were quite a number of private wells still in use in the East St. Louis district, the water mains are accessible to nearly all the built-up territory. The company has a total of about 325 miles of mains and distributes from the East St. Louis plant about 20-million gallons a day.

During 1926-27 a new intake and supply line was established upstream but the old intake opposite the treatment plant is maintained for emergency use.

SEWERAGE.

The land comprising the site of East St. Louis was low and quite flat and land drainage was one of the earliest needs. The first permanent or public sewers were installed in 1873 and since that time numerous extensions and additions have been made, but without regard to any comprehensive plan and with limited thought of future needs.

All of the sewers are of the combined type to handle storm water as well as sanitary sewage. There is one main outlet with a pumping station southwest of the city, and several other smaller outlets discharging either directly

into Mississippi River or indirectly to the river through Cahokia Creek, which flows through the western portion of the city and discharges into Mississippi River at the western city limits.

No treatment of the city sewage has been necessary because of the dilution afforded by the river, and because there is no water-supply intake for a great many miles downstream. The sewage from the public and some private and industrial sewers has caused very objectionable pollution of Cahokia Creek and Schoenberger Creek, a tributary of Cahokia Creek, which flows westerly through the northern portion of the city.

In 1907 the East Side Levee & Sanitary District was established, which district includes not only East St. Louis but a large territory surrounding the city, and was formed for land drainage and not to provide sanitary sewerage facilities. Many projects have been planned by this district, some of which have been carried out, others only partly carried out, and others abandoned or not started. Politics have entered considerably into the functioning of the district and has somewhat hindered the development and carrying out of good plans based upon sound engineering and finances. The delays and uncertainties of the district's work have hampered somewhat the proper development of main sewers serving parts of the city.

A report was prepared for the district by Alvord & Burdick, consulting engineers, giving recommendations and general plans for drainage for the district, and in 1924 a report on sewerage was prepared by Black & Veatch for the city. Since the city's consulting engineer's report the city has planned some rather extensive sewerage improvements for the northern portion of the city, but unfortunately more or less disregarded their own engineer's recommendations. The project thus planned by the city was unsound and was defeated in the courts.

Many sewers in East St. Louis are now inadequate and relief sewers, as well as extensions to unsewered areas, are badly needed. The city has been advised several times by the engineering division of the State Department of Public Health to adopt a sewerage plan looking toward the future, such as that recommended by the city's own consulting engineers, and that any relief or new sewers that are built should take into consideration the land adjoining the city which drains to and through the city, much of which is building up and will sooner or later be a part of the city.

HEALTH CONDITIONS.

Writing in 1852 concerning health conditions which had prevailed in the American Bottoms, Governor Reynolds in *The Pioneer History of Illinois*, said:

"The country at that day was more sickly than it is at present: but the only disease then was the bilious fever with the pleurisy at rare in-

tervals. The bilious attacks showed themselves mostly in the form of fever and ague. The fever without the ague or some chill with it was not frequent. These diseases attacked the people in the latter part of summer and in the fall, and were very common, but not often fatal. The sickness at this time is not so common, but more malignant and dangerous.

"Many in olden times were sick in the fall, but few died. By improvements or by some other means the diseases of the country have changed within the last fifty years to be much fewer in the number of cases, but more fatal.

"The remedies to cure the bilious fever and ague in the first settlement of the country were tartar-emetic, calomel and jalap and peruvian barks. These were the uniform and universal remedies and they generally succeeded. When the patient was weak after the fever, the doctors prescribed stimulus of wine, etc."

While this autumnal disease, doubtless malaria, was so uncommonly common among early settlers that it attracted attention there were a few other ailments that found space for themselves upon the meagre health records of the time either because of public alarm which their appearance inspired or because of their extraordinary rarity. Milk sickness, smallpox and cholera were chief among these. Governor Reynolds believed that his

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whooping Cough	Diphtheria and Croup	Influenza	Polymyositis	Tuberculosis (All forms)	Pneumonia (All forms)
1894	278	...	...	...	...	...	...	...	...	...	...	...
1895	298	6	...	...	...	1	1	15	...	...	19	...
1896	285	5	...	...	4	...	...	9	...	...	13	...
1897	276	76	...	...	3	...	1	3	...	...	26	...
1904	...	...	...	1	...	...	...	...	...	...	...	...
1907	914	18	...	...	18	7	...	15	10	...	90	101
1908	831	...	...	...	...	...	...	...	...	...	...	...
1909	777	...	...	...	...	...	...	...	...	...	...	...
1910	908	...	...	...	...	...	...	...	...	...	...	...
1911	865	...	...	...	...	...	...	...	...	...	...	...
1912	853	...	...	...	...	...	...	...	...	...	...	...
1913	864	19	...	...	7	5	...	18	...	...	81	...
1916	931	16	8	...	6	1	4	27	...	...	110	...
1917	965	7	5	...	22	3	2	22	...	...	104	...
1918	1217	14	3	1	3	1	13	12	267	...	109	173
1919	874	7	2	...	5	2	5	4	87	...	66	102
1920	827	4	3	...	17	2	8	8	46	...	61	91
1921	753	5	2	1	1	3	17	15	7	...	52	66
1922	741	2	2	...	1	2	...	10	23	...	59	53
1923	938	8	1	...	13	1	23	9	42	...	19	99
1924	840	2	1	...	7	4	7	8	18	...	64	74
1925	890	4	1	1	...	2	1	2	38	1	75	78
1926	924	1	...	...	14	9	4	16	35	...	53	88

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1894	13.1	...	...	...	...	...	...	...	...	...	...	...
1895	13.1	26.4	...	...	...	4.4	4.4	66.3	...	...	84.0	...
1896	11.8	20.7	...	...	16.6	...	...	37.3	...	...	53.8	...
1897	10.9	300.0	...	...	13.0	...	3.9	13.0	...	...	102.7	...
1901	...	...	...	2.4	...	...	...	...	...	...	...	...
1907	18.3	36.0	...	...	36.0	14.0	...	30.0	20.0	...	184.3	202.4
1908	15.7	...	...	...	...	...	...	...	...	...	...	...
1909	13.9	...	...	...	...	...	...	...	...	...	...	...
1910	15.5	...	...	...	...	...	...	...	...	...	...	...
1911	14.5	...	...	...	...	...	...	...	...	...	...	...
1912	14.1	...	...	...	...	...	...	...	...	...	...	...
1913	14.1	31.1	...	...	11.4	8.1	...	29.4	...	...	132.7	...
1916	14.6	25.2	12.6	...	9.4	1.5	6.3	42.5	...	...	173.2	...
1917	15.0	10.8	7.7	...	34.2	4.6	3.1	34.2	...	...	161.7	...
1918	18.6	17.9	3.8	1.2	3.8	1.2	16.4	15.3	342.3	...	139.7	221.7
1919	13.2	10.4	2.9	...	7.4	2.9	7.4	5.9	129.8	...	98.5	152.2
1920	12.3	5.9	4.4	...	25.3	2.9	11.9	11.9	68.6	...	91.0	140.2
1921	11.1	7.3	2.9	1.5	1.5	4.4	25.0	22.0	10.3	...	76.4	97.0
1922	10.8	2.9	2.9	...	1.5	2.9	...	14.5	33.4	...	85.6	76.9
1923	13.4	11.4	1.4	...	18.6	1.4	32.9	12.9	60.2	...	70.3	142.0
1924	11.9	2.8	1.4	...	9.9	5.6	9.9	11.3	25.5	...	90.6	104.8
1925	12.5	5.6	1.4	1.4	...	2.8	1.4	2.8	53.2	1.4	105.0	109.2
1926	12.8	1.3	...	...	18.2	12.4	5.2	22.1	49.0	...	73.3	120.3

*Figures 1886-99 for Enteric Fever.

Note: The rate from all causes is per 1,000 population; all others per 100,000 population.

sister died of milk sickness and his historical reference to the disease suggests that it probably occurred with some frequency in the American Bottoms where he lived during the early nineteenth century.

Alarm and terror marked the progress of smallpox wherever it appeared in those days so that the suffering or escape of a community from that disease was deemed a matter worthy of record. Consequently we are not surprised to find Governor Reynolds observing that Cahokia escaped an outbreak which fell upon the community across the river in 1801. He adds, furthermore, that the application of preventive medicine saved the folks on the Illinois side at that time. Reading from his history we continue:

"In 1801, that dreadful scourge, the smallpox, made its appearance in St. Louis. Many of the citizens of Cahokia, were inoculated by Dr. A. F. Saugrain of St. Louis and were lodged in his hospital in that city.

"It never came to Cahokia so as to sweep entirely over the village.

*** This disease did not reach the American settlements at all. The smallpox never raged through the country and at last was rendered harmless by proper vaccination."

In connection with this same worthy Doctor Saugrain, Zeuch adds:

"In a business notice, he announced that the first vaccine had been brought to St. Louis and would be given gratuitously to indigent per-

sons (May 26, 1899). We know, from the history of a contemporaneous writer, that he made good his word, giving vaccine not only to those living on his side of the river, but also to the inhabitants of the Illinois villages, during the smallpox epidemic."

Thus we discover that the first clear cut piece of preventive medicine ever successfully employed on a community scale in Illinois and the first free distribution of preventive biologics were the good works of an outsider, truly a good samaritan, whose concern for the health of others and whose love for his fellow beings recognized no political boundary lines, knew no religious creeds and were unhampered by economic considerations.

East St. Louis seems to have been no less fortunate in 1833 when cholera swept over the surrounding communities but apparently missed this little town. This is a conjecture based upon the lack of any records, however, rather than a clear cut statement relating the good fortune of that place. It seems probable though that some mention of it would be found had cholera visited the community at that time. For its escape only fate or happy circumstances of chance can be credited because no method of prevention was known then.

Next time East St. Louis did not fare so well. Cholera swept the country again about the middle of the nineteenth century, spending its wrath upon this quiet little river town leaving death and sorrow in its path. Again in 1866 this dreaded malady visited the place alarming the people with its disastrous progress. How large a percentage of the population was affected nobody can say. Statistics were neither collected nor recorded. References are vague and general. We may rest assured, however, that the havoc wrought was bad enough.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	20	8	12	11	13	20	16	19	12	5	12	12
Malaria					4	1	12	3	2	1	1	1
Smallpox		537		24	191	358	7	2	30	129	10	2
Measles	182	555	94	125	371	77	37	301	91	6	653	24
Scarlet Fever	61	71	26	25	72	191	57	34	215	119	346	62
Whooping Cough	19	3	33	2		99	1	35	17	5	36	37
Diphtheria	327	222	88	17	111	173	111	77	88	43	135	154
Influenza					629	7	82	18	11	41	40	26
Poliomyelitis		5		2		9	3	1	2			4
Meningitis		3			4	5	6	1	3	2	3	
Tuberculosis*	24	14	4	5	27	89	122	47	89	95	68	69
Pneumonia*						33	108	75	56	119	139	105
Syphilis						214			176	157	135	139
Gonorrhea						282			311	306	309	189
Chancroid						36						12

* All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1916	1192	18.7	174	145.9
1917	1023	15.9	167	163.2
1918	992	15.2	201	202.6
1919			155	
1920	1374	20.4	157	114.3
1921	1364	20.0	128	93.8
1922	1296	19.9	103	79.5
1923	1358	19.5	147	108.2
1924	1457	20.6	154	105.6
1925	1454	20.1	138	94.9
1926	1471	20.3	147	99.9

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

It was the same with smallpox. The immunity established by general vaccination in 1801 did not last forever and with the passing of immediate danger human nature was up to its time honored trick of casting precaution to the winds. Thus epidemics recurred from time to time, brought in from first one source and then another. St. Louis was a great immigration terminal which made it the source of constant danger. An epidemic threatened in 1881 but prompt control activities together with the fact that many inhabitants had been vaccinated at the time of previous outbreaks, kept the disease down to a dozen cases and one death.

Even as late as 1921 East St. Louis experienced one of the worst smallpox epidemics in her history. The outbreak got beyond control before effective control measures were put into practice so that 461 cases occurred. Wholesale vaccinations rendered the city practically immune to the disease so that it has not yet experienced any further serious difficulty from smallpox.

The influenza pandemic of 1918 was decidedly the worst epidemic experience of the city during the twentieth century to date. Deaths from influenza and pneumonia combined caused the mortality rate for the year to rise five or six points above the annual average. At the same time East St. Louis escaped with less severe losses than many other municipalities in Illinois. In ratio to the population the number of deaths from influenza and pneumonia in 1918 ranked about midway between the highest and lowest mortality from those causes in Illinois communities.

The infant mortality rate in East St. Louis has been persistently high. Deaths per 1,000 live births have seldom dropped below 100 and at times have reached twice that figure. In 1926 deaths among children less than one year old constituted about 16 per cent of the total mortality in East St.

Louis, whereas in the State at large it accounted for less than 11 per cent. Mortality among children less than five years old has averaged more than 20 per cent of the total mortality in the city during recent years and about 15 per cent in the State. A relatively large negro population has contributed materially to the high child mortality.

In other respects health conditions in East St. Louis have varied but little from that which has prevailed elsewhere in the State. Tuberculosis has been and remains a big problem but mortality from it has declined materially of late. Diphtheria has come and gone in epidemic cycles common to that disease. Scarlet fever likewise has varied in prevalence from season to season. Infantile paralysis seems to have struck the city a trifle more severely in 1917 than it did some other communities.

With sanitary improvements, including the public water supply, the sewage disposal system, the sanitary district, the pasteurization of milk, and with the hygienic work done by voluntary agencies, the health department and the park district, the mortality rate in East St. Louis has declined noticeably, indicating more favorable health conditions than prevailed twenty years ago, but the city does not enjoy facilities for combating communicable diseases and promoting health equivalent to those active in most municipalities of its size.

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Elgin

Founded during the first half of the nineteenth century and located on the banks of the beautiful Fox River amid a group of splendid hills Elgin was incorporated on February 28, 1854, under a special charter granted by the legislature. While the region is fertile enough to make it a rich agricultural area, dairying predominates among rural activities while the city itself depends largely upon industry for its economic wellbeing. Elgin shares the municipal honors of Kane County, one of the most densely populated of the State, with Aurora.

Elgin is a city of gradual development although the population more than doubled during the decade between 1880 and 1890. It was first listed in the United States census returns in 1870 when 5,441 people resided there. This number had increased to 8,787 by the end of the next decade and had jumped to 17,823 by 1890. An influx of foreign immigrants accounted for the growth at that time, less than 40 per cent of the population in 1910 being of native parentage. The opening of the twentieth century found Elgin with 22,433 people and the next decade witnessed a growth that brought the count to 25,976 in 1910. The 1920 census returns showed the presence of 27,454 souls in the city, of whom 22,278 or about 81 per cent were native born and 5,055 or about 18 per cent, foreign born whites. There were only 116 negroes in the municipality. A total of 8,224 nearly 30 per cent of the whole population, were listed as being 45 or more years of age. This as well as a number of other unusual features of the health history of Elgin is explained by the presence in the city of a large State hospital for the insane.

HEALTH MACHINERY.

On October 18, 1880, Elgin gave up its special charter and reorganized under the Cities and Villages Act. The statute authorizing the change conferred upon the municipality powers to create a board of health and to make such local ordinances and regulations as were deemed necessary for the protection and preservation of the public health.

Advantage of this authority was taken in 1883 when an ordinance creating a local department of health was adopted. The first section of the ordinance reads:

"Sec. 1. There is hereby established a department of health, which shall embrace the committee on health, the city marshal, the city physician, a health officer and such employees and assistants as the city council may prescribe and establish: Provided, that until otherwise prescribed by the city council the superintendent of streets shall be ex-officio the health officer of said city."

While this appears to be the first legislative action toward providing the city with an official public health organization it gives, in the section quoted, evidence of a pre-existing agency. "The



Dwight E. Burlingame, M. D.
City Physician, 1875-
1886, 1888

committee" and "the city physician" are clearly terms implying that the city council had been accustomed to exercising its powers concerning public health through a committee from its own membership and that a local doctor had habitually been designated as city physician. These practices had continued over a period long enough to establish both as familiar agencies in the city. Doubtless the city physician was called upon whenever medical services were required to handle an emergency and surely inspectors were put to work when occasion arose, each being paid according to the time consumed and the character

of the employment. No appropriations were made for health work but expenditures, which the committee were authorized by the council to incur, usually amounted to about \$300 per year.

The term "a health officer" certainly indicates that no official had been so designated in the past and the council shrewdly steered clear of financial complications by providing that the superintendent of streets should be ex-officio health officer. This choice had a deeper significance, too. It manifestly betrays the close association in thought of environmental cleanliness with preventive medicine and it indicates how inferior the work of city health officer was considered at that time when compared with the practice of medicine. A doctor would have felt and rightly so, that he was disgracing his profession, had he engaged in the sort of work expected and required of a health officer in small communities during the eighties.

If the city council had displayed mature skilfulness in financial maneuvering when they discovered a health officer who cost them nothing, the newly created health department showed no insignificant aptitude in that direction when it designated, through the council, the city clerk as local registrar of vital statistics. He seems to have performed this work with an unusual degree of care and faithfulness for the death certificates were recorded in extension. The health department exercised an interest in the statistics exactly commensurate with what the clerk cost it. No compilations nor analyses were made.



Alban L. Mann, M. D.
City Physician, 1889-1891;
1912 to date

The city physician was a doctor designated by the ordinance and named by the mayor to be an integral part of the health department, which to all intents and purposes was a board of health. His function was to perform whatever medical duties arose in connection with public health emergencies and give advice on medical problems that arose. He usually was elected chairman of the health department and in that capacity had opportunity to color the public health policies of the municipality with medical influence. He was remunerated for actual services rendered but drew no specific salary. Dr. D. E. Burlingame, for instance, who was chairman of the department and city physician during the early eighties when a great epidemic wave of smallpox swept the State, was responsible for a rigid enforcement of the vaccination requirements of the State Board of Health and by performing much of the vaccination work himself and by isolating and disinfecting patients he was able to protect Elgin from serious invasion. The danger past, Dr. Burlingame dropped the roll of public official, taking up again his private practice of medicine and leaving the "health officer-superintendent of streets" and the public to take care of themselves until a new emergency appeared on the horizon.

The system prescribed by the ordinance of 1883 continued in operation until 1907 when a new ordinance reorganizing the health department was adopted. It provided for a health department and created the offices of "city physician" and "health officer," fixing the salary of the city physician at \$150.00 per year and that of the health officer at \$720.00. This is the first evidence of anything like a regular budget for the health department.



J. Forrest Bell, M.D.
City Physician, 1892-1895

Manifestly, from the lengthy ordinance made up of 43 sections, the functions of the city physician were largely advisory in character while those of the health officer were executive. This is suggested by the specified rate of pay and by the enumeration of duties as well. The adoption of the ordinance was a mark of distinct advance, however, for it created an independent arm of the city government for health service only. This indicates a growing respect for the possibilities of preventive medicine even though the character of the organization created betrays only juvenile notions about the fundamental principles of sanitation, hygiene and bacteriology.

A few years later, 1911, Elgin adopted the commission form of government and this brought on a third change in the legal basis for the public health organization of the city. All powers, duties and responsibilities for-



O. L. Pelton, M.D.
City Physician, 1896-1897

merly vested in the city council, departments or boards of health now fell upon the shoulders of the commissioner of public health and safety. Under him the city physician and the health officer continued to be two distinct officials, the one contending to be the superior health authority in the community by virtue of his medical training and a more ancient life of the position while the other declared that the office of "health officer" carried with it superior authority in all save medical questions upon which he would request aid from the city physician if and when it was needed or desired.

This uncertain and confused arrangement continued to feature the official agency for conducting public health work in Elgin until 1925. In that year the city council passed another and final ordinance relating to the health department. This ordinance created a board of health, specifying the mayor, the commissioner of public health and safety, the health officer, the city physician and another resident physician as members of the board. The board was given power among other things, to make rules and regulations as it deemed wise and necessary without conflicting with State laws and regulations. Under this provision the board adopted a set of rules, one section of which specified unequivocally that the city physician should be the executive officer of the health department and that he should have all the powers and authority of the board while not in session. Thus we see the health service finally placed firmly in the hands of the medical profession where it belongs and still remains.

By 1927 Elgin had reached the point where she was enjoying a fairly adequate degree of public health service although a considerable part of it was supplied by voluntary agencies. In the health department there were the city physician, practically a full time officer, a sanitary inspector, a laboratory which had been established in 1912 and which had become a very useful and important part of the department and a clerk. The city clerk was doing the vital statistic work.

There were four school nurses and three other public health nurses at work in the community. Through their efforts and the support of the organizations back of them a health center for infants, prenatal patients and children was



H. J. Gabagan, M.D.
City Physician, 1898-1902;
1911-1912

maintained. These services combined with those provided by the city proper and by the Kane County Tuberculosis Sanitarium Board gave to Elgin a public health program that compares favorably with those in other communities of comparable size in the State.

The doctors who have served Elgin in the capacity of city physician include the following:

D. E. Burlingame, M. D.,	1875-1886 and 1888
Howard L. Pratt, M. D.,	1887
Alban L. Mann, M. D.,	1889-1891
John F. Bell, M. D.,	1892-1895
O. L. Felton, M. D.,	1896-1897
H. J. Gahagan, M. D.,	1898-1903
A. B. Sturm, M. D.,	1904-1905
F. C. Schurmeier, M. D.,	1906-1907
H. C. Waddell, M. D.,	1908-1909
L. W. Dudley, M. D.,	1910-1911
H. J. Gahagan, M. D.,	1911-1912
Alban L. Mann, M. D.,	1912 to date

A list of the laymen who held the place of health officer, either by virtue of another job, such as superintendent of streets, or by direct appointment, include the following:

William Rundquist	1897-1899
John W. Mink	1900-1901
George E. Allen	1902-1905 and 1908-1909
Adolph Fischer	1906-1907 and 1910-1913
A. J. Volstorff	1914-1922
Herman Vierke	1923
George Reber	1923 to date

This apparently strange dual system of carrying on the city's public health work is not unique of Elgin nor is it difficult to understand, when the background is examined somewhat closely. Until quite recently, about the beginning of the twentieth century, the activities of a health officer, according to popular conception as well as in practice, were limited largely to abating nuisances, weed cutting, fumigation, alley inspection, pest house supervision, placarding quarantined premises and the like. Such menial duties were beneath the dignity of the ancient and honorable profession of medicine.



Arthur B. Sturm, M. D.
City Physician, 1904-1905

But the introduction of bacteriology into the world of science and the consequent potentialities of preventing diseases by medical processes raised the level of public health service to a plane equivalent and in some respects superior to that of treating the sick. Still further developments, such as those relating to nutrition and hygiene, have added one dignity after another to public health work until now it embraces a multitude of highly technical professions, such as bacteri-

ologists, sanitary engineers, statisticians, publicists, milk sanitarians, nurses, dentists and doctors and offers an honorable and worthy calling for ambitious physicians with executive ability. Indeed public health service is now a highly technical profession of its own, involving scientific knowledge of wide scope.

Thus the very requirements of the service, highly technical as they are, have eliminated untrained laymen from executive control over reasonably adequate health departments while the pressure of long standing custom and the love of public office have inspired the vanishing lay health officer who in truth was a sanitary policeman to cling tenaciously to whatever authority and power he was able to reach. For the sake of political peace and expediency it has often been necessary to beguile him with titles, leaving him with whatever glory the term "health officer" may give him, while clipping from his credentials practically all administrative authority and vesting it in medical men designated as "city physician," "director of public health," "commissioner of health," "executive officer," or some such title.



L. C. Volberding,
Commissioner of Public
Health and Safety,
1923 to date.

WATER SUPPLY.

In 1887 a water supply was installed with Fox River as the source. In 1888 a water-purification plant using Jewell pressure filters was installed. This supply continued until 1905 when, owing to popular adverse opinion as to the advisability of procuring water from the river which had become gradually more and more polluted, a series of artesian wells were installed. Four wells, 16 inches in diameter, were sunk at depths ranging from 1,300 to 2,000 feet deep on land bordering Fox River about two miles north of the city. The wells were interconnected by means of a 9-foot circular shaft 120 feet deep with 9-foot circular tunnels leading off to each well at the bottom. Water from the wells was pumped into two circular reservoirs, each having a capacity of one million gallons. To supplement the well supply, a low dam was constructed across the river below the waterworks plant to impound water for emergency purposes and to maintain depths suitable for the intake. The old filters were used when any water was drawn from Fox River.

In 1914 an additional well was sunk on the original site, another in 1918, another in 1921, another in 1922, and another in 1926. It has been necessary at various times up to the present to supplement the well water supply from Fox River.

At the present time, four deep wells and three shallow wells are in service, all located in the vicinity of the pumping station, with the exception of one shallow well which is situated in the south part of the city. River water is used only when the yield from wells becomes inadequate and at such time is coagulated, filtered and chlorinated before discharge to the distributing reservoirs.

Routine analyses of public water supply samples have been made since July, 1920.

The present water consumption is about 95 gallons per capita daily. Cross connections in existence between the river water and well supply necessitate classification of the water as doubtful in sanitary quality.

SEWAGE.

As late as 1890 privy vaults were very common, especially in the large area of the city which was not sewered at that time.

In 1894 Samuel M. Gray, consulting engineer of Providence, Rhode Island, was engaged to prepare sewerage plans for the city. The plans were adopted and a number of sewers built in accordance with them. Subsequently, however, changes were made in the basis of design. Mr. Gray recommended a separate system of sewers and the early installations adhered to this principle. Recent districts, however, have been built on the combined plan.

Fox River at Elgin has been polluted for many years by sewage from Elgin and other neighboring cities. A few years ago the Fox River Conservancy District was organized and residents in the valley have been keenly interested in the matter of removing pollution from the river.

In 1923 comprehensive studies were made of the sewerage needs of the city for the Sanitary District of Elgin, which was organized in 1922. Recommendations were made and plans prepared for an intercepting sewer, pumping station, and sewage-treatment plant, comprising oil and grit chambers, Imhoff tanks, sprinkling filters, sludge beds and secondary sedimentation tanks. This improvement was completed in 1926 and the sewage-treatment plant placed in operation.

The Elgin Sanitary District includes 5,320 acres. The entire city is now well served with about 80 miles of sewers. The condition of Fox River has been very materially improved since the project has been completed.

HEALTH CONDITIONS.

Information on the state of public health in Elgin prior to 1900 is meagre enough. A relatively new community, heavily populated with immigrants not altogether homogeneous, facing economic problems at once fasci-

nating and defiant, tender with growing pains, the inhabitants had plenty to do besides quietly marking down every wave of sickness that chanced to befall the place. Folks had always suffered from sickness and always would so far as they knew. Why should they spend time and effort in laboriously recording things that everybody knew had existed since the beginning of time and would evidently continue to the end?

At any rate people took their diseases as private affairs and tried to combat ill health as well as they might with the resources at hand, accepting the results of their efforts as matters of good or evil fortune. Consequently, we know but little about what transpired in this tranquil community, so far as health is concerned, prior to 1900. Tradition has it that Union soldiers, home on furlough, infested the city with smallpox in 1864. Citizens still living declare that malaria plagued the inhabitants, frequently in epidemic proportions, for years and did not begin to decline until 1870 or thereabouts. Surely tuberculosis, typhoid fever, scarlet fever, diphtheria and the whole family of communicable diseases shared with one another the inglorious task of heaping hardship upon the local people but they soon forgot their sufferings and sorrows, drowning past defeats and griefs in the success of

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1895	267	3	...	...	...	...	4	16	...	...	2	...
1896	312	...	...	1	...	...	...	10	...	...	11	...
1897	262	...	...	...	...	...	...	16	...	...	13	...
1898	228	5	...	...	...	...	...	4	...	...	3	...
1901	278	7	...	...	...	1	1	1	...	...	28	39
1902	219	3	...	...	...	1	...	2	...	...	16	22
1903	232	7	...	...	1	...	...	1	1	...	20	18
1904	226	4	...	...	...	...	...	...	...	...	30	10
1905	229	1	...	...	...	...	...	...	...	...	15	22
1906	232	...	...	...	...	...	No Record	...	...	...	...	...
1907	399	2	...	...	...	1	2	2	5	...	48	18
1908	376	...	...	...	...	1	1	...	...	...	16	13
1909	423	2	...	...	1	...	1	...	...	...	15	16
1910	476	3	...	...	...	...	...	1	3	...	26	21
1911	507	5	...	...	...	1	...	6	6	...	17	17
1912	467	3	...	...	...	1	1	...	...	...	11	15
1913	433	3	...	...	...	4	3	...	...	...	16	15
1914	251	2	...	...	...	1	...	4	...	...	25	17
1915	216	...	...	...	...	...	No Records	...	...	...	...	...
1916	193	24	...	...	...	1	...	1	...	...	22	21
1917	322	1	...	...	...	3	1	...	...	...	15	19
1918	685	1	...	...	...	1	5	1	70	...	47	41
1919	542	2	...	...	...	...	...	3	19	...	44	34
1920	581	1	...	...	1	3	1	4	17	...	54	66
1921	532	...	...	...	1	2	...	4	8	...	39	29
1922	568	1	...	...	...	...	...	2	8	...	50	56
1923	653	...	1	1	3	...	...	4	17	...	47	41
1924	605	...	1	1	1	2	2	...	4	...	31	34
1925	705	2	...	...	...	1	3	2	7	1	29	32
1926	758	2	...	...	1	2	2	...	10	...	25	46

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Cause	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Polyomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1895	13.2	14.9	...	...	...	...	19.8	79.2	...	...	9.9	...
1896	15.1	38.8	...	4.8	...	...	...	48.5	...	...	53.4	...
1897	12.4	...	...	...	...	...	...	76.0	...	...	61.7	...
1898	10.5	23.2	...	...	...	...	...	18.5	...	...	13.9	...
1901	12.2	30.7	...	...	...	4.3	4.3	4.3	...	...	122.8	131.6
1902	9.4	12.9	...	...	...	4.3	...	8.6	...	...	69.1	95.0
1903	9.8	29.7	...	...	4.2	...	4.2	4.2	...	...	85.1	76.6
1904	9.4	16.7	...	...	...	...	...	...	...	...	126.2	41.9
1905	9.4	4.1	...	...	...	...	...	...	...	...	61.9	90.8
1906	9.1	...	...	...	...	No Records	...	...	...	...	...	...
1907	12.0	8.0	...	...	...	4.0	8.0	8.0	20.0	...	192.7	72.2
1908	14.8	...	...	...	...	3.8	3.8	...	...	...	61.5	50.0
1909	16.3	7.6	...	...	3.8	...	3.8	...	...	...	57.6	61.5
1910	18.3	11.5	...	...	...	...	3.8	7.6	...	...	100.0	80.7
1911	19.4	19.2	...	...	...	3.8	...	23.0	23.0	...	65.3	65.3
1912	17.7	11.5	...	...	...	3.8	...	...	...	...	12.3	57.6
1913	16.1	11.4	...	...	...	15.2	11.4	22.8	...	...	174.3	58.8
1914	8.7	7.5	...	...	...	3.7	...	14.8	...	...	94.3	64.1
1915	8.1	...	...	...	...	No Records	...	...	...	...	...	...
1916	7.3	89.1	...	...	...	3.7	3.7	...	...	...	83.0	79.2
1917	11.5	3.5	...	...	...	10.7	3.5	...	...	...	53.5	67.8
1918	25.2	3.4	...	...	...	3.4	17.2	3.4	241.3	...	162.0	141.3
1919	19.8	7.2	...	...	...	...	...	10.9	69.3	...	160.5	124.0
1920	21.1	3.6	...	...	3.6	10.8	3.6	14.5	61.7	...	196.1	239.7
1921	19.2	...	...	...	3.6	7.2	...	14.4	28.9	...	140.8	104.8
1922	20.4	3.6	...	...	...	...	...	7.2	28.7	...	179.7	129.3
1923	23.3	...	3.5	3.6	10.5	...	...	14.2	60.7	...	167.8	146.4
1924	21.5	...	3.5	3.6	3.5	7.0	7.0	...	14.2	...	110.6	121.4
1925	24.9	7.1	...	...	...	3.5	3.5	7.1	24.7	3.5	102.5	97.0
1926	22.3	5.8	...	...	2.9	5.8	5.8	...	29.0	...	73.5	135.2

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

the present and the hopes of the future, leaving for the historian nothing but the fragmentary mortality statistics laboriously copied by the city clerk. These are practically worthless for one who has not the time to study and analyze hundreds of records in great detail.

Likely enough cholera spared not the city in 1849-53. Smallpox, which nearly always provokes a shower of publicity, seems to have been pretty well averted during the great epidemic of the early eighties. Evidence of other factors in the health conditions of the community in the early years is almost wholly lacking. From such data as are available it appears that typhoid fever was never the serious problem in Elgin that it has been in so many other communities of the State, although an outbreak of 216 cases resulted in some 24 deaths in 1916. Diphtheria, on the other hand, has time and again visited the place in severe epidemic form. In 1895, for instance, there were 16 deaths charged against that disease and ten and sixteen in the next two years, respectively, the wave stretching over a full triennium. Since 1900 the number of deaths has never been so high in any one year but outbreaks of varying intensity have come and gone.

Tuberculosis became a very grave danger to public health there in the nineteenth century but began to recede during the second decade of the twentieth century in the face of a determined effort at eradication. During its ascendancy mortality rates from that disease climbed to a maximum of almost 200 per 100,000 population but the downward trend in recent years brought it to 73.5 in 1926.

The only noteworthy epidemic of scarlet fever listed is one that occurred during the winter of 1925-26. It caused nearly a thousand cases of illness but the disease was mild and resulted in but two or three deaths altogether. Doubtless other epidemics have visited the city from time to time since the first settlements there but records of the facts are wanting.

The influenza outbreak of 1918 while severe enough, was relatively very mild in Elgin. Only three other cities embraced in this volume experienced a lower mortality from influenza proper while Elgin had the lowest rate of all from influenza and pneumonia combined.

If a stranger should scan the general mortality records of Elgin he would surely conclude that the city is a most unhealthful community. Deaths from all causes rarely fall below 20 per 1,000 population per year, a figure fully 75 per cent higher than that for most other municipalities in Illinois. To one familiar with local conditions, however, these otherwise alarming statistics indicate nothing more sinister than the location of a large State hospital for the insane in Elgin. Patients confined in the institution experience a mortality high enough to make a distinctly unfavorable aspect on the general rate for the city.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	218	7	4	12	4	6	1	6	7	9	9	10
Smallpox	4	5	88	53	7	9		1		2	49	4
Measles	90	647	68	57	300	806	20	405	72	180	1232	51
Scarlet Fever	29	77	10	25	77	27	38	54	50	397	418	41
Whoop, Cough	18	84	250	7	268	28	30	83	279	34	268	200
Diphtheria	9	29	9	19	17	93	29	17	15	13	6	2
Influenza			1399	173	314		6	39	5	6	7	12
Poliomyelitis	2				1	6		3	3	1		3
Meningitis				3			2				1	3
Tuberculosis*	13	18	22	62	27	29	51	63	52	62	58	72
Pneumonia*				17	27	27	39	125	71	73	111	153
Syphilis		2		25	25	24	28	29	196	187	171	183
Gonorrhea		2	17	42	41	47	29	38	47	48	44	50
Chancroid				2	1	1	1	2				

*All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else. Elgin is among the cities where notification is comparatively good, practically complete reports being the rule for the more serious diseases.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1913			37	
1914			33	
1915			27	
1916	323	12.3	28	86.1
1917	372	13.3	31	91.4
1918	468	16.7	23	69.1
1919	390	13.9	21	53.8
1920	472	17.1	36	76.3
1921	546	19.7	24	44.0
1922	553	19.1	23	43.2
1923	539	19.3	26	48.2
1924	621	22.1	36	58.0
1925	635	22.4	31	48.8
1926	619	18.2	44	71.1

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

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 Annual Reports of the State Board of Health, John H. Rauch, M. D., Secretary, Springfield, Illinois, various dates.
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 U. S. Census Reports, Washington, D. C., various dates.

Evanston

Settled originally as a residential community and built into a university city of comfortable homes, Evanston has always enjoyed the enviable reputation of being the healthiest city in Illinois. This reputation was and is not without foundation on fact whether unqualifiedly true or not.

It seems that a man named Samuel Rohrer was the first to choose what is now Evanston as a place of residence. He left Chicago in 1839, at that time a community of only a few hundred souls, in search of a more healthful and what he probably had in mind was more air lanes or rather bigger and wider and better air lanes on all sides of his house. The location of Evanston satisfied his requirements and he started a community that was destined to perpetuate his ideals of home environment although there were many factors other than his notions involved in the matter, his ideas probably being indeed the least influence of all.

For one thing, Chicago was by natural location destined to be the heart of commercial and industrial life in that vicinity. This caused a centralizing of business activities there, leaving the magnificent lake shore territory now occupied by Evanston for other purposes. Covetous eyes of successful and enterprising men were not slow in recognizing in this locality a splendid place for homes, free from the noise, smoke, turmoil and excitement of a rapidly growing city and with great possibilities for beauty and contentment. Consequently many of the more financially able were attracted to Evanston where they settled, adding a tremendous influence to the character and wealth of the community.

Another factor of tremendous influence in the character of Evanston was the founding there of Northwestern University. This great institution, organized in 1851 and located on a campus of 379 acres in the very heart of Evanston, brought to the municipality the wholesome and perpetual atmosphere of dignity and learning. It did more. It secured from the legislature a charter which, among other provisions, prohibited the sale of intoxicating liquors within a radius of four miles of the university. This made Evanston a dry town.

Furthermore, it will be seen hereafter that the municipality began very early, relatively, to spend money freely for public health service. While other communities contented themselves with providing boards of health clothed with broad powers but starved to death financially, Evanston was appropriating real money to the health department. No wonder this community was reputed to be the healthiest in the State.



The Old College Building, Northwestern University

Evanston was organized as a township in 1857 and was incorporated as a town in 1863. The village of South Evanston was organized in 1873 and annexed to Evanston on February 20, 1892. A month later, March 29th, Evanston was established as a city under the Cities and Villages Act and the first city officials were duly elected on April 19th of the same year.

In 1860 the population of Evanston was 831. As might be expected of a residential and university community, growth was never rapid but substantial, so that by 1900 the number of inhabitants was only 19,259. This figure rose to 24,978 in 1910 and to 37,234 in 1920. Approximately 75 per cent of the population in 1920 were native born whites, nearly 18 per cent were foreign born whites and something over 6 per cent were negroes. There were 8,714 persons, something over 23 per cent, returned as being 45 or more years of age.

HEALTH MACHINERY.

It seems that the first board of health was appointed in Evanston in 1874, three years before the first State Board of Health was created and at a time when Evanston was still a small village. Contrary to customs gen-



E. H. Webster, M.D.
Member, Board of Health,
1885

erally prevailing elsewhere the whole membership of the board was made up of physicians from the outset. Apparently, the chairman of the board acted as its executive officer during the first few years but the ordinance was amended in 1882 so that provision was made for the employment of a health officer to execute the policies and plans of the board.

It is probable that a sanitary inspector was employed shortly after the revision of the ordinance in 1882 and that he exercised the authority of health officer, although the administrative head of the work done was a physician, the chairman of the board. At any rate John Corney was at work as the health officer in 1883 although Dr. O. H. Mann, a member of the board is shown in the records as filling the place of village health officer from 1882 to 1888.

The complete list of village health officers includes the following:

Dr. O. H. Mann	1882-1888
Dr. M. C. Bragdon	1888-1890
Dr. W. A. Phillips	1890-1891
Dr. E. P. Clapp	1891-1892

When the village was reorganized into a city in 1892 a department of health was created and its executive officer, subject to appointment by the mayor, was called the commissioner of health. Dr. Clapp was retained under the new title which has continued in use down to the present time. The office was not made a full time position until 1926. Physicians who have filled the place of health commissioner in Evanston are:

Dr. E. P. Clapp	1892-1896
Dr. W. A. Phillips	1896
Dr. Josiah Jones	1897
Dr. E. E. Shutterly	1898
Dr. A. B. Clayton	1899-1901
Dr. William R. Parkes	1901-1909
Dr. S. V. Balderston	1909-1914
Dr. C. T. Roome	1914-1925
Dr. John W. H. Pollard	1926 to date

Manifestly the medical profession has always exercised a predominating influence over the public health interests in Evanston and this was doubtless a factor in establishing the health reputation enjoyed by the city.



William G. Alexander, M.D.,
Dairy Inspector, Board of
Health, 1901; Mayor,
1926 to date

The breadth of vision, the foresight and withal the broad understanding of health service requirements displayed in the code of ordinances adopted in 1892 were such that no material changes have since been necessary. That code vested administrative authority in the commissioner of health and gave him power to enforce all rules, regulations, ordinances, etc., relating to health. It required the reporting of contagious diseases by any person having knowledge of a case; it provided for quarantine; it placed the commissioner of health in charge of the city hospital; it gave the commissioner of health supervision over health in the schools; it required the vaccination of school children; the keeping of vital statistics; the abatement of nuisances; the abandonment of privies where sewer facilities were available; the adequate ventilation of public buildings; the sanitary supervision over milk supplies. In short it provided the legal machinery necessary for the operation of an efficient and adequate department of public health.

Since the adoption of the code in 1892 no significant changes have taken place in the health organization of the city. It has simply grown and developed, increasing its staff and expanding its services as the multiplying complexity of the community on the one hand and the knowledge of medicine on the other demanded.

Of course, the official health department did not grow in size and ability fast enough to meet all the demands of the city for public health service. No health department ever did. Voluntary agencies sprang up and did an enormous volume of work. The two school boards employ physicians, dentists and nurses to work among the children. But with it all a splendid policy of co-ordination has prevailed so that the commissioner of health exercises the leadership and really directs the public health service of the municipality.



S. V. Balderston, M.D.
Commissioner of Health,
1909-1914

The State Department of Public Health conducted a survey of the public health facilities of Evanston in 1926 and compared the results of the study with those found in 14 other communities of the State. The report gives a clear picture of the situation as it was at the close of 1925. Pertinent quotations read as follows:

"Reckoned on the basis of the appraised value, Evanston, with a score of 812 points, enjoys the most satisfactory public health service maintained in any of the fifteen cities embraced in the study.

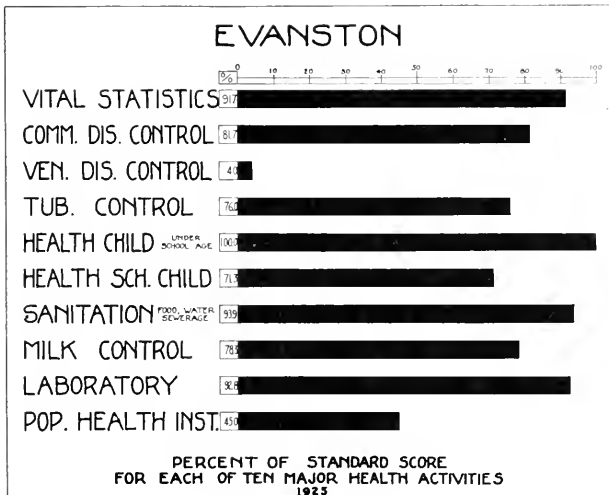
"The best health organization was found here. Practically all work is centralized in the city health department which engages in comprehensive activities relating to vital statistics; communicable disease control; prenatal, infant and preschool and school hygiene; safety of food

and milk supplies; sanitation; purity of water supply; diagnostic laboratory service. All employees are appointed by the health officer, subject to civil service regulations.

"The Chicago Tuberculosis Institute conducts tuberculosis clinics and field nursing work, the nurse having her office in the health department. The Visiting Nurse Association, in addition to bedside care, does some prenatal and infant field work. The nurse so engaged also has her office with the health department. A very satisfactory coordination of all social service agencies is in effect.

"This city furnishes a good example of the efficiency in health service which can be secured through a part-time health officer, who has a grasp of public health problems and who devotes his energies to developing an efficient organization. He, however, has realized that the demands on the time of a health officer have become such that full-time service is needed, and has convinced the city government of this need. A full-time health officer will have been appointed before this report appears in print.

"Based on the U. S. Census Bureau estimated population of 43,883, exactly one dollar per capita is being spent for health service in Evanston. Of this, the city spends \$26,800, or sixty-one cents per capita. If



This graph illustrates the strong and weak points in Evanston's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Evanston was 81 per cent of the standard perfection requirement.

local estimates of population are used the expenditures are forty-nine and seventy cents respectively.

"Very efficient measures are carried out for the control of contagion. A high percentage of cases are hospitalized and the communicable disease control score equals the standard except that a communicable disease nurse does not visit all cases; only about fifty per cent of grade schools show a vaccination against smallpox; and immunization of preschool children against diphtheria is not quite up to minimum requirements for full credit on that item. It should be noted, however, that Evanston's score for the immunization of children against diphtheria is by far the highest of any of the fifteen cities of this group.

"Measures for the control of venereal disease constitute the most neglected phase of health service in Evanston and stand out in striking contrast to the efficiency of other activities. It is true that owing to the presence of clinics in Chicago, the need here is not so great as in some other towns. However, the few cases of venereal disease recorded indicate that physicians rarely report these diseases.

"Evanston is unique among the fifteen cities surveyed in accepting as a health department function all activities for the promotion of prenatal, infant and preschool hygiene. Evanston stands first in the service rendered in prenatal, infant and preschool clinics and in field nursing service. This is in addition to a considerable amount of work done at similar clinics in the Evanston Hospital, a definite record of which was not secured. Evanston has the honor of being the only city in this group to score 100 per cent on the care given to its children under school age.

"The administration of school health activities in Evanston is complicated by the existence of two school boards, each representing approximately one-half of the city. This work is carried out by two school physicians (one in each district), who are assisted by three nurses. The nurses perform the work of truant officers in addition to their school work. A school dentist also is employed by the board of education. The school work is not so well organized as most other health activities. The two physicians do not employ uniform methods in their work or in their record reports. Children are weighed but parents are not notified. A total of more than five thousand out of a total grade school population of seven thousand are examined each year, but the examination is not so thorough as is desirable. In some cases a nurse and a school physician each inspect a child rather than have the nurse conduct the vision, hearing, height and weight inspection, leaving the medical examination to the physician.

"More than 95 per cent of the Evanston milk supply is pasteurized and practically all of the remainder is certified. Since the same milk plants supply both Chicago and Evanston, an intimate supervision of the plants is not possible. A higher percentage of samples of pasteurized milk than would be expected was shown to have a count in excess of fifty thousand bacteria per c. c.

"In addition to the health services recorded on the standard appraisal form and which have been discussed above, a number of addi-

tional activities have been carried out. Prominent among these has been the demonstration in active immunizations against scarlet fever in one school. The health department secured the services of the Doctors Dick, who tested the children and immunized 155 who were found to be susceptible. Since scarlet fever has been prevalent in Evanston, it will be interesting to observe the case incidence among this group of children as compared with children of same ages in other schools.

"A mental hygiene clinic is maintained at the Northwestern University, cases being referred to the clinic by the health department, schools and social agencies. Group and individual mental tests have been made in a number of the schools. In 1925, a heart clinic was started at the Evanston Hospital, one evening clinic every week being held. The city health officer was instrumental in bringing about its organizations. Forty-nine cases attended in the month of December. Through the social service department of the hospital, vocational readjustments are made for the cases whose condition makes a change of occupation advisable. The Evanston Hospital conducted a number of other clinics, including dental and prenatal.

"The interest of the local medical profession, as evidenced by the hospital clinics, has been a considerable factor in the progress of health services in this city."

Since the time when the report quoted above was written Evanston has employed a full time commissioner of health, Dr. John W. H. Pollard, established a venereal disease clinic and increased the efficiency of the public health service at a number of points by co-ordination and co-operation between the various official and voluntary agencies at work there. The budget for 1927 amounted to \$38,633.75, a respectable sum for a city of that size.

Voluntary and quasi-public organizations have played a particularly active part in the health history of Evanston. The milk borne scarlet fever epidemic of 1907, which spread into Chicago when the contaminated milk supply was diverted to that market, led to the birth of what is known as the Chicago and Suburban Health League. The function of this non-official agency is to keep health officers in the whole metropolitan area informed about local conditions that may prove to be inimical to the health of any section or district in the absence of precautionary activity.



Clarence T. Roome, M.D.
Commissioner of Health,
1914-1925

Prior to this, however, in 1906, the medical inspection of school children was undertaken as a privately supported enterprise although the school authorities heartily co-operated in the project. Later this work was taken over and enlarged by the school boards.

In 1910 the expenditure of the health department amounted to \$5,111.62, of which \$200.00 went to the Evanston and St. Francis Hospital Association, \$150.00 to the Visiting Nurse Association and \$158.00 to the board of plumbing examiners. The items betray not only a close spirit of cooperation between the city official and the agencies named, but indicate that the organizations were engaged in health work popularly regarded as definitely public in character. They show, furthermore, that these agencies were of long standing in the community at that time and enjoyed implicit public confidence.

Again, in 1912 a public-spirited citizen donated funds for the construction of a contagious disease hospital. An endowment fund of \$100,000 was promptly subscribed by citizens in the whole suburban territory of northern Illinois, and the institution was turned over for management to the Evanston Hospital Association. The conditions of the original donation as well as the source from which the endowment fund was drawn made the hospital a distinctly public institution and it has functioned in that way.

It was in 1912 also that the Evanston Woman's Club undertook a peacetime piece of public health service in the nature of food sanitation. Due to the high degree of intelligence that has marked so many of the health projects, there the club first obtained the advice and assistance of Professor John H. Long of Northwestern University who identified himself with many important health projects in the community and State, particularly those involving laboratory service, and J. D. G. Koehler, assistant commissioner of health in Chicago, in drawing up their plans for the task. A satisfactory plan adopted, the club employed an inspector whose duty it was to inspect grocery stores, meat markets, restaurants, and other food establishments. To provide him with authority an ordinance was passed by the city council and that type of work became permanent in the community.



John W. H. Pollard, M.D.
Commissioner of Health,
1926 to date

The mother's clubs in several schools undertook the weighing and measuring of school children in 1919 at the instance of the United States Children's Bureau and in 1921 the Elizabeth McCormick Memorial Fund established a nutrition class in one of the public schools (Dewey). Then in 1921 the Evanston Branch of the Infant Welfare Society started prenatal work in the city. There was also in Evanston the Council Committee on Sanitation, Charity, and Health, an organization representing many component parts, which for a long time participated in a large way in the health and sanitary program of the municipality.

These references, although not exhaustive, indicate how strong the public sentiment favors preventive medicine and they explain why Evanston has always enjoyed the reputation of being the healthiest city in Illinois. A bona fide reputation of that kind comes only as the result of steadfast determination that inspires intelligent and persistent activity.

WATER SUPPLY.

Water supply was one of the first matters discussed after Evanston was incorporated as a village in 1872. An ordinance providing for a waterworks was passed in 1873 and in 1875 the water supply was put in service. Northwestern University donated the site for the pumping station at Lincoln Avenue and the lake. The installation consisted of an intake pipe, extending about one-half mile into Lake Michigan, wooden crib, and pumps which delivered the water direct to the distribution system. A sewer outlet was within one mile of the intake, but the supply was used by some for drinking purposes.

In 1884 the village of South Evanston installed a waterworks, securing its supply from an artesian well. When this village was annexed to Evanston this waterworks was abandoned.

As the population of Evanston increased, more pumps were added and the intake was enlarged and extended.

Analyses made between 1897 and 1912 indicated that the water was safe for drinking purposes only a part of the time. Typhoid fever was prevalent. At times 10 per cent of the cases in hospitals were typhoid patients. The water was also turbid during lake storms or dredging operations along the lake front.

In 1912 treatment of the water with hypochlorite of lime was started. The sanitary quality of the water was improved but the method of applying the hypochlorite was rather crude and the supply was not considered safe at all times.

Financed by a bond issue, a modern, adequate, purification plant was placed in service in 1914. In 1922 the purification plant was doubled so as to have a capacity of 24 million gallons a day in order to meet the increased consumption demands. Liquid chlorine replaced "hypo" as a sterilizing agent in 1921.

Since the installation of the purification plant the supply has been considered safe for drinking purposes at all times, and by 1922 the typhoid rate had dropped to a small percentage of the rate before purification.

The original limited distribution system has been enlarged and extended so that it serves practically the entire built-up area.

SEWERAGE.

Evanston, like all other cities along Lake Michigan, originally disposed of its sewage by discharging it into the lake. By 1912 there were five separate outlets to the lake. Although in the Chicago Sanitary District, it was not until 1920 that an interceptor was constructed to divert the Evanston sewage from the lake into the north shore channel of the Sanitary District.

At the close of this history period the north side sewage-treatment plant of the Chicago Sanitary District was nearing completion and it will treat all the sewage from Evanston before it is discharged into the drainage canal. Extensions of submain and lateral sewers have been made from time to time and good sanitary conditions maintained.

HEALTH CONDITIONS.

While vital statistics are not available for the first fifty years of community life there, it is probable that Evanston never experienced an excessively high mortality rate. Epidemics did not spare the place, to be sure, but the general tone of health was good and the intelligent management of home and community kept it so. The general mortality rate since 1900 has rarely amounted to as much as 12 per 1,000 population per year and was only 14 in 1918, the great influenza year. More recently, the rate has tended a little higher but that does not necessarily imply a decline in the general health. Hospital facilities there attract people from outside the city and this is liable to affect adversely the crude death rate. Furthermore, the city is getting to be of respectable age, as cities go in the Middle West, and that indicates an increasingly large number of people in the upper age strata. Over 23 per cent of the inhabitants in 1920 were 45 or more years old.

Apparently Evanston escaped the unhappy experiences with smallpox that colored so vividly the "pest house" period in the history of so many communities. They didn't even have a "pest house" in Evanston so far as available evidence shows. Physicians were always at the helm in health matters and they knew a better way of controlling that loathsome disease than by casting into the exile of a barren shanty the unfortunate victims of the disorder. The people who lived there were the sort who resort to calm judgment and sound advice rather than to public alarm and mob psychology in dealing with public problems whether of health, economy or what not. Thus smallpox has been a minor problem there because the inhabitants so willed it. Prior to 1900 the disease was so rare that a case discovered on the last day of that year provoked no little comment and brought out the interesting fact that no other case had been observed in the city for eight years.

Subsequently the smallpox record has been a little less favorable due to the supreme court decision that compulsory vaccination is not constitutional in Illinois. There was an outbreak involving 81 cases in 1902 and another of 3 cases in 1908. In 1920 another little flare-up took place when 17 cases were reported and again early in 1927 another epidemic was vaccinated out of existence when half a dozen cases endangered the community. Perhaps smallpox appeared within the city on other occasions but the story is the same. That disease never gains any considerable headway in a community where public health affairs are managed as they have been in Evanston.

Typhoid fever was not so easily managed. Ways by which this infection was communicated from one to another were mysterious even to the medical profession and specific preventive measures were unknown until about 1900. Consequently, outbreaks of considerable severity though not of the serious character frequently observed in the history of many other places have marred the happiness of the inhabitants from time to time. Furthermore, Chicago suffered from disastrous outbreaks of typhoid fever time and again while the infection was endemic there during the last half of the nineteenth century and the proximity of that community to Evanston and

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1897	200	4	...	...	...	...	...	5	...	...	...	...
1898	191	2	...	...	...	1	...	5	...	...	...	...
1899	...	...	...	...	...	...	...	...	...	...	...	...
1900	206	5	...	...	...	...	...	4	...	...	...	...
1901	173	11	...	...	...	12	...	...	...	...	19	14
1902	233	7	...	...	...	...	...	5	...	...	13	32
1903	212	7	...	...	...	12	...	3	...	...	22	28
1904	201	5	...	...	...	...	...	...	...	...	27	10
1905	209	3	...	...	...	...	...	5	...	...	19	26
1906	216	...	...	...	...	1	...	12	...	...	22	50
1907	268	4	...	...	...	4	...	...	...	...	18	49
1908	258	8	...	...	3	...	1	4	4	...	28	21
1909	245	7	...	...	...	...	1	1	1	...	20	18
1910	273	6	...	...	1	1	1	2	...	...	22	17
1911	284	7	...	...	6	...	1	8	...	...	18	31
1912	302	6	...	...	1	2	1	7	...	...	14	20
1913	276	4	...	...	2	4	1	5	...	...	12	24
1914	304	3	...	...	...	2	...	4	...	...	20	29
1915	340	1	...	...	3	...	1	4	4	...	19	35
1916	369	1	...	...	1	10	...	7	1	...	18	39
1917	385	1	...	...	2	10	1	6	1	...	21	44
1918	496	1	1	...	...	...	4	2	93	...	20	87
1919	385	...	...	...	...	1	...	3	19	...	13	12
1920	493	3	...	...	...	7	4	7	25	...	31	41
1921	416	...	...	...	...	...	2	17	...	...	22	27
1922	495	1	...	...	...	3	1	4	4	...	19	24
1923	478	1	...	...	...	1	...	7	8	...	18	29
1924	476	...	...	...	...	4	...	...	...	...	8	7
1925	570	...	...	1	1	1	...	2	4	2	19	25
1926	623	...	...	...	1	2	3	1	2	...	17	4

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1897	11.0	21.4	...	...	...	...	...	26.7	...	...	...	...
1898	10.2	10.7	...	...	...	5.3	...	26.7	...	...	...	...
1899	...	...	...	...	...	...	...	...	...	...	...	...
1900	10.6	25.9	...	...	...	...	...	20.7	...	...	...	...
1901	8.7	55.4	...	...	...	10.0	...	...	...	...	95.4	76.0
1902	11.4	34.3	...	...	...	...	...	24.5	...	...	63.7	161.7
1903	10.1	33.3	...	...	...	9.5	...	14.3	...	...	104.8	138.2
1904	9.3	23.2	...	...	...	...	...	9.2	...	...	129.9	46.4
1905	9.4	13.5	...	...	...	...	...	22.6	...	...	85.9	90.4
1906	9.5	...	...	...	...	4.4	...	8.8	...	...	96.8	132.2
1907	11.5	21.4	...	...	...	17.1	...	...	...	...	77.4	210.6
1908	10.8	33.5	...	...	12.5	8.4	4.2	16.8	16.8	...	117.4	88.1
1909	10.0	28.5	...	...	...	8.0	4.1	4.0	24.5	...	80.1	73.7
1910	10.9	24.1	...	...	4.0	4.0	15.9	8.6	...	...	88.0	180.9
1911	10.6	27.3	...	...	23.4	7.8	3.9	31.2	...	...	70.1	120.7
1912	10.9	22.9	...	...	3.8	19.0	3.8	26.7	...	...	53.3	76.2
1913	9.4	11.7	...	...	7.4	18.4	3.7	14.7	...	...	44.3	88.4
1914	10.0	10.8	...	...	...	7.2	...	14.4	...	...	72.1	104.6
1915	10.8	3.6	...	...	10.7	...	3.6	14.3	14.3	...	67.8	124.9
1916	11.2	3.0	...	...	3.5	34.8	...	24.4	3.5	...	62.7	135.8
1917	11.3	3.4	...	...	6.8	34.1	3.1	20.5	3.4	...	71.7	150.2
1918	14.0	3.3	3.3	...	...	...	13.3	6.6	310.0	...	66.6	290.0
1919	10.5	...	...	...	...	2.7	...	8.1	51.3	...	35.1	113.5
1920	13.0	7.8	...	...	...	18.4	10.5	18.4	65.7	...	81.5	107.8
1921	10.5	...	...	...	...	2.6	5.1	13.5	...	...	56.4	69.1
1922	12.3	2.5	...	...	...	7.5	2.5	9.9	9.9	...	47.2	96.9
1923	11.5	2.4	...	...	...	2.4	4.8	12.0	19.2	...	43.4	70.0
1924	11.2	6.9	...	...	...	9.3	4.6	6.9	6.9	...	18.6	16.2
1925	13.0	4.6	...	2.3	2.3	2.3	4.6	4.6	9.1	4.5	43.2	72.8
1926	13.8	...	...	...	2.2	4.4	6.6	2.2	4.4	...	37.7	100.0

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

the close social and commercial intercommunication between the two municipalities exposed the citizens of Evanston constantly. There was local danger too because of inadequate sanitary sewer facilities, because the lake from which the public supply was drawn was contaminated from a sewer outlet relatively near the water intake, because effective water sterilizing processes were not started until 1912, because the factors involved in the sanitation of milk were not fully appreciated, because the public supply after it became safe was not available to all citizens and because, withal, the public had not learned the very close and subtle relation between sewage disposal, safe water supplies and typhoid fever.

Increasing knowledge on these points was readily appreciated and reduced to practical application, however, so that typhoid began to dwindle as soon as preventive measures could be made operative. The year 1901 seems to have been the worst typhoid year in the whole history of the municipality. Eleven deaths occurred, giving a mortality rate of about 55 per 100,000 inhabitants. This was about twice the rate for Chicago in that year but there is no data available to show the source of the outbreak. It might have been

from the public water supply. The population at the time was a bit short of 20,000 and 11 deaths from typhoid fever suggest an epidemic of more than 100 cases, a rather severe experience.

Subsequently, energetic measures toward water purification, sanitary sewage disposal and sanitary supervision over milk supplies began to result in perceptible declines in the annual typhoid fever rates but no marked decreases occurred until 1912 when the practice of treating the public water supply with hypochlorite of lime was started. After the modern purification plant was put into commission in 1914 typhoid became a negligible factor in the health problems of the community. The city profited also, in regard to danger from typhoid, from the general practice of pasteurization of milk which became generally effective in Chicago in 1914 and by its own vigorous efforts to safeguard milk sold in the city (much of Evanston's milk is handled by Chicago dealers). Evanston had previously suffered from a few milk borne outbreaks, particularly in 1912 when twenty cases were traced to a single dairy.

Another flare-up of typhoid started in 1923 and stretched out over three years, confining itself however to the late autumn or winter months. This caused no little public concern because most cases were among the best families and because the source of infection appeared at first to be quite baffling. Careful epidemiological studies finally incriminated raw oysters as the offending agent, however, and after considerable agitation which ultimately involved the whole oyster industry of the United States and the local, State and federal health agencies—because outbreaks traced to the same source occurred elsewhere—the disease abated in Evanston and has continued to be a health problem of minimum significance in the city.

Diphtheria was another of the grave problems that presented itself for perennial solution and its savage assaults on the child life made it a subject of very active consideration from time to time. Epidemic waves carrying off from one to five children came and went with the seasons, sometimes confined to a handful of cases and again reaching alarming proportions. Experiences prior to 1900 were much the same as those elsewhere. Until the last few years before that date antitoxin was unknown so that quarantine was the only control measure applicable in a public way and this all too frequently was not utilized with the promptness and uncompromising rigidity necessary for maximum benefits.

After 1900 the increasingly general use of antitoxin caused a marked decline in the ratio of deaths to cases but that had little effect upon the number of cases, which sometimes grew to alarming proportions. They varied, of course, from year to year but 1921 seems to have been the worst in the history of the city. In that year 178 cases and 17 deaths were reported. That gave a mortality rate of about 43 per 100,000 population.

Other years since 1900 when the rate has soared above 20 per 100,000 are 1902, 1905, 1911, 1912, 1916 and 1917.

Since 1921 the possibility of preventing diphtheria by the immunization of children with toxin antitoxin has come into popular favor and Evanston demonstrated her historic attitude of a will to be well by taking advantage of this opportunity on a large scale. Although there is in Evanston a considerable element who are opposed to the specific methods of prevention advocated by the orthodox medical and public health professions, still the general public follows the lead of these scientific proponents and the result seems to justify their faith. The total number of cases of diphtheria reported in Evanston during the five years ended with 1927 is less than that for the one year of 1921.

The history of scarlet fever in Evanston has been considerably different from that of diphtheria because the milk supply has been involved in the spread of the former. On at least three occasions, in 1906, 1907 and 1908, rather conclusive evidence was secured pointing toward specific milk supplies as the source of outbreaks. The epidemic of 1907 was the worst of the three and the worst that the city ever experienced. There were 279 cases reported and the city had less than 25,000 people at that time. Dr. H. B. Hemenway made a careful epidemiological study of the outbreak and concluded that the source was a contaminated milk supply. The fact that the epidemic promptly subsided when the sale of milk from that supply was cut off and the further fact that a severe outbreak occurred shortly after in Chicago among families who bought the milk that had been diverted from the Evanston market, verified the conclusions of Dr. Hemenway in the matter.

In 1925 there was another wave of scarlet fever that caused 260 cases of illness but at that time the population of the city was estimated at 43,833 so that the ratio of prevalence was far less than in 1907. True to the spirit of keeping abreast of the times arrangements were made to promote the use of scarlet fever toxin as an immunizing agent against the disease. This procedure is very new, having been announced by the discoverers, Doctors George F. and Gladys H. Dick, in 1923. The Dicks themselves were secured to test the children in an Evanston school and to immunize the susceptibles, a task which was completed in 1925. Results of the demonstration are not available for use here.

Other than the points mentioned there has been nothing unusual about the scarlet fever history of Evanston. The disease appears to have grown milder there as it has elsewhere in the country although the incidence has declined but little.

Tuberculosis is a disease particularly sensitive to errors in the habits of living and accordingly we should expect to find relatively little of it in

Evanston where the public has manifested such a keen and intelligent interest in health matters. That is exactly the case. Since 1908 the annual mortality rate from that disease has always been less than 100 per 100,000 population, with a persistent downward trend that reached the point of 37.7 in 1926. That is an unusually low rate, less than one-half of that which prevails in Chicago and scarcely more than one-half the rate for the State at large.

Before 1900 the mortality rate sometimes grew to a figure in the neighborhood of 150 but those were the days before the anti-tuberculosis movement with its modern effectiveness was well under way. Even so the people in Evanston were alive to the importance of tuberculosis and were busy at whatever measures gave reasonable hope of prevention and control. Were not three herds of cattle in the vicinity tuberculin tested in 1900?

The bulk of the anti-tuberculosis work has been done by voluntary agencies, principally the Chicago Tuberculosis Institute. Splendid response from individuals and the public to control and preventive measures made possible the enviable progress that has marked the trend of the local campaign against tuberculosis.

Influenza struck Evanston a rather severe blow in 1918 although the mortality rate from that infection and pneumonia was not so great as in many other places. Ninety-three deaths were attributed to influenza that year and 87 to pneumonia, giving mortality rates of 310 and 290 per 100,000 respectively. This was disastrous enough but 12 other cities embraced in this volume suffered worse from influenza. The combined rate from influenza and pneumonia was greater in 11 other cities. But even with this unhappy experience the general mortality rate was only 14 per 1,000 population compared with 18 and 20 in many of the other municipalities.

It would hardly do justice to the health history of Evanston to close the account without reference to the infant mortality rate. This, like the tuberculosis mortality rate is a sensitive index to the efficiency of public health service. Evanston has for a long time enjoyed one of the lowest bona fide infant mortality rates in the State. The average number of deaths among children less than one year of age was 50.4 per 1,000 live births reported during the seven years ended with 1926. During the same period the average annual rate in the State at large was more than 75. The favorable showing in Evanston is doubtless the result of the splendid infant and child hygiene and the prenatal service that has so admirably supplemented the general sanitary and health program of the city.

No community in the State has gone at its health problems more earnestly nor more intelligently than has Evanston and none has reaped more enviable rewards of efforts in the shape of favorable health conditions and low mortality rates.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever			5	8	4	2	2	17	17	11	3	4
Smallpox		1	2		17	17			4	14	17	10
Measles	55	318	228	1206		93	141	1169	108	410	329	1277
Scarlet Fever	178	150	31	46	174	83	72	111	181	260	142	110
Whoop, Cough						120	187	250	204	425	162	217
Diphtheria	38	55	13	20	137	178	48	66	49	7	18	35
Influenza			2878	124	574	4	11	9	2	6	32	19
Poliomyelitis	8	2	6	1		5	1	2	4	2	1	3
Meningitis				1		1				3		5
Tuberculosis*	15		8			15	59	59	39	57	59	50
Pneumonia*						28	104	88	62	79	164	119
Syphilis						1			3	26	87	125
Gonorrhea									1	8	36	54

* All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. Notification in Evanston now is as nearly complete as in any city of the country.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1910			42	
1911			43	
1912				
1913			27	
1914			35	
1915			56	
1916			44	
1917			56	
1918			49	
1919			57	
1920	960	25.1	61	63.5
1921	1136	24.0	62	54.6
1922	1203	29.5	62	51.5
1923	1315	31.7	60	45.7
1924	1481	34.5	64	43.2
1925	1528	34.8	66	43.2
1926	1724	38.2	80	51.6

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

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Freeport

The city of Freeport is located in Stephenson County, about 15 miles from the northern boundary of the State and is about 113 miles west from Chicago. It is served by three railway trunk lines and one interurban system, namely, the Illinois Central, Chicago, Milwaukee and St. Paul and Chicago and Northwestern railways and the Rockford and Interurban electric line.

The city is located on the Pecatonica River, which forms a part of the north and east boundaries. The greater part of the city is so located that good natural drainage is afforded. There are certain sections, however, especially the northeast, which become flooded during high water. The greatest known flood in the history of the Pecatonica River occurred in March, 1916. The river frequently spreads out over a whole valley north and east of the city limits during flood period, and there is considerable property damage in that part of the city located on the east side of the river due to a silting up of the channel.

The rich alluvial soil of the bottom lands and the good rail facilities encourage extensive farming and grazing, devoted largely to the raising of cattle and the production of dairy products.

The city occupies an area of 4.2 square miles, the highest elevation being 873.5 feet above sea level and the lowest 743.5. It has a total of 10.7 miles of alleys and 70 miles of street. There are six parks, four of medium size, comprising an area of about two acres each, and two large parks, one covering an area of 90 acres and the other 75 acres. Aside from these there are six small flower parks of about one-quarter acre each. The city has a park board operating under special State law, which has control over all the "breathing spaces."

Freeport is an industrial community. Here one of the large shops of the Illinois Central Railway is located while thirty-odd manufacturing concerns maintain plants in the city. Hardware, engines, toys, furniture and medicinal products are the chief items made in the factories.

In 1920 the population of Freeport was 19,669, a figure to which the number of inhabitants had grown from 17,567 in 1910 and 13,258 in 1900. The 1890 census returns showed a population of 10,189. Of the 1920 population 5,410, or nearly 28 per cent, were listed as being 45 years or more of age. Native whites predominated with a percentage of 87.7, the remainder



Robert J. Burns, M. D.,
Commissioner of Health,
1903-1909; 1923 to date

being divided between foreign born whites and negroes with percentages of 10.6 and 1.7 respectively. The character of the population had changed but little during the decade that preceded.

HEALTH MACHINERY.

The ordinance creating the first official health organization in Freeport was adopted in 1893. It provided for a board of health under which a health officer performed the executive duties ascribed to him. From the very outset a physician has always filled the position of health officer. Under the first board of health ordinance the health officers who served Freeport included the following, the dates indicating year of original appointment from which time each continued in office until the next one listed:

E. H. Best, M. D.	1893-1895	E. H. Best, M. D.	1909-1911
J. A. Poling, M. D.	1895-1899	J. A. Poling, M. D.	1911-1913
E. E. Burwell, M. D.	1899-1901	E. E. Burwell, M. D.	1913-1915
T. J. Holke, M. D.	1901-1903	E. J. Torey, M. D.	1915-1917
R. J. Burns, M. D.	1903-1909		

In 1917 the original board of health system was abandoned when a new ordinance, creating a department of public health with a commissioner at its head and administered through a committee of the city council, was adopted. Under this plan the mayor appoints, every two years, a committee of three aldermen and a health officer or commissioner of health who, with himself, make up the official health organization of the city. The commissioner of health is the executive officer.

The ordinance of 1917 requires that the city health commissioner shall be a legally qualified physician possessed of the requisite knowledge of sanitary science. It specifies as a duty of the health commissioner that he shall assist and advise the health committee in all matters pertaining to public health and clothes him with the power and responsibility of general supervision over the health conditions of the community. The ordinance is sufficiently broad in its terms to provide ample legal authority for initiating and carrying out every reasonable activity calculated to benefit the public health.

Under the ordinance of 1917, which still constitutes the legal basis for the official health activities in Freeport, three physicians have served as health commissioner. With the date of appointment they are:

E. H. Best, M. D.	1917-1919
J. A. Poling, M. D.	1919-1923
R. J. Burns, M. D.	1923 to date

Besides the commissioner of health the city health department employs a sanitary inspector.

Voluntary agencies and such public organizations as the local school and county tuberculosis boards have done more active public health work in Freeport than the city government. This is not uncommon among municipalities.

In 1915 the board of education employed a nurse to do health work among the school children of the city and that service has continued. At about the same time, through the cooperation of the Stephenson County Dental Society, the board of education established a dental clinic in the schools where necessary dental work is done gratuitously for indigent children.

The Stephenson County Tuberculosis Board employs two nurses who spend a part of their time in Freeport. Their attention is devoted entirely to problems relating to tuberculosis and their efforts are directed primarily toward preventing that disease.

The Amity Society, oldest of Freeport's charitable organizations, dating back to the seventies, is responsible for the largest volume of active public health work accomplished in the city. With an annual budget of about \$4,000 this society has carried on practically all of the infant and child welfare work, other than that in the schools, which has been undertaken. It first became active in this field in 1917 when the Children's Bureau of the U. S. Department of Labor stimulated interest in a child health program. Later the Amity Society became affiliated with the American Child Health Association and has operated a child welfare station for many years. It has sponsored a crippled children's clinic, provided by the Rotarians, and has been responsible for much of the success of this clinic to which crippled children have come from a large surrounding area.

WATER SUPPLY.

A waterworks was first installed in 1882 when a thirty-year franchise was granted the Freeport Water Company. In 1912 the franchise was renewed but with some important alterations in the terms of the ordinance.

In supplying the city with water the founders of the company first planned to develop a spring which issued from a bluff near the river on the north edge of town. A large pit was excavated and the flow from this spring was conveyed to this pit through a drain tile. Beside the pit was built a pumping station which still forms a part of the present waterworks plant.

It soon became apparent, however, that the spring supply was altogether inadequate to meet the demands and for a period of three or four years it was supplemented by water drawn direct from Pecatonica River.

Next a small well was bored at the plant and it was found that the water rose and overflowed at the ground surface. This encouraged the sinking of several more wells. The static head receded, however, in a short time and it became necessary to pump the wells. These wells then became the main source of supply. In 1890 the old river intake was discontinued and the old pit filled up.

In 1893 there were 14 wells in service, all confined to an area of one-fourth of an acre lying just north of the pumping station.

Between 1893 and 1915, 11 drift wells and 2 wells entering St. Peter sandstone were added to the system. These additions extended westward a distance of about 300 feet.

For a number of years the drift water was satisfactory and then difficulties began to arise due to iron and growths of crenothrix in the wells and pipe lines. In 1900 an effort was made to eliminate this trouble by seeking a new supply from St. Peter sandstone. One well was drilled and is said to have furnished good water until it also began to contribute iron.

Experiments were then begun to discover a means of overcoming the difficulty by treating the water. Aeration alone proved inadequate while treatment with lime resulted in the precipitation of the iron.

In 1903 the company added to its equipment a purification plant of 2,000,000 gallons per day capacity, consisting of a means for treating with lime, two sedimentation tanks, four gravity filters, clear-water well, and low-lift pumping machinery. In the same year new high-service equipment was installed.

In 1910 an appraisal of the company properties was made and negotiations undertaken looking toward renewal of the franchise in 1912. The city and company could not agree on the original appraisal and a commission was appointed which made a new appraisal and submitted a report including recommendations for extensive improvements.

By 1915 most of the recommendations of the committee had been carried out. In 1915 a second well was drilled to St. Peter sandstone but was not equipped for the reason that the metering of the city so reduced the water consumption that additional water was unnecessary. The capacity of the filter plant was doubled, an additional clear-water basin was built and new low-lift equipment, coal bunkers and new service mains were installed. The cost of these improvements was approximately \$215,000.

In 1915 the water consumption was about 1.6 million gallons per day. The distribution system comprised about 54 miles of service mains.

In 1917, 25 drift wells and 2 wells into St. Peter sandstone were in use.

In 1920 there was a threatened shortage of water and in changing pump connections so as to connect with the deep wells, a mistake was made which permitted raw river water to enter the system for several hours.

In 1921 a new well entering St. Peter sandstone was constructed. During this year also, attention of local officials was directed to numerous industrial cross connections between polluted river and the city well-water supply.

In 1922 to safeguard the water supply a chlorinator was installed. To date, however, it has been impossible to secure the removal of dangerous cross connections which are in existence.

The present supply comprises 25 shallow drift wells and 3 deep wells. The waterworks comprises a purification works and pumping equipment. The present water consumption is about 1.85 million gallons per day.

Due to dangerous cross connections, the water is regarded as of doubtful sanitary quality.

SEWERAGE.

The city is served by a system of separate sewers with 8 sanitary and storm outlets to the river ranging from 12 to 144 inches in diameter.

HEALTH CONDITIONS.

Only present day health conditions in Freeport can be appraised on the basis of statistical evidence. Reliable records date back to 1907 only. Since that time the general mortality rate has fluctuated between 14 and 20 per 1,000 inhabitants. These figures are higher than the rates for the State generally and for some of the other municipalities. This results partly, at least, from the character of the age distribution in Freeport. Nearly 28 per cent of the population in 1920 were above 45 years of age. That suggests a considerable number of individuals in the upper age strata. At any rate the group constitutes a much larger share of the whole population than in the State at large and in a number of other places.

Infant mortality and the death rate from tuberculosis are usually regarded as sensitive indices to general health conditions. Since 1920 the infant mortality in Freeport has fluctuated between 50 and 80 per 1,000 live births reported with an average of 65.2. This is what may be termed a moderately low rate. In a few cities the infant mortality is much higher, in a few it is much lower. The average for the State during the same year was 73.0.

Mortality from tuberculosis has consistently declined in recent years, reaching the unusually low point of 28.8 per 100,000 population in 1926. Most of the decline has taken place since 1918 when 24 deaths gave a rate of 120. Prior to that time the number of deaths seldom fell below 18 per year, yielding rates above 100.

In Dixon and Freeport rather aggravating situations developed in 1922 when activity on the part of anti-vaccinationists delayed the establishment and carrying out of control measures in the face of a threatened epidemic

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1907	248	8	...	...	...	...	5	12	4	...	23	19
1908	222	...	...	...	...	...	...	...	...	...	...	...
1909	231	...	...	...	...	...	...	...	...	...	...	...
1910	246	...	...	...	...	...	...	...	...	...	...	...
1911	260	8	...	...	...	1	...	12	...	12	22	...
1912	285	13	...	1	...	...	...	12	1	...	18	...
1913	274	...	...	...	12	12	51	12	...	...	22	...
1914	...	13	...	...	...	...	...	4	...	...	19	...
1915	...	13	...	...	...	...	4	...	...	...	16	...
1916	296	13	...	...	1	...	...	...	5	...	18	23
1917	...	12	...	...	...	...	...	...	...	...	...	...
1918	366	...	...	...	...	1	12	...	52	...	24	30
1919	296	1	...	...	12	3	...	1	18	...	21	9
1920	399	...	...	...	...	...	...	1	40	...	16	25
1921	308	6	...	1	...	12	3	10	3	...	14	19
1922	302	...	...	...	1	...	1	7	2	...	17	18
1923	330	...	...	...	1	1	...	7	...	...	11	25
1924	311	1	...	...	...	...	...	1	1	...	12	13
1925	308	5	...	...	...	...	...	...	4	1	15	15
1926	359	...	...	...	4	...	4	...	6	...	6	23

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1907	15.2	49.1	...	...	...	...	49.1	12.2	24.5	...	141.3	116.7
1908	14.5	...	...	...	...	...	...	...	...	...	...	...
1909	13.8	...	...	...	...	...	...	...	...	...	...	...
1910	14.0	...	...	...	...	...	...	...	...	...	...	...
1911	14.6	45.0	...	...	...	5.6	...	11.2	...	11.2	125.7	...
1912	15.8	17.0	...	5.5	...	...	...	11.1	...	...	100.0	...
1913	15.6	10.9	...	...	10.9	10.9	27.4	10.6	...	...	120.8	...
1914	...	10.8	...	...	...	...	...	21.7	...	...	103.2	...
1915	...	10.7	...	...	...	...	21.4	...	...	...	85.9	...
1916	15.7	10.6	...	...	5.3	...	...	...	26.5	...	95.6	122.1
1917	...	...	...	...	...	...	...	...	...	...	...	...
1918	18.9	9.9	...	...	...	5.0	9.9	5.0	260.0	...	120.0	150.0
1919	15.1	5.1	...	...	10.2	15.3	...	20.4	91.8	...	107.1	45.9
1920	20.2	...	...	...	...	25.6	...	5.0	290.0	...	79.9	129.9
1921	15.4	39.1	...	5.0	...	10.0	5.0	50.1	15.0	...	79.1	95.2
1922	15.6	...	...	...	5.0	...	14.9	34.8	9.9	...	84.1	89.4
1923	16.2	...	...	...	4.9	4.9	...	30.0	39.4	...	53.1	123.1
1924	15.2	4.8	...	...	...	...	...	4.8	...	...	58.5	63.4
1925	14.9	24.1	...	...	...	...	...	...	10.3	4.8	72.5	72.4
1926	17.2	...	...	...	19.1	...	19.1	...	28.8	...	28.8	110.0

Note: The rate from All Causes is per 1,000 population; all others per 100,000 population.

of smallpox. At Dixon the difference between local adherents to the constituted authorities and to the Medical Liberty League terminated in court action, and the same thing was threatened in Freeport, although the final outcome at each point resulted in the general vaccination or quarantine of

all unvaccinated contacts with active cases and the outbreaks were stamped out with less than 100 cases at each point.

The influenza epidemic of 1918 was not severe in Freeport, relatively speaking. The death rate of 200 per 100,000 was moderate. Pneumonia was also relatively light that year, the rate of 150 being much lower than for many municipalities.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	1	1	25	2	2	2	9	7	4
Smallpox	4	103	19	46	22	12	4		
Measles	61	207	8	13	72	67	112	573	27
Scarlet Fever	22	45	47	80	62	71	119	19	19
Whoop, Cough			21	160	12	17	91	84	22
Diphtheria	15	20	125	123	36	16	6	4	4
Influenza	124	348	2	12	10	2	12	5	5
Polio-myelitis				2	1		1		9
Meningitis			1	3				1	1
Tuberculosis*		13	22	64	25	30	17	52	34
Pneumonia*			8	64	56	32	35	69	57
Syphilis			37			15	9	30	17
Gonorrhea			66			16	13	35	18

*All forms.

Note: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates that notification of more diseases now prevails in Freeport but that there is still room for improvement in the completeness of returns.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1916	407	21.6	33	81.0
1917				
1918			42	
1919			33	
1920	427	21.5	33	77.3
1921	483	24.0	25	51.8
1922	423	20.7	33	78.0
1923	453	22.2	30	66.2
1924	506	24.7	25	49.4
1925	487	23.5	26	53.4
1926	483	23.2	29	80.4

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

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Galesburg

Galesburg, the county seat of Knox County, is located near the divide between the basin of Henderson River, a tributary of the Mississippi, and that of the Spoon River, a tributary of the Illinois, in the west central portion of the county. The city occupies high level ground on the divide between the two drainage basins.

Cedar Creek, a branch of Henderson River, flows westerly through the city, receiving practically all of the drainage with the exception of a portion from the southwestern part, which enters Court Creek, a tributary of the Spoon River.

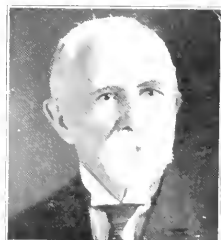
The soil consists of a glacial drift, varying in depth from 30 feet in the uplands, to as much as 120 feet in the valley of Cedar Creek. This drift contains water-bearing strata, which yield large quantities of water. The underlying rocks lie deep and are generally limestone with some soft sandstone. Bituminous coal is mined in the vicinity. There are no ponds, lakes or marshes in the city or within a radius of five miles.

Settlement of Galesburg began in 1837 and the community was incorporated as a city in 1841. It was reorganized under the general law of 1872 in 1876.

The population was 882 in 1850. In the following decade there was a marked growth of the city, the population reaching 4,953 in 1860. In the next ten years the population doubled, the inhabitants numbering 10,158 in 1870. The end of another decade found 11,437 people there and this number had grown to 23,834 by 1920. Of this number 20,054 or 84.1 per cent were native born whites, 2,925 or 12.3 per cent were foreign born whites and 843 or 3.6 per cent were negroes. There were 6,749 or 28.3 per cent over 45 years of age.

HEALTH MACHINERY.

Health service in Galesburg is now provided under an ordinance, adopted in 1915, that divides responsibility between a commissioner of health and a board of health. Conflict of purpose and action between the two is avoided by making the commissioner of health a member of the board and by limiting to \$25.00 any item of expenditure incurred by the health commissioner without the approval of the board.



E. D. Wing, M. D.
Health Commissioner,
1918 to date

Under the board there is an executive officer, a layman, known as the health officer. In matters not medical, he has authority equivalent to that vested in the health commissioner, who is a physician. The ordinance specifies that the city council may from time to time prescribe the duties of the board of health but the duties of the health commissioner are set forth in the ordinance. There is, furthermore, another city officer known as the city physician. His duties are not public in character but relate to the medical care of indigent sick who find themselves as city charges. The first four sections of the ordinance read:

"Section 1. The board of health shall consist of the mayor, commissioner of health, chief of police, poormaster and city physician. The city clerk shall be clerk of the board.

"Section 2. The mayor shall be ex-officio the president of the board of health.

"Section 3. The city council may from time to time prescribe the duties of said board of health.

"Section 4. Said commissioner of health shall have and exercise a general supervision over the sanitary condition of the city, shall give to the mayor and other city authorities all such professional advice and information as they may require concerning the health of the city and the preservation thereof, enforce all the laws of this state and ordinances of the city relating to health, and promptly abate all nuisances which may in any manner endanger the health of the city."

The other fifteen sections enumerate various duties, responsibilities and powers of the health commissioner and the board of health.

This system is the culmination of a long experience in official health activities that began when the city was young. The Cities and Villages Act under which Galesburg was reorganized in 1876, provided for a board of health and the city took advantage of that provision. Prior to that time a board or committee of health met the emergencies that faced the municipality from time to time.

During the earlier years there was no regularity in activities directed toward the control and prevention of disease and consequently there was no permanency in the executive office of the board or committee of health. After 1876, it was the practice to appoint a physician as health officer. Dr. George W. Foote filled the office in 1881 and was succeeded by Dr. James E. Cowan, in 1884. Then Dr. D. W. Aldrich was appointed health officer in 1885.

Later it became the practice to let a non medical person fill the office of health officer and this has continued. Medical direction of health service was maintained, however, through the creation of a new office known as health commissioner.

Recent incumbents have been John D. Bartlett, M. D., 1914; F. G. Hall, M. D., 1915-1918; E. D. Wing, M. D., 1918, to date.

Voluntary agencies have done and are still doing a great deal of work in Galesburg. There are six public health nurses, supported by various organizations at work in the city and county. Among other things, the agencies which support the nurses participate in infant and maternity hygiene service, do work among the school children and maintain, through the co-operation of the Illinois Crippled Children's Society, a clinic for crippled children.

WATER SUPPLY.

In the seventies a public water supply was provided. This was derived from wells and cisterns. One well was located in George W. Brown's works and the other at the Frost factory. These were drift wells about 12 feet in diameter.

Two reservoirs were maintained for storage purposes, one on Seminary Street with a capacity of 1,100 barrels, the other on West Street, holding 1,500 barrels.

Besides these reservoirs for well water, there were twenty large cisterns for the storage of rain water.

In 1878 water pipes were laid only in the central part of the city.

A water supply obtained from artesian wells was established in 1887, supplemented by drift wells.

In 1890, after a private company, which received a franchise to supply water, had its contract revoked on account of failure to meet its obligations, the city took over the waterworks. The supply was derived from a series of driven wells about 80 feet deep, in a line parallel to Cedar Fork at the present site of the waterworks. These wells were connected to a common suction pipe from steam pumps. The method of pumping was unsatisfactory and two wells, 1,226 feet deep pumped with air, were installed. Later several wells about 70 feet deep were added.

In 1912 two deep wells and six shallow wells were in service. Water was delivered from the wells into a collecting cistern from whence it was pumped into a storage reservoir. Just prior to 1912 a large service pump to pump water from the storage reservoir directly into the mains, was installed.

In 1914 a Venturi meter on the discharge of the high-service pump was installed. At this time three deep wells penetrating St. Peter sand-stone and four drift wells were in service. During this year, a shallow drift well of large diameter with a special straining device to eliminate troubles due to fine sand was sunk to replace three of the old drift wells. The consumption in 1914 was about 30 gallons per capita daily.

The question of an adequate supply had at times been the cause of anxiety and prior to 1915 studies had been made relative to increasing the supply by developing of either a surface-water supply or development of an isolated deep-well system.

Due to the continued inadequacy of the supply, private shallow dug wells and cisterns, open to contamination, were maintained for many years. In 1915, following an epidemic of typhoid fever, investigations cast suspicion upon the public water supply and the supply was given hypochlorite treatment for a time.

In 1915 a new deep well was started at the pumping station, but due to delays and breakdowns the well was not yet completed in 1919. In 1916 and 1917 four more shallow wells were added to those already in existence. In 1917 a new deep well (1,252 feet deep) was constructed just back of the city hall. In 1919 another deep well in the southeastern part of the city was constructed, and placed in service.

In 1922 the supply comprised three wells entering St. Peter sandstone and one well entering Potsdam sandstone located near the waterworks station and two wells entering St. Peter sandstone located near the city hall and in the southeast part of the city, respectively. The Potsdam well, which was started in 1915 and not completed until late in 1919, was the only well normally pumped in 1922.

The present supply comprises the four wells in service in 1922. The supply is still subject to contamination at the open reservoir and its sanitary quality is regarded as doubtful.

In 1919 there were 41 miles of service mains and 3,500 services. The present water consumption is 65.7 gallons per capita.

SEWERAGE.

The major portion of the city has natural drainage toward Cedar Creek, which flows in a southwesterly direction through the central portion of the city. The southeast part of the city drains to Court Creek, which flows easterly and discharges into Spoon River.

The first public sewer system was installed in 1870. This was on the combined plan and served part of the area on the south side of Cedar Fork.

Between 1870 and 1880 four other limited systems were constructed. Porous tile drains laid beneath street gutters facilitated somewhat the removal of surface drainage. These early sewer projects were financed by an arrangement whereby two-thirds of the cost was defrayed by abutting property owners and one-third by the city.

In 1880, nearly all the private dwellings depended upon privies for sewerage facilities. Only hotels and other public buildings were connected. About this time the board of health prohibited the digging of more privy vaults and endeavored to bring into use the dry-earth system. This was done because the board had had analyzed the water from wells on premises where diphtheria cases had occurred and had found it contaminated. At this time the board was of the opinion that vault privies were the cause of

diphtheria epidemics which previously had occurred. There was violent opposition at first, to the installation of dry-earth closets, but the board, in 1880, reported that the number was gradually increasing.

Night soil was used as manure by farmers a few miles distant from the city, but such use was prohibited on the gathering ground of the public water supply.

The sewer system, built mostly on the combined plan, was extended from time to time as local requirements demanded. Many sewers, especially in the extreme northern and southern parts of the city were laid at such shallow depths that basement drainage was not afforded.

The numerous outlets discharged into Cedar Creek, which soon became an open sewer flowing through the city. In 1914 gross pollution extending seven miles below the city was observed in Cedar Fork. Some sewage was discharged into Court Creek in the southeast portion of the city, and produced conditions concerning which many complaints arose. In 1916 the matter of the pollution of Cedar Creek came to a hearing before the Rivers and Lakes Commission, and an order was issued requiring the city to abate the nuisance before July, 1918, which order was never enforced.

At the present time there are 36 combined sewer outlets discharging into Cedar Fork. The tributary sewers are divided into 34 sewer districts. Practically all streets are served and 90 per cent of the population are connected. About 50 miles of sewers are in existence. In addition there are some sewers discharging into Court Creek, but further development of this system as an outlet watercourse has been curtailed through an injunction granted by the court.

Two comprehensive preliminary studies of the sewerage needs of Galesburg have recently been made, the second study being made in 1924. The consulting engineers have recommended the construction of a trunk sewer following along Cedar Fork, channel improvement along certain portions of Cedar Fork, force main and pumping station to serve the Court Creek area, intercepting sewer for the purpose of conducting the dry-weather flow to a point west of the city, and a modern sewage-treatment plant comprising grit chambers, Imhoff tanks and sludge beds.

HEALTH CONDITIONS.

The story of a "pest house" located on the outskirts of town and shunned like a leper by all health loving citizens, is somber evidence that Galesburg felt the sting of smallpox and experienced the alarm that was want to follow fast upon the heels of an outbreak in years gone by. Cholera doubtless paid its gruesome respects to the inhabitants of that college community, too, but historians seem to have left the recording of such events to others and the others found more congenial ways to pass the time. At all events we find

very little about the coming and going of epidemic diseases even in later years. It is reported that the city escaped with but four cases of smallpox during the State-wide epidemic of the early eighties. A typhoid fever outbreak of 20 cases occurred in 1902. With these meagre references we are left to surmise what other ailments may have plagued the citizens until 1918. What has transpired since that time is suggested in the mortality and morbidity tables herewith presented.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop. Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1907	275	8	...	...	4	3	1	3	...	...	21	21
1908	243	...	...	...	...	...	...	...	...	...	...	...
1909	263	...	...	...	...	...	...	...	...	...	...	...
1910	292	...	...	...	...	...	...	...	...	...	...	...
1911	311	...	...	...	...	...	...	...	...	...	...	...
1912	304	...	...	...	...	...	...	...	...	...	...	...
1913	297	6	...	...	1	...	3	...	...	...	25	...
1918	459	8	...	...	1	...	3	4	65	...	29	49
1919	317	2	...	...	...	...	...	1	17	...	25	29
1920	376	4	...	...	1	...	...	1	16	...	15	49
1921	324	1	...	...	2	...	...	1	...	...	23	23
1922	372	...	...	...	1	...	...	1	9	...	14	27
1923	414	3	...	...	1	1	6	2	10	...	15	25
1924	344	1	...	...	6	1	...	1	2	...	25	16
1925	310	4	...	...	...	...	...	1	...	1	11	17
1926	401	1	...	1	...	...	1	3	16	...	13	21

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop. Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1907	13.0	38.0	...	...	19.0	14.2	4.7	14.2	...	...	99.7	99.7
1908	13.2	...	...	...	...	...	...	...	...	...	...	...
1909	12.0	...	...	...	...	...	...	...	...	...	...	...
1910	13.2	...	...	...	...	...	...	...	...	...	...	...
1911	13.9	...	...	...	...	...	...	...	...	...	...	...
1912	13.5	26.5	...	...	4.1	...	13.2	...	...	...	110.5	...
1918	19.5	32.0	...	...	4.0	...	12.0	16.0	260.0	...	116.0	196.0
1919	13.4	8.3	...	...	...	...	...	8.3	70.8	...	104.1	120.8
1920	15.7	16.6	...	...	4.1	8.2	8.2	4.1	66.6	...	62.0	204.1
1921	13.4	4.1	...	...	8.3	8.3	...	4.1	8.3	...	95.3	95.4
1922	15.3	...	...	...	4.1	...	...	20.6	37.1	...	37.6	111.2
1923	16.9	12.2	...	...	4.0	4.0	24.5	8.1	40.9	...	61.0	102.4
1924	14.0	4.0	...	...	21.0	4.0	...	4.0	8.0	...	112.0	64.0
1925	13.7	16.1	...	...	...	...	...	4.0	32.2	4.0	44.3	68.5
1926	16.2	4.0	...	4.0	...	...	4.0	12.0	64.0	...	52.0	124.0

Note. The rate from All Causes is per 1,000 population; all others per 100,000 population.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever		34	45	16	20	6	22	19	23	7	18
Smallpox	13	11	92	174	31	1		3	2	4	
Measles		267	180	31	621	31	160	376	4	260	84
Scarlet Fever	8	9	21	21	48	15	34	66	62	16	39
Whoop Cough					156	17	187	76	23	117	86
Diphtheria	73	12	19	18	65	74	32	23	12	17	11
Influenza		3658	565	248	2	4	7	2	4	9	8
Polymyelitis	2	1	2	1	2				1		2
Meningitis					2	4	1		2	4	
Tuberculosis*					25	37	14	32	29	59	23
Pneumonia*					51	64	82	47	52	92	74
Syphilis		3			28			59	31	45	73
Gonorrhea					54			45	19	23	52
Chancroid					1						

* All forms.

NOTE.—Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1918			33	
1919			35	
1920	503	21.0	46	91.5
1921	547	22.7	24	45.9
1922	463	19.1	47	101.5
1923	585	24.9	48	82.1
1924	592	24.0	38	64.2
1925	572	23.4	37	64.3
1926	545	21.8	43	78.9

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

REFERENCES.

- Annual Reports, State Board of Health, Springfield, Illinois, various dates.
 Bulletins, Illinois State Water Survey, Urbana, Illinois, various dates.
 U. S. Census Reports, Washington, D. C., various dates.

Jacksonville

The site of Jacksonville, the county seat of Morgan County, was one of the most beautiful locations on the native prairies of that county. For about a mile to the east and north of the center of the town, a line of heavy timber marked the changing course of Mauvaisterre Creek on its way to the Illinois River about twenty miles to the west.

About four miles to the south a line of timber marked the western course of Big Sandy Creek. A mile west was a magnificent grove of large timber, through which the land gradually rose to culminate in what was called the Mound three miles away. To the south, on another ridge about a mile away, was another grove, later known as Diamond Grove.

The town was laid out in 1825 and was located on a well-drained prairie ridge. According to Peck's Gazetteer, twenty families resided there at that time. Dr. Ero Chandler, the first physician, arrived in 1821.

Located in a spot so favored by nature and lying almost in the very middle of Illinois, it was but natural that Jacksonville should become a seat of learning. That is exactly what happened, and more, for it not only became a college town, Illinois College and Jacksonville Female Academy, now called the Illinois Woman's College, being located there but one that accommodates three great State institutions, one for the blind, another for the deaf and one for the insane.

Jacksonville was incorporated as a city in 1840 under a special charter granted by the legislature. The charter provided for a board of trustees and among those elected the next year was Isaac D. Rawlings, grandfather of the present director of the State Department of Public Health who bears the same name. Subsequently, the city was reorganized two or three times under new charters and laws, changing in 1911 to the commission form of government and back again to the aldermanic in 1918.

The population in Jacksonville grew from 1,900 in 1840 to 15,713 in 1920. Of late years the increase has been small. Of the 1920 population 86 per cent were native born whites and 7½ per cent were negroes, a relatively heavy black element. Nearly 35 per cent were 45 years old or over, suggesting the pronounced influence of the State institutions, particularly that for the insane, over the age characteristics of the population. This same factor is important in the general death rate.

HEALTH MACHINERY.

Alarm over the possibility of a smallpox epidemic in 1880 frightened local officials into action and the result was an ordinance creating the office

of health warden. This appears to be a unique title for the office which was filled by the following physicians:

C. G. Brown, M. D.	1880-1882
W. H. King, M. D.	1882-1883
Morris H. Goodrick, M. D.	1883-1884
T. M. Cullimore, M. D.	1884-1885

For some reason, possibly the passing of apparent danger and the waning of popular interest in such matters, the practice of appointing a health warden to keep watch over the health destinies of the inhabitants apparently fell by the wayside for a period, only to be revived again at the turn of the century. Then came the following:

L. H. Clampit, M. D.	1898-1901
George E. Baxter, M. D.	1901-1908
George F. Dinsmore, M. D.	1908-1909
A. M. King, M. D.	1909-1922

These health wardens or officers were employed on a part time basis and were expected to function only in emergencies or when some legal authority was necessary to abate nuisances or for another cause. Up to 1922 the health warden was the only person employed by the city to perform public health functions of any sort and he was responsible to a committee of the city council.

Voluntary and quasi-public organizations were more active than city officials in providing public health service during the first quarter of the twentieth century. The Morgan County Anti-Tuberculosis League, for example, began to function early in that period and was responsible for the adoption of the county sanitarium law in Morgan County in 1916 and for readopting the law in 1924 after it had been abandoned, in the meantime by vote. The first open-air schoolroom in the State outside Chicago was opened in Jacksonville in 1913 by the tuberculosis league. The next year the school board employed a teacher for the open-air school and two years later (1916) it began the regular employment of a teacher with nursing training to teach health and do public health nursing duty in the public schools.

In 1920 there were four full-time and two part-time public health nurses working in the city and county. These were supported by various organizations such as the tuberculosis association, Red Cross, school board, etc. Furthermore, a series of clinics for crippled children had been held by the State Department of Public Health under local auspices and an infant welfare station was functioning at a local hospital.

This was the state of affairs in 1920 when the local chapter of the American Red Cross undertook and carried out a community study that embraced an account of the public health facilities. In the report it was



An Exterior and Two Interior Views of Morgan County Tuberculosis Sanitarium.



stated that the mayor of Jacksonville, E. E. Crabtree, had under consideration the subject of providing the city with a more adequate health service and that similar ideas were agitating the minds of county officials.

During the next year Dr. Isaac D. Rawlings was appointed State director of public health in Illinois and he cherished the idea of promoting the establishment of county health departments throughout the State. Enjoying a



R. V. Brokaw, M. D.
County Health Director,
1922-1924.

wide acquaintance in Jacksonville, where he had formerly resided, he laid before the local officials a plan for creating there a health department that would serve both the city and the county and they accepted the proposal which gave to them the first full-time county health department ever established in Illinois. It began to function in May, 1922, with Doctor R. V. Brokaw at its head. He filled the office for two years and was succeeded by Dr. Thomas A. Mann who in turn was succeeded by Dr. W. H. Newcomb the present incumbent.

How the new organization began to function and what it was like is described in the first quarterly report of its director. He says:

"Previous to the inauguration of the present program, considerable health activity was carried on by public and private enterprise in the city and county. All of which, however, lacked coordination.

"The staff has to date included a field director, a nurse, and an office secretary.

"The field director functions as the Morgan County health officer, the city health officer of Jacksonville, and the registrar of vital statistics for three contiguous registration areas including Jacksonville and adjacent territory.

"The budget of \$10,000 is provided jointly by the Rockefeller Foundation, State of Illinois, County of Morgan and City of Jacksonville.

"The primary object of the present enterprise is a demonstration of the fact that the county is the logical administrative unit for the provision of adequate health service to smaller towns and rural areas.

"The program is designed to meet the problems of individual and community health throughout the entire county, featuring public health education, communicable disease control, child hygiene, and sanitation.

"The work was introduced by the ordinary methods of publicity. The reaction was immediate and favorable. County and city officials, the medical profession, clubs, and influential citizens have lent a hearty and continued support.

"A census and sanitary survey of the city of Jacksonville was begun at an early date. Facts regarding race, age groups, water supply, sewage disposal, and other sanitary features, were obtained as a basis for the development of a future improvement program.

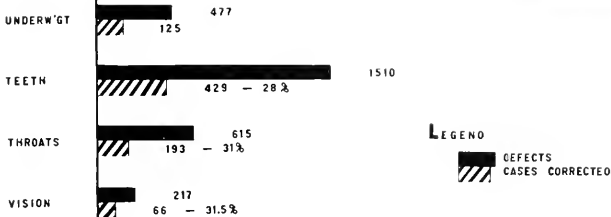
MEDICAL INSPECTION OF SCHOOL CHILDREN
MORGAN COUNTY



CORRECTIONS OF PHYSICAL DEFECTS

MORGAN COUNTY SCHOOL CHILDREN

1926 - 1927



"Communicable disease control is a major feature of the work of the department. Cases in the most remote areas of the county are coming under surveillance. In general, there has been a very gratifying lack of resentment toward quarantine regulations. County and city officials have commented upon the obvious reduction in the expense of quarantining under the new regime.

"A twelve bed isolation hospital project is well under way in Jacksonville; and the building will no doubt soon be in course of construction. At present there are no hospital beds in the city for the care of communicable disease. As a committee member, the health officer has been able to render material aid in this enterprise.

"In June, 1922, there was no pasteurized milk sold in the city of Jacksonville. As a result of the efforts of the health officer, a company was formed, an abandoned plant was leased, modern equipment was installed, operation was begun, and at present the company is distributing 150 gallons of pasteurized milk daily. A specially designed building is already being considered to provide for the increasing business.

"Upon the recommendation of the health officer, the city school board voted to use nothing but pasteurized milk in the cafeterias and grades of the school system.

"There is every reason to believe that the city of Jacksonville will in the near future adopt the model milk ordinance recently suggested by the State Department of Health.

Later the staff of the Morgan County health department was increased so that at the close of 1927 it consisted of the director, 2 nurses, 1 inspector and a secretary-clerk.

WATER SUPPLY.

The first ordinance relating to waterworks in the ordinance book of Jacksonville, was drawn up in 1869. In 1871 work was begun on a reservoir one and one-half miles southeast of the town located on Pullman's Ravine, tributary to Mauvaisterre Creek, in what is now known as Nichol's Park. The supply was developed in accordance with plans prepared by E. S. Cheshbrough of Chicago, \$150,000 being appropriated for the purpose. Nichol's Park was donated to the city for recreation purposes. At the time the reservoir was constructed, cultivated fields occupied the park area. Strong springs used to bubble forth from the ground just south and east of the present pavilion and these springs are reported to have been the main source of supply for a small pond which formed there. A dam was built across the northern outlet of the pond and Morgan Lake thus formed, with a storage capacity of 60,000,000 gallons. A vitrified-tile pipe line was laid to the pumping station located on the bank of Mauvaisterre Creek, about one mile north of the reservoir. Water was pumped to a distributing reservoir of 2,500,000 gallons, built on College Hill about a mile west of the city.



A School Well OK'd by
the Health Department.



Morgan County Nurses
at Work in a Rural School.



Lake Mauvaisterre, Source of Jacksonville's Water Supply

In 1885 the Gas and Oil Syndicate put down a 1,000-foot well near the Wabash Railroad. The city purchased the well and deepened it to 2,200 feet. The yield proved inadequate and the well was sold. The well was abandoned as a source of the city water supply about 1895.

In 1888 the Decker well, located just southeast of the pumping station, was sunk to a depth of 3,110 feet, being 10 inches in diameter at the top and 4½ inches at the bottom.

In 1890 another well was sunk 200 feet west of the Decker well. In 1895 the American well, similar to the Decker well, was sunk to a depth of 3,118 feet, just northeast of the pumping station.

All three wells flowed into a cistern at the pumping station, from which the service pumps drew their supply. The water contained considerable hydrogen, sulphide and iron, making it rather objectionable for domestic uses. In 1914 only one of these wells was flowing, and the yield from this was very small.

The flow of the wells gradually diminished so that the supply had to be supplemented from other sources. In 1899, a small dam was constructed across Mauvaisterre Creek opposite the pumping station and creek water was allowed to run into the pump cistern when the yield of the wells became inadequate. This arrangement was still in use in 1914.

In 1898 the project of deriving a supply from Big Sandy River, five miles southwest of Jacksonville, was considered, but eventually dropped.

In 1904 the Jacksonville Water Company obtained a franchise to supply the city with a suitable water supply, derived from wells sunk in the alluvial deposits of Illinois River near Bluffs, about twenty miles west of Jacksonville.

A pumping station was erected with a combined capacity of 6,000,000 gallons daily and a 20-inch spiral riveted steel pipe line constructed, leading to the city. The pumps drew water directly from the wells and discharged into the pipe line. Fourteen wells, 10 inches in diameter, sunk to bedrock at depths of about 70 feet, were developed.

From October, 1907, to April, 1908, the company delivered water into the city reservoir at Jacksonville. The company was required to make a test of supplying 6,000,000 gallons of water in 24 hours every fifteen days, and at each of these tests only 2,500,000 gallons of water were delivered to the city within the specified time. Following the test in April, 1908, after more than 3,000,000 gallons had been delivered within the 24-hour test period, the city refused to allow the company to pump into the reservoir for a longer period. The waterworks company pulled the strainers from the wells and had them recut and replaced. A test which followed resulted in only 5,000,000 gallons per 24 hours although the rate of supply exceeded at times

the required rate. Litigation followed between the city and the water company, which lasted for several years.

In 1912 the water company was incorporated and an agreement reached with the city relative to the supply of water. A part of the pipe line was repaired, but no water was delivered to the city.

The next source of supply adopted was the Widenham-Daub group of wells located about one mile southeast of the public square and near the Chicago, Peoria & St. Louis Railroad crossing over Mauvaisterre Creek. Three drift wells were put down by Widenham-Daub about 1910 and soon after two more wells were added by the city, which had purchased the supply and the surrounding land. Water was discharged into a collecting reservoir from which it was pumped directly into the distributing system. These wells were from 58 to 74 feet deep and penetrated alluvial deposits of clay and beds of sand and gravel. These wells were used only intermittently until 1914 when, due to low water in the creek and in Morgan Lake, they had to be operated continuously for 22 to 24 hours per day.

In 1914 the supply comprised Morgan Lake, Mauvaisterre Creek and the Widenham-Daub wells. The wells were subject to contamination due to overflow of the polluted waters of Mauvaisterre Creek. During this year a levee was built along the banks of the creek and the height of the projecting well casings was increased. The lake and creek water was, of course, at all times subject to contamination.

In 1917, a pump of 150-gallon-per-minute capacity was installed to pump water into the service reservoir from Ashelby pond and a drainage ditch located in the southwest part of the city. During the same year six test wells were sunk in the valley of Mauvaisterre Creek near the north city limits, with the view of increasing the supply.

The serious water problem at Jacksonville had much to do with the development of a bottled-water company in the city. This company was incorporated in 1902. Water from a spring near Markham was pumped to the bottling plant of the company in Jacksonville, and from there distributed. At the close of the period covered by this history this company owned more than 5,000 glass carboys and water is distributed to many points in Illinois through branch distributing stations. The supply has never been under the close surveillance of the State Department of Public Health, exercised for many years over the public water supply.

The water problem of the city was studied in detail in 1917 through co-operation of the State Board of Health, Geological Survey and State Water Survey. Recommendations were made for a thorough investigation of the ground-water supply and development of a surface supply in case such investigations showed the extension of the ground-water supply would be impracticable. In 1918 the preliminary studies were continued by the

co-operating State agencies, various wells tested and conclusions reached that a supply from wells was impracticable.

In 1919 work on a surface-water-supply project was begun. An impounding reservoir was constructed on Mauvaisterre Creek, with a surface area of 234 acres and a capacity of 418,000,000 gallons. A water-purification plant was constructed comprising aeration, coagulation, sedimentation, filtration and chlorination.

After the water shortage in 1922-23 the spillway elevation of the reservoir was raised two feet and the reservoir capacity increased to 200,000,000 gallons. Three of the Widenham-Daub wells constitute an emergency source of supply.

Since the construction of the purification plant, minor changes have been made in the mixing basin and aeration has practically been abandoned. An additional sedimentation basin has been constructed and one filter has been added to the original installation. As now constituted the water-supply system of Jacksonville comprises the Mauvaisterre Creek impounding reservoir and the three Widenham-Daub wells as an emergency source, the water-purification plant, and pumping station and two distribution and equalizing reservoirs.

In September 1926, due to unprecedented rainfall over the Mauvaisterre Creek drainage area, a serious flood occurred resulting in the inundation of about one-tenth of the area of the city. Due to inadequate spillway provision the reservoir dam broke and the water-purification plant was flooded. After the flood waters receded, the dam was re-built. Due to careful protective measures taken no outbreak of water-borne disease resulted.

There are about 32 miles of service mains and the present water consumption is about 114 gallons per capita daily. Routine analyses of water samples for the city have been made by the State Department of Public Health since May, 1921.

The water supply is regarded as being of a safe sanitary quality.

SEWERAGE.

A portion of the present sewer system was built in 1895 and additions were made in 1901, 1903, 1904, 1906, 1908, 1909, 1910, 1913, and 1916. These sewers were built on the combined plan and were paid for by special assessment. The development of sewerage in the city has been in a haphazard fashion and without regard to a comprehensive plan or the future needs of the city.

At present three distinct systems are in existence with outlets discharging into Mauvaisterre Creek and its tributaries. Practically all of the sewers are overloaded.

In 1921 detailed preliminary studies of the sewerage needs of the city were made and recommendations made for the organization of a sanitary district.

In 1927 an attempt was made to sewer some additional areas of the city. A group of riparian owners along Mauvaisterre Creek sued for an injunction and the same was granted. The present status of sewerage improvements in the city is that no more sewers may be installed until proper provision is made for treating the sewage now tributary to the creek. The effect of this injunction will undoubtedly be the construction of a modern sewage-purification plant in the near future.

HEALTH CONDITIONS.

Judge William Thomas came to Morgan County in the autumn of 1826. He seems to have been particularly observant of health conditions for his letters carry numerous references thereto. In a letter written shortly after his arrival he says:

"From the crossing of the Wabash River all the way to Jacksonville there seemed to be prevailing an epidemic of sore eyes. Several families in Jacksonville **** were severely afflicted".

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet F.	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (all forms)	Pneumonia (all forms)
1900	268	4	1	...	...	1	...	...	7	...	32	14
1901	350	5	...	1	...	...	3	...	...	...	35	19
1902	364	15	1	...	...	...	1	...	1	...	47	25
1903	372	16	2	...	...	...	3	4	10	...	47	17
1904	339	9	...	...	...	...	...	1	3	...	43	31
1905	391	6	...	...	...	...	...	...	...	...	36	31
1906	290	3	...	...	1	...	4	...	...	...	48	15
1907	321	5	...	...	...	...	...	1	1	...	46	19
1908	329	3	...	...	...	...	1	2	2	...	36	19
1909	319	4	...	...	3	1	...	4	1	...	30	24
1910	364	5	...	...	...	1	...	1	1	...	43	34
1911	388	4	...	...	2	...	2	1	5	...	39	23
1912	367	7	...	...	...	...	...	3	1	...	35	20
1913	393	1	...	...	2	...	...	2	2	...	34	27
1914	441	7	...	...	...	...	...	7	...	...	43	31
1915	454	1	...	...	...	...	...	1	2	...	42	35
1916	545	6	...	...	...	1	...	3	4	...	37	47
1917	545	5	1	...	2	...	...	2	3	...	77	72
1918	617	5	...	1	...	...	4	1	47	...	73	82
1919	475	4	...	...	...	...	...	...	15	...	43	50
1920	540	2	...	...	1	...	1	1	18	...	42	72
1921	448	...	...	...	2	...	...	...	1	...	36	35
1922	509	9	1	...	...	...	...	1	2	...	45	47
1923	594	3	...	...	...	...	...	...	13	...	44	57
1924	518	2	...	...	2	...	...	1	2	...	46	32
1925	510	1	...	...	...	...	...	...	1	...	33	27
1926	635	6	...	...	1	...	...	...	6	...	54	53

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet F.	Whoop Cough	Diphtheria and Croup	Influenza	Polymyositis	Tuberculosis (All forms)	Pneumonia (All forms)
1900	17.8	26.5	6.6	...	...	6.6	...	...	46.4	...	212.3	92.9
1901	22.9	32.7	...	6.5	...	...	19.6	13.1	32.7	...	228.4	124.2
1902	23.5	96.7	12.9	6.5	...	12.9	6.5	...	6.5	...	303.1	161.2
1903	23.7	101.8	12.7	...	41.5	...	19.1	25.4	63.6	...	299.0	168.1
1904	21.3	56.5	...	...	...	...	...	6.3	18.8	...	269.9	194.6
1905	19.5	32.9	...	...	6.6	...	...	...	19.7	...	289.1	151.3
1906	17.7	18.3	...	...	6.1	...	24.4	...	...	...	293.3	91.7
1907	21.0	32.8	...	...	...	...	...	6.6	6.6	...	301.5	124.5
1908	19.6	17.9	...	...	...	...	6.0	11.9	11.9	...	214.4	113.2
1909	20.8	26.1	...	...	19.6	6.5	...	26.1	6.5	...	196.0	156.8
1910	22.6	32.6	...	...	...	6.5	...	6.5	6.5	...	280.5	221.8
1911	24.7	26.0	...	...	15.0	...	13.0	6.5	32.6	...	253.9	149.8
1912	23.8	45.5	...	...	...	...	6.5	19.5	6.5	...	227.5	139.0
1913	25.4	6.5	...	...	13.0	...	...	13.0	13.0	...	226.7	175.3
1914	28.5	45.4	...	...	...	...	...	45.4	...	...	278.7	200.9
1915	29.5	6.5	...	...	...	...	6.5	12.9	...	...	271.7	226.4
1916	35.0	38.8	...	...	...	...	6.5	19.4	25.8	...	339.0	303.6
1917	34.9	32.2	6.4	...	12.9	...	...	12.9	19.3	...	496.6	461.3
1918	39.4	51.6	...	6.4	...	...	25.8	6.4	303.2	...	470.9	529.0
1919	30.3	25.3	...	...	...	...	...	...	94.9	...	272.1	316.4
1920	34.3	12.4	...	...	6.2	...	6.2	6.2	112.5	...	262.5	450.6
1921	28.4	...	...	...	12.7	...	...	...	6.3	...	228.2	221.9
1922	32.2	56.9	6.3	...	...	...	...	6.3	12.6	...	284.6	297.3
1923	31.8	18.9	...	...	...	...	...	...	82.2	...	278.4	360.7
1924	32.6	12.5	...	...	12.5	...	...	6.2	12.5	...	287.5	200.0
1925	32.0	6.3	...	...	...	...	...	...	6.3	...	207.1	169.8
1926	39.7	37.5	...	...	6.3	...	...	...	37.8	...	212.5	331.2

NOTE: The rate from All Causes is per 1,000 population; all others per 100,000 population.

He continues, saying:

"The fever and ague had prevailed during the fall in every neighborhood in the county and especially on the river and margins of small streams."

A few years later the town received a severe check by the ravages of a cholera epidemic which carried off a great many inhabitants in 1833. Mr. James S. Anderson, a local undertaker at the time, describes the outbreak from start to finish. He says:

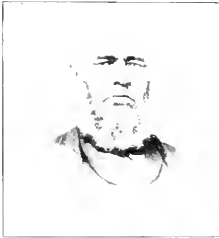
"The first case made its appearance in May or June of the year 1833. A mover traveling by wagon through the county stopped here and his wife was taken sick. The citizens went to his assistance and the case was pronounced a case of genuine Asiatic cholera. The citizens conveyed the sick woman and the others to a log cabin outside of town so as not to spread the infection. ****

"The woman died and the people burned the clothing, etc., supplied the man with money and sent him on. I saw this woman just before she died. Myself and several companions went there out of curiosity. Two weeks later the second case appeared, being that of a young man from Exeter, who was visiting relatives who kept a boarding house, where Marble Block now stands. He died, and the disease began to spread rapidly

"The town at that time contained about 500 inhabitants, fully half of which fled to the country. Of those who remained about 75 were attacked with the epidemic of whom about 55 died. It was very malignant. Besides these quite a number who fled to the country died, some of them I believe were scared to death. *** Ross (his partner) and I concluded to take our chances and stay in town. We were both young, unmarried men, and we left our shop and commenced to nurse the sick and we were almost the only ones who devoted our time to it. We went from house to house, sitting up night after night, waiting on the sick, preparing the dead for burial and doing what we could. The whole community seemed paralyzed and little business was done. **** The scourge lasted six weeks and was the most terrible that ever visited Jacksonville."

It is recorded that Doctors Samuel L. Prosser and Bezalzel Gillet worked valiantly with the afflicted, serving rich and poor alike until the epidemic subsided.

In the fall of 1844, Jacksonville was visited by Dr. Daniel Drake. From the local physicians, Doctors Henry Jones, Samuel L. Prosser and Nathaniel English he learned that all forms of autumnal fever occurred there, also that they were less prevalent than formerly. Malignant intermittents were rare, remittents tending to a continued type, rather frequent. On the whole, he found that these fevers prevailed there in a mitigated degree, compared with the surrounding region generally.



Nathaniel English, M. D.

These constitute the principal historical references to health conditions in Jacksonville and vicinity during the early years of community life there but they are sufficient to show that people there did not escape the severe hardships of pioneer existence on the prairies. Later, however, it seems that the community developed a reputation for unusually favorable health. Only one case of small-pox was reported from that vicinity during the great epidemic wave of the early eighties and Eames, the local historian, declared in 1884 that:

"The health of the city has always been remarkable, the average death rate being much lower than that of the average cities of the West."

Whether this reputation was altogether justified on the basis of fact is questionable although the community doubtless enjoyed a noticeable freedom from those contagious diseases which ordinarily attract particular public notice and stimulate fear and alarm. At any rate typhoid fever has been a problem of long standing and it has entailed a heavy burden upon the people there for many years. Fairly reliable statistics since 1900 show that the

mortality rate from typhoid has been persistently higher than modern cities like to recognize or talk about when the booster club is active. The source of their trouble appears to be in a considerable area of unsewered residential district.

Tuberculosis likewise has been a problem of significant magnitude. It is complicated by the presence there of the hospital for the insane so that statistics are somewhat misleading. Undoubtedly the loss of life among citizens has been heavy enough, however.

The unrefined general mortality rates appearing in the accompanying tables are not satisfactory evidence of underlying health conditions because of the influence of the institutions. People confined in the asylums remain there for periods long enough to make of them, technically at least, local citizens. This adds intricacy to an already complex problem of analyzing mortality returns.

On the other hand the extraordinary freedom from diphtheria and scarlet fever which the city has enjoyed in recent years suggests the successful prosecution of a sound public health program and the annual reports of the health department carry incontrovertible evidence of satisfactory sanitary and hygienic improvements. A reasonable conclusion is that Jacksonville is a healthful city which is prepared to meet all ordinary hazards that may arise to endanger public health and that both the city and the county are profiting by the services of a modern public health department devoted to preventive medicine and health promotion.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	24	...	63	28	16	15	27	25	16	37	20	27
Smallpox	1	24	38	32	107	5	...	...	6	1	1	...
Measles	66	255	134	16	55	311	2	24	637	4	28	306
Scarlet Fever	45	9	3	15	14	114	92	57	70	87	43	24
Whoop, Cough	7	...	...	...	...	89	6	54	24	146	166	43
Diphtheria	7	12	4	...	11	27	48	30	19	12	1	26
Influenza	...	...	2025	544	605	...	4	9	6	3	34	8
Poliomyelitis	1	...	...	...	1	5	2	4	2	1	...	3
Meningitis	...	1	...	...	...	...	...	...	...	...	1	4
Tuberculosis*	4	...	29	...	...	88	49	82	72	91	95	85
Pneumonia*	...	...	...	...	...	...	25	107	62	36	100	89
Syphilis	...	...	1	...	...	50	...	...	42	26	218	192
Gonorrhea	...	...	9	...	...	40	...	...	22	16	55	25

* All forms.

NOTE.—Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates that notification in Jacksonville has reached a relatively satisfactory degree of completeness.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths*	
	Number	Rate**	Number	Rate
1900	114	7.5	31	272.1
1901	130	8.6	38	292.3
1902	213	14.0	26	112.
1903	210	13.8	20	95.2
1904	234	15.4	33	141.
1905	238	15.6	32	134.4
1906	210	13.7	27	128.5
1907	250	16.3	28	112.
1908	196	12.8	21	107.1
1909	183	11.9	25	136.6
1910	165	10.7	19	115.1
1911	172	11.1	13	75.5
1912	250	14.9	17	75.8
1913	235	15.2	20	85.1
1914	242	15.4	17	70.2
1915	298	19.2	24	80.5
1916	263	16.9	35	133.1
1917	260	16.6	24	92.3
1918	286	18.2	15	52.4
1919	272	17.3	39	143.4
1920	286	18.2	24	83.9
1921	296	18.7	22	74.3
1922	308	19.4	26	84.4
1923	307	19.3	24	78.2
1924	320	20.1	23	71.9
1925	337	21.1	23	68.2
1926	353	22.	23	65.2

*Deaths of infants under 1 year of age per 1000 births reported.

** Per 1000 population.

REFERENCES.

- Annual Reports, Department of Health, Jacksonville, Illinois, various dates.
 Annual Reports, State Department of Public Health, Springfield, Illinois, various dates.
 Illinois Health News, State Department of Public Health, Springfield Illinois, various dates.
 American Red Cross, Survey of the City of Jacksonville, Illinois, 1920.
 Letters and correspondence, prominent citizens of Jacksonville, Illinois.
 U. S. Census Reports, Washington, D. C. various dates.

Joliet

Joliet has the unique distinction of being the locality where the first doctor in Illinois was located. This was the surgeon who was in the Illinois country when Father Marquette sojourned at the Chicago portage during the winter of 1674-5 and who came to him on January 16, 1675, with Pierre Moreau ("La Toupine") when they heard from Indian messengers of the holy Father's plight.

Marquette was suffering from an intestinal disorder probably dysentery. In his journal he recorded that the surgeon gave him whortle berries and "did and said everything that could be expected." The surgeon's name is not found recorded in Marquette's journal but recent historical research shows that he probably was Louis Moreau, of Quebec.

Soon after this, Chicago and the mound at Joliet, called Moujolly on the old maps, where the surgeon who attended Marquette may have resided, were lost track of and closed to the white men for nearly a century because hostile Indians occupied the Chicago portage.

Joliet again gained prominence when the work on the Illinois and Michigan Canal was started in 1836. Dr. John H. Rauch reported that in 1838, laborers employed on the canal were afflicted with a disease resembling cholera which struck them down suddenly. Also that nearly all who resided along the line of excavation and almost all the laborers on the canal suffered with autumnal fever.

Dr. Daniel Drake on his voyage up the Illinois River in the Fall of 1844 visited Joliet. Doctors Schoolfield and N. W. Bowen reported to him that the locality was annually invaded by autumnal fever, though it seldom assumed either a wide-spreading or fatal character. The Irish laborers on the canal in 1838 and 1839 were the greatest sufferers.

The canal was completed in 1848 and opened communications with Chicago. The Rock Island railroad was under construction at the same time. The canal and the railroad both passed through Joliet and it was natural that the cholera, which was brought to Chicago on April 29, 1849, should be introduced in Joliet, within a short time. This occurred and the disease raged there until 1854. It is reported that the mortality was 13.8 per 1,000 population. Among the victims was Dr. Alexander M. Comstock, who came to Joliet in 1837 and took an active part in treating the sick, during the epidemic.

The village of Joliet was incorporated in 1837 by an act of the legislature. In 1853 it was incorporated as a city. The population in 1850 was

2,659; in 1860, 7,104 and in 1870, 7,263. In 1880 it reached 11,657, of which number 3,148 were foreign born. There were 98 negroes counted in the city at that time. During the next decade the population more than doubled reaching 29,353 in 1900 and rising to 34,670 and 38,442 in 1910 and 1920 respectively.

The city lies on both sides of the Des Plaines River, and the Illinois and Michigan Canal passes through it. The city is situated mainly in the river valley and extends to the bluffs on either side, rising to a height of fifty feet above the river level. The soil is underlaid by a layer of finely stratified limestone, 200 feet deep.

PUBLIC HEALTH SERVICE EQUIPMENT.

A board of health, composed of one citizen from each ward, appointed by the mayor and confirmed by the city council, constituted the sanitary organization of Joliet in 1880. One member of the board was a physician.

The health officer was appointed by the mayor, at a salary of \$100 per annum. His principle duty was the inspection of nuisances.

Smallpox cases were taken to the "pest house" situated outside of the city limits. Scarlet fever cases were quarantined in the home. Vaccination was not compulsory.

By law all births were required to be reported to the county clerk.

HEALTH OFFICERS.

One of the first medical health officers of Joliet was Dr. Alfred Nash who held that position in 1886. He deserves mention particularly because of his interest in sanitation. Among other things he invited Dr. John H. Rauch, secretary of the State Board of Health to visit Joliet in the interest of sanitary improvement. Together they made a brief survey of conditions and concluded that the extension of the sewer system was the greater sanitary need of the city. The same recommendation was made forty years later after a thorough survey of the city's health facilities by Dr. Thomas Parran, Jr., of the U. S. Public Health Service who at the time was attached to the Illinois State Department of Public Health.

Dr. Chas. Kohn, health commissioner in 1901 and 1902, started the laboratory service in the health department. For that purpose he secured an appropriation of \$200. Although laboratory facilities have not developed commensurate with the needs of the city it was, nevertheless, an important advance to make a beginning in that respect. The immediate purpose for opening a laboratory was to provide equipment for making examination of water and milk supplies.

In 1904 Dr. Martin Cushing, the commissioner of health at that time, succeeded in adding a plumbing inspector to the health service personnel. He was followed the next year by Dr. W. A. McRoberts who held the office but a short time, being succeeded by Dr. W. B. Stewart. During this period a survey of school drinking water supplies was made and the source in practically every instance was condemned. It appears that the supplies were drawn largely from local wells.

The present health commissioner is Dr. Ed. J. Higgins.

CITY HEALTH SERVICE APPRAISAL IN 1926.

Joliet was one of fifteen Illinois cities in which a careful study and an appraisal of local public health services was conducted by the State Department of Public Health in 1926. For this study a survey and appraisal form prepared and recommended by the American Public Health Association was used. The results of this study give a clear conception of present facilities for doing public health work. Pertinent quotations from the report read as follows:

"With a total score of only 446 health service in Joliet falls short of the standard in many respects. The city officials state that owing to low taxable valuation, due to the inability of the city to extend its boundaries, all city functions are seriously handicapped for lack of funds. The health department consists of a part-time physician and one sanitary inspector. In addition the city pays \$1,800 per year to the Joliet Public Health Council for the employment of a nurse. Some laboratory work is done for the city by local laboratories. The board of education employs three public health nurses and the Public Health Council, a volunteer organization, employs a supervising nurse and five field nurses who conduct in and around Joliet the prenatal and infant welfare, tuberculosis and bedside nursing services.

"Expenditures on the part of the city are \$7,715 per annum and the total expenditures by all agencies \$24,714, giving an annual per capita expenditure of 19 cents and 61 cents, respectively.

"Communicable diseases are handled by the health officer and sanitary inspector, no contagious disease nurse being employed. About one-half of the cases of smallpox and most of the cases of typhoid fever were hospitalized, but other contagions were not treated in hospitals. As a result of the smallpox epidemic early in 1925 a large number of people were vaccinated against this disease. No immunizations were done against diphtheria with toxin-antitoxin.

"Venereal disease cases are incompletely reported and there is no clinic service for indigent sufferers of these infections.

"The number of field nursing visits to tuberculosis patients last year was only about one-half the requirement for full credit in the appraisal scheme. Two clinics during 1925, with a total attendance of 32 and a like registration, fall far short of the required attendance of 660 with an average of 3 visits per patient. Advantage was taken of the splendid county tuberculosis sanitarium where beds are free to Will

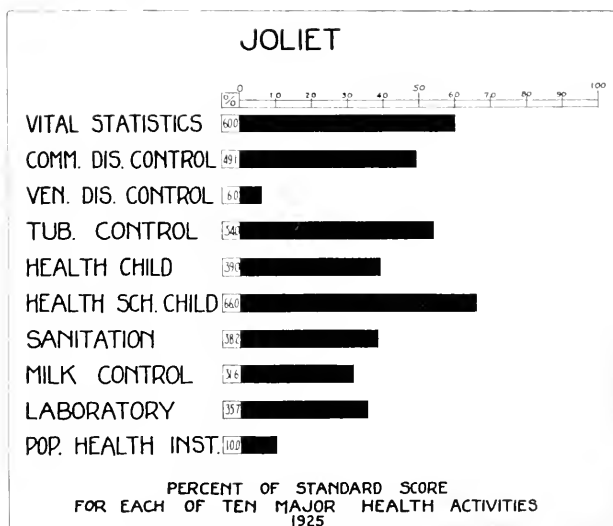
County citizens. It appeared, however, that practically all patients hospitalized were well advanced in the disease. One open-air classroom is maintained in the public school system.

"An infant welfare clinic is maintained, 1,700 visits being made to it last year. There is no prenatal or preschool clinic, and relatively few field nursing visits are made in behalf of these age groups. The Public Health Council also supports a crippled children's clinic. This organization is covering a broad field of activity with limited personnel.

"There is no medical inspection of school children; the nurses weigh and measure the children, inspect for obvious defects and do home visits. Five school buildings in the city (two public and three parochial) have outside toilets.

"The Elizabeth McCormick Memorial Fund has been conducting in Joliet for a number of years a demonstration in health education and an intensive study of the group of about four hundred school children.

"The one inspector employed by the health department does some sanitary and food inspection work. The city water supply does not completely meet the United States Treasury Department Standards because



This graph illustrates the strong and weak points in Joliet's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Joliet was 45 per cent of the standard perfection requirement.

of a possibility of contamination between the supply wells and the distribution system. It has been given a provisional certification only by the State division of sanitary engineering. It is distributed to approximately 95 per cent of the homes. The sewer system, it was estimated, serves less than 60 per cent of the dwellings, giving the city a very low score for this section.

"The city has an excellent milk ordinance which requires that all milk sold in the city be pasteurized. However, no machinery is provided by the city for the proper enforcement of this ordinance, and a recent investigation of the pasteurization plants shows much to be desired in some of them. There are eighteen such plants in the city. A local laboratory made for the health department weekly examinations of milk from two plants during November and December 1925. These examinations show a constantly low bacterial count, but no information was available concerning the bacterial quality of the remaining milk supplies."

WATER SUPPLY.

The original waterworks, installed in 1884 by private interests and purchased by the city in 1888, comprised a group of drift wells about 40 feet deep, in the eastern part of the city in the valley of Hickory Creek. From time to time additional wells were sunk until finally there were 20 such wells serving the city. Later, due to increased demands, it became necessary to drill six rock wells (1,200 to 1,700 feet deep) on the same site. These wells entered St. Peter sandstone and secured a large additional supply. After a few more years the supply again became inadequate and an open and unprotected storage reservoir, deriving its water from Hickory Creek, was constructed to tide the city over dry periods.

In 1900 the water supply problem was thoroughly studied by Daniel W. Mead, who made recommendations for extension of the deep-well system and development of a shaft and tunnel system, but construction was never carried out.

Until 1907 the city got along as best it could by using the existing wells supplemented by polluted water from Hickory Creek whenever the wells alone failed to meet the demand.

In 1907 construction of a system of isolated deep wells, located in the central portion of the city, was begun, one well being installed in 1907, one in 1911, one in 1912, two in 1913, one in 1914, and two in 1925. These wells are about 1,600 feet deep and enter Potsdam sandstone. As these wells were developed the original drift wells were gradually abandoned.

In 1911 the city increased its supply somewhat by pumping into the open reservoir at the pumping station, spring water from two stone quarries situated one-half mile south of the waterworks.

Until 1913, water from Hickory Creek and the stone quarries was used as an auxiliary source of supply, although in 1910, following a typhoid fever epidemic, a hypochlorite treatment plant was installed. This plant was rather a crude affair and was never regarded as an adequate safeguard. In 1913 the practice of obtaining additional water from the creek and quarries was discontinued.

In 1915 a second open and unprotected concrete collecting reservoir was constructed, adjacent to the old storage reservoir.

At the present time only four of the first six deep wells constructed on the original site are in service, two wells having been completely abandoned. In addition to these four wells, the present supply is obtained from the eight deep wells which were progressively sunk between 1907 and 1925. Water from the wells is delivered to one of two open concrete collecting reservoirs situated at the site of the main pumping station. A fence constructed around the collecting reservoirs in 1925 gives some protection against wilful contamination. The supply, however, is subject to possible contamination at two of the wells in case the city sewers are surcharged and at the open collecting reservoirs, and the sanitary quality of the supply is regarded as doubtful.

The consumption of water has been rather high, averaging 117 gallons per capita in 1921.

SEWERAGE.

In 1880, about one-third of the household wastes were discharged into sewers. A large proportion of the houses depended upon privy vaults. These were cleaned during the night, under permits issued by the board of health. The night soil was disposed of outside the city limits.

DesPlaines River at Joliet has a very large flow as the result of the discharge into it of Chicago's sewage. Water power is developed at Lockport and near the center of Joliet, by means of dams across the river. Des Plaines River is decidedly polluted. It is extremely turbid, carries considerable oil and floating material and emits a characteristic sewage odor.

The old Illinois-Michigan Canal crosses DesPlaines River at Joliet by using a portion of the river above the Public Service Company dam.

Hickory Creek and Spring Creek are small watercourses which enter the city from the east and then flow southerly through the east part of town, having confluence near the center of the east corporate limits. Hickory Creek circles to the south and west around the southeast corner of the city and joins DesPlaines River.

The city proper at the present time is extensively sewered on the combined plan. These sewers, carrying both sanitary sewage and storm water, discharge at numerous points along the various watercourses. The sewers have been installed largely in a "piecemeal" fashion as immediate develop-

ments demanded and without regard to a comprehensive plan or the ultimate future needs of the city. As a result there are portions of the city not adequately served and several heavily populated outlying districts where sanitary conditions are deplorable and the need for adequate sewerage facilities is acute.

HEALTH CONDITIONS.

In common with every other community of the Middle West, smallpox and cholera were the barometer of health conditions in Joliet during the last quarter of the nineteenth century. Scarlet fever attracted some attention but such diseases as typhoid fever, diarrhea, malaria, measles, diphtheria and tuberculosis were so common and so thoroughly endemic that both public and medical profession seem to have taken them as a sort of matter of course. Consequently, we can arrive at no definite idea about the prevalence of these infections and can establish reasonable conjecture only on the basis of vague references and indefinite statements.

Smallpox and cholera were different. They came in violent epidemic waves. Folks knew that they were contagious. Many had seen their deadly havoc and not a few carried the scars of smallpox as a living evidence of what might be expected from that disease. Consequently, an outbreak caused public concern. The "pest house" crowned a desolate bluff on the outskirts of the city. No mischievous boy was ever bold enough to crash out the windows or play ghost there.

For these reasons the story of smallpox gives a tangible basis upon which to build an idea about what kind of health conditions prevailed in a community in those days. Even then vaccination was a generally accepted method of preventing the disease. If people neglected that precaution and permitted their health officer to trail around behind an epidemic like a dog behind his master, that fact implies that other and less definite preventive methods against other diseases were probably less actively pursued and less effectively utilized.

Accordingly, the experience of Joliet with the smallpox epidemic of 1882 is illuminating. The story shows how obviously this disease always comes to town and illustrates how stubbornly people resist the one clear-cut way of controlling its course. The story is by no means peculiar to Joliet but rather it is typical of what took place in nearly every town that enjoyed a sturdy growth and thriving commerce in those days. This is the way things transpired in Joliet.

In the winter of 1882, tramps in different stages of smallpox were on three different occasions picked up on the streets of Joliet and taken to the "pest house".

MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1907	505	17	...	...	...	1	1	3	3	...	65	64
1908	611	...	...	...	...	...	...	...	...	...	...	...
1909	594	...	...	...	...	...	...	...	...	...	...	...
1910	680	...	...	...	...	...	...	...	...	...	...	...
1911	593	...	...	...	...	...	...	...	...	...	...	...
1912	499	...	...	...	...	...	...	...	...	...	...	...
1913	659	21	...	...	10	4	1	3	...	...	50	...
1918	1062	7	...	...	7	1	10	15	236	...	51	212
1919	503	5	...	...	...	...	1	7	47	...	31	46
1920	447	5	...	...	5	1	4	8	24	...	27	49
1921	515	11	...	...	9	2	7	11	5	...	29	29
1922	449	7	...	...	...	...	...	7	6	...	31	39
1923	503	1	...	...	...	...	3	...	14	...	25	36
1924	477	6	...	...	6	...	...	...	...	...	22	37
1925	527	8	...	...	...	1	...	1	11	...	22	35
1926	593	4	...	...	...	1	4	3	22	...	25	40

MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1907	14.9	51.4	...	...	...	3.02	3.62	9.0	9.0	...	196.5	193.5
1908	18.1	...	...	...	...	...	...	...	...	...	...	...
1909	17.3	...	...	...	...	...	...	...	...	...	...	...
1910	19.6	...	...	...	...	...	...	...	...	...	...	...
1911	16.9	...	...	...	...	...	...	...	...	...	...	...
1912	14.0	...	...	...	...	...	...	...	...	...	...	...
1913	18.3	58.6	...	...	27.9	11.1	2.7	8.3	...	...	139.6	...
1918	28.1	17.8	...	...	17.8	2.5	25.4	38.1	600.5	...	129.7	539.4
1919	13.2	21.0	...	...	...	...	2.6	18.4	123.6	...	81.5	121.0
1920	11.6	12.8	...	...	12.8	2.5	10.2	20.5	61.5	...	69.2	125.6
1921	13.2	28.2	...	...	23.1	5.1	17.9	28.2	12.8	...	74.3	74.3
1922	11.3	17.5	...	...	...	...	...	17.5	15.2	...	75.6	99.0
1923	12.6	25.0	...	...	24.0	5.0	7.5	25.3	60.3	...	62.8	99.4
1924	11.9	15.0	...	...	15.0	2.5	...	25.3	35.0	...	80.0	92.5
1925	13.0	19.7	...	...	...	2.4	...	24.4	27.1	...	74.2	86.2
1926	14.5	9.6	...	...	...	2.4	9.6	13.3	52.8	...	60.9	97.5

NOTE: The rate from All Causes is per 1,000 population; all others per 100,000 population.

Early in March of the same year, the son of a gunsmith returned from Chicago to his father's house in Joliet. On the 18th his mother and sister were taken ill with hemorrhagic, confluent smallpox and both died. During their illness they were visited by a neighbor who caught the disease and died shortly thereafter.

Very little precaution was taken with these cases. The sheets and blankets used by the two confluent patients were hung in the yard next to a public street to dry.

From March 18th to June 30th, there were a total of 57 cases of small-pox reported in the city with 18 deaths. It cost the city \$26,402.07 to quell the epidemic.

In the meantime, neighboring towns quarantined against Joliet, the city council ordered schools, churches and all public gatherings suspended, special policemen were detailed to guard the infected houses and excitement ran high. Finally the State Board of Health was appealed to and Dr. John H. Rauch, the secretary, made a personal visit to the city and urged vaccination and the enforcement of quarantine.

This epidemic of smallpox merely stands out above the many outbreaks of that disease, like a given flood or snowstorm above others, because of its fierce deadliness and the general public alarm which it provoked. Even as late as 1923 the city was visited by an outbreak that yielded 64 cases and in 1925 by one that produced 23 cases and 3 deaths.

Typhoid fever began to attract particular public notice about 1900. From that time on there appear references from time to time of epidemics in Joliet. Twelve cases in 1902, for example, were attributed to drinking water drawn from shallow wells. In 1918 a series of 43 cases were likewise said to have resulted from contaminated well water.

The only reason for pointing out these two epidemics is that they received particular epidemiological studies by health officials. Neither was unusual and very likely the number of cases reported fell considerably short of all the cases of the year in the city and its outlying populated district. Joliet has always had a high typhoid fever rate. Mortality from this disease is ordinarily from two to five times the prevailing rate in the State at large. The reason probably is found in the large unsewered areas that still exist there.

From the mortality returns in recent years it appears that tuberculosis was less extensive there than in some of the other cities of comparable size. It is significant, however, that the tuberculosis death rate among prisoners at the State penitentiary was so excessively high that it attracted especial attention as early as 1870. Reports concerning the condition apparently hastened the anti-tuberculosis program in Illinois, a matter that is treated at some length on page 364 of Volume I of this book.

With the discovery of diphtheria anti-toxin in the nineties and the progress made subsequent to 1890 against typhoid fever, cholera and malaria, people began to regard contagious diseases generally as an unnecessary burden rather than one of the necessary evils that complicate the vicissitudes of life. Consequently, the more deadly infections, such as scarlet fever and diphtheria began to receive public notice enough to stimulate some recording of prevalence by health officers.

Thus we find that 79 cases of scarlet fever and 38 of diphtheria were registered in Joliet during 1905. There is no evidence to show that these figures represent the total incidence of that year while the fragmentary recorded notification from year to year implies that case reports picked up during the periods when outbreaks reached proportions sufficient to provoke public concern and that notification fell off in completeness between these epidemic cycles.

CASES OF CERTAIN DISEASES REPORTED.

	1909	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	47	49	64	24	46	38	22	21	20
Smallpox	15	16	11	5	64	2	23	2	5
Measles	9	53	304	29	137	310	34	84	235
Scarlet Fever	16	37	110	60	63	105	93	67	18
Whoop. Cough			66	8	73	3	15	65	14
Diphtheria	46	36	152	52	25	24	10	29	11
Influenza	4			5	16	4	16	17	11
Poliomyelitis			7			1			1
Meningitis			2			1	2	1	1
Tuberculosis*	3		32	64	78	58	69	195	146
Pneumonia*	54	74	59	78	91	107	73	102	69
Syphilis			23			28	24	45	277
Gonorrhea			87			35	20	28	49
Chancreoid			8						1

* All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1918			159	
1919			77	
1920	568	14.7	81	142.6
1921	707	18.1	80	114.6
1922	713	18.2	67	94.6
1923	802	20.2	82	102.2
1924	800	19.9	73	91.2
1925	747	18.4	71	95.6
1926	816	19.8	75	92.6

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

An epidemic of scarlet fever that took place in the spring of 1915 is worthy of mention because it reached such alarming proportions that the State Board of Health assumed charge of the situation and because the local newspapers, presumably expressing public sentiment, suggested the creation of a first rate local health department at an annual cost of from \$25,000 to \$50,000. The outbreak involved several hundred cases, accurate figures being unavailable. There were 140 active cases at the time the State Board

took charge in May and there were 53 under quarantine on June 30th. The city spent about \$1,500 in emergency work during the epidemic but the newspapers estimated that commercial and other economic losses due to the disease amounted to fully \$100,000.

The influenza wave of 1918 struck Joliet with a deadly vehemence that has few, if any, parallels in the State. Mortality from the infection reached the extraordinary high peak of 600 per 100,000 people while deaths attributed to pneumonia soared to 539 per 100,000 people. The influenza mortality rate was higher in Joliet than in any other city embraced in this volume and the rate in Joliet from pneumonia was exceeded only by that in Kankakee.

These illustrations are sufficient to show that health conditions in Joliet have been about average in most respects. The prevalence of typhoid fever has been more unfavorable than in many other places and the influenza pandemic spent itself with greater fury in that place than in most other cities. For the most part, however, epidemics have come and gone creating sentiment favorable to a strong public health department during the heat of the outbreak but invariably leaving behind the chronic problems involved in endemic health conditions which probably influence more profoundly than is ordinarily realized the severity of epidemics.

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Kankakee

In the days of the early explorers the Kankakee-St. Joseph Rivers route was used alternately with the DesPlaines-Chicago Rivers route in traveling between Lake Michigan and the Illinois River. Father Louis Hennepin traveled by way of the Kankakee River in 1679 and was impressed by the vast marshes in the territory through which the river flowed. He said,

"The country is nothing but marshes, full of elder trees and rushes; and we could have hardly found for forty leagues together, any place to plant our cabins, had it not been for the frost which made the earth more firm and solid, * * * * We suffered very much in this passage and * * * * most of them (the men) were so weary of this laborious life, that they would have run away, if possible, and gone to the savages."

After Father Charlevoix made the descent to Louisiana via the Kankakee River, then called the Theakiki in 1721, the route was closed because the territory was held by the unfriendly Foxes and their allies and later by the Pottawatomies, Ottowas, and Chippewas, which were not dispossessed of their holdings until the treaty of 1833.

The settlers who then poured into the territory suffered much from malarial fever. Dr. Hiram Todd was one of the first doctors to settle in the Kankakee Valley. He arrived there in 1836 and made his headquarters at the village of Waldron on the banks of the Kankakee, opposite the mouth of the Iroquois River. His intention was to look after his land interests which consisted of 8,000 acres along the banks of these two rivers, but he was soon drafted to look after the sick.

During an outbreak of smallpox among the Indians in the vicinity, Dr. Todd's services were procured and he stopped the spread of the epidemic by vaccination of the redskins. They in consequence held him in high esteem as a medicine man.



Abraham Lennington Small,
M. D.

In 1836 Dr. Todd was commissioned postmaster of Kankakee post office located about two and a half miles up the river. This was the first use of the modern spelling of the name and was derived from the various appellations such as Theakiki, Kiakiki, Kankiki, etc., given to the river in the early reports and maps of the explorers, all said to have been derived from the

One of the early physicians in Kankakee County was Dr. Abraham Lennington Small, father of the present Governor, the Honorable Len Small.

Dr. Small engaged in the practice of medicine at Wilmington, Illinois in 1850, and later moved to Rockville, Kankakee County. He was born September 5th, 1830, in Wayne County, Indiana, and was the second of eleven children of John and Mary Lennington Small. John's father was opposed to slavery and emigrated west from Virginia for that reason. The family was of Scotch origin.

Other early physicians were Doctors Henry Russell, who came to Bourbonnais in 1834, C. W. Knott, who was the chief physician during the cholera epidemic of 1851, James F. Mazuzan, who arrived in Mokena in 1837 and settled in Kankakee township in 1840.

SETTLEMENT AND EARLY DISEASES

The first house in Kankakee was built in 1834 on ground that is now the northeast part of the court yard. The original town was platted June 8th, 1853, and was called Bourbonnais. The nearby station on the Illinois Central Railroad was known as Kankakee Depot.

In 1853 when the Illinois Central Railroad scouts came to Bourbonnais and asked for a right of way for the new railroad, the French-Canadians and early settlers told them that they were not anxious to have the railroad come through the town, giving as their reason that the railroad would scare the horses, frighten the children and that the smoke and soot would damage the white clothes that the wives would have on the line. For this reason the Illinois Central officials decided to buy a right of way two and one-half miles southeast. The first town site was called Bourbonnais City, but when the people of the county decided to vote on the location of the county seat, a contest arose between this new Illinois Central town site and the town of Mokena. Immediately the Illinois Central officials feared that the voters might suspect Bourbonnais was contesting with Mokena and they changed the name to Kankakee Depot.

The election was held on June 21, 1853. The town site projectors offered as an inducement the magnificent square as the seat for the court house, also the sum of \$5000 for the construction of the building. With the aid of the voters from the vicinity of Limestone and Illinois Central employees, the election was carried by Kankakee Depot.

The first term of court was held in the upper floor of the Illinois Central freight depot and the second term of court was held at the Van Meter Hotel. In 1865, during the building of the court house, the city of Kankakee was granted a charter by the State legislature which was signed by Richard J. Oglesby, Governor. Section 18 of this charter provides that the common council may make regulations to prevent the introduction and spread

of contagious disease in the city. The office of health officer was not mentioned in the charter, but the charter granted the mayor and council permission to appoint other officers than those which were mentioned. Consequently the authority for employing a health officer was there.

By an act of the legislature February 15th, 1855, the name of the municipality was changed to Kankakee City.

In later years the city became incorporated under the general law of 1872.

The natural lay of Kankakee is high, with a perfect natural surface drainage. It is underlaid with a layer of limestone, deep enough under the surface of a loose alluvial soil to afford an excellent drainage.

The city extends back and east of the river a distance of nearly three miles sloping gradually to the river from the east, south and west. The north side is drained by Soldier Valley Creek, running to the west, and emptying into the river below. Practically all the wells in the city are drilled into the limestone which lies only a few feet below the surface.

Kankakee is one of the smaller of the principal cities of Illinois. In 1920 the population was 16,753. This represented an increase of about 60 per cent in twenty years. Of the 1920 population 14,363 or 85.7 per cent were native born white, 2121 or 12.7 per cent were foreign born whites and 265 or 1.6 per cent were negroes. Nearly 25 per cent were 45 years old or over.

HEALTH MACHINERY

A fire in the police station destroyed all the official records made by the city council during its early years so that evidence from that source is completely wanting for the period prior to 1898. In that year the ordinances were revised and among them was one granting the local government power to establish a health department with broad authority relating to sanitary and hygienic matters. The inclusion of this ordinance in the revised code of the city implies the previous existence of a similar instrument that no doubt was a part of the city's legal equipment from an early date. It appears that a health officer was functioning in 1868 and very likely there was either a committee or a board of health whose chairman exercised the authority of a health officer even earlier.

Since 1898 the legal provision for authorizing the city government to participate in health work has changed but little. It provides for a board of health which is vested with power to employ a health officer and other personnel and to do all of the ordinary functions usual to such an agency. A few new ordinances have been added to the health and sanitary code, regulating milk and food supplies, plumbing, theatre ventilation and the like but the basic administrative scheme remains unaltered. The capacity and ade-

quacy of the health department may be surmised from the size of the annual appropriation which was \$2200 in 1927.

It seems that the first health officer in Kankakee was a doctor. Later it became the practice to fill the position with laymen and then in 1917 another change back to the medical profession came. Since 1917 the office has been held by a physician. So far as available records disclose, the following persons have acted as health officers of Kankakee.

Miron H. Van Riper, M. D.	1867	Charles K. Smith, M. D.	1917
John H. Van VonVert	1895	William Yates, M. D.	1923
John H. Bell	1900	Charles K. Smith, M. D.	1925
John Metzger	1915		

Besides the work done by the city health department, voluntary agencies have been active. The Kankakee Tuberculosis League inaugurated a public health nursing service in 1919 and since then that type of service has been continued. There has also been a clinic service for crippled children established subsequently to the infantile paralysis epidemic of 1917 and continued.

WATER SUPPLY

The waterworks system was first installed in 1886 by the Kankakee Water Works Company and was later purchased by the Kankakee Water Supply Company. In 1890 this company was bought by the American Water Supply Company and in 1912 it was taken over by the Northern Illinois Water Co., a subsidiary of the above corporation.

The present franchise which expires in 1932, requires that the water shall be suitable for domestic consumption and specifies the amount necessary for fire protection.

Until 1901 the supply consisted of raw water from Kankakee River, but in that year a new 3,000,000-gallon rapid sand filter plant was constructed. In 1910 two more one-half million-gallon filter units were added and the settling capacity was increased. Equipment for the use of calcium hypochlorite was replaced by a modern chlorinator in 1917. Since that time only minor changes have been made in the treatment plant.

SEWERAGE

The first sewers were installed in 1886 and at present there are five outlets discharging into Kankakee River below the waterworks intake and the dam.

Due to a number of complaints about the condition of the river in the city it is proposed to construct an interceptor to carry the sewage well below the city before discharging it into the river.

HEALTH CONDITIONS

Speaking of the sufferings of the pioneers in the Kankakee region in 1844 Burroughs

"There was one, two and three day ague * * * * Mostly, however, it was just plain 'ague' that a fellow had almost daily and with no let up from aching bones, creeping chills, and 'shakes' followed by fever.

"Whole families were thus afflicted, and the misery endured has never been adequately set forth by those attempting to describe it. * * * * Nine members of the Nichols family were afflicted with the malady at the same time, and a favorite practice when the premonitory symptoms of chills were felt was to tuck up in some bright, sunshiny nook where the sun shone hot against the cabin and sit and quake and bake until the fever came on."

At an old settlers meeting in 1841, Mr. George Legg said that the physical hardships of the early settlers were overshadowed by the almost continued fever and ague which sapped the vitality of the pioneers and, coupled with prairie itch, menaced the advancement of agriculture. Smallpox was succeeded by fever, ague and itch. Quinine proved a boon in the hands of the early doctors in this community.



Benjamin Franklin Uran,
M. D.

Dr. Benjamin Franklin Uran, now president of the Kankakee County Historical Society, who has practiced medicine in Kankakee since 1872, states that a cholera epidemic came into the territory in August 1838, starting at first in a family named Magill, who resided on a tract of land a few miles down the river from Kankakee, which is now part of Governor Small's farm. Strangers from Indiana, traveling by covered wagon, came to the Magill home to do some trading and to acquire food to take on their trip. After the strangers departed the two sons of the Magill family took sick suddenly and died with a disease that was first thought to be "milk sick".

Then the father and mother followed the same course. It was Dr. Uran's opinion that this was a cholera epidemic. He based this conclusion upon the description given by a Dr. P. W. Knott who had lived through the outbreak.

Another cholera epidemic attacked the community in 1851. It is described by Burroughs, who says that it appeared suddenly in June of that year in the little community of Bourbonnais. He continues:

"A party of twenty or thirty French emigrants from Canada came to Bourbonnais in June bringing with them the body of a child that died on the way the day before at Joliet. The next morning one of

them was stricken down with the terrible scourge. The weather being very warm these emigrants were lodged in Noel Vasseur's barn. By 11 o'clock the same day, eight or ten more were taken ill and by 10 o'clock that night 15 of the men were seized with the disease and all who became sick, died."

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1918	775	3	...	...	...	12	1	...	73	...	112	85
1919	233	...	...	...	...	1	...	...	...	...	12	16
1920	224	12	...	...	12	1	3	1	50	...	12	26
1921	235	...	...	...	...	...	...	...	...	...	15	12
1922	251	...	...	...	...	...	...	5	4	...	10	14
1923	241	1	...	...	...	...	1	...	4	...	8	15
1924	255	...	...	...	1	1	...	...	7	...	12	12
1925	248	2	...	...	...	...	...	2	...	...	8	11
1926	294	1	...	...	4	...	4	1	10	...	5	24

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1918	47.5	20.9	...	...	...	13.9	6.9	...	510.4	...	783.2	594.4
1919	14.0	...	...	...	...	2.5	...	...	161.1	...	66.6	88.5
1920	13.1	11.2	...	...	11.7	3.8	11.8	5.8	29.4	...	70.5	117.6
1921	12.9	...	...	...	...	...	17.3	...	...	...	86.5	69.2
1922	14.2	...	...	...	...	...	...	25.4	22.7	...	56.8	79.5
1923	13.5	5.5	...	...	5.5	...	5.5	...	22.3	...	44.6	83.7
1924	14.0	...	...	...	...	5.5	...	22.2	38.8	...	66.6	66.6
1925	13.4	10.8	...	...	...	21.6	10.8	37.8	...	...	48.7	59.4
1926	15.6	2.1	...	...	8.4	...	21.2	5.3	53.0	...	42.5	122.3

NOTE: The rate from All Causes is per 1,000 population; all others per 100,000 population.

The outbreak ran a swift, acute, deadly course, according to Dr. Uran's memory of Dr. Knott's description, causing about 30 deaths within ten days and sparing neither Indian, halfbreed nor white.

Smallpox, likewise, did not overlook the quiet village of Kankakee in the early days. Here again we have a verbal report from Dr. Uran who was practicing medicine there when an outbreak fell upon the community in 1877. History is that 40 or 50 French and German families who occupied a group of small houses in a segregated district south of the Illinois Central tracks, suffered the brunt of the epidemic. They chose smallpox rather than vaccination and the result was heavy loss of life. Their dead were

buried near the homes and later, when the site was utilized for commercial building, the excavators were frightened away from their work when the news went around that the bones were those of smallpox victims rather than of aborigines.

Even earlier smallpox left its indelible impression upon the place.

A severe epidemic hovered over this little community during the winter of 1837-1838. That outbreak was attributed to French emigrants who came in from Canada.

No deaths from smallpox have occurred in the city during recent years but occasional outbreaks have come from time to time to disturb the tranquility of the public mind and to stimulate the application of control measures which have always proved effective.

Typhoid fever in Kankakee has run a unique course. Elsewhere it was a chronic problem, recurring with the autumnal season with the regularity of harvest and weather phenomena. Here it was sporadic. Sometimes the community escaped entirely with no cases and no fatality during a whole year. Again a violent outbreak would darken the prospects of healthful prosperity. Thus in 1900 and 1901, typhoid occurred with great severity bringing to the city in November 1901 Jacob A. Harmon sanitary engineer of the State Board of Health who was sent in answer to an urgent request to make an investigation. He found that 60 per cent of the families in which the disease occurred derived their water supply from the Kankakee River which was contaminated with sewage above the city. The remaining 40 per cent obtained their water supply from shallow wells sunk in the stone formation at the surface of which were located many privy vaults. Mr. Harmon advised the boiling of all water used for domestic purposes whether from the river or shallow wells, the closing of all privy vaults and the construction of suitable sewage-treatment and water-filtration plants. The latter recommendation was subsequently carried out by the water-works company.

The venerable Dr. Uran recalls a significantly severe epidemic that occurred in the nineties. More recently statistical evidence shows that from one to four deaths are apt to occur in a year or that the city may escape without any mortality. Since 1918, for instance, there have been four different years in which no death from typhoid was reported. On the other hand 1927 brought the worst record in ten years, the four deaths yielding a rate of 20.9.

Influenza was very severe in 1918. There were 73 deaths attributed to influenza and 85 to pneumonia, giving a mortality rate of 510 and 594 per 100,000 respectively. Only one or two other municipalities in Illinois underwent such a heavy loss to those diseases that year.

Mortality from tuberculosis was also extraordinarily heavy in 1918. The 112 deaths gave a rate of 783. Since that time, however, the mortality

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever		14	5		3	3	6
Smallpox	16					3	1
Measles	33	5	197	8	3	19	4
Scarlet Fever	5	7	2	53	56	19	15
Whoop, Cough	22	13	28	10	3	7	1
Diphtheria	19	16	39	39		17	9
Influenza		1	4	4		9	4
Poliomyelitis			2				1
Tuberculosis*	1	17	45	38	16	16	19
Pneumonia*	6	4	7	7	22	23	17
Syphilis				6		3	2
Gonorrhea	1			14	6	2	12

* All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. A comparison between the figures in this table and those showing mortality in table 1, makes obvious the fact that notification is still far from complete in Kankakee.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1918			44	
1919			26	
1920	347	20.5	25	72.
1921	326	19.	34	104.3
1922	366	21.4	28	76.5
1923	444	24.8	34	76.6
1924	469	25.8	35	74.6
1925	465	25.2	39	83.9
1926	447	23.8	37	82.8

* Deaths of infants under 1 year of age per 1,000 births reported.

** Per 1,000 population.

from tuberculosis has been more favorable than that found in most of the other cities of the State. The rate in 1926 was 42.5, a very low figure.

Other communicable diseases have run courses that appear to have manifested nothing particularly unusual. Diphtheria and scarlet fever have risen and fallen with the seasons and with the epidemic cycles characteristic of both. Neither is so fatal now as it was prior to 1900. Diphtheria is far less prevalent.

The general death rate is rather high but this is unfavorably influenced by the location there of a State hospital for the insane. The percentage of people in the older age group is also larger than usual.

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Kewanee

Soon after Kewanee was incorporated as a village in 1855 certain members of the village board were organized into a nuisance committee. This was the beginning of what later developed into the municipality's public health service but the functions of that committee, as the name implies, were confined to the abatement of nuisances except that it was expected to initiate and carry out measures calculated to prevent and control cholera and smallpox whenever epidemics of these diseases developed or threatened. So far as available, records disclose that no occasion ever arose which prompted this committee to attempt any significant epidemiological work during the forty-two years of its existence.



Edward C. Kent
First Health Officer, Village
of Kewanee, 1888-1890

In 1890 the village board appointed sort of a health board whose duties were entirely advisory. This board consisted of Doctors W. H. Cole, J. H. Mannon and J. C. Nichols; from 1891 to 1892 Doctors J. H. Mannon, W. H. Cole and E. C. Stilson. During the years 1892 and 1893 the health advisory board was also suspended, but in 1894 the board consisted of Doctors J. H. Mannon, J. C. Smiley and E. C. Stilson, who served up to the time that the city was incorporated in 1897.

When the village was transformed into a city in April 1897, the village nuisance committee metamorphosed into the committee on fire and nuisances and George Tunnicliffe was at once employed at \$20.00 per month as its executive officer. In July of the same year the responsibility for health work was shifted by ordinance to the finance committee which appointed Tunnicliffe as health officer at \$30.00 per month.

In 1898 another change came when the duties and functions of city collector were fused with those of health officer and Tunnicliffe, falling heir to the double job, was the recipient of another advance in salary which now netted him \$40.00 per month. Except for changes in personnel and some modification in pay this continued to be the health arrangement until 1907.



George Tunnicliffe
First Health Officer, City of
Kewanee, 1894-1899

John Chisnall succeeded Tunncliffe in 1899 and was, in turn, replaced by Charles Collins on October 6, 1902. Then followed W. H. Barrett who took office with a new city administration in the spring of 1905. He resigned shortly and was succeeded by B. M. Cavanaugh who quit in the fall of 1906 and was followed by E. P. Reeser.

It is interesting to observe that when the monthly remuneration of the office was \$40.00 only \$10.00 were specified for health service and that from

1902 on to 1907 when the pay was \$50.00 per month, \$20.00 were specified as pay for the health officer part of the job.

BOARD OF HEALTH BRINGS MEDICAL INFLUENCE.

Probably the most important single change in the public health service history of Kewanee took place in 1907 when an ordinance creating a board of health became effective. Its most significant feature was the stipulation that the membership should consist of a physician and a layman, the physician to act in the capacity of city health commissioner. For the first time we find here an official expression of the influence of the medical profession in directing the policies and activities of local public health work.

Dr. W. D. Hohmann and A. B. Spickler, duly appointed, constituted



W. D. Hohmann, M. D.
First Medical Health
Officer, 1907

the first board of health. Thus Dr. Hohmann became Kewanee's first medical health officer.

During the same year the medical profession manifested its interest and exerted its influence in another and probably no less important way when a committee of physicians headed by Dr. H. N. Heflin succeeded in getting the city council to pass a milk ordinance. This legislation created a milk commission which was vested with authority to regulate the production, handling and sale of milk in the municipality. Dr. Heflin was made chairman of this commission which soon merged with the board of health when Dr.



A. B. Spickler
Member First Board of
Health, 1907

Heflin became health commissioner, a position which he has held continuously up to the time of this writing.

The list of lay health officers who have served Kewanee as a village and city include:

E. C. Kent	1888-1890	W. H. Barrett	1905
W. M. Elliott	1890-1892	B. M. Cavanaugh	1905-1906
George Tunnicliffe	1894-1899	E. P. Reeger	1906-1907
John Chisnall	1899-1902	Floyd Johnson	1907-1911
Charles Collins	1902-1905		

The two medical men who have served Kewanee as health commissioners are:

W. D. Hohmann, M.D.	1907
H. N. Heflin, M.D.	1907 to date

COMMISSION FORM OF GOVERNMENT ADOPTED.

In January 1911 the city of Kewanee adopted the commission form of government and the powers and responsibilities of the board of health automatically fell upon the commissioner of public health and safety. Under the new form of government, Dr. Heflin was retained as health commissioner and a sanitary inspector in the person of James L. Torticil was employed. The appropriation to the health department for 1911 amounted to \$737.00 and of that sum the sanitary inspector drew \$240.00.



H. N. Heflin, M.D.
City Health Commissioner,
1907 to date

Another and final change in the legal status of the public health service came to pass in 1920 when a new ordinance creating again a board of health was adopted. Under this arrangement, Dr. Heflin was appointed chairman of the board and health commissioner.

The expenditures of the city for public health work totaled approximately \$3000 in 1920 and the paid personnel included the commissioner—on a part-time basis—and two sanitary inspectors.

OTHER OFFICIAL AND VOLUNTARY HEALTH AGENCIES

Like many other places, Kewanee gets a larger volume of health work done through quasi official and voluntary agencies than directly through the city health organization. In 1920, for example, there were three school nurses at work in the community, one nurse employed by the Wolworths Manufacturing Company and one nurse employed by the Civic Nurse Association. All of these four were actively engaged in public health work.

Kewanee also supports a clinic for the benefit of crippled children in that vicinity. The orthopedic medical and the specialized nursing service for the clinic proper is provided by the Illinois Crippled Children's Society but local organizations manage the many details which keep this piece of work going in that community. Kewanee is, furthermore, the home of Mr. E. E. Baker, president of the Illinois Crippled Children's Association, who has exercised a very large influence in vitalizing the activities of that organization throughout the State.

WATER SUPPLY

The original waterworks was installed in 1883-1884 comprising a single well drawing its supply from glacial gravel deposits in the vicinity of Crystal Lake at the northern edge of the city, a pumping station, collecting basin, and limited distribution system. The single well proved inadequate and the supply was subjected to some surface and shallow-ground-water pollution because the water-bearing gravel was not covered with a protecting impervious clay layer and the area in the vicinity was building up.

In 1887-1888 three drilled wells, a little less than 1,500 feet deep and drawing their supplies from St. Peter sandstone were drilled near the original pumping station and the original well was abandoned except for supplying water for road sprinkling purposes. Later, while working on one of these wells, it was so damaged that it could not be used, and in 1905 a fourth well was drilled in the same locality which well was extended into St. Peter sandstone. Trouble was experienced in pumping from these wells, possibly because the holes may have been crooked, and in 1903-1904 air-lift equipment replaced the deep-well pumps.

The water from the St. Peter sandstone wells was of good sanitary quality as drawn from the wells, but it was subjected to some possible contamination in open basins after withdrawal. It was quite hard and the supply did not continue to meet the demands of the growing city.

In 1908 a new pumping station and two new wells ending in St. Peter sandstone were installed near the C. B. & Q. railroad tracks near the center of the city, but these wells and station were not placed in service until about 1912. In 1911 and possibly other years the city had to purchase water from one of the industries that had a separate well supply. Following a report made by a consulting engineer, the new station was placed into service in 1912 and another well recommended at that time was finally drilled in 1919. This last well was 2,497 feet deep and ended in Potsdam sandstone. The old pumping station and wells at the northern edge of the city were abandoned and a new half-million gallon storage reservoir built near the new pumping station in the central portion of the city. The old one and one-

half million gallon reservoir near the old pumping station had leaked badly for some time so that it was not possible to maintain it full.

Since 1919 the Potsdam well drilled in that year has served as the main source of supply, but the two other wells at the same pumping station have been available for emergency or supplemental use. All wells are pumped by air-lift.

The water as drawn from the wells is safe and its sanitary quality as delivered to the consumers depends on whether or not it is exposed to contamination in the receiving basin into which the well water is discharged before it flows to the storage reservoir. Cross connections between the city mains and the private supplies of several industries might serve to contaminate the public water supply if the private supplies are not always maintained in excellent condition and free from contamination. The water from the Potsdam well is even harder than that from the St. Peter wells and there has been some local agitation in favor of a supply of better mineral quality, but no definite plans or possibilities for such improvement have been developed.

SEWERAGE

Most of the area in the city drains to the east to Spoon River, a tributary of Illinois River, and the smaller northwest and northern portion drain to the north into tributaries of Green River, a tributary of Mississippi River.

Private drains may have been installed previous to 1890 but in that year the first public sewer system was installed by the city and comprised the existing 18-inch main outlet sewer to the east and some of the larger sub-mains. Since that time several additional districts have been sewered and connected to the original sewer district and outlet sewer.

Extensions and improvements to the sewer system have been very slow and inadequate to satisfactorily serve the growing city and maintain sanitary conditions. Up to the close of the period covered by this history sewers were serving only about 8,000 population out of the total estimated population of 20,000. Also many of the sewers are overloaded, causing water from them to overflow from manholes and back up into basements. Of the total estimated population of 20,000, 18,000 are in that portion of the city which drains to the east and 2,000 are in the northwestern and northern part of the city that drains to the north, in which no sewers at all have been installed.

The original sewer system comprised a septic tank for partially purifying the sewage. The tank is entirely inadequate to effect any material purification of the sewage, and the stream below the outlet has been grossly polluted for years.

At the close of this historical period the city was planning to engage competent consulting engineers to make an inventory of the existing sewer system and prepare a report, plans and specifications for an adequate system of sanitary sewers, treatment plant, and also storm-water sewers so that it is quite probable that in the near future the existing insanitary conditions at Kewanee caused by inadequate and defective sewerage facilities will be entirely remedied and the entire built-up area will be provided with adequate sewerage and drainage facilities and existing objectionable stream pollution abated.

HEALTH CONDITIONS

Kewanee went through the "pest house" and "shotgun quarantine" periods like most other cities and villages that existed prior to the twentieth century and like most others the records of severe epidemics promptly fell into obscurity when the "passover" was done, leaving nothing but tradition upon which to depend for history.

It is related that the water committee of the city council was authorized in July 1897 to dispose of the "detention hospital", a dignified name given to what in other communities was ordinarily bluntly called "pest house". This transaction implies that smallpox and perhaps cholera had not overlooked the tranquil village of Kewanee. Doubtless, the "pest house" was a monument to the havoc wrought and the alarm inspired by these loathsome

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1907	203	8	...	...	...	1	4	4	1	...	...	...
1908	154	...	...	...	...	...	...	...	...	...	...	...
1909	167	...	...	...	...	...	...	...	...	...	...	...
1910	148	...	...	...	...	...	...	...	...	...	...	...
1911	154	...	...	...	...	...	...	1	1	...	6	6
1912	138	12	...	...	...	1	...	1	1	...	7	25
1913	209	...	...	...	...	...	7	5	...	...	15	33
1914	...	12	...	...	...	...	1	2	1	...	5	14
1915	...	12	...	...	...	...	...	...	...	...	10	17
1916	...	12	...	...	2	...	...	1	1	1	6	27
1917	...	...	...	...	...	...	2	...	...	...	10	34
1918	...	12	...	...	...	...	1	3	30	...	5	78
1919	...	4	...	...	...	...	1	3	...	...	15	41
1920	270	18	...	1	...	...	1	3	38	...	15	41
1921	231	...	...	...	2	...	...	2	3	...	15	24
1922	246	...	...	...	2	...	...	2	...	...	10	28
1923	246	1	...	...	...	1	...	1	16	...	11	31
1924	245	...	...	...	6	...	4	...	7	...	10	10
1925	199	...	...	...	...	...	1	2	7	1	8	22
1926	237	...	...	...	4	...	6	...	12	1	5	30

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Polymyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1907	22.4	88.6	...	...	...	11.0	44.3	44.3	11.0	...	...	...
1908	16.8	...	...	...	...	...	...	...	...	...	...	...
1909	18.1	...	...	...	...	...	...	...	...	...	...	...
1910	15.8	...	...	...	...	...	...	...	...	...	...	...
1911	15.4	...	...	...	...	...	...	10.0	10.0	...	60.1	60.1
1912	12.9	18.7	...	...	...	9.3	...	9.3	9.3	...	65.7	234.7
1913	18.4	26.4	...	...	...	...	61.8	44.1	...	...	132.4	291.4
1914	...	16.6	...	...	...	...	8.3	16.6	2.3	...	41.6	116.7
1915	...	...	...	...	...	...	...	7.8	...	...	78.9	134.2
1916	...	14.9	...	...	14.9	...	...	7.4	7.4	7.4	44.9	202.4
1917	...	14.2	...	...	...	...	14.2	...	...	...	71.3	212.7
1918	...	13.6	...	...	...	...	6.7	20.4	204.3	...	34.0	531.3
1919	...	26.6	...	...	...	...	6.5	6.5	63.1	...	97.7	267.1
1920	16.7	50.0	...	61.2	...	...	6.2	18.6	237.5	...	95.7	256.2
1921	13.4	24.3	...	...	12.2	12.2	6.1	79.6	18.2	...	91.2	197.7
1922	11.5	10.7	...	...	...	19.7	...	10.7	10.7	...	52.2	149.1
1923	12.9	21.0	...	...	...	5.2	21.0	5.2	84.2	...	31.5	163.1
1924	10.0	...	...	...	30.8	...	5.1	...	36.0	...	31.5	51.5
1925	10.0	...	...	...	...	...	5.1	10.1	35.4	5.1	40.5	111.6
1926	11.8	...	...	...	19.8	...	23.7	...	47.4	4.9	24.8	149.2

NOTE: The rate from All Causes is per 1000 population; all others per 100,000 population.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	23	10	6	4	18	9	5	17	2	7	5	3
Smallpox	...	1	3	2	96	14	11	1	2	...	1	1
Measles	380	38	238	1	33	31	146	40	237	38	118	7
Scarlet Fever	44	8	12	2	139	143	190	53	23	11	17	18
Whoop, Cough	3	109	80	8	18	12	122	134	14	25	112	2
Diphtheria	14	3	14	2	21	34	106	16	8	9	4	6
Influenza	...	...	2765	399	2500	1	1	7	1	6	6	1
Polymyelitis	12	2	1	2	...	1	...	...	...	5	2	...
Meningitis	0	3	1	...	...	1	1	2	1	1	...	0
Tuberculosis*	5	3	2	6	1	13	29	20	31	27	52	10
Pneumonia*	...	1	148	7	60	47	25	91	37	62	116	50
Syphilis	...	...	1	...	...	9	...	...	6	19	3	1
Gonorrhea	...	...	...	...	...	4	...	...	7	5	7	2

*All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. *Kewanee is among the cities where notification now is complete enough to be a fairly accurate index to epidemic conditions.

diseases. How frequently smallpox visited the community is largely a matter of conjecture. That the disease left its mark upon the hearts, and probably the faces too, of the local people, the story of the "detention hospital" declares.

But the passing of the "pest house" with all of its implications did not prohibit the disease nor protect the people against smallpox. In 1911 an epidemic involving 79 cases spent itself upon the community and a milder outbreak, involving 19 cases, occurred in 1913.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1911			45	
1912			49	
1913			74	
1914			38	
1915			45	
1916	337	25.2	40	118.6
1917	308	21.9	43	139.6
1918	385	26.2	49	127.2
1919	355	23.1	25	70.4
1920	372	23.2	35	94.1
1921	376	22.	39	103.7
1922	350	19.7	30	85.7
1923	364	19.1	31	85.2
1924	359	18.5	32	91.9
1925	379	19.2	27	71.2
1926	381	18.9	36	94.4

Some of the data not obtainable.

* Deaths of infants under 1 year of age per 1000 births reported.

** Per 1000 population.

A return wave of influenza overwhelmed the city in the winter of 1919-1920 when some 8,000 or 9,000 cases developed, leaving a considerable fatality rate behind.

Other recent epidemics include 280 cases of scarlet fever in Kewanee and vicinity in 1920 and an unusual prevalence of whooping cough during the same season.

In 1922 an outbreak of typhoid fever caused 35 cases of sickness and resulted in a careful epidemiological study by the State Department of Public Health. It appeared that the source of the epidemic was a carrier on a dairy farm and that the disease had been spread through a local dealer who did not pasteurize his milk. One of the two brothers who operated the plant succumbed to an attack of typhoid and the tracing of the epidemic to this concern wrecked the entire business.

During the following winter season a mild epidemic of scarlet fever was attributed to a local milk supply. This, together with the typhoid experience, led to the adoption of an ordinance in 1923 which practically required the pasteurization of the city's milk supply.

In the spring of 1926 an epidemic of German measles yielded 663 cases and was accompanied by a considerable wave of pneumonia.

These illustrations indicate that the city has experienced what might be termed an ordinary health history. Within the course of seventy odd years, the public efforts to protect community health and prevent disease have run about the average course, beginning with a vague conception that somehow there existed a relation between nuisances and contagion and culminating

with a service directed by a physician who is able to place at the public disposal as much of modern epidemiology as it is willing to accept and utilize. In the meantime, ordinances relating to milk, water, sewage disposal, plumbing and similar matters have marked the advance of popular knowledge about the prevention of disease and the preservation of health.

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- U. S. Census Reports, Washington, D. C., various dates.

La Salle, Oglesby and Peru

These three municipalities are taken together because all three now enjoy the services of a single health department known as the Hygienic Institute. LaSalle and Peru are contiguous, constituting a single community with two municipal governments. Oglesby is across the river and a little south. All three grace the banks of the Illinois River.

The three cities have this in common. They are strictly industrial. In the tri-cities and vicinity are three cement plants, two zinc plants, a clock, a wheel and a plow factory, a number of coal mines and numerous smaller industries.

The population is strictly industrial in character with a heavy foreign element. In 1920 there were 13,050 people in LaSalle, 4,135 in Oglesby and 3,869 in Peru.

Peru was incorporated in 1851, LaSalle in 1852 and Oglesby in 1902. Each maintained separate and distinct governments throughout until 1914 when a plan, which will be discussed at some length hereafter, for providing a health service for all three through one organization was devised and carried out.

HEALTH MACHINERY

The first board of health in LaSalle was appointed in 1852 with John Gillett, James Strain and David L. Hough as members. A year later Peru felt the need of such an agency and the city council elected J. V. H. Judd and R. P. Wright to constitute the first board of health there. After their creation, however, the boards of health succeeded in doing very little worthy of record. At least no record of any significant activities has survived.

Some thirty years later, in 1886, a physician by the name of P. M. Burke became a member of the board in LaSalle and it seems that from that date the medical profession began to exercise an intimate influence over the public health affairs in all three communities. At any rate it became the customary practice to make some doctor the health officer in each community and to remunerate him at the rate of about \$300 annually, expecting of him no arduous duties except, perhaps, in the face of some emergency which everyone, including the health officers, hoped would not arise. But emergencies did arise periodically and at such times the boards of health and the health officers became active, doing everything that their knowledge and resources permitted to bring relief. It was during such an occasion in the nineties that Dr. A. W. Hutton did constructive work enough in LaSalle to attract public attention. Sometimes sanitary policemen or in-

spectors were employed and again no one was active in health work so that expenditures varied from a few hundred to a thousand or more dollars per year.

Ordinances, too, were placed upon the books from time to time as occasion and public sentiment required but these, like the activities of the health departments, meant much or little according to some momentary emergency or condition that provoked favor or disdain. It was hard enough to enforce regulations that seemed to curtail the liberties or desires of any considerable number of people. In 1912, for example, when smallpox became epidemic, many infected or exposed persons were concealed while others boldly walked the streets in open defiance of the quarantine regulations.

It was conditions like these coupled with the obvious need for efficient health service, that led Frederick W. Matthiessen, a wealthy local citizen,



Frederick W. Matthiessen

to inaugurate a plan for giving to the people in the three communities a first class, efficient public health service. One thing he saw clearly—that the boards of health could not provide the sort of service required with the resources at their command and the task of increasing their resources would be difficult. He saw, too, that it would be uneconomical to maintain a separate health service of the type desired for each community. Thus in 1910, he began to manifest an interest in the health of these communities when he donated \$10,000 as an endowment fund for the maintenance of a medical library. The

next year he provided the funds for opening and operating a milk laboratory, designed to supply at a reasonable cost the proper kinds of milk for infants and children in the vicinity.

This laboratory was placed under the direction of a board of directors, made up of Doctors W. W. Greaves, R. C. Fullenweider, P. M. Burke, H. M. Orr, W. O. Storey, Anna Hennesy and O. B. Stafford. An expert nurse, Minnie Farrar, was placed in charge and food mixtures were made and dispensed upon prescriptions from physicians. This practice soon fell into disfavor among the doctors, however, and the laboratory became a milk dispensary for poor people. Still later the laboratory was fused with the Hygienic Institute and was transformed into the Emma Matthiessen Chancellor Memorial Infant Welfare Station.



W. W. Greaves, M.D.

These experiences led Mr. Matthiessen into a more ambitious undertaking. He decided to provide the three cities of LaSalle, Oglesby and Peru



R. C. Füllenweider, M. D.

with an adequate public health service if a practicable plan could be devised. He took counsel with his son-in-law, Dr. Phillip S. Chancellor and with Dr. Gustav F. Ruediger. As a result Mr. Matthiessen proposed to endow an organization to be known as the Hygienic Institute, with headquarters in LaSalle, fully equipped and manned for rendering adequate health service in the three cities provided each community would accept the director of the Institute as its chief health officer and take care of such legal technicalities as were necessary to clothe the organization with whatever authority was required to fulfill its purposes.

The proposition was accepted and the Hygienic Institute came into existence in 1914 and developed into one of the best equipped and most complete health departments in Illinois. To legalize its functions in the three cities, the mayors appoint health officers who are nominated by the director of the Hygienic Institute, whose assistants they become, and who are paid by the Hygienic Institute. This scheme eliminates political influence, insures cooperation and provides all necessary authority.



Futhermore, the participating communities were required to employ each a sanitary policeman, to adopt uniform sanitary codes, to report

Gustav F. Ruediger, M. D.
Director, Hygienic Institute,
1914-1917

all contagious diseases to the main headquarters and to manifest good faith in otherwise providing for complete harmony of service from the principal organization.



Anna Hennesy-Kinder
M. D.

Thus the Hygienic Institute came into being and its continuity is assured by reason of a liberal endowment made for the purpose by its creator. It is governed by a board of trustees made up of five members who elect new members to fill vacancies, subject only to the disapproval of the Matthiessen heirs. They constitute the actual board of health of the three municipalities

although each has a paper board of health in order to lawfully settle any legal questions that may arise at any time. The first board of trustees was made up of Ernst Roth, president, George A. Wilson, treasurer, J. Henry Cox, Charles Nodder and Harry A. Bent. Dr. Gustav F. Ruediger was the first director of the Institute. Subsequently, Dr. Carl F. Raver, Dr. Edmund W. Weis and Dr. Arlington Ailes have occupied the position of director, the latter being the present incumbent.

The Hygienic Institute is housed in a remodeled building adjacent to the LaSalle-Peru Township High School. Here are maintained properly furnished offices with filing cabinets and printed blanks for keeping records, and a completely equipped laboratory for making bacteriological diagnoses and sanitary chemical analyses of water and foods. It was thought desirable to have the Institute in close cooperation with the high school so as to bring the pupils in touch with the public health work. This has been amply justified as high school classes have frequently visited the offices and laboratory and have had the work explained to them. Members of the Institute have frequently been invited by the high school principal to give health talks before classes or at the general assembly.



J. Henry Fox

In formulating the plan of organization of the Hygienic Institute and the cooperative health department, economy of operation was not the paramount consideration. The first thing sought after was efficiency in public health administration, but those who advanced the project were desirous that original research should also be provided for. They therefore, aimed to have assistants enough to allow the director and the bacteriologist to devote considerable time to this important side of the work.



Harry A. Bent

The Hygienic Institute now provides every type of service ordinarily expected of or performed by a health department, delves into the field of research and makes itself a general public health, medical and welfare center for the communities it serves. It seems to be meeting fully the purposes for which it came into being. A clear picture of the organization is given in the June 1927 edition of *Nation's Health*. Its present director, Dr. Arlington Ailes, is speaking.

"Despite the fact that this is an endowed institution and could better afford to be independent than most health departments, every effort is made by the director and staff to promote harmony and a spirit of cooperation between itself and the practicing physician. The dinners



Carl F. Raver, M.D.
Director, Hygienic Institute,
1917-1918

spoken of above is one method used to appease the primitive instincts of the human animal, and are enjoyed by the doctors and staff as well. These dinners are prepared and served by the nurses at cost to the society, after which the physicians enjoy their regular monthly program in the library of the Institute. The library is kept up-to-date with a reasonable selection of late books and current journals. This, together with the laboratory service rendered the physicians, is of great value in promoting and preserving mutual good will. The Institute also recognizes the inalienable rights of the physician to treat the sick, and the broad principle that health should be bought and paid for

the same as any other valuable and purchasable commodity.

"The physicians, on their part, are showing confidence in the health department and their program by endorsing the various diagnostic, educational and demonstrational clinics, and by meeting the Institute half way in the field of preventive medicine, especially when epidemics threaten. The danger of mentally impoverishing certain classes by carelessly extending free service is guarded against. The details of this cooperative service in the field of preventive medicine have not been fully solved, but it is being approached with the hope of solution along the lines stated above.

"In the matter of community cooperation, with other agencies, in the field of public health, there seems to be entire harmony. The three boards of education are cooperating with the health program in their schools and are assisting financially. The tuberculosis society employs

a nurse, who is, in fact, a member of the Institute staff of nurses, and who is under the supervision of the chief of this division. Their other expenditures for health have been made in harmony with the wishes and with the guidance of the health officials. There are many large industries in the community, three of which maintain medical or nursing service, and with which the Institute cooperates. The Tri-City Family Welfare Society is also well organized and officered, and the chances of cooperation and mutual usefulness between the Hygienic Institute and this society are many.



Edmund W. Weis, M.D.
Director, Hygienic Institute,
1918-1925

"A unique and valuable service of this society is the sponsoring of mental clinics, which are held at the Hygienic Institute. The clinicians are furnished by the Illinois Institute for Juvenile Research, and the service is taken advantage of by the society, the Institute, and the schools. The La-



Arlington Ailes, M.D.
Director, Hygienic Institute,
1925 to date

Salle-Peru Township High School also maintains an unusual service, known as a Bureau of Educational Counsel, which gives individual study, advice, and guidance to students, especially in their mental and emotional complexes and their fitness and choice of vocations. The psychiatric and psychological service for this bureau is also rendered by the Illinois Institute for Juvenile Research located at Chicago, and the physical examinations are made by the Institute staff. The Metropolitan Life Insurance Company also maintains a full time nursing service, but as yet this is not under the service of the Institute. There

is, however, entire harmony and cooperation, which is exceedingly important since the Hygienic Institute also maintains a visiting nurse service.

"The organization and activities of the Hygienic Institute have grown and changed and kept pace with the ideas of the best public health practices, ranging from almost purely sanitary, through prevention, to the modern idea of health promotion."

LA SALLE WATER SUPPLY

The first waterworks was constructed in 1888 with a spring about two miles east of the pumping station as a source of supply. During 1894 a second high-lift pump was added and in 1903 and 1904 extensive changes were made. The spring supply was abandoned and a well developed, located in the Illinois River bottom land at the southeast corner of the city just south of the Illinois-Michigan Canal, between Little Vermilion River and the Illinois Central Railroad. The well was pumped by a centrifugal pump. A larger collecting reservoir was constructed and the present boiler room, equipped with new boilers, was built. In 1907 a feed-water heater was added and in 1911 a second well was sunk.

The two wells in use in 1913 were 39 feet deep and 7½ feet in diameter and penetrated a gravel water-bearing stratum. The collecting reservoir had a capacity of 35,000 gallons. Water was pumped directly into the service main.

In 1913 a third well was sunk and two elevated equalizing reservoirs constructed.

The waterworks remained unchanged until 1921 at which time the old plant was abandoned and a new plant built.

The present waterworks comprises the three drift wells, pumping station, and two equalizing reservoirs. There are about 25 miles of service mains and the average water consumption is about 153 gallons per capita daily.

From time to time cross connections have been in existence between polluted river water and the city well supply at certain industries. The last of these cross connections was broken in 1926.

Routine analyses of samples from the public water supply have been made by the State Department of Public Health since September 1921.

At the present time the water at LaSalle is classified as being of a safe sanitary quality.

LA SALLE SEWERAGE

A combined system of sewers, with three 36-inch outlets discharging into the Illinois-Michigan Canal, and serving that portion of the city south of Eleventh Street has been in existence for several years. There are several areas in the city not adequately served, and no immediate improvements are contemplated.

Poor drainage facilities coupled with the extensive overflow lands in Illinois River bottoms have from time to time produced severe mosquito-breeding nuisances.

PERU WATER SUPPLY

The first waterworks was installed in 1891. At that time the city was too much in debt to issue bonds and build the works, so the Peru Water Company was formed and bonds issued for \$43,000. Besides this sum the city paid \$25,000 for mains and hydrants, making the cost of the system \$68,000. It was the intention of the city to purchase sufficient bonds annually to acquire complete ownership of the works in nine years, but owing to paying expenditures, this was not done and a re-issue was necessary. In 1914 all but \$2,000 in bonds had been taken up by the city. Although the water company owned the plant, the city always operated it.

The original supply consisted of one well constructed in 1889, 1,365 feet deep into St. Peter sandstone, located in the south part of the city. A collecting reservoir of 250,000 gallons capacity was constructed in 1891, when the water plant was built.

In 1893 another well was sunk 1,254 feet deep near the Chicago, Burlington & Quincy railroad depot. In 1905 a third well was put down at the pumping station site. In 1913 a fourth was constructed. The collecting reservoir was not used after construction of the fourth well in 1913.

At the present time only three wells are in service, the first well having been abandoned. Water from the wells flows into a concrete collecting reservoir of 360,000 gallons capacity located at the pumping station from

whence it is pumped to the distribution standpipe. The pumping station was being rebuilt in 1926, at which time four cross connections between the city supply and that of the Western Clock Company were in existence.

The present water consumption is about 56 gallons per capita daily and the water is regarded as being of a safe sanitary quality. Analyses of samples from the public water supply have been made by the State Department of Public Health since September 1923.

PERU SEWERAGE

In 1914 the city was said to be quite thoroughly sewered by a system of combined sewers, with ten outlets discharging into Illinois River, ranging from 15 to 24 inches in diameter.

In 1925 several portions of the city were affected by the backing up of sewage in basements and improvements to the sewer system were contemplated. Recommendations were made for systematic and comprehensive study of the sewerage needs of the city, but to date little progress has been made.

OGLESBY WATER SUPPLY

The waterworks was installed during 1915 and 1916. A well 14 inches in diameter and 1,645 feet deep was constructed near the center of the town. Prior to 1915 a local coal company supplied a number of residences with water which previously had been passed through a softening plant.

At the present time the waterworks comprises the original well which enters St. Peter sandstone, the air-lift equipment which was installed in 1916, an open surge tank above the well, a 15,000-gallon collecting tank, and the pumping station. Water is pumped direct into the distribution system.

The present consumption is about 40 gallons per capita. The water is regarded as being of a safe sanitary quality. Analyses of samples from the public water supply have been made by the State Department of Public Health since October 1926.

OGLESBY SEWERAGE

A system of sanitary sewers, which serves the central portion of the city, was installed prior to the development of the public water supply.

HEALTH CONDITIONS

A. D. Jones, who visited the town of Peru on his trip up the Illinois River in the late fall of 1838, wrote:

"Peru is said by many to be unhealthy which the residents on the spot stoutly affirm to be highly libelous. Still I need further proof that it is not generally unhealthy on that river—not sickly, however,

that it need be shunned by those who are disposed and determined to take care of their health * * * * In these bottoms, swarm such hosts of mosquitoes as New England men never dreamed of. They fairly make it difficult to breathe and silence was imposed from very fear of inhaling them with our breath. They were not to be endured and hot as it was, we closed the curtains and smoked them out with our cigars."

During the early years, however, there seems to have been but one epidemic of sufficient importance to impress the minds of the lay historians. It was the cholera outbreak.

In LaSalle, this epidemic is reported to have killed the inhabitants by the hundreds. The burial of the dead of all ages and sexes is likened to scenes after a battle.

Table 1.
MORTALITY FROM CERTAIN CAUSES IN LASALLE.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1918	326	4	...	...	5	...	1	3	68	...	8	64
1919	149	1	...	...	...	...	...	...	4	...	16	15
1920	196	4	...	...	2	...	2	...	17	...	7	25
1921	151	...	...	...	...	...	...	3	...	...	8	9
1922	164	...	...	...	...	...	...	...	...	...	4	14
1923	174	1	...	...	...	...	1	4	242	...	6	15
1924	161	2	...	...	...	...	2	...	4	...	6	9
1925	161	...	...	...	...	...	3	1	5	...	11	13
1926	184	2	...	...	2	...	6	...	9	...	13	16

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES IN LASALLE.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1918	25.4	32.4	...	...	40.3	...	8.0	24.1	548.3	...	64.5	516.1
1919	11.5	7.6	...	...	...	...	...	...	30.5	...	123.6	115.3
1920	14.9	30.6	...	...	15.3	...	15.3	...	130.5	...	53.8	192.3
1921	11.4	...	...	...	...	...	...	22.6	...	...	60.2	67.8
1922	12.6	...	...	...	...	...	...	29.8	14.9	...	29.7	104.2
1923	13.9	7.3	...	...	...	...	7.3	7.3	222.2	...	44.4	111.1
1924	11.7	14.2	...	...	...	...	...	14.2	28.4	...	42.8	61.2
1925	11.6	...	...	...	...	...	21.5	7.1	35.9	...	79.1	93.5
1926	12.6	13.7	...	...	13.7	...	41.4	...	62.1	...	89.0	109.5

NOTE. The rate from All Causes is per 1,000 population; all others per 100,000 population.

Beebe says that:

"During the summer of 1853 cholera again made its appearance, and with increased violence. From the first settlement of the town to 1849, with the exception of the years 1838 and 1839, when bilious fever prevailed to some extent, the inhabitants had enjoyed immunity from disease, seldom experienced in new western settlements, or indeed, in any other. For the space of one year, no death occurred except from casualty. Even the ague found few, if any subjects. Throughout the summers of 1850 and 1851, cholera continued its ravages in the surrounding towns and country, and visited Peru but slightly. In the early part of the summer of 1852, when LaSalle and other contiguous places were scourged, Peru remained healthy. At length it appeared to have spent its material and departed the entire country. Suddenly it reappeared; and while the places previously afflicted remained healthy, Peru was devastated to an extent not surpassed, if equaled, by any place in the United States. The estimated number of victims was from five to six hundred, being about one-sixth of the entire population. It was observed that less panic and excitement were produced than upon its visitation in 1839. But few cases occurred in the two following years, and from that time to the present—1858—the same freedom from disease has prevailed which distinguished its early settlement."

This harrowing experience with cholera was evidently the thing that first brought a demand for an official public health organization in any of the three municipalities. The boards of health that this emergency summoned into being probably had little to do with it but cholera never again spent its fury upon these communities with sufficient force to awaken alarm. If it ever appeared there again the fact escaped significant notice.

One bad epidemic of smallpox in the communities is recorded. It occurred in 1912. Due to the character of the population, a good deal of prejudice and the lack of a strong health department it was hard to manage

Table 3.
CASES OF CERTAIN DISEASES REPORTED IN LASALLE.

	1916	1917	1918	1919	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	25	...	1	4	4	2	4	4	2	3	1
Smallpox	2	1	1	1	1	...	...	...	...	...	...
Measles	112	247	212	3	7	58	423	62	12	411	32
Scarlet Fever	43	4	7	1	26	18	27	27	4	2	161
Whooping Cough	...	...	...	...	10	28	28	38	116	190	10
Diphtheria	30	70	25	4	40	55	27	37	6	1	...
Influenza	...	...	1781	16	...	13	5	2	5	15	...
Poliomyelitis	6	1	1	1	5	...	...	...	2	...	3
Meningitis	...	7	...	...	...	...	...	3	1	...	2
Tuberculosis*	17	...	3	...	24	17	23	29	33	24	36
Pneumonia*	...	...	26	...	32	44	16	38	52	102	34
Syphilis	...	...	...	...	...	...	...	6	11	14	12
Gonorrhea	...	...	...	...	...	...	...	12	32	34	22

* All forms.

No figures available for 1920.

and involved over 200 cases before it subsided. Since the organization of the Hygienic Institute, smallpox has never gained an appreciable foothold in the territory that it serves.

Diphtheria also visited these communities with particular severity on one occasion that made the epidemic stand out in bold relief above ordinary outbreaks of that disease. This happened in 1888. Scarcely a home in which there were children escaped and few families withstood an attack without the loss of one or more members. Diphtheria was common before and after that dreadful experience but no other single epidemic of this disease is recalled with such grievous vividness. More recently a determined campaign by the health department against diphtheria seems to have been attended with satisfactory results. Only one death was registered in LaSalle and Peru in 1925 and none in 1926. No cases were reported in LaSalle in 1927, although the prevalence of the disease in the State at large that year advanced thirty per cent above the 1926 figure.



O. C. Yoder, M. D.
Health Officer, Peru

Problems of typhoid and scarlet fever presented themselves to plague the inhabitants of the district on numerous occasions. There were 25 cases of typhoid in LaSalle in 1916 but that disease has been practically eliminated from the district through successful efforts to cause the abandonment of privies and through intelligent sanitary supervision over water and milk supplies. Scarlet fever is still an unsolved problem, a rather widespread epidemic having occurred in 1927, but it seems to be less malignant than in years gone by and there is hope upon the horizon that specific means of prevention may shortly be at hand.

Infantile paralysis did not overlook the district during the epidemic wave of that disease in 1916 nor in 1927. In the former year nine cases were reported from LaSalle and Peru and some half dozen in the latter.

Influenza was deadly there in 1918. It caused 68 deaths in LaSalle and Peru, yielding a mortality rate of 5.48 per 100,000 population. Pneumonia was charged with 64 deaths in the same year, giving a rate of 5.16 per 100,000.

Statistics for years prior to the opening of the Hygienic Institute are incomplete and unreliable but the illustrations cited are sufficient to indicate that the communities now embraced in the health district suffered from their full share of communicable diseases and that the operation of the Institute has resulted in a pronounced improvement in health conditions.

Table 4.
BIRTHS AND INFANT DEATHS IN LASALLE.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1918			45	
1919			24	
1920	331	26.7	35	99.7
1921	344	23.5	25	72.7
1922	301	22.6	21	69.8
1923	320	25.5	26	81.3
1924	347	25.2	27	77.8
1925	310	22.3	30	96.8
1926	301	20.6	27	89.7

*Deaths of infants under 1 year of age per 1,000 births reported.

** Per 1000 population.

REFERENCES

- Data supplied by Dr. Arlington Ailes, Director of the Hygienic Institute, LaSalle, Illinois.
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 Annual reports of the Hygienic Institute, LaSalle, various dates.
 Illinois and the West, A. D. Jones, Boston, 1838.
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 U. S. Census Reports, Washington, D. C., various dates.

Moline

Located on the banks of the Mississippi River a few miles above the mouth of the Rock River, Moline spreads across most of the intervening territory which is only one and a half miles in breadth, with a population largely of Scandinavian ancestry, estimated at 34,500 in 1926. Principally industrial, the business of the community centers around the manufacture of farm implements and tractors.

Moline is not a community apart but lies contiguous to the city of Rock Island on the one side and practically so to East Moline and Silvis on the other, while Davenport stretches along the opposite shore of the Mississippi. Intimate intercommunications are always maintained between these several municipalities and this fact complicates the health problems of the one great community.

Moline was incorporated as a town in 1848 and under a special charter in 1855. It was reorganized as a city under the Cities and Villages Act in 1872. Another change in the city administration took place in 1911 when the commission form of government was adopted and then in 1919 it reverted back to the aldermanic form.

Growth and development in Moline have been gradual and substantial. The place first appeared as a separate unit in the United States Census returns in 1860 when 2,028 people lived there although the first white settlers arrived about 1828. This number grew to 4,166 by 1870 and to 7,800 in 1880. In 1890 there were an even 12,000 inhabitants and in 1900 there were 17,248. At the end of the next decade the population was 24,199 and 30,734 in 1920. About 24 per cent of the 1920 population were foreign born whites and a trifle more than one per cent were negroes. About 21½ per cent were 45 years old or over.

HEALTH MACHINERY

The Cities and Villages Act provides for the establishment of local boards of health and it is probable that Moline adopted an ordinance taking advantage of that feature in 1872 when the city was incorporated under the Act.

At any rate we find the city council adopting a compulsory vaccination ordinance in 1881, when smallpox threatened the community, and the health officials busied themselves with its enforcement. Both the passage of the ordinance and the activities concerning its enforcement imply the previous existence of some sort of official machinery. Not only so but reference

is made of the fact that Dr. C. Piper was president and Dr. L. G. Dunn, secretary, of the board of health in 1882.

About this time the city spent \$6,000 in constructing an isolation hospital, for the detention of smallpox patients. There seems to have been little if any change in the legal arrangements for providing a health organization between 1872 and 1905. During all that period there was probably technically in existence a board of health and for the greater part of the time it functioned through a lay health officer, usually the chief of police. Edward Kittleson, still a member of the police department, filled this dual office over a long period. The board of health had on it one or more physicians and apparently the chairman of the board, usually a doctor, was regarded as the administrative head of the city's health service.

In 1905 a new practice was inaugurated when an ordinance revising the status of the board of health and creating the office of city physician was adopted. This placed the responsibility for administration squarely in the hands of the medical profession, the city physician being paid for his services on a part time basis.



R. C. J. Meyer, M.D.
City Physician, 1905-1907

The list of city physicians include:

R. C. J. Meyer, M.D.	1905
A. H. Arp, M.D.	1907
Perry H. Wessel, Jr., M.D.	1911
H. S. Bennett, M.D.	1915
W. T. Hinman, M.D.	1917
A. H. Kohler, M.D.	1919
E. A. Edlen, M.D.	1923 to date

With the adoption of the commission form of government in 1911, no material change was made in the method of administering the health department. The office of city physician was continued and the commissioner of public health and safety chose to delegate to him the responsibilities of carrying out the public health duties.

After a few years of commission government the city reverted back to the aldermanic form in 1919 when an ordinance was passed making the mayor the city physician and the health inspector a board of health. This was later expanded to include other members of the health department, which in 1927 included an inspector and a chemist, and an alderman.



E. Z. Eastman
First Commissioner of
Health and Safety,
1911-1919

Voluntary and other public or quasi-public agencies have added a very considerable strength to the public health machinery of the city so that the volume of work done is much greater than the limited capacity of the health department staff would suggest. The county participates in tuberculosis work through funds collected by tax levy under authority of the tuberculosis sanitarium law, the school board employs a nurse and operates a dental service while voluntary agencies maintain a clinic for crippled children, a system of infant welfare stations, a visiting and public health nursing service and allied types of work. One of the most complete and active health centers found anywhere in the State is in Moline under the management of voluntary agencies with Miss Mabel Dunlap, a nurse and a splendid executive, in charge.

A good conception of what public health service is maintained may be gathered from the report of a survey made by the State Department of Public Health in 1926. It reads, in part, as follows:



E. A. Edlen, M. D.
City Physician, 1923 to date

"Scoring 571, or 57.1 per cent, Moline ranks seventh from the top among the fifteen cities embraced in the appraisal of public health activities.

"The health department, functioning under the authority of a board of health, consists of a part time health officer and an inspector. The former acts as registrar of vital statistics and is personally active in communicable disease control while the latter, who is appointed by the mayor, placards premises for quarantine, makes sanitary inspections, collects samples of milk and supervises garbage collection. One full time school nurse and a part time dentist are supported by the board of education, while the King's Daughters and the Red Cross combine resources in maintaining a public health and bedside nursing service, devoting considerable energy to prenatal and preschool hygiene. Voluntary and other agencies are responsible for far more of the health work in Moline than is the city government, efforts of the latter being credited with only 149 of the 571 points earned.

"The tuberculosis clinic is a county project in which Moline shares. A venereal disease clinic was discontinued in 1925 after several years of operation. Clinics for infants and children appear to be functioning less vigorously than in years gone by.

"Out of the city treasury is expended slightly more than eight cents per capita annually for public health service, funds appropriated to the health department for garbage collection being excluded. Other agencies contributed enough to make the gross per capita expenditures about 39 cents in 1925. Apparently Moline gets maximum returns on the money invested in health projects, ranking relatively high on the score sheet and very low in the appropriation column.

"Reporting of cases of communicable diseases and record keeping was reasonably complete. The health officer states that he personally visits about one-half of all cases of contagion reported, giving educational advice to the household. A sanitary inspector placards premises and releases from quarantine. No communicable disease nursing service is maintained. Two isolation hospitals, one for smallpox and another for other communicable disease patients, are provided in the city. Out of 14 cases of diphtheria last year only one was cared for by the isolation hospital, while but 5 out of 72 scarlet fever patients received hospitalization.

"A very commendable practice is that of notification between the school and health authorities of all cases of communicable diseases that may be of concern to either.

"Tuberculosis field nursing service and the follow-up work of post-sanitarium cases is done with great thoroughness. A total of 1,026 visits were recorded as having been made in 1925, whereas the appraisal quota for the city on the basis of 13 deaths from tuberculosis during the year was only 650. Under the supervision of the county sanitarium board a clinical service is maintained for the entire county in which Moline participates.

"While local sanitarium facilities are inadequate to take care of the community needs, still the county allows \$25.00 per week per patient for this service to tuberculous citizens. Under these circumstances only 1,646 patient days were spent in sanatoria by Moline citizens. Furthermore, the patients who received sanitarium care at public expense were mostly moderately advanced in the disease, practically none being in an incipient stage.

"Voluntary agencies provided 210 field nursing visits to prospective mothers. There is no prenatal clinic, although an educational center for prospective mothers is maintained and had 550 visits recorded for last year.

"A rather large percentage of the births of the city take place in hospitals. Field nursing visits in behalf of infants are about one-half of the required number for a maximum score on that item, while the number of infants in attendance on the clinic numbered 1,310 against a requirement of 1,642.

"Field nursing and clinical service for the preschool child were at a higher ratio, the score for these items approaching very nearly the maximum. It appears that the work done in behalf of the preschool child (age 2-6 years) is much more nearly equivalent to the appraisal requirement than any other phase of public health service in the city.

"The board of education furnished a visiting nurse and a part-time dental surgeon, but no school physician to look after the health of its grade school children. In the private schools these activities are under the supervision of the King's Daughters. Frequency and completeness of the weighing, notification of parents, and the follow-up of under-weights meet all reasonable requirements for such activities.

"Out of 3,474 public school children examined by the dental surgeons, 1,539 were found who needed attention, and 1,311 received treatments consisting of fillings, extractions and oral prophylaxis. In the

private schools 104 of the 519 children found with dental defects were given treatment.

"While the public water supply is ordinarily safe and the supervision good, still the purification plant is heavily overloaded. To this condition has been attributed one or more epidemics in the past. A house-to-house sanitary survey made by the State Department of Public Health in 1920 showed the existence of 1,635 privies with only 77 per cent of the dwellings connected to sewers. While many of the privies have doubtless been abandoned during the intervening years, it is reason-

able to conclude, in view of experience elsewhere, that hundreds of these primitive accommodations still exist.

"The city maintains no public health laboratory, although a municipal chemist is employed who tests the public water supply daily and examines samples of milk and food supplies at the request of the board of health. A branch laboratory of the State Department of Public Health provides facilities for examination of diphtheria cultures locally.

"In summing up the situation in Moline, it can be fairly stated that the local health department is doing all that is humanly possible with the limited person-



A. E. Anderson
City Chemist

nel at its command. The president of the board of health, the city physician, the registrar of vital statistics and the health officer are one and the same man; and he is on a part-time basis with a salary of \$600 per year. The health inspector, in addition to his multiplicity of responsibilities in the health department, assumes supervision of the collection and disposal of garbage."

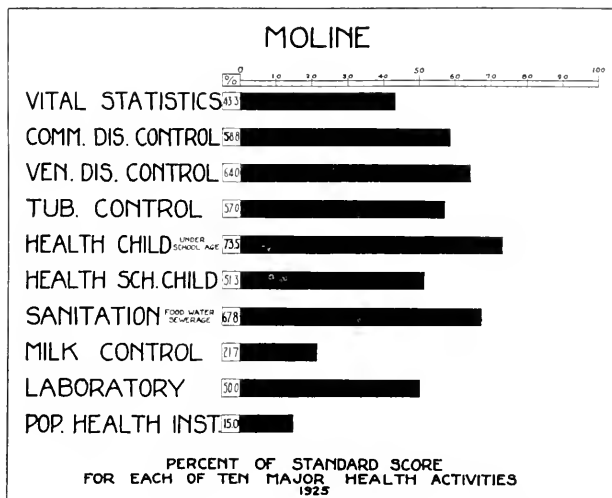
WATER SUPPLY.

The first waterworks at Moline was constructed by a private company in 1883 and purchased by the city in 1887. The supply was obtained from Mississippi River.

The city installed a mechanical filtration plant in 1902, consisting of three filters. In 1911, two more filters were added. Hypochlorite was used in that year and was replaced by liquid chlorine in 1915.

It was estimated that the typhoid rate was about four times as high previous to the installation of the purification plant, as it was later. However, in the winter of 1917-18, typhoid became more prevalent and an investigation indicated that city water was the cause due to the use of insufficient chlorine.

Until recently cross connections between the raw and filtered water made it necessary to classify the supply as doubtful. At present, the plant is old and badly in need of reconstructing and enlarging.



This graph illustrates the strong and weak points in Moline's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Moline was 57 per cent of the standard perfection requirement.

Reports on the pollution of the river and the purification plant prepared by Alvord & Burdick, sanitary engineers, and Dalney H. Maury, consulting engineer, recommend reconstructing the filters and increasing the storage capacity.

SEWERAGE.

The first sewers were installed about 1913 and since that time the system has been extended until, at present, the most of the city is adequately sewered. The system is built on the separate plan. There are two sanitary sewers discharging raw sewage below the waterworks intake and one sanitary sewer discharging treated sewage above the intake. The treatment includes Imhoff tanks and chlorination.

The river is badly polluted by other cities as well as Moline, and many complaints have been made.

HEALTH CONDITIONS.

While tuberculosis, typhoid fever, diphtheria and perhaps other infections were undoubtedly causing far more damage to health and life smallpox is the deadly disease about which centers practically the whole story of community health during the early days. Tradition of earlier suffering very likely grew dim in the glare of subsequent epidemics so that the first important outbreak of which record is available took place in 1881. During that year smallpox, carefully concealed in a bale of rags, arrived in Moline.

A great epidemic wave of smallpox was just starting in the State. One of the most deep seated foci was in Chicago, the great immigration terminal. From that point a bale of rags was consigned to a factory in Moline and eight of the employes who handled it promptly came down with smallpox. Exposure of citizens had been general so the disease started to spread. Alarmed at the prospects of a general epidemic compulsory vaccination was ordered by the city council so that the outbreak was limited to 21 cases and some half dozen deaths. During the next few years smallpox could not get a foothold in the city although introduced on several occasions and in spite of the fact that a general epidemic prevailed in the State during the early eighties. The wholesale vaccinations during the autumn of 1881 rendered the community immune.

Like every other good thing the immunity against smallpox wore off with the passing of time and the neglect of vaccination. New immigrants came in, new babies were born and even the immunity in those who had been vaccinated grew less complete as time went on. Consequently, the city was again open to danger and danger usually seeks out favorable places. So from about 1900 on Moline has been a rather chronic focus of smallpox. Records are incomplete for the first fifteen years after that date but beginning with 1916 up through 1927 the city has not entirely escaped the disease in any year. Case reports have varied from 1 to 102 per year while the character of the disease has manifested itself in every degree from extreme mildness to extraordinary malignancy. In 1924, for example, nine out of 52 cases that occurred in Moline, Rock Island and Sterling, terminated fatally.

Typhoid fever has been a chronic problem in Moline for years. The city escaped during a whole year without a single case for the first and only time, so far as records disclose, in 1927. The worst experience occurred in 1917 and 1918. Toward the end of December 1917, a serious outbreak of typhoid fever developed. The first cases appeared late in July and increased numbers were reported during the following months. In the middle of January 1918, the disease reached epidemic proportions approximately 50 cases being reported during the first half of the month.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop. Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1906	276	3	...	...	...	5	...	8	...	...	26	36
1907	286	5	...	...	12	23	1	10	...	...	44	28
1908	309	5	...	...	...	1	...	12	...	...	26	35
1909	352	7	...	...	3	5	1	1	1	...	32	32
1910	276	5	1	...	1	3	1	1	...	...	33	30
1911	443	18	...	...	...	1	...	7	1	...	38	46
1912	358	15	...	...	...	...	12	12	...	...	32	30
1913	302	12	...	...	1	1	...	12	...	...	41	33
1914	436	13	...	...	...	...	...	2	2	...	33	47
1915	385	6	...	...	...	...	...	2	3	...	16	48
1916	386	12	...	...	...	...	...	1	5	...	40	41
1917	373	7	...	...	...	6	1	4	1	...	32	39
1918	614	24	...	...	7	4	7	7	134	...	26	31
1919	389	11	...	...	1	1	...	6	19	...	17	46
1920	371	3	...	1	1	...	5	3	15	...	20	12
1921	306	1	...	...	...	...	...	3	1	...	20	31
1922	281	1	...	...	...	...	...	1	6	...	22	13
1923	344	4	...	...	4	...	12	1	7	...	13	15
1924	311	1	...	3	...	...	...	3	6	...	18	29
1925	347	1	...	...	...	1	3	4	7	1	...	...
1926	359	1	...	...	1	2	...	1	8	...	...	...

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop. Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1906	12.8	14.0	...	...	23.3	...	...	37.3	...	...	121.3	168.0
1907	12.9	22.6	...	...	9.0	104.0	1.5	45.2	...	...	198.9	126.6
1908	13.5	21.9	...	...	...	4.3	...	8.7	...	...	113.9	153.4
1909	14.9	29.7	...	...	12.7	21.5	4.2	4.2	4.2	...	136.1	136.1
1910	11.4	20.6	4.1	...	4.1	12.3	4.1	20.6	...	...	136.3	123.9
1911	17.8	72.8	...	...	...	4.0	...	28.1	4.0	...	152.8	185.1
1912	14.0	58.8	...	...	...	...	7.8	11.7	...	...	125.4	117.6
1913	14.1	45.8	...	...	3.8	3.8	...	7.6	...	...	103.2	...
1914	16.2	48.4	...	...	...	...	...	...	7.4	...	152.8	123.1
1915	14.0	21.8	...	...	...	...	...	7.2	10.9	...	120.1	171.1
1916	13.7	42.6	...	...	...	...	...	3.5	17.7	...	56.8	170.6
1917	12.6	24.3	...	...	13.8	5.4	13.8	3.4	...	...	138.9	142.4
1918	20.4	85.7	...	...	25.0	21.1	10.7	25.0	478.5	...	114.2	317.8
1919	13.2	35.8	...	...	...	3.2	...	19.5	61.8	...	84.6	100.9
1920	12.0	9.6	...	3.1	3.2	...	16.1	9.6	48.5	...	54.8	148.3
1921	9.7	3.2	...	...	...	...	...	9.5	22.0	...	72.9	38.0
1922	8.7	3.1	...	...	...	...	...	3.1	18.6	...	62.4	37.3
1923	10.5	12.2	...	...	12.2	...	6.1	3.0	21.7	...	61.4	94.8
1924	9.3	3.0	...	9.0	6.0	...	...	9.0	18.0	...	66.0	49.0
1925	10.2	2.4	...	...	...	2.9	8.7	11.7	20.6	2.9	38.3	44.2
1926	10.4	2.9	...	...	2.9	4.8	...	2.9	23.2	...	52.1	84.0

NOTE: The rate from All Causes is per 1000 population; all others per 100,000 population.

The State Department of Public Health was called upon to make an investigation. The findings pointed strongly to the water supply as the source of infection and after remedial steps were taken the epidemic abated in the latter part of January, and the situation seemed practically cleared up during February and March.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	97	47	334	40	9	14	6	13	5	3	25	...
Smallpox	28	102	8	33	94	70	1	7	20	1	1	5
Measles	10	110	459	28	452	159	17	1042	357	37	247	1026
Scarlet Fever	53	68	77	21	23	11	24	20	21	75	73	33
Whooping Cough	1	52	99	31	164	43	32	219	23	373	91	179
Diphtheria	26	52	64	37	73	22	16	44	91	11	49	7
Influenza	...	...	2008	42	247	2	69	11	2	8	7	4
Poliomyelitis	4	8	...	1	...	1	...	1	...	1	2	...
Meningitis	...	1	...	6	1	2	1	1	1	...	1	...
Epileptics*	19	8	5	11	69	114	93	77	68	55	87	143
Pneumonia*	...	...	...	...	50	44	55	54	31	77	129	97
Syphilis	1	...	7	6	60	68	70	57	56	45	52	21
Gonorrhea	...	...	63	127	244	294	142	137	111	76	47	39
Chancroid	...	...	3	...	7	11	7	3	...	...	...	...

*All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates significant improvement in notification in Moline.

In April 1918, the disease reappeared, with an increased number of cases during May and again assumed epidemic proportions in June and increased in seriousness during the first half of July. In the first fifteen days of this month, 125 cases were reported.

A more painstaking and exhaustive study of the situation was made which finally determined that the epidemic was due to the faulty operation of the water plant, whereby raw and untreated water from the Mississippi River had been permitted to enter the local supply.

The epidemic carried over into January of 1919 but since that time the typhoid rate has not been unusually high although the city had but one free year, 1927, from the disease.

Tuberculosis was at one time of major importance as a cause of death in Moline but the careful and persistent work against that malady has resulted in a very satisfactory improvement in that respect. The mortality rate of 52.1 per 100,000 population in 1926 was one of the most favorable among the cities of the State. None of the other communicable diseases have manifested themselves in any extraordinary fashion in Moline, with the possible exception of influenza and pneumonia. The mortality rate in Moline from these two infections together was the sixth highest among municipalities of the State in 1918. With 134 deaths attributed to influenza and 89 to pneumonia in that year, the mortality per 100,000 mounted to 478.5 and 317.8 respectively.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1900			37	
1901			38	
1902			37	
1903			34	
1904			38	
1905			41	
1906	434	29.3	51	117.5
1907	490	22.2	64	130.6
1908	473	20.8	54	114.1
1909	385	16.4	51	132.4
1910	486	20.0	43	89.4
1911	563	22.8	48	85.2
1912	508	20.0	57	120.0
1913	565	22.0	69	128.0
1914	626	24.0	50	86.0
1915	512	18.2	53	96.0
1916	597	22.0	56	92.6
1917	547	19.7	36	61.1
1918	554	19.6	37	92.6
1919	579	19.7	44	75.0
1920	834	26.8	37	44.4
1921	739	23.3	32	43.3
1922	658	20.4	32	48.6
1923	626	19.1	41	65.5
1924	630	18.9	39	61.9
1925	643	19.0	27	42.0
1926	662	19.2	40	60.4
1927	732	20.08	31	42.3

* Deaths of infants under 1 year of age per 1000 births reported.

** Per 1000 population.

Altogether, however, Moline enjoys splendid community health in spite of her unhappy experiences with some of the epidemic disorders. The general death rate is lower than that for the State and lower than that for most of the comparable municipalities in Illinois or any other state for that matter. Deaths among infants less than a year old are likewise few in number compared with other places. The rate in 1926 was 60.4 per 1,000 live births, a figure just one-half of that for 1912. Since infant mortality is regarded as a sensitive index to health conditions and to the effectiveness of public health service, the prevailing low rate during recent years may be accepted as a manifestation of effective infant and prenatal hygiene service in Moline and of a relatively good condition of public health.

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Oak Park

By Dr. Frank S. Needham, Health Commissioner.

Joseph Kettlestrings, an Englishman from Yorkshire, was the first white settler within the boundaries of what is now known as Oak Park. With his wife and three children he came here in 1833, making the journey from Cincinnati in a covered wagon. At that time, according to William Halley in his *Pictorial Oak Park*, "Not a vestige of civilization was visible. Chicago itself was only an outpost village of a few inhabitants. There were no railroads and no country roads. There were, however, few Indians to fight, no trees to blaze for pathways through dense forests, but still the pioneers had hardships to endure. The land itself was not yet pre-empted nor open for settlement and those who had settled were simply squatters."

Two years later, when this land was put up for sale, Kettlestrings purchased the quarter section known as Oak Ridge because, as he said, "It was the only dry land between Chicago and the Aux Plaines",—as the Des Plaines River was called. The home of oak boards which he erected on this land was the first house of any kind ever built in Oak Park. Later, when suitable additions had been made to this building, he started a tavern known as "Oak Ridge House". He had been working, meanwhile, for George Bickerdike, who owned a saw mill on the banks of the Aux Plaines, and eventually Kettlestrings became his partner in the business.

The sale of public lands, of course, brought more settlers and the business man, and in 1848 the first train ran from Halsted Street to the Des Plaines River. Later this road became the Chicago & Northwestern railway and transported grain brought by the farmers from west of the Des Plaines River to Halsted Street.

In 1858 the town could not boast more than half a dozen houses, all situated on Lake Street. The school house had been erected in 1855. The first drug store and doctor's office were opened in 1866, just after the Civil War, by Dr. Orin Peak.

The name "Oak Park" dates only from 1871, when the Noyesville post-office and the Harlem railroad station were changed to conform to the new name. At that time and until 1902, Oak Park had no local governing body, being part of the town of Cicero. However, when Cicero was organized in 1857, the residents of Oak Park had a large part in determining Cicero policies through a controlling power in elections, and this condition existed until 1867. From this time on there were fewer Oak Park men on the board and finally, in 1899, the misuse of privileges by officers of the board caused Oak Park to secede.

Election of officers followed in Oak Park on December 17, 1901, and village government was inaugurated January 2, 1902, with Allan S. Ray as the first president.

Since then its population has increased rapidly and many changes and improvements have taken place. All of the streets and many of the alleys are now paved. The sewerage system, which was installed in 1891, has been enlarged to meet the increased demand, and an adequate supply of good water has also been provided for the village needs.

The village of Oak Park is located directly west of Chicago and constitutes a rectangular area, three miles long and a mile and a half wide. On the north and east it is bounded by the city of Chicago, on the south by Berwyn and Cicero, and on the west by Forest Park and River Forest.

The population of Oak Park has experienced its greatest period of growth since 1900 and particularly since 1910. There were 500 inhabitants in the village in 1871 and 10,000 in 1902. The census returns showed 19,444 in 1910 and 39,900 in 1920. Of the 39,900 there were 9,877 or 24.7 per cent in the 45 years or over age group and 85.4 per cent were native born whites. Only 169 negroes, a matter of four-tenths of one per cent, were residents of the village.

HEALTH DEPARTMENT.

On January 5, 1905, an ordinance was adopted by the village of Oak Park, creating a department of health. The first board of health was appointed at that time, comprising Drs. W. E. Potter, H. G. Vaughn and A. F. Storke. Another ordinance providing health regulations was passed on January 14th.

The health of the community was cared for by boards similarly appointed until April 20, 1916, when Mr. C. E. Buck was appointed as the first commissioner of health. Three months later, on July 20th, an ordinance was passed creating the first advisory medical board, consisting of the following: Drs. W. E. Potter, W. A. Ribbeck, G. W. Beebe, H. C. Vaughn, C. W. Poorman and J. W. Tope.

About a year and a half later Mr. Buck resigned and Dr. Frank S. Needham was appointed commissioner of health on January 17, 1918 and has continued in office to date.

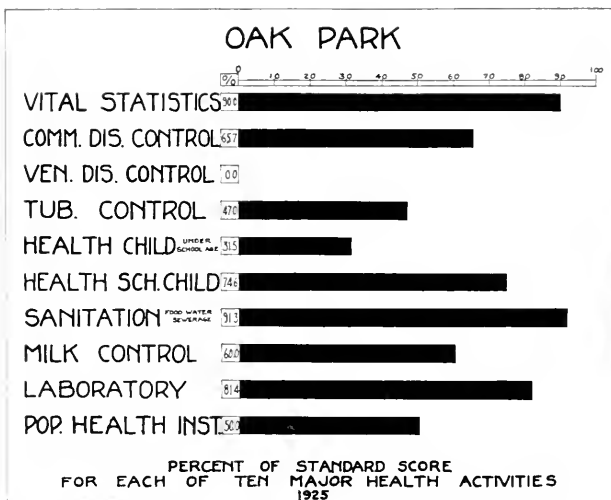
As the result of a court decision in connection with the quarantining of contacts, during a smallpox epidemic in another city in Illinois, the village of Oak Park amended the above ordinance on May 17, 1922, creating a board of health to consist of the commissioner of health



Frank S. Needham, M.D.
Commissioner of Health,
1918 to date

and six other members selected from among the physicians of the village, to be appointed by the president, with the advice and consent of the village board, the commissioner of health to act as executive officer. The members of the first board of health so appointed were as follows:

Frank S. Needham, M. D., Commissioner and ex-officio Chairman.	
L. W. Beebe, M. D.	W. L. Ruggles, M. D.
C. E. Hemingway, M. D.	W. T. Hughes, M. D.
A. H. Parmalee, M. D.	M. D. Jones, M. D.



This graph illustrates the strong and weak points in Oak Park's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Oak Park was 60 per cent of the standard perfection requirement.

The system of public health administration created by the ordinance of 1922 continues to prevail. Under this ordinance the health department meets all legal requirements necessary for performing satisfactory service and for dealing adequately with all problems which the health authorities are likely to face. It ranked well up toward the top among fifteen leading cities of the State in a health service appraisal made by the State Department

of Public Health in 1926, based upon the 1925 activities. In the appraisal report we read:

"The score of 599 gives Oak Park fifth place among the fifteen cities studied for efficiency and adequacy of public health service. This city is unique in being the only one of the group in which there is a board of health, all members of which are physicians, and this board has been of much assistance to the health officer in promoting a spirit of harmony between the health department and the local medical profession. Those activities which have been undertaken by the health department have been well carried out. A number of important services, however, are not under the direction of the health department. The health department employs one nurse for work in the parochial schools, but other school hygiene activities are under the direction of the board of education.

"Infant welfare work is conducted by the Infant Welfare Society, and tuberculosis service by the Chicago Tuberculosis Institute. The health department handles vital statistics, contagious disease control, food and milk control, sanitary inspection and laboratory services.

"The city health budget is \$16,000 per annum, funds from other sources bringing the total yearly expenditures up to \$43,532, a matter of 31 cents and 85 cents per capita, respectively."

VITAL STATISTICS.

The commissioner of health is the registrar of vital statistics and the records are maintained at the department of health. From the year 1917 to date, such records are intact and available for use.

Published statistics usually are made up of all the births and deaths which occur in the village. This circumstance, coupled with the fact that a large maternity hospital to which many obstetric patients from other communities come, is located in Oak Park, makes it appear that the people of this village are unusually fecund. According to these gross vital statistics annual birth rates of from 30 to 50 per 1,000 population are common. As a matter of fact these rates shrink to a range of 12 to 20 when the data are analyzed to show the births in families who reside in Oak Park.

EPIDEMICS.

During the year 1915 an epidemic of typhoid fever appeared in this community, caused by a typhoid carrier who was employed in the kitchen of the high school lunch rooms. About thirty cases of the disease developed among the pupils and teachers of that school.

The year 1918 brought the influenza epidemic from September 23rd to December 31st. There was a total of 1,368 cases of influenza reported, with 47 deaths from that disease. Seventy-six deaths from pneumonia also occurred during the same period.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Polymyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1917	456	...	...	...	...	...	...	...	...	...	...	...
1918	519	1	...	...	...	4	...	12	47	...	16	76
1919	448	...	1	...	1	1	1	12	29	...	16	50
1920	539	...	...	...	...	4	3	3	19	...	16	68
1921	527	1	...	...	1	2	...	5	7	...	13	37
1922	566	...	...	...	...	1	3	4	...	...	17	39
1923	654	...	...	...	...	3	3	4	...	...	31	39
1924	708	3	...	...	1	...	1	...	...	...	22	29
1925	759	...	...	...	...	2	2	4	...	...	15	53
1926	824	1	...	...	...	2	2	4	13	...	15	53

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Polymyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1917	13.5	...	...	...	...	...	...	...	...	...	...	...
1918	14.4	2.8	...	...	...	11.1	...	33.5	131.2	...	44.6	212.2
1919	11.8	...	2.6	...	2.6	2.6	2.6	5.2	76.6	...	42.2	132.1
1920	13.5	...	...	...	...	10.0	...	5.0	20.0	...	32.5	170.4
1921	12.3	2.3	...	...	2.3	4.6	...	11.6	18.6	...	30.2	86.0
1922	12.5	...	...	...	...	2.2	4.4	8.9	11.1	...	17.7	64.3
1923	13.7	...	...	...	...	4.3	4.2	14.8	...	...	36.0	82.5
1924	14.3	6.6	...	...	2.0	6.6	2.0	2.6	8.1	...	62.8	58.7
1925	14.8	...	...	...	...	...	1.9	3.8	15.5	...	42.7	...
1926	15.1	1.8	...	...	...	3.6	3.6	7.4	23.4	...	28.0	99.0

NOTE: The rate from All Causes is per 1000 population; all others per 100,000 population.

Smallpox appeared in Oak Park at the close of the year 1920, 36 cases being reported. The State regulations for the prevention and control of this disease were established and unvaccinated children were excluded from school, which involved legal entanglements. The case was finally disposed of in the courts in favor of the defendants.

SCHOOL NURSES.

The first school nurse in Oak Park was appointed in January, 1916, to take care of all schools in the village and to receive a salary paid jointly by the board of education and the village.

Following the influenza epidemic in 1918, school inspection was arranged for and the number of nurses increased to four in the grade schools. Two other nurses were provided by the high school.

Tabel 3.
CASES OF CERTAIN DISEASES REPORTED.

	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	5	4	12	12	4	3	3
Malaria	1					2	1
Smallpox	9	0	3	3	0	0	0
Measles	1244	286	334	314	1088	108	1044
Scarlet Fever	178	94	86	142	168	110	135
Whoop, Cough	221	338	378	267	464	175	264
Diphtheria	107	99	8	34	36	27	36
Influenza	5	33	22	8	9	42	12
Polio-myelitis	9		1			1	4
Meningitis	3	1	2		4	1	3
Tuberculosis*	49	35	36	40	40	67	55
Pneumonia*	111	119	140	140	157	213	153
Syphilis	2			1	1	2	
Gonorrhea	1	1	1	3	3	2	4

*All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

About three years later the nursing force was increased to its present size, that is, five nurses for the grade schools, whose salaries are paid by the board of education, one nurse provided by the high school, and one nurse for parochial schools and health department work, whose salary is paid by the village.

LABORATORY.

The laboratory in the health department was first established in a meagre way in 1905 and continued until 1914, when a full time bacteriologist was employed.

At present a well-equipped laboratory is maintained as a part of the health department. Regular examination is made of the drinking water and all milk and cream sold in the village, in addition to the usual routine work, including examination of cultures, smears, etc.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1917	777	23.0		
1918	941	23.6		
1919	913	24.1	41	43.5
1920	1267	30.2	43	47.0
1921	1224	28.4	67	55.5
1922	1503	33.3	66	53.9
1923	1781	57.7	82	54.5
1924	2152	43.6	66	37.0
1925	2283	44.4	63	29.2
1926	2531	47.3	80	35.0
			89	35.1

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1000 population.

WATER SUPPLY.

Oak Park obtained its water supply from individual wells until the year 1885, when deep wells were drilled, a reservoir constructed and mains laid. This remained the source of supply until 1909, when Oak Park first connected with the water system of Chicago and a portion of the village enjoyed this service. During the year 1912 the connection was completed and Oak Park received Lake Michigan water in all of its mains, pressure being maintained by its own pumping station.

The supply thus obtained proved to be inadequate at certain times of the day, especially during the summer months, so in 1912 a reservoir was constructed and installed, with a capacity of 5,000,000 gallons, enabling the village to maintain a reserve amount for use when the Chicago supply became low.

Adjoining the reservoir is the pumping station, which has six pumps. These may be used, in combination, to raise the pressure to 45 pounds for domestic use and 60 pounds for fire protection, throughout the 101.58 miles of water pipes in the entire village system.

SEWERAGE.

The sewer system in Oak Park was laid about 1891, draining south and emptying into the Drainage Canal. Since that time two additional sewers have been laid in Chicago Avenue and North Avenue, flowing westward through the sanitary district sewage plant located in Maywood, Illinois.

Oak Park now has 88 miles of sewers, ranging in size from 6" to 84" in diameter.

Privies are not allowed to be maintained within the village limits, as all streets have access to sewers.

GARBAGE COLLECTION AND DISPOSAL.

The present incinerator was built in 1907, at an approximate cost of \$12,000, with an estimated capacity of burning 30 tons a day. At the present time approximately 60 tons of garbage alone are burned daily.

An ordinance provides for careful wrapping of all garbage, covered metal containers and other sanitary precautions.

SANITARY INSPECTION.

In addition to the nurse, bacteriologist and quarantine officer, the department employs a sanitary inspector, whose duty is to examine all stores where food products are dispensed and to investigate insanitary conditions.

Oak Park has a milk ordinance similar to that in effect in Chicago, which requires all herds furnishing milk sold within the limits of the village to be tuberculin tested, as well as regular requirements pertaining to butter fat, bacteria and adulterants.

HOSPITALS.

There are two general hospitals in Oak Park, with a total capacity of about 500 beds. There is no contagious disease hospital but, when necessary, patients with contagious infections may be removed to the Cook County Hospital, or arrangements made for care at the Municipal Contagious Hospital or the Isolation Hospital in Chicago.

During the year 1926 the health department purchased a new modern ambulance for the removal of such patients.

OAK PARK HEALTH CENTER.

The Chicago Tuberculosis Institute was responsible for the tuberculosis work begun in Oak Park. The first nurse employed by the Institute opened the first health center here on March 19, 1917, which was located in a store on Roosevelt Road and Harvey Avenue. Larger quarters were necessary in two years' time, when the health center was moved to Maple Avenue and Madison Street, where the Child Welfare Association was quartered. Regular weekly clinics were held, with a local doctor specializing in tuberculosis, in attendance.

In December of 1922, Dr. H. H. Bay came to the staff of the Chicago Tuberculosis Institute and has since been the attending clinician, having two clinics a month in Oak Park.

Two years later, in 1924, the Institute severed its connection with the Child Welfare Association and moved into quarters of its own. The present health center is at 1145 Washington Boulevard, Oak Park.

The health center work is financed entirely by the sale of Christmas seals through the Chicago Tuberculosis Institute, of which Mrs. Theodore B. Sachs is superintendent.

CHILD WELFARE WORK.

In the Spring of 1919, the Oak Park Center of the Chicago Infant Welfare Society, which had been supporting a station in Chicago for three years, was asked by the Associated Charities of Oak Park to take over an infant welfare station which they had been trying to maintain for three or four years under great difficulties.

This was done and from a registration of 52 babies, with one conference each week, the attendance increased so rapidly that by 1924 the station

was holding three clinics for infants and one-pre-school clinic each week. Many mothers, who learned the value of the education received at these conferences, continued to attend and bring others with them, even after moving to other suburbs, until it became necessary to open three additional stations in neighboring towns.

At the present time, Oak Park station has a registration of about 750, with an average attendance at clinics of 40 babies and 15 children of pre-school age. The discharges for non-attendance, removals and age limit are offset by new registration of infants, thus maintaining the above average.

The two nurses at this station visit the homes to demonstrate preparation of food formulas and render aid and instruction to the mother concerning general care of the baby. These nurses, together with a physician, are in attendance at each conference.

The slogan of this organization is "keep the well baby well", and their aim to instruct mothers to give their babies proper food, fresh air and rest,—above all, to consult a physician when the baby is ill.

HEAT.

In January, 1923, an ordinance was passed relating to heated apartment buildings, stores and factories, requiring that owners or agents must maintain a minimum temperature of 60 degrees Fahrenheit at 6:30 A. M., and not less than 68 degrees Fahrenheit from 8:30 A. M. to 10:30 P. M.

PLUMBERS.

The board of examiners of plumbers was created in the year 1917, for the purpose of conducting examinations for the licensing of journeyman and master plumbers.

Mr. W. A. Bunge, master plumber, and Mr. Albert LaJeunesse, journeyman plumber, comprised this first board, with Dr. Frank S. Needham, health commissioner, as ex-officio chairman.

REFERENCES.

Data written and furnished by Dr. Frank S. Needham, Oak Park.
Pictorial Oak Park, William Halley.

Peoria

Several starts were made under three or four names and the exact site of settlement was changed at least once before a permanent community got under way to make the present city of Peoria. In 1680 the indomitable LaSalle gave it the name of Crève-Cœur when he felt heart-broken at the news of the loss of his boat the "Griffen". For a hundred years thereafter the place was a trading post where Indians, trappers and voyagers met to exchange their wares.

In 1761 Robert Maillet built his house a mile and a half below where the community was located at that time because he thought it more healthful. The land was higher and drier and the drainage better. He was followed by all of the inhabitants and the new place was called LaVille de Maillet.

Then came in 1797 a band of 126 Virginians who arrived after a grueling journey through the woods, prairie and swamp only to be virtually annihilated by a putrid and malignant fever (probably diphtheria) that fell upon them in the overcrowded cabins that had been opened hospitably for their reception and comfort. It appears that none but French were occupying the place in 1812 when Captain Thomas E. Craig, under orders from Governor Ninian Edwards, razed the place by fire after a brief bombardment and took captive the 75 white people who were there. All had French names but one and he was a Frenchman who had adopted an English name.

A little later a military fort was established there by the Americans who called it Fort Clark. This seems to have been the last change before the permanent civil community that developed into Peoria began in 1819. The fort was burned in 1818 by the Indians. Thus the present city of Peoria began the next year after Illinois was admitted into the Union as a full fledged State.



Rudolphus Rouse, M. D.

For fifteen years the struggling colony was scarcely more than a prospective community, too small to suggest organization. Then in 1835 a village government was created with Dr. Rudolphus Rouse as president of the first board of trustees. The next decade was marked by a gradual growth so that the community with something less than 1,000 souls was incorporated as a city in 1839. A few years later, 1845, the first distillery, which proved to be the beginning of a tremendous industry that won for Peoria a nation wide reputation, was established.

Peoria lies on the west bank of Peoria Lake, a widening of the Illinois River, about 160 miles southwest of Chicago. The city is located on a plateau which rises from the lake to an average elevation of 85 feet above the water level and varies in width from one-half to one and a half miles. Back of this plateau are the bluffs which rise from 100 to 125 feet higher. Lake Peoria is about a mile wide and 20 miles long. Many residences on the bluffs overlook the river, lake and surrounding country.

The development of the city began with the opening of the Illinois and Michigan Canal in 1848. This proved of two-fold significance for it not only brought commerce and industry, but also a danger of invasion by disease, especially the dreaded cholera which broke out in Chicago in the following year and remained epidemic there for about four years.

In 1840 the population of Peoria was 1,467. By 1850 it has grown to 5,095 and to 14,045 in 1860. The next six decennial census years found the city with 22,849, 29,259, 41,024, 56,100, 66,950 and 76,121 inhabitants respectively, the last figure being that for 1920. Of these 76,121, eighty-six and nine-tenths per cent or 66,177, were native born whites while 10.2 per cent or 7,790 were foreign born whites and 2.8 per cent or 1,170 were negroes. There were 19,213 or slightly more than 25 per cent who gave their age as 45 or more years.

HEALTH MACHINERY.

The first professional health service of any permanent character in Peoria started with the arrival of Dr. Augustus Langworthy in 1824. He found less than 1,500 settlers in an area embraced in a radius of more than one hundred miles. Other physicians who located there during the early days included Rudolphus Rouse, Alfred Castle, Edward Dickinson and Joseph C. Frye. By 1848 there were at least seven resident physicians in Peoria for in that year the Peoria City Medical Society, the first city medical society in Illinois, was organized with seven charter members. That was an important event in the health history of the community.

This society began at once to exercise an active interest in public health. No later than January 10, 1849, it passed a resolution praying the city government to create a board of health composed of four physicians and four non-medical members. This movement was precipitated by fear of cholera which was raging at the time in the United States and while official records are lacking concerning the consequent response of the city council, Dr. O. B. Will of Peoria, who furnished the minutes of the medical society relating to the resolution, presumes that a board was appointed and began to function. He says:

"All of which means, as I take it, that while nothing can be found respecting the action of the 'Town Council', it is fair to presume that

the medical representatives consisted of Doctors Francis A. McNeil, Rudolphus Rouse, Edward Dickens and Elias Cooper, particularly since Dr. Rouse was head of the Council."

It is very probable that a board came into existence then and doubtless was very active during the summer of 1849 when the cholera which the doctors feared played deadly havoc in the community. It is probable also that this or some similar board continued to exist, technically at least, until a reorganization of the city government in 1878.

In that year the revised ordinance provided for a board of health composed of three members. One member, at the time, was a physician. It was vested with the broad powers and responsibilities common to such boards in municipal and state experience with the usual limitation of activities guaranteed by short appropriations. Annual expenditures amounted to about \$500.00 of which \$200.00 went to the president of the board for executive duties which were a function of the office. Apparently the practice from date of reorganization was to appoint a physician chairman of the board and in his capacity as its executive officer he was actually the health officer of the community. Doctors who filled the position include:

John H. Niglas, M. D.	1889	Marcus Whiting, M. D.	1888
J. L. Hamilton, M. D.	1882	B. M. Ross, M. D.	1891
L. H. Spaulding, M. D.	1884		

In 1898 it became the practice to appoint a physician as health officer and to designate him as the commissioner of health. Physicians who held that position include:

J. W. Hensley, M. D.	1898	Albert Weil, M. D.	1907
F. C. Bourscheidt, M. D.	1899	J. Rix Scholl, M. D.	1909
J. T. Sloan, M. D.	1901	Edward Hassom, M. D.	1913
W. R. Allison, M. D.	1901	E. A. Garrett, M. D.	1916
Lewis A. McFadden, M. D.	1901	George Parker, M. D.	1917
H. M. Hayes, M. D.	1903	E. A. Garrett, M. D.	1919
Elmer M. Eckard, M. D.	1905	Sandor Horwitz, M. D.	1923
Joel A. Eastman, M. D.	1925 to date		

Thus it appears that Peoria is one of the very few places in Illinois where the practice of employing laymen as health officers never prevailed. At first the president of the board of health always a physician, exercised whatever executive powers were necessary to accomplish the health projects undertaken. Later the commissioners of health always physicians, exercised those functions.

No radical change in the scheme for providing public health work in Peoria has marked the development of that service except the one in 1898 when the board of health was abandoned and in its place a department of

health created with a commissioner and employes appointed by the mayor to man it. Before that time the board of health was the responsible agency. Since that time responsibility has been transferred by the mayor upon the commissioner of health.

The first medical health officer, Dr. John N. Niglas was a man of unique history. He fled from Germany to avoid incarceration because of his revolutionary activities in that country. He left a practice he had built up in Peoria to win distinction as a medical officer in the Union Army of the Civil War and later in the capacity of health officer of Peoria he earned a reputation as an epidemiologist. He introduced in his community the use of antiseptics and he promoted the practice of isolation of patients suffering from contagious diseases.

Too little was known however, in those early days to steer the city directly into the practices of modern preventive medicine. It therefore went through the "pest house" period, maintaining on the outskirts of the community a building in which smallpox patients were housed with all of the vigor and fear that might have surrounded a leper. Comforts and conveniences were doubtless scarce enough in the "pest house."

However the development of hospitals, the first of which was opened in 1876 by the Franciscans, and the growing public confidence in the efficacy and safety of vaccination led away from the "pest house" which fell into disuse about the turn of the century.

Beginning about 1900 the health department began to grow in resources and functions taking on new employes and new activities as occasion arose and the increasing demands for preventive medicine manifested themselves. A milk ordinance, for instance was adopted in 1898 and the health department began to enforce it about in 1899. About the same time considerable attention began to be paid to sanitary matters such as privies, garbage, etc. These activities required additional personnel in the shape of inspectors.

Then in 1907 a laboratory was established with Dr. John F. Sloan in charge as bacteriologist. In 1921 a venereal disease clinic for treating indigent persons was opened. Along with these new projects more rigid sanitary supervision over milk supplies was required by revised ordinances adopted from time to time while the quarantine and isolation of patients with communicable diseases became more and more technical. These increasing demands entailed larger and larger expenditures and required more and more personnel until the close of 1925 found the health department with a staff of ten members made up of a part time commissioner of health, a part time laboratory director, one nurse, one clerk, four full time and one part time inspectors.

Voluntary and quasi-public agencies also sprang up or began to assume public health activities in the city soon after the turn of the century. The

Associated Charities, for example, made a study of tuberculosis in the city in 1903 and recommended as a result that the disease be made reportable. The Peoria Society for the Prevention of Tuberculosis came into existence shortly thereafter and in 1905 joined with the Associated Charities in employing a nurse to work under the commissioner of health.

By 1915 popular sentiment toward the tuberculosis problem was such that an election providing for the erection of a municipal tuberculosis sanitarium resulted in favorable action. Buildings for this purpose were constructed and patients began to be received in 1919.

Infant and child hygiene work began under the auspices of voluntary agencies while the school board undertook to provide a health service for the children by the employment of nurses, dentists and a physician. These developments found the city at the close of this historical period with a corps of six part time physicians, one full time physician, one full time dentist, four full time and one part time inspectors, seven full time nurses and several clerks engaged in public health service in one capacity or another in the city.

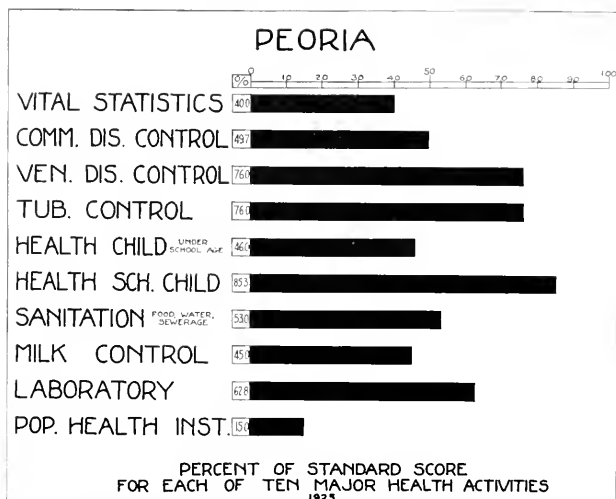
A good description of just what was being done is found in the report of a survey and appraisal made early in 1926 by the State Department of Public Health. It was based on the 1925 record and was one of fifteen made in the State at the time. From the report we read:

"The largest of the fifteen cities studied, Peoria stands sixth from the top for adequacy of public health service. The score earned by Peoria is 580 or 58 per cent of a possible maximum.

"With an almost complete change in personnel last year (1925), the city health department gives promise of marked improvement in organization which will increase efficiency in communicable disease control, vital statistic record keeping, sanitary and laboratory work and venereal disease supervision—the activities in which it is engaged. Tuberculosis clinics, field nursing and sanitarium services are provided from the resources of the municipal tuberculosis sanitarium board, while the board of education is responsible for an excellent school hygiene program. Public health and bedside nursing and prenatal and infant hygiene clinics are conducted by the public health nursing association. This association also maintains a Neighborhood House where all public clinics except those for venereal and school dental patients are held.

"With the city government contributing 16 cents per capita the total expenditures for public health work in 1925 amounted to 64 cents per capita. Eleven out of the fifteen cities appropriated more, proportionately, for health service than did Peoria.

"Computing no mortality rates, attempting no correlation between death certificates and contagious disease or birth reports, making no graphs or charts, Peoria not only ranks lowest for vital statistic record keeping but loses the splendid advantages which a careful study and use of these important data provide.



This graph illustrates the strong and weak points in Peoria's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Peoria was 58 per cent of the standard perfection requirement.

"Reporting of cases of contagious diseases seems reasonably complete, the activity of the director of school hygiene in locating and reporting cases being especially commendable. There is no communicable disease nursing service except occasional visits made by the public health nursing association. A communicable disease hospital is maintained by the city health department. In 1925, 86 out of 350 cases of scarlet fever and 19 out of 28 cases of smallpox were hospitalized. The hospital, apparently, is not used for diphtheria, whooping cough or measles. Immunizations against diphtheria by toxin-antitoxin have not been performed or promoted by the health department and only 58 per cent of the grade school population are protected against smallpox.

"Case reports of venereal disease are above the average but attendance on the local clinic, which is efficiently managed, falls a little short of the requirements for full credit. There is a lack of follow-up service designed to prevent patients from quitting treatment too early for public safety.

"Peoria has made more progress than any of the other fifteen cities surveyed in organizing open-air classrooms in the schools. Four such rooms were in operation last year, the average attendance being about 135 pupils, and an additional room is being opened this year.

"The public health nursing association conducts the field nursing service for prenatal, infant and preschool cases. Prenatal, infant and preschool clinics are held at the Neighborhood House, but these clinics are not well attended, only 273 new children being registered last year. A large proportion of the patients, too, are sick babies. The Peoria medical society recently has endorsed and is to sponsor a prenatal and infant welfare center which should meet the need in this field of health work more fully.

"The board of education employs a full-time physician with two nurses and a clerk, and a full-time dentist with one assistant, these activities being carried out by two separate departments. The school hygiene in Peoria takes first place among the fifteen cities surveyed.

"The first concern of the school hygiene department is the control of contagion. Last year (1925) a total of 197 cases of contagion were discovered and reported, in addition to 385 cases of pediculosis, impetigo and pink eye. Nearly 1,600 children were excluded from school because of suspected contagion and more than 50,000 were inspected for evidence of contagious disease. Routine weighing and measuring of children is not practiced. Routine physical examinations are made each year of the first, third, fifth and seventh grades, nearly 4,600 such examinations being made last year. Two thousand special examinations were made, in addition, on recommendation of the teachers and to select children for open-window rooms. All children who fail in their grades are given a careful examination which is repeated each month until correction of defects has been secured. The school health program is unique in the intensive work which is done on this group of children, the results of which have been most encouraging. The demonstration thus made is increased scholastic efficiency when physical conditions are improved, and the successful control of contagion have been the important factors in convincing the education authorities of the value of its school hygiene program.

"In addition to measures for the control of contagion and for the detection and correction of physical defects, considerable effort has been directed towards health education both by lectures to the pupils and by interesting teachers in this problem.

"The percentage of physical defects corrected, as shown on the records, is almost up to the appraisal requirements for full credit and doubtless would exceed this quota if a follow-up nursing service checked up on all corrective measures. Visits of nurses to the homes of school children were about two-thirds of the required number.

"The dental work in the Peoria schools is one of the pioneer projects of its kind in the country and easily stands first among the group of cities.

"The development of this splendid undertaking was due primarily to the efforts of two or three local dentists, who a decade or more ago, induced the school board to permit the dental society to introduce this work. The growth of the dental department has been gradual and has reached its present efficiency as a result of the ability and enthusiasm of the present director who has been employed since 1917. The dental hygiene program embraces: (1) education; (2) dental inspection; (3) clinical service. Dental education is carried out through lectures by the

dentist in every grade school room every year. The lectures given vary for each grade. The children's interest in dental hygiene is aroused and each room carries out a dental project; in some cases this is combined with the art work and many interesting posters have been prepared; in other instances, it has been combined with the English work and the children write compositions concerning some aspect of dental health. Wednesday of each week is devoted to lectures. Each lesson is concluded with a thorough drill in toothbrush technique. Lectures are also given before mothers' clubs, parent-teacher's association, teachers' training classes and teachers' assemblies. Each year, examinations are made of the second and fourth grades.

"The striking fact should be noted that 1,979 children in a total of 4,307 examined had good teeth; and that of the remainder 1,136 were receiving dental care at the time of the survey. In other words, more than one-half of the children at the time of the examination had good teeth or were then receiving dental care. When the thoroughness of the examinations is considered, this record falls little short of remarkable.

"Two schools are provided with dental equipment. At these clinics only children unable to pay for private dental work are admitted. Income in relation to the size of the family, determines eligibility for treatment. Four days per week are given to the clinic work during the second semester. During the first semester four afternoons per week are given, the remainder of the time being used for the dental examinations. Orthodontic treatments are not given nor are permanent teeth extracted. For needy cases these services are given gratis by local dentists. The service thus given by one dentist figured at current rates amounted to more than \$1,000 last year. Five hundred fifty patients made a total of 2,210 visits to the dental dispensaries last year.

"The public water supply in Peoria is of good quality and is distributed, it is estimated, to 95 per cent of the homes. Only 66 to 70 per cent of the homes are connected with the sewer system. There is no record of the actual number of open privies. Sanitary inspection service is handled by two untrained inspectors. Last year many notices were given for sewer connections but relatively few were complied with. Food establishments are inspected and are licensed by the city for revenue.

"Ninety-two per cent of the Peoria milk supply is pasteurized and a small amount (150 gallons per day) is certified. Milk supply control has been under the direction of one part-time inspector who has had experience in pasteurization plant operation. Plants have been frequently inspected and during the year 116 samples of pasteurized milk were analyzed. The bacteriological counts were in excess of the standard and no examinations were made of milk before pasteurization. No inspections were made of producing farms. The inspector recently has been placed on a full-time basis.

"The city health department maintains a small laboratory and employs a local physician who is part-time bacteriologist. Apparently milk analyses and diphtheria examinations constitute the major part of the work. Water analyses are not made regularly."

WATER SUPPLY.

The water supply was installed by the city in 1868. Since 1889 the waterworks system has been owned and operated by the Peoria Water Works Company, a private corporation. The ordinance conveying the municipal plant to the private company in 1889 provided for a repurchase by the city or a renewal of the contract in 30 years. It allowed the free use of water for practically all public purposes and for public and charitable institutions.

The original works comprised a group of wells located in the northeast portion of Averyville between the tracks of the Peoria branch of the Rock Island railroad and Illinois River. A large main well, now used as a collecting well, 34 feet in diameter and 60 feet deep and extending into gravel, was in service in 1892.

Before the opening of the Chicago Drainage Canal, during summer seasons when the water level in the ground was low, it was impossible under the existing arrangements to prevent the pumps from sucking air. Consequently the main well was pumped dry and a circular steel tank 20 feet in diameter and 12 feet in depth was installed in the bottom of the well. Foot valves placed in the bottom of the tank made it possible for water to flow into the well without flowing back. The pump suction terminated in this tank about one foot from the bottom.

In 1919 the water supply comprised the main collecting well and seven auxiliary and reserve wells at the original waterworks site and two wells located about $2\frac{1}{2}$ miles north of the main pumping station. All of these wells discharged into the main collecting well. There were also two pumping stations, one being held in reserve.

One of the reserve wells was sunk in 1908 and the two somewhat isolated wells were constructed in 1910 and 1911. Water was pumped from the main collecting well directly into two 30-inch cast-iron supply mains, one of which lead to an equalizing reservoir of 19,000,000 gallons capacity on Peoria Heights constructed in 1892, and the other through the village of Averyville direct to the city.

The present supply comprises a system of wells from which water is pumped direct into a distribution system in one service with an equalizing storage reservoir. The supply works comprise one main well completed in 1892, four auxiliary wells constructed in 1899, one reserve well constructed in 1909 and eight supplementary wells constructed between 1895 and 1913. Total available yield is estimated at 17,700,000 gallons daily. The wells vary from 40 to 90 feet deep and penetrate gravel formations. Two pumping stations are maintained, one always acting as a reserve. One station was built in 1890 and the other in 1913. The open equalizing reservoir is still in service. The pumping equipment comprises four pumps with a combined

capacity of 17,200,000 gallons per day. There are approximately 150 miles of distributing mains and the static pressure maintained varies from an average of 48 to 60 pounds per square inch. The average daily water consumption is about 97 gallons per capita.

In 1918, an epidemic of intestinal disturbances in which approximately 30,000 cases developed was attributed to contamination of the water supply. The source of contamination was calculated to be polluted river water which entered the supply wells through an underground route. The epidemic occurred during high-water stages in Illinois River. In 1919 a mild outbreak of dysentery occurred in which 3,000 cases developed. The cause was thought to be identical with the cause of the 1918 epidemic.

In 1920 a considerable number of cases of enteritis developed, but investigation established that the water supply probably was not involved, although conditions were similar to those in 1918 and contamination of the supply was possible.

In 1922 minor changes were made to eliminate the danger of contamination during high-water conditions and provision made for the installation of chlorinators for emergency purposes. The water supply at the present time is regarded as of a safe sanitary quality.

SEWERAGE.

In 1880 most of the liquid wastes of the city were discharged into cess-pools. About ten per cent of the houses were provided with indoor toilet facilities, the remainder being dependent upon privies. Privy vaults, by regulation, had to be 10 feet in depth. Night soil was removed by scavengers to points outside the city limits.

Sewers have been built on the combined plan with several outlets into Illinois River. In addition there are many industrial sewers and the problem of disposing of industrial wastes is an acute one. In 1926 preliminary studies of the sewerage needs of the city were carried on and recommendations made for the organization of a sanitary district, the construction of an intercepting sewer along the river front, a sewage-treating works, and miscellaneous internal improvements. The Peoria Sanitary District was organized during 1927.

At the present time it is estimated that only about 70 per cent of the population are connected to the sewers.

HEALTH CONDITIONS.

The first account we have of health conditions in Peoria is that of Robert Maillet who caused the community to move a mile and a half down the river to a more healthful location. Just what the unhealthful conditions

at the original site were is not disclosed but more than likely they were ill attributed to poor drainage.

Next came the disaster to the colonists from Virginia referred to at the opening of this article. To their sad experience more, perhaps, than to any other one factor was due the reputation for unhealthfulness which spread abroad throughout the civilized world concerning the Illinois territory. Physicians think that their trouble was diphtheria.

What health conditions were like during the cholera wave that followed the Black Hawk War may be surmised from a descriptive paragraph taken from James Haines. Quoting from his "Early Settlement of Illinois", we read:

"Time had but little softened grief for those slain by Indians when the cholera spread a funereal pall over the same territory lately stricken by war. The swift flying messengers on horseback in pursuit wherever to be found dotted the prairies with omens of dread. For when the fell disease struck its victim no time could be lost before remedies were applied. Death was the quick result if potent relief was not found within the early hours of attack. In my family four were fatally stricken in as many days. Many who were not at once attacked fled their homes, only to meet death a little later in the lonely prairie or unsettled forest. Bereavement and sorrow was widespread, almost universal over a great part of the West. Typhoid and other fevers followed this dreadful visitation, swelling the death list generally from those who escaped the cholera. Indeed, the 'cholera year' as it was long referred to, was a period of gloom from which memory turns in horror. From this period may be dated most of our country graveyards, being then set apart for burial of our first dead."

Another reference to this same period, a little later perhaps, is found in Drown's "Record and Historical View of Peoria". Here we find:

"During the autumn of 1834 considerable sickness prevailed and many deaths occurred among the inhabitants. Those who kept their health and those who recovered from their sickness put their shoulders to the wheel with renewed vigor, and the town for several years grew rapidly."

Zeuch finds evidence of a severe epidemic of yellow fever that occurred in 1836 in Peoria. Dr. and Mrs. Alfred Castle are said to have greatly endeared themselves to the community through their untiring and self-sacrificing services to the sick during that dreadful experience.

A. D. Jones, in his "Illinois and the West," states that the ferryman who took him across the river at Peoria in 1838 said "that it was mighty sickly there; everybody had the chills and fevers".

Doctor Daniel Drake visited Peoria in 1844 while on one of his observation excursions and learned from Doctors Dickenson, Rouse and Frye that both remittent and intermittent fever was prevalent in the vicinity. Dr. Frye reported that the intermittent was more prevalent in the low, wet timbered spots.

Again in 1849 the dreaded cholera returned. Local physicians had given warning of its probable coming and efforts to ward it off had been made with no avail. Its violent deadliness is described by Munsell in his History of Peoria County. A paragraph taken from that volume reads:

"A terrible epidemic of cholera having broken out in the summer of 1849 the commissioner, on July 11th, granted the use of the three upper rooms in the Court House for cholera patients of the city and county; also such beds and bedding as might be needed at the poor house, the county to stand the expense of furnishing the sick with all medical and hospital stores and provisions as well as nurse. These rooms were used as long as needed for this purpose."

Among the prominent citizens who succumbed to attacks of cholera during the epidemic were listed Samuel H. Davis, publisher and William Mitchell, postmaster.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1900	279	..	..	..	..	..	..	..	..	..	..	..
1901	374	..	..	..	..	..	..	..	..	..	..	..
1902	745	..	..	..	..	..	..	..	..	..	75	..
1903	772	..	..	..	..	..	..	27	..	..	..	..
1904	884	..	..	..	..	..	..	..	..	..	..	..
1905	1081	..	..	..	..	..	..	..	..	..	84	..
1906	732	..	..	..	..	..	..	..	..	..	..	..
1907	801	16	..	..	4	3	5	13	14	..	130	78
1908	837	..	..	..	..	..	..	..	..	..	..	..
1909	898	16	..	..	..	..	..	..	..	..	71	..
1910	990	..	..	..	..	..	..	..	..	..	..	..
1911	994	..	..	..	..	..	..	..	..	..	..	..
1912	965	..	..	..	..	..	..	..	..	..	..	..
1913	952	7	..	..	15	..	..	2	..	..	56	..
1914	973	..	..	..	..	6	..	..	..	..	70	..
1915	..	..	..	..	..	..	..	..	..	..	..	..
1916	1116	..	..	..	..	2	..	..	..	..	..	..
1917	1247	..	..	..	..	1	..	..	..	..	80	145
1918	1397	10	1	..	5	1	6	7	232	..	81	193
1919	1065	4	2	..	..	8	12	14	91	..	74	92
1920	1174	3	2	..	9	7	19	19	62	..	60	115
1921	1014	5	..	..	..	8	1	21	7	..	40	58
1922	1066	2	2	..	..	3	3	7	31	..	61	75
1923	1218	11	1	..	6	6	4	4	41	..	18	113
1924	1102	..	2	..	..	1	..	..	12	..	63	88
1925	1125	..	..	..	..	1	3	1	33	1	38	85
1926	1108	3	1	..	8	4	1	6	34	1	39	72

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1900	4.9	...	...	...	...	...	...	...	...	...	...	...
1901	13.5	...	...	...	...	...	...	...	...	...	...	...
1902	12.8	...	...	...	...	...	...	...	...	...	...	...
1903	13.0	...	...	...	...	...	...	45.4	...	...	125.9	...
1904	12.9	...	...	...	...	...	...	...	...	...	...	...
1905	17.5	...	...	...	...	...	...	...	...	...	136.5	...
1906	11.6	...	...	...	...	...	...	...	...	...	...	...
1907	12.5	25.1	...	...	6.2	4.7	7.8	20.4	21.9	...	204.0	106.7
1908	12.9	...	...	...	...	...	...	...	...	...	...	...
1909	13.6	25.8	...	...	...	...	...	...	...	...	107.9	...
1910	14.8	...	...	...	...	...	...	...	...	...	...	...
1911	14.6	...	...	...	...	...	...	...	...	...	...	...
1912	14.0	...	...	...	...	...	...	...	...	...	...	...
1913	11.9	10.0	...	...	21.5	7.2	7.2	2.9	...	...	80.4	...
1914	13.7	...	...	...	...	8.5	...	...	...	...	99.2	...
1915	15.4	...	...	...	...	...	...	...	...	...	...	...
1916	15.4	...	...	...	...	2.7	...	...	...	...	...	...
1917	17.0	...	...	...	...	...	...	...	...	...	109.0	197.6
1918	18.7	13.8	1.3	...	6.9	1.3	8.3	9.7	322.2	...	111.1	268.0
1919	14.1	5.2	2.6	...	...	10.5	2.6	18.4	119.7	...	97.3	121.0
1920	15.3	3.8	2.5	...	6.4	9.0	9.0	24.6	86.5	...	77.9	149.3
1921	13.0	6.4	...	...	...	10.3	1.3	27.0	9.0	...	51.4	74.6
1922	13.5	2.5	2.5	...	...	3.2	3.8	8.9	39.4	...	77.5	95.5
1923	15.3	13.8	1.2	...	7.5	7.5	5.0	5.0	51.5	...	60.3	14.1
1924	13.7	...	2.4	...	...	1.2	...	...	14.8	...	77.7	108.6
1925	13.8	...	...	...	...	1.2	3.6	1.2	41.7	1.2	46.6	104.1
1926	13.4	3.6	1.2	...	9.6	4.8	1.2	7.2	40.8	1.2	47.2	87.2

NOTE: The rate from All Causes is per 1000 population; all others per 100,000 population.

This appears to have been the last outbreak of cholera of any significant magnitude and it was indeed enough. Peoria had certainly suffered enough from that harrowing plague.

Smallpox likewise had a long and ugly history in Peoria but it never reached the fatal proportions characteristic of cholera. The "pest house" that defied small boys and tramps alike was a monument to the fear and alarm which the disease had inspired even before 1880. Records are unreliable and nothing more than vague references to smallpox in those early years are available but it must have required a considerable outbreak at one time or another to bring into operation the pest house.

Throughout the years since the time when records became more reliable smallpox has occurred sporadically. Epidemics involving from 100 to 500 cases were reported in 1885, 1901, 1907, 1909, 1916, 1917, 1918, 1919 and 1922.

While both cholera and smallpox provoked greater alarm and concern because of the suddenness and dramatic character with which these diseases descend upon a community, tuberculosis doubtless was a more destructive ailment in the life of Peoria than either of the other two. Indeed it probably was Peoria's major health problem for many years although few people

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever			8	9	9	10	7	73	6	6	15	3
Smallpox	146	125	261	267	38	64	251		2	24	7	
Measles		1404	170	30	492	40	31	904	36	142	1101	707
Scarlet Fever	143	170	63	203	399	599	237	184	95	243	128	76
Whoop, Cough						11	142	97	58	108	227	72
Diphtheria		232	90	253	155	289	66	37	19	12	21	22
Influenza			7260	1252	750		6	21	4	24	24	13
Poliomyelitis		1		1		8			1	6	1	5
Meningitis		13	5	3	1	9	2	3		1	2	
Tuberculosis*						142	98	101	288	84	138	80
Pneumonia*						18	42	36	61	94	157	91
Syphilis			98			289		228	119	119	150	477
Gonorrhea			286			422		492	246	347	303	664
Chancroid						27		6				4

* All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates considerable improvement in notification, although reports of pneumonia, tuberculosis, influenza and some of the others are manifestly far below the actual incidence.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1918			137	
1919			99	
1920	1309	15.8	134	119.8
1921	1322	17.0	115	87.0
1922	1335	17.2	121	90.6
1923	1417	17.8	126	89.6
1924	1311	16.3	111	84.7
1925	1517	18.6	116	72.6
1926	1593	18.2	92	61.2

* Deaths of infants under 1 year of age per 1000 births reported.

** Per 1000 population.

recognized it as such until after the turn of the century. During the nineties, for instance, when the registration of deaths was far from complete, more than fifty fatalities per year were charged against tuberculosis. In 1884 when the population of the city was about 35,000, there were 82 deaths attributed to tuberculosis. In 1902 there were 75 and in 1905, 84 deaths attributed to that cause. For the three years ended with 1927 the average annual number of deaths from tuberculosis was 41 although the population was over 20,000 greater than in 1900. These data show what a scourge tuberculosis really was in Peoria for a long period. Cholera kills quickly and the fatality ratio is high. Sometimes smallpox is extremely mortal and sometimes not but rarely is the prevalence rate very high. Tuberculosis is a slow devitalizing disease that leaves ten people sick for each one it kills. A bit of arithmetic based upon the deaths reported will give one an idea of

the heavy burden which that disease has placed upon Peoria. Apparently the measures employed against it have proved splendidly effective. Deaths per year are now but little more than one-half what they were in 1900 while the rate per 100,000 people is one of the most favorable among Illinois municipalities.

Typhoid fever appears to have been a problem of less magnitude in Peoria than in many other places. From the meagre records available it seems that after 1910 the disease has not been widespread although an outbreak in 1923 resulted in 11 deaths. Before 1910 it was common to find from 15 to 20 deaths per year attributed to typhoid. That suggests from 100 to 200 cases in a population under 60,000.

Diphtheria and scarlet fever have run courses similar to those observed in municipalities generally. Up to 1900 diphtheria was particularly deadly and even as late as 1903 an outbreak carried off 27 souls. More recently the number of deaths has been quite small. Scarlet fever has declined in malignancy but not so much in prevalence. Both these diseases have appeared in epidemic waves from time to time, the one growing less and less extensive even in epidemic years and the other changing but little in magnitude of prevalence but becoming milder in form.

The influenza epidemic of 1918 was moderate in Peoria, comparatively speaking. Mortality amounted to 322 per 100,000 population from influenza and 268 from pneumonia. The combined figure of 590 was exceeded in a dozen other Illinois cities. About that many had lower rates.

General health conditions are subject to some improvement in-so-far as the mortality rate may be accepted as a barometer. The rate has ranged above 13 per 1000 steadily and that is a good deal higher than for the State. In small places homes for the aged and hospitals are apt to affect death rates rather decidedly in an unfavorable way but Peoria is approaching, if not already there, a size that should have absorbed a good deal of the unfavorable influence of those factors without any marked effect on the general death rate.

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- U. S. Census Reports, Washington, D. C., various dates.

Quincy

Quincy is located on the east bank of the Mississippi River, 150 miles above St. Louis. The city and surrounding country is hilly, except along the river. A short distance to the north there are several bluffs and mounds, which rise from 150 to 250 feet above the river level. Beyond these, to the north and south of the city the land is low and moist, or so-called "Bottoms." These have been drained.

The site and vicinity belong to the carboniferous limestone period, with coal seams in the vicinity. The surface rocks are limestone, and the underlying strata, from above downward, are clay, loam, gravel and limestone. The strata are horizontal with no dip nor slope. Soil-water flows in continuous fissures in the rocks, and through the gravel strata.

Quincy is an old city, as Illinois cities go. It was founded in 1822, and incorporated in 1825. It was once "The Crossing" and "The Track's End." Here in the early days of the settlement of the Great West the flood tide of immigration stopped for a time before it crossed the Mississippi by ferry.

The river with only a ferry for crossing was like a dam holding back waters. The flood was a tide of humanity. Quincy was then a stormy, seething mob. It was the frontier, the jumping off place. Gunmen and gamblers, rough people of every sort, men without money and men with much money congregated here.

Finally came the railroad bridge, tracks on through to the Great West beyond. Building the bridge was like breaking a dike. The reservoir of humanity rushed out. Streams of men who came after flowed through without stopping. This was followed by a different day for Quincy. Business fell off. Then came years of quiet, almost stagnation. Finally Quincy built in a newer and sounder way, gradually the Quincy of today.

Returns from the United States census bureau show population figures for Quincy for each decade beginning with 1840. In that year it had 2,319 inhabitants. This number almost tripled by 1850 when the population reached 6,902. For the next fifty years the city settled down to a substantial decennial growth, finding itself the home of 36,252 people in 1900. Since then it has experienced no growth, the 1920 census revealing an actual loss of 609 below the 1910 returns. Of the 35,978 people there in 1920, 32,349 or 89.9 per cent were native born whites, 2,411 or 6.7 per cent were foreign born whites and 1,210 or 3.4 per cent were negroes. Something over 29 per cent were above 45 years of age, a percentage larger than that for any of the other cities in the State.

HEALTH MACHINERY

The hard campaign waged by the physicians of the county against cholera and other diseases which swept the country in 1849, called very forceful attention to the necessity of organization and cooperation, both to meet emergencies and for purposes of consultation and progress in ordinary times. Accordingly Adams County Medical Society was organized in Quincy, March 28, 1850, at a meeting presided over by Dr. Samuel W. Rogers. It is the third oldest medical society in Illinois, its only seniors being the Aesculapian Society of the Wabash Valley, and the Rock River Medical Society, both founded in 1846. The Adams County society antedates the State Medical and the Chicago Medical society by about two months.



Joseph N. Ralston, M.D.
First President Adams County
Medical Society, 1850.
(President 1864, 1865 and 1866.)

The officers selected were: Joseph N. Ralston, president, Samuel W. Rogers and M. Shepherd, vice-presidents; J. R. Hollowbush, recording secretary; Louis Watson, corresponding secretary.

This society gave much attention to sanitary matters and by its persistent efforts secured the creation of a board of health by the city and the adoption of a system of mortuary registrations, several years previous to the passage of the present State laws relating to these matters.

Naturally general sanitation early engaged the attention of the medical society. Thus in November, 1865, Doctors Edward G. Castle and Joseph Robbins appeared before the city council and asked that, in view of a probable visitation of epidemic cholera, steps be taken to put the city in a proper sanitary condition. The authorities acted promptly, created a board of health of which Dr. Castle was made president, and under his direction the city was placed in such hygienic condition that when, in the following summer, disease came up the Mississippi River, Quincy escaped with less than a dozen cases, and only two or three of these were fatal.



Joseph Robbins, M. D.

Dr. Francis Drude, representing the county society, organized in 1869, a more efficient board of health, replacing the old body which after the cholera failed to appear had virtually dropped out of existence.

The reorganized board comprised five members, three of whom were regular physicians. All were appointed by the mayor, himself a member ex-officio. Dr. Drude served as its chief officer and registrar, with only nominal compensation for twenty years or more.



Francis Drude, M. D.
First Adams County Physician
to Celebrate 50 Years of
Continuous Practice.

It became the practice, probably much earlier than the time when the board of health was organized, to appoint a doctor, at a small or nominal salary, known as the city physician to look after indigent sick which the community found upon its hands. He became subject to the board of health which ordered him to put on a general vaccination campaign in 1871. At that time Dr. Platt was city physician and he reported 604 vaccinations. During the preceding year Dr. Platt established the city dispensaries.

It afforded ready means of relief to the indigent sick and also saved \$100 to \$150 per month to the city in the difference between medicines and prescription prices and wholesale rates. Previous to this time prescriptions had been given out, but no drugs were procured at wholesale prices and dispensed from the dispensary, which was open from 9:00 A. M. to 4:00 P. M. daily.

Another city physician found to his dismay that public office is not always the easy path to financial comfort and mental tranquility which it sometimes appears and he was not one who minced his words in expressing his opinion of the matter. Herewith is quoted from his report of 1873 a statement of his activities for the year and of his determined attitude toward the job which he expressed with vigor:

"Visits made in the city.....	1592
Patients visited in the city.....	456
Office consultations	515
Patients treated at city hospital	54
Average number per day.....	5.5
Visits paid to hospital.....	119

"To this I add attendance on ten accouchments and the compounding of 2500 prescriptions.

"This report closes my career as city physician and thank God for it.

"I congratulate myself upon my release from such a public burden at such an insignificant salary, six hundred dollars per annum; and I thank the Honorable Council for their practical appreciation of my services by refusing me additional pay for services made additional by the severest and most protracted winter we have ever seen and also by the outbreaking of two epidemics (smallpox and cerebrospinal meningitis)—causes which human wisdom could neither anticipate nor prevent.

"Before closing this report, I cannot forbear expressing my admiration for the consistency of your Honorable Body in allowing the Overseer of the Poor extra compensation for his services rendered paupers and yet disallow the City Physician extra compensation for extra services rendered the same paupers nor can I forbear expressing my appreciation of that consistency of your Honorable Body which would and did allow the City Sexton double pay for the interment of smallpox cases and yet disallow the City Physician extra compensation for medical attendance on them. 'Consistency, thou art a jewel!' is the proud ejaculation of your retiring City Physician.

"Respectfully submitted,

Samuel A. Amery, M. D.

City Physician."

The same year the board of health declared in its report that "Modern science has demonstrated beyond all controversy that a very large percentage of disease is preventable by proper sanitary regulation."

Cut off from the stimulation of deadly epidemics, however, the board of health soon fell into a dormant paper organization with the result that the medical profession dropped almost completely out of the picture. Indeed in 1885 the mayor and three aldermen constituted the board which had power to nominate and elect to membership three physicians in case of emergency. From this time on for a long period the executive officer of the board was a layman who drew pay varying from about \$100 to \$600 annually. Garbage collection and scavenger service were under the jurisdiction of the board so that it handled a considerable sum of money and employed a number of people. It also had charge of quarantine, fumigation and the other functions common to health departments or boards.

Boards of health came and went for a long time. Some were large, some small. Some had on them physicians. Others did not. The executive or health officer continued to be non-medical but the staff increased and the rate of pay.

This was the state of affairs in 1920 when the periodic ascendancy of public interest in health problems, probably intensified by national activities in that field during the war, resulted in the erection of a public health district in Quincy. This was done by popular vote in conformity with a law passed by the legislature in 1917. It provided among other things:

"1. That any town, or two or more adjacent towns in counties under township organization, or any road district, or two or more road

districts in counties not under township organization, or any town or towns in a county under township organization, may be organized into a public health district.

"2. That, upon presentation of a petition signed by not less than 5 per cent of the total vote cast in any town or road district, and filed with the town or road district clerk at least 30 days before the regular election, the proposition shall be submitted to a vote of the people at the next town or road district election.

"3. That the supervisor at large, the township clerk and the assessor shall constitute the board of health and shall select a health officer from a list of eligibles submitted by the State Board of Health.

"4. That an annual tax levy, in addition to all other taxes which now or hereafter may be authorized to be levied on the aggregate valuation of all property within the public health district, not to exceed 2 $\frac{1}{2}$ mills on the dollar on all taxable property embraced within such public health district according to the valuation of the same as made for the purpose of the State and county taxation, may be made—this tax to form, when collected, a fund to be known as the 'public health fund'."

Quincy was the first city in the State to take advantage of this law and since that time she has had one of the best equipped health departments in the State. Its organization is outlined as follows:

"1. Registration division where all deaths and birth certificates for the townships of Quincy, Melrose, Riverside and Ellington are received and recorded, and from which all burial and transit permits are issued to undertakers.

"2. Communicable disease division in which all contagious and infectious diseases are registered, and from which history cards of each case are forwarded to the State Department of Health at Springfield.

"3. Clinical laboratory division in which specimens of blood, sputum, throat swabs, smears, feces, water, milk, etc., are examined by an expert bacteriologist and serologist. This work is done free upon request of local physicians. During the first eight months of its activities upwards of 1200 free examinations were made.

"4. A sanitation division, where all complaints in regard to unsanitary conditions are registered and investigated. In addition the sanitary officer inspects restaurants, dairies, meat and fish markets, grocery stores, soft drink stands, etc. Also all complaints for non-collection of garbage are received by him, the garbage collector is notified, and a weekly report forwarded to the mayor.

"5. A quarantine division, the responsibilities of which are to establish and enforce quarantine for all contagious diseases, and to report all such quarantines to the public library and to the proper authorities, either school or business, as the case may be. Release from all quarantines is likewise reported.

"6. A social hygiene division, presided over by a registered physician and a social worker, in which all indigent cases of venereal diseases are treated free. During the first six weeks after its establishment this clinic received 349 visits for consultation, examination, and treatment. Thirty-nine patients were under treatment at the end of that period.

"7. Dental clinic division, for the treatment of children of school age. This clinic was opened on February 28, and bids fair to have more work than it can handle."

Under this new organization, Dr. John W. H. Pollard of Lexington,

Virginia, was chosen as the first health officer and he served the community in that capacity from July 1921 until 1924 when William D. Wrightson, a sanitary engineer, was elected to succeed him. Wrightson was succeeded in 1925 by Dr. Thomas W. Rhodes who is still in office.

From 1900 to 1920, Quincy saw much public health activity. During that period an infant mortality survey was made by Miss Nannie Lackland, R. N., of the Children's Bureau, Washington, D. C. This was sponsored by the Quincy Council of National Defense. It was found that too many babies were dying under one year of



John W. H. Pollard, M. D.
Health Officer, 1921-1924

age; that there were too many deaths of infants due to prematurity and congenital debility; also that stomach and intestinal conditions were responsible for a great number of infant deaths.

Better birth registration and education of mothers in prenatal and infant care, and especially in the feeding of children were recommended as remedies for these conditions.

Two better babies conferences were held at Cheerful Home Settlement. Members of the Adams County medical and dental societies and nurses from Blessing Hospital cooperated in this movement. The attendance at the first conference was 112, and 432 at the second.

In 1918, following these conferences, in order to emphasize "Children's Year" and to afford an opportunity for giving advice to post-infantile-paralysis cases left after the epidemic of this disease in 1916 and 1917, Dr. Elizabeth B. Ball, who at that time was secretary of the Adams County Medical Society, proposed to the society that it go on record as favoring the



Thomas W. Rhodes, M. D.
Health Officer, 1925 to date



Elizabeth B. Ball, M.D.
Long-time Secretary of the
Adams County Medical
Society

establishment of a crippled children's clinic in Quincy. She also suggested that the clinic be similar to the ones already in operation in various parts of the State, and that it be conducted by an orthopedist from the State Department of Public Health. A motion was duly made, seconded, and carried that this be done. The clinic was established and held at Blessing Hospital for several years, and many unfortunate crippled children were helped to such an extent, that instead of being handicapped wards of the State, they are or will become self-sustaining useful citizens.

In the same manner an infant-welfare station was opened at Cheerful Home, to which mothers could bring their babies every Wednesday afternoon. A physician and a nurse were in attendance at this time.

A conference for mental defectives was also established in Quincy in 1918. Once a month a physician from the State Hospital for Mental Dis-



Cheerful Home Settlement.



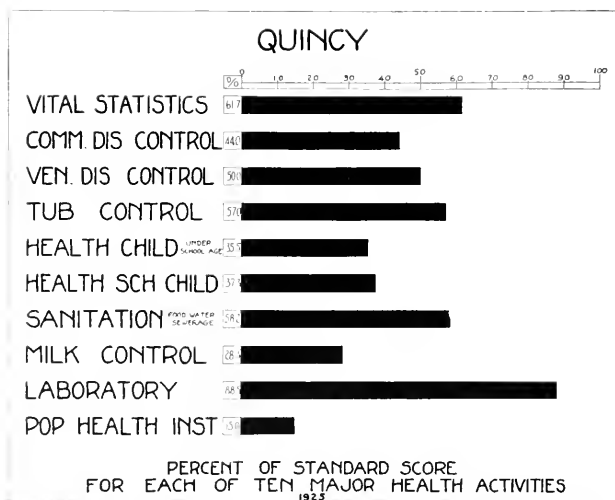
1. A Unit in a Mammoth Parade Manifesting Public Interest in Health.
2. Two Views of "Hillcrest", Adams County Tuberculosis Sanitarium.
3. An Inside View of "Cheerful Home".

eases at Jacksonville gave mental tests, and made recommendations as to the handling of the cases. The probation officer furnished most of the cases for this work. The Visiting Nurse Association cooperated in the undertaking.

During the influenza epidemic in 1918, daily medical inspection of the school children was carried on.

In 1919 classes in nutrition were established in some of the public schools. Miss Martha D. Fitzgerald, R. N., supervisor of visiting nurses and at present head resident of Cheerful Home, was in the main responsible for this work.

The Cheerful Home Association has played an important role in the improvement of health conditions and in rendering social service in Quincy. In the spring of 1901, Mr. Lorenzo Bull announced his intention of presenting the property formerly known as Wells residence, No. 421 Jersey Street for use by this Association. The gift was accepted. Following this the Association reorganized and incorporated.



This graph illustrates the strong and weak points in Quincy's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Quincy was 47 per cent of the standard perfection requirement.

The object of the Cheerful Home Association as stated in its by-laws is "to promote right living, thrift and happiness by means of instruction in useful knowledge, industrial training, wholesome recreation, and friendly visits."

Among all the educational and philanthropic organizations in Quincy, there is none that is doing a more necessary or hopeful work than the Cheerful Home Association.

In 1907 the Association started a day nursery, which in the last few years has taken over a large part of the first floor of the settlement. The daily attendance ranges from 25 to 50. Two nursery mothers are in charge. The children cared for during this period were nearly all immunized against diphtheria.

A social service is conducted in connection with the institution. A visiting nurse service was undertaken in 1914, doing bedside nursing and corrective work, teaching home nursing and making infant-welfare calls in the home. In 1926 a nursery school for cultural training was established in connection with the institution.

Cheerful Home Association has been working for the establishment of an isolation hospital by the city, and for better housing conditions.

In February, 1903, Miss Clara L. Adams entered the settlement, as the first resident worker. Miss Martha D. Fitzgerald, R. N., is head resident now and through her popularity and untiring efforts, the work of Cheerful Home has been crowned with great success.

The Adams County Anti-Tuberculosis League has been a tremendous factor in the public health activities of the city. Through its initiative a splendid tuberculosis sanitarium is located a short distance outside of Quincy and a good field nursing service is maintained.

The Red Cross and other voluntary organizations have likewise been active.

The State Department of Public Health made two surveys in the city. One was an exhaustive sanitary study, made in 1920, involving a house to house canvass and was undertaken for the purpose of providing accurate information upon which to base the program of the newly adopted health district. The other was made in 1926 as a basis for appraising the health facilities of



T. B. Knox, M. D.
First President, Adams
County Anti-Tubercu-
losis League, 1913

the city and the result is shown in an accompanying illustration. The report of the survey reads, in part, as follows:

"For adequacy of public health service Quincy, with a score of 472, or 47.2 per cent, ranks tenth among the fifteen municipalities studied.

"The health department is distinctly unique in that it operates under a State health district law, adopted by popular vote in 1920, whereby ample funds for a completely satisfactory program can be collected through taxation. A board of health consisting, as required by law, of the township clerk, assessor and supervisor-at-large, administer the public health affairs of the city through a full-time health officer whose staff includes a part-time dentist, a sanitary inspector, a practical nurse and a clerk. Laboratory service is secured by contract with a local concern. The county tuberculosis sanitarium board and the county anti-tuberculosis league each employ a nurse for field duty while the Cheerful Home Association maintains four nurses who engage in bedside nursing and promote infant and prenatal hygiene.

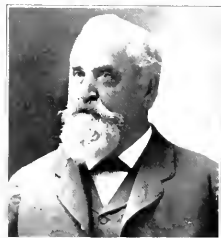
"The work of the health department is confined largely to vital statistics, communicable disease control, dental hygiene, sanitation including supervision over milk supplies, diagnostic laboratory service and limited popular education. Other agencies named above do tuberculosis field nursing and promote prenatal, infant and child hygiene. Clinics are maintained for the diagnosis of tuberculosis and for dentistry among children, the one for venereal disease patients having been abandoned early in 1925.

"Oddly enough, Quincy is in a position to provide, through taxation, funds sufficient for a well rounded, adequately extensive public health program and yet neither the amount invested in this basic governmental function nor the breadth of the service undertaken measures up to what is regarded as a reasonably satisfactory degree. Total expenditures from all sources for health work amount to about 54 cents per capita per year. Over 45 cents of this is contributed by the board of health, making a much larger percentage from the municipal government than in any other of the fifteen cities."

WATER SUPPLY

The legislature in 1868-1869 passed a law by which the city of Quincy could issue bonds, build waterworks, and create a board of water commissioners. In that year a pump house was constructed near Mississippi River at the end of Main Street. Six-inch mains were laid on Main Street and three fire hydrants were provided.

In August 1873, the city council passed an ordinance under which a 30-year franchise was given to the Quincy Water Works Company to maintain and operate the water supply. When this franchise expired in 1904 the Citizen's Water Works Company, acting as a holding company for the city, took over the waterworks and sold it to the city in 1916.



Colonel Edward Prince,
Hydraulic Engineer, Project-
ed and Constructed Water
Works in 1873

A survey made for the State Board of Health in 1885 indicated that three-fourths of the population used cistern water for all domestic purposes. At that time the river water was allowed to settle and was pumped to a reservoir, from which it was fed to the mains by gravity.



Lorenzo Bull
Joint-owner Water Works
up to 1904

The city of Quincy possesses a distinction, in that it was one of the first cities in this country to adopt the use of filtration as a means of purifying its water supply. The filter plant was constructed in 1891 and was in service until 1914. This city was also one of the first to adopt hypochlorite as a sterilizing agent, which was done soon after the first experiments in 1908.

On September 1, 1914, the city put in service a new mechanical filtration plant. The plant at that time was modern and adequate for the city's needs. Liquid chlorine replaced hypochlorite in the new plant.

Several changes and additions have been made, but the plant still is essentially as constructed in 1914 and is still delivering an adequate supply of safe water.

SEWERAGE

In 1885 there were two city sewers, three feet in diameter, emptying into a creek tributary to Mississippi River.

Since that time the system has been extended to include several outlets but it is still inadequate. Several nuisances have been reported.

In a report on the sewerage facilities by Black & Veatch, consulting engineers, prepared in 1926, it was recommended that intercepting sewers be constructed to carry most of the sewerage direct to Mississippi River.



William B. Bull
Joint-owner Water Works
up to 1904

HEALTH CONDITIONS

On July 4, 1833, Asiatic cholera first made its advent into Quincy. The expense of fighting the epidemic was borne by public subscription. The record shows that \$26.81 were contributed.

At the time of this outbreak a citizens' committee with William G. Flood, as chairman, was formed, to take the actions deemed necessary in the emergency. That the committee acted with vigor is shown by an

excerpt from the minutes of the first meeting, preserved in the handwriting of Honorable Orville H. Browning, who acted as secretary, which reads:

"At a meeting of the citizens of Quincy, July 6, 1832, to consult upon the means of preventing the further spread of cholera, it was

"Resolved, that the town of Quincy be divided into three districts and a committee of Vigilance be appointed in each district.

"Resolved, that J. T. Holmes, O. H. Browning and R. S. Green, Chairmen of the Committees of Vigilance shall constitute a Board of Health for the Town of Quincy; that they shall meet at the Court House each morning at eight o'clock and oftener if necessary and shall have power to make all necessary arrangements to procure attendance and nourishment for the sick and burial for the dead."

This epidemic cost the village 33 lives within five days out of a population of 400. It ran the true course of cholera, short, acute, deadly.

In March 1849, the same type of cholera broke out again. This time the number of deaths was placed at 400 out of a population of about 6000, a ratio about the same as that of 1833. After the first fatal burst of the epidemic, the disease subsided but smouldered in the community until 1851.

Dr. Joseph N. Ralston, one of the physicians who did much to stem the tide of the epidemic, denied belief in the infectious and contagious nature of the disease. The "sulphur remedy" seemed to be the favorite treatment among the local physicians.

Among other remedies, one used on two young ladies by a religious sect deserves mention. It reads:

"The process consisted of anointing with oil, prayer, brandy, psalm singing, flannels, exhortation and hot water. The prescription was carried into effect with great vigor and perseverance throughout the entire night and in the morning the patients were quiet and without pain,—both being dead."

Dr. Francis Drude was a new arrival in Quincy at the time of the epidemic. He came from Germany in 1848. In his reminiscences he relates his experiences during the cholera season of 1849-51, in part as follows:

"Cholera made its first appearance in Quincy in June, 1849. It was imported by immigrants coming on a sailing vessel from Europe by way of New Orleans. It was a family by the name of Jost. They had lost the head of the family and two children on the way from New Orleans here. They found shelter with their relative, Leonhard Schmitt, living in Hampshire Street, between 8th and 9th Streets.

"During the first months of its appearance, the disease proved to be the most malignant in its character. Then it lost much of its virulence, appearing in a much milder form in 1850-51.

"The worst cases of cholera occurred 1 to 3 o'clock at night, the attacks were often so severe, that when called an hour later, we would find the patient in a state of collapse.

"In regard to mortuary records, Quincy was at this time in a rather primitive, unorganized, yes, chaotic condition. No certificate of death was required, the two sextons, one American, one German, buried a corpse placed in a coffin box, at once when notified.

"Quincy had at this time scarcely a population of 6000 inhabitants. Without records, it is, therefore, quite impossible to make an estimate of the percentage of the dead.

"I cannot close the reminiscences without mentioning an episode that occurred to myself. It was at the end of the most busy season of 1859. Daily from early in the morning until late in the evening I had worked. For many a week, every night, someone would disturb my short slumbers.

"Once at midnight I woke up dreaming that I was taken sick with the disease, and would be a corpse at daylight. This horrid dream had produced a cold sweat all over my body, the rolling of my intestines could be heard by an outsider. Being wiped dry and re-dressed, I took a dose of calomel and quinine, each 5 grains, and lay down again. I soon fell asleep and rested till late in the morning when I awoke weak, but restored to my usual business.

"Dr. Woebken, a young German physician, having a great run of custom, presented a similar example, which, unfortunately ended his brilliant career. I recollect his case quite distinctly. He came to his office about 11 A.M., felt quite exhausted and had to lie down. He told his friends at his bedside that he would be a corpse in about three or four hours. He had no confidence in any medicine, refused every advice and medication, and made his prophetic words true. He died at 3 P.M.



Daniel Stahl, M.D.

"Dr. Stahl, another German physician, who had lived in Quincy about 6 years before the cholera season, after treating a good many patients with cholera, and losing an alarming big percentage, felt so disgusted with the practice of medicine, that he quit it entirely, having lost his wife and two children within one week.

"Almost had I forgotten to mention my old friend, Dr. Louis Watson, who lived here during the whole season. At 10 o'clock he would regularly frequent the then old, fashionable Hall of John Nelschs, take a big glass of Dayton ale, into which he would invariably put five grains of quinine, believing that it was a sure preventive of the disease."

In reference to health conditions in the fifties, Dr. Daniel Stahl wrote as follows:

"We have here in autumn bilious diseases, more or less, for instance the ague, the intermitting, and the properly called bilious fever. In very rare cases however do these diseases prove dangerous; every new resident in the West acquiring in a short time the knowledge of the very simple remedies by which their cure is effected.

"Fifteen or twenty years ago these diseases, together with those sure always to accompany them, the hepatic diseases, hypochondriasis and jaundice, held such a formidable sway, that they spared but very few especially of the immigrants. * * * *

"Diarrhea prevails to some extent but always in a mild form, being very rarely, if ever, dangerous."

The statistical tables show that Quincy has had trouble enough from communicable diseases of all kinds but that a vast amount of her suffering is now ancient history if present conditions may be regarded as a basis for forecasting. Typhoid fever was a bad problem until 1917. Smallpox periodically alarmed the community. Diphtheria has exacted a heavy loss of life. Tuberculosis was once a common plague. Influenza caused a sharp advance in the death rate of 1918.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1875	...	111	15	...	...	5	...	21	...	...	86	48
1876	...	8	15	...	...	13	20	17	...	...	122	49
1877	...	37	9	...	...	16	19	35	...	...	104	38
1878	...	21	21	...	...	6	...	35	...	...	91	37
1879	...	17	16	...	...	...	16	13	...	...	117	42
1880	...	10	10	...	...	1	14	41	...	...	101	68
1881	...	49	17	...	3	6	1	55	...	...	81	31
1882	...	21	13	...	1	27	1	20	...	...	75	31
1883	...	25	5	...	...	21	...	68	...	...	55	20
1884	...	36	12	...	...	12	7	49	...	...	85	43
1885	...	24	7	...	...	1	3	15	...	...	103	32
1895	518	24	...	...	5	1	2	19	...	...	53	...
1896	521	17	...	...	...	3	1	32	...	...	41	...
1897	515	9	...	...	...	1	...	15	...	...	47	...
1898	522	8	...	...	1	5	2	3	...	...	51	...
1899	525	7	...	...	...	2	1	3	...	...	29	37
1900	568	11	...	1	1	...	1	10	1	...	68	23
1901	542	15	...	...	...	4	...	1	10	...	74	29
1902	561	21	1	2	2	18	...	11	4	...	73	20
1903	552	15	3	1	1	2	1	5	8	...	61	37
1904	586	20	...	...	...	...	...	3	5	...	79	61
1905	472	3	...	2	3	1	2	2	2	...	56	47
1906	495	13	3	...	...	1	...	3	8	...	51	19
1907	602	8	3	...	...	8	6	22	11	...	77	28
1908	577	9	1	...	...	...	5	7	12	...	75	32
1909	496	14	1	...	...	...	...	9	4	...	62	37
1910	620	10	3	...	...	2	8	10	3	...	62	50
1911	673	11	2	...	9	...	1	14	7	...	66	60
1912	555	34	...	...	...	...	12	5	3	...	64	31
1913	575	24	1	...	...	1	2	1	4	...	54	37
1914	545	13	...	1	...	...	...	6	...	...	63	37
1915	561	10	1	...	...	...	9	3	22	...	61	48
1916	610	3	...	...	11	8	1	6	15	...	74	55
1917	589	8	...	...	1	...	1	8	14	...	43	54
1918	859	1	...	...	1	2	1	5	126	...	67	85
1919	473	4	3	...	6	1	3	3	26	...	44	37
1920	554	4	...	...	...	4	2	4	25	...	36	40
1921	511	5	...	...	6	3	...	12	4	...	27	15
1922	557	3	...	...	...	7	...	3	3	...	27	25
1923	600	2	1	...	2	1	2	3	11	...	18	46
1924	536	...	...	...	6	1	2	2	3	...	19	29
1925	584	...	...	...	...	...	...	5	6	...	23	27
1926	605	4	...	...	3	...	10	...	...	...	30	36

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1875	...	438.8	7.6	...	7.6	19.2	...	80.7	...	...	330.7	184.6
1876	...	150.0	57.6	...	30.0	50.0	76.0	65.3	...	...	469.2	188.1
1877	...	92.3	34.6	...	...	61.5	73.0	241.5	...	...	400.0	146.1
1878	...	77.7	77.7	...	...	22.2	...	129.6	...	...	337.0	137.0
1879	...	137.0	59.2	...	...	...	59.2	48.1	...	...	433.3	155.5
1880	...	148.1	37.0	...	25.9	3.5	51.8	151.8	...	...	374.0	251.8
1881	...	160.0	60.0	...	10.0	21.4	3.5	196.4	...	...	289.2	110.7
1882	...	75.0	46.4	...	3.2	96.4	3.5	71.4	...	...	267.8	110.7
1883	...	89.2	17.8	...	...	75.0	...	242.8	...	...	196.4	71.4
1884	...	106.8	41.3	...	...	41.3	24.1	165.5	...	...	293.1	148.2
1885	...	82.7	24.1	...	...	3.4	10.0	51.7	...	...	355.1	110.3
1895	16.1	70.8	...	...	14.7	2.9	5.9	56.0	...	...	156.4	...
1896	15.1	49.4	...	...	...	8.7	2.9	93.1	...	...	119.3	...
1897	15.6	25.8	...	...	...	2.8	...	43.0	...	...	134.9	...
1898	14.7	22.6	...	...	2.8	14.1	5.6	8.4	...	...	144.4	...
1899	14.7	19.5	3.5	...	...	5.5	9.7	5.5	8.3	...	81.0	159.3
1900	15.7	30.3	8.3	2.8	2.8	...	2.8	27.6	2.8	...	187.6	121.1
1901	14.8	40.8	...	...	11.0	...	2.7	27.2	...	...	291.5	79.0
1902	15.0	56.4	2.7	5.4	5.4	16.1	...	22.0	11.0	...	196.2	110.2
1903	14.7	39.8	8.0	2.6	2.6	6.3	2.6	13.3	21.3	...	161.9	98.2
1904	15.4	52.4	...	...	...	...	...	7.9	13.1	...	207.1	159.9
1905	15.6	27.5	3.7	5.5	5.5	8.2	11.0	13.7	19.2	...	205.9	107.1
1906	12.9	33.2	7.7	...	...	2.6	...	7.7	29.5	...	130.4	48.6
1907	16.5	21.9	7.7	...	13.7	...	16.4	60.3	30.1	...	211.0	76.7
1908	14.4	22.5	2.5	...	...	...	12.5	17.5	30.0	...	187.3	79.9
1909	13.6	38.3	2.7	...	...	...	...	24.6	16.9	...	169.6	101.2
1910	16.6	27.3	8.2	...	...	...	21.9	27.3	8.2	...	169.4	136.6
1911	18.1	30.0	5.5	...	24.6	...	2.7	38.2	19.1	...	180.2	163.8
1912	14.7	...	...	...	...	...	32.7	13.6	8.2	...	174.6	84.6
1913	15.8	65.4	2.7	...	...	2.7	...	16.4	24.5	...	147.1	100.8
1914	14.9	33.4	...	2.7	...	...	5.4	2.7	10.9	...	174.5	100.7
1915	15.6	27.2	2.7	...	...	...	24.5	8.2	59.8	...	165.0	139.6
1916	16.9	8.2	...	...	99.9	...	2.7	16.3	35.3	...	291.1	149.5
1917	16.3	21.7	...	...	2.7	...	2.7	21.7	38.0	...	116.7	146.6
1918	23.8	106.8	...	...	10.8	5.4	2.7	13.5	340.5	...	181.0	229.7
1919	13.1	11.1	8.3	...	2.7	2.7	8.3	8.3	72.2	...	122.2	102.2
1920	15.4	11.1	...	...	...	8.3	5.5	11.1	69.4	...	100.0	111.1
1921	14.2	13.9	...	...	16.7	...	...	33.4	11.1	...	75.1	41.7
1922	14.9	8.0	...	...	...	18.7	...	8.0	8.0	...	72.0	66.7
1923	16.9	5.2	2.6	...	5.2	2.6	5.2	7.8	29.4	...	48.1	122.9
1924	14.3	...	...	...	16.0	2.6	5.2	5.2	7.8	...	50.6	77.3
1925	15.6	...	...	...	...	...	...	13.3	11.0	...	61.3	69.2
1926	15.4	10.0	...	...	12.0	...	4.0	7.6	22.5	...	76.5	91.8

NOTE: The rate from All Causes is per 1000 population; all others per 100,000 population.

But it appears that a new day has come for community health in Quincy. The 1926 mortality record was exceptionally favorable viewed from the standpoint of communicable diseases, compared with that of 1900 and most of the intervening years. Epidemics will continue to come and go but it is probable that the health department will be able to keep them under sufficient control to prevent the terrible havoc that has often followed their advent into the community during years gone by.

A fair conception of what Quincy has experienced in her long journey toward a healthful city would scarcely be complete without mention of Slab Hollow and the "pest house." These two institutions held sway in the com-

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	7		20	15	19	15	15	23	13	17	21	11
Smallpox	2	58		14	30	31	8		3	7		
Measles	865	191	194	1	16	478	6	253	513	267	649	217
Scarlet Fever	7	22	19	73	77	50	126	47	48	38	98	89
Whoop, Cough						14	12	177	116	8	232	72
Diphtheria	45	72	62	27	44	36	31	41	14	28	30	14
Influenza			2909		402		39	176	9	16	14	9
Poliomyelitis				1		1		2		1		
Meningitis	1	2	2	1	1	1		1		2		
Tuberculosis*	1	3	14			77	103	70	31	59	66	39
Pneumonia*			82			14	92	192	89	9	96	83
Syphilis			6			37			59	24	26	53
Gonorrhea			30			64			95	48	18	41

* All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1875			122	469.2
1876			149	573
1877			112	546.1
1878			155	
1879			157	
1880			146	
1900			96	
1901			63	
1902			99	
1903			97	
1904			118	
1905			151	
1906			49	
1907			69	
1908			100	
1909			78	
1910			65	
1911			64	
1912				
1913			48	
1914			52	
1915			51	
1916	590	15.4	56	98.7
1917	573	14.4	56	87.2
1918	644	16.6	54	92.2
1919	556	13.7	37	69.0
1920	701	19.5	49	69.9
1921	679	18.9	42	61.9
1922	697	19.4	55	77.5
1923	773	20.6	47	60.8
1924	766	20.4	44	64.0
1925	798	21.3	73	91.4
1926	757	19.3	55	72.6

* Deaths of infants under 1 year of age per 1000 births reported.

** Per 1000 population.

munity over a period of years and were responsible for many a shudder to thinking citizens of unfortunate victims of their influence or function.

The story of Slab Hollow in Quincy holds something to put towns and cities to analyzing. Slab Hollow was a gulch. Poverty-stricken people lived there. They huddled in shacks crudely fashioned out of discarded slabs which men and women and children dragged from a nearby sawmill to patch together into inhuman abodes.

Here in Slab Hollow the grass was worn away, here was sickness and death. People from the outside shunned it. Just over the ridge was another place that was shunned—the pest house.



Edward J. Parker
President Park and Boulevard
Association, 1887-1912

Gone now is Slab Hollow. Gone the pest house. They went in the main because one man, in the beginning, rebelled against them. He was E. J. Parker, banker. His widow, now gray haired, carries on for him. Mr. Parker felt that Slab Hollow and the gloomy pest house should go. First Slab Hollow and then the pest house were rooted out. In their place stands all the beauty of the public parks system of the city.

And the point of it is that when the slab shacks of Slab Hollow vanished the poverty that was there vanished, too. The people were forced into better living!

The property which was called Slab Hollow consisted of ten acres of ground bounded by Cedar, Spruce, Third and Front Streets, and belongs to the Wabash Railway Company. About 1910, Mr. E. J. Parker, president of the Quincy Park and Boulevard Association, took up with President Delano of the Wabash Railway Company the matter of leasing this property to the Park and Boulevard Association for an addition to the park system. Mr. Delano was agreeable to the proposition and the lease was made at a nominal amount per year. Up to the time the lease was made the property was occupied by a very undesirable lot of squatters, poor white trash, negroes, and all sorts of combinations of these races.

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Rockford

Rockford has established a well earned name and reputation in the health history of the State. In this connection it may be fitting to recall John H. Thurston's story in regard to the origin of the city's name. To the early travelers from Chicago to Galena, the locality of the rock ford in the Rock River was called "Midway" because it marked the beginning of the second half of the journey between the two towns.

Thurston says when the original claimants of the mill privilege met in Dr. J. C. Goodhue's office on Lake Street in Chicago to name their claim, which they hoped at some time would become a town, the name "Midway" was not in favor. Various other names were suggested and rejected until Dr. Goodhue said: "Why not name it 'Rockford' from the splendid rock bottom ford on the river there?" The name seemed appropriate and was at once unanimously accepted. This happened in 1835, but the legislature, meeting in Vandalia in 1836, in its proceedings still referred to the site as "Midway." But news traveled slower to the capital in those days than reports of contagious disease do now.



Josiah C. Goodhue, M. D.

This same Dr. Goodhue, who was not satisfied that Rockford should be known only as a midway halting place between Chicago and Galena, put into effect his convictions, and went to Rockford in 1838 and settled there.

In Chicago he had been an alderman from the first ward, in which office he was succeeded fifty years later by "Hinky Dink" Kenna. As a councilman, he took a leading part in the establishment of the public school system, in fact is known as the father of Chicago's public schools. In 1834 he served with Dr. W. B. Egan as a sanitary officer of the Town of Chicago under the Vigilance Committee which was acting then to protect the city from any further invasion of the cholera.

In this capacity it was a part of his duty to enforce the first sanitary ordinance of Chicago, which was passed by the town council in 1833. This prohibited the throwing of refuse into the Chicago River, a simple provision yet very significant, in that it was the forerunner of the great efforts made in the next 75 years to solve the great sanitary problem of the city, namely, the pollution of the river and the contamination of the water supply.

Dr. Goodhue was a close friend and associate of Dr. Daniel Brainard and with him was one of the founders of Rush Medical College, and is named as one of the original trustees in the charter granted to that institution in 1837.

When Dr. Goodhue became a resident of Rockford, he continued to display the same interest in public affairs as he had in Chicago. In 1846 he organized the Rock River Medical Society, one of the earliest in the State, and became its first president.

If the early proceedings of that society were available, they would probably show that the health of the community was given much consideration and the first efforts to check the ravages of contagious diseases were made by public spirited members of this society.

Rockford appeared first in the U. S. census returns in 1860. At that time 6,979 people inhabited the place. By 1870 the population figure had grown to 11,049 and to 13,129 in 1880. The next decennial census year found 23,584 souls in Rockford and this number had increased to 31,051 when the new century began. In 1910 the population was 45,401 and in 1920 it was 65,651. Of the 1920 population 47,782 or 72.8 per cent were native born whites, 17,343 or 26.4 per cent foreign born whites and 490 or 0.7 per cent negroes. There were 14,584 or 22.2 per cent in the 45 or over age group.

PUBLIC HEALTH SERVICE MACHINERY

The story of public attempts in Rockford to protect itself against the ravages of disease divides itself into periods that correspond very closely to the advancements in sanitary science. At the outset attention was concerned almost wholly with environmental conditions that dealt principally with physical cleanliness of streets and premises and with the abatement of nuisances. As time went on bacteriology came into practical use and the citizens of Rockford through their local officials took advantage of the new methods prescribed by it more promptly and on a larger scale than most other communities of like magnitude in Illinois.

To begin with the sanitary efforts were handled by laymen independent of the medical profession. This arose, as it did in other places, not from a lack of confidence in physicians of the day but because doctors were regarded as a profession dealing only with the cure of disease and the alleviation of the sick and not as men whose training fitted them to cope with external conditions that were regarded as the source of contagious infections. Another reason was that doctors were busy people and could ill afford to devote their time and talent to the current sanitary procedures, the benefits of which were doubtful enough. Furthermore, the remunerations provided for per-

sonal service and the resources for carrying out constructive programs were only too meagre.

Thus the first public health efforts in Rockford were an expression of this prevailing attitude. An epidemic of cholera that reached the city in 1853 led to the adoption of an ordinance requiring the abatement of nuisances. In June of 1854, therefore, a board of health was organized and Newton Crawford was employed as its executive officer. This was the beginning of what may be termed the lay or non-medical period of public health service in the city. It continued for almost exactly thirty years during which time only one physician was named among the long list of health officers who included the following:

Newton Crawford	1854	J. Fisher	1863
T. B. Potter	1855	R. H. Paddock	1864
E. H. Potter	1856	T. Sully	1865
Dr. R. P. Lane	1857	G. H. Platter (3 months)	1866
E. C. Roberts	1858	T. Sully	1867-1879
M. T. Upright	1859	P. A. Coonradt	1880-1881
A. J. Pennock	1860	T. Sully	1882-1884
A. Halstead	1861-1862		

During this lay period numerous ordinances of a sanitary nature, relating for the most part to nuisances, were adopted and placed under the jurisdiction of the health officer for enforcement. In 1860, for example, a code of sanitary regulations was adopted and the next year an ordinance concerning barber shops was added. Then followed from time to time new regulations, prescribed by the city council, relating to plumbing (1875), weeds and grass in streets and alleys (1877), scavenger service (1878), inspection of slaughter houses (1878), sewage disposal (1880) and the reporting of cases of contagious diseases. Apparently the continuity of the original board of health was not maintained for in 1879 the mayor appointed a committee from the city council to form a board of health.

From this account it is clear that public health work in Rockford up to 1885 was chiefly a matter of abating nuisances and promoting general community cleanliness. Responsibility for providing this service was vested in a sanitary policeman, the health officer, who had authority to employ medical service when circumstances required it. The city paid from \$200 to \$450 a year to the health officer.

Beginning with 1881, three years before the medical profession took over the direction of public health affairs, a series of epidemic events brought health protective measures to pass in a hurry for two years. Scarlet fever and smallpox were the chief offending infections during this period, the first causing 53 cases of illness in 1881, with a recurrence the next year and the second bringing 23 individuals to bed and 3 to their graves.

Public concern over this situation led to the expenditures of \$593.75 in health work during 1881, an unheard of sum up to that time; the building (1882) of a pest house on the outskirts of the city at a cost of \$2,000 with an additional \$175 per annum for its operation; the construction of a general hospital (1882) now known as the Rockford General Hospital; and the placarding (1882) of houses in which scarlet fever existed.

These developments manifested a distinct tenderness of the public conscience toward health service and demonstrated the important fact that the people were willing to pay for any reasonable activity that promised protection from epidemic attacks. Accordingly we are not surprised to observe signs of substantial advancement in the years that follow.

PERIOD OF MEDICAL INFLUENCE

The years of 1884 and 1885 mark two important changes in public health administration of the city. Both involved a reorganization of the board of health. The first provided a board of four members, made up of the mayor, the health officer, the city marshal and an alderman. At the same time the city council inaugurated the practice of maintaining a standing committee on health.

The second change provided for the organization of a board of health "consisting of the mayor, city marshal, the chairman of the committee on health of the city council, and a health officer who shall be a resident practicing physician possessing the requisite knowledge of sanitary science and preventive medicine, and shall be appointed by the mayor with the consent of the city council."

Here we find the influence of the medical profession manifesting itself and from this date forward that influence plays an increasingly important part in the public health service of the city. This is significant because it probably became a big factor in giving to Rockford what is today one of the finest health departments for cities of its size in the country.

But the administrative reorganization of 1885 did not stop with providing a more satisfactory and serviceable board of health. The board was clothed with vigorous authority. For one thing the health officer could forcibly hospitalize persons found sick in the city of "any pestilential or infectious disease." Strict reporting of all cases of communicable diseases was required. Compulsory vaccination of school children, as required by the State Board of Health, was made mandatory. The keeping of vital statistics was ordered by ordinance.

These requirements together with numerous others expressing the most advanced sanitary and hygienic ideas of the day indicate a lively public interest in health problems and suggest a well advised and deliberate policy on the part of those in charge. While not largely compared with present

day expenditures for first class health service, the appropriation of \$1,425 to the health department in 1885 was generous for that time when the State appropriated only \$9,000 for such purposes. Moreover, the same generous attitude added dignity to the health department by providing it with furnished quarters of its own in the city hall. The property schedule showed a desk, a stove, a bill file, a pick and an officer's badge. Just what the function of the pick was is left to the imagination.

Beginning with 1885 none but medical men have served Rockford in the capacity of health officer. The position was on a part-time basis until 1923 when the present health commissioner, Dr. N. O. Gunderson, found it advantageous to the service and the public to convert the office into what is practically a whole-time proposition.

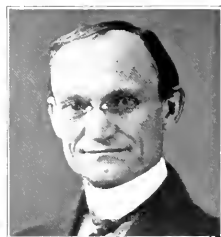
The list of physicians who have acted as health officer or commissioner of health, as the officer was officially known after 1892, includes the following:

HEALTH OFFICERS OF ROCKFORD 1885—1927

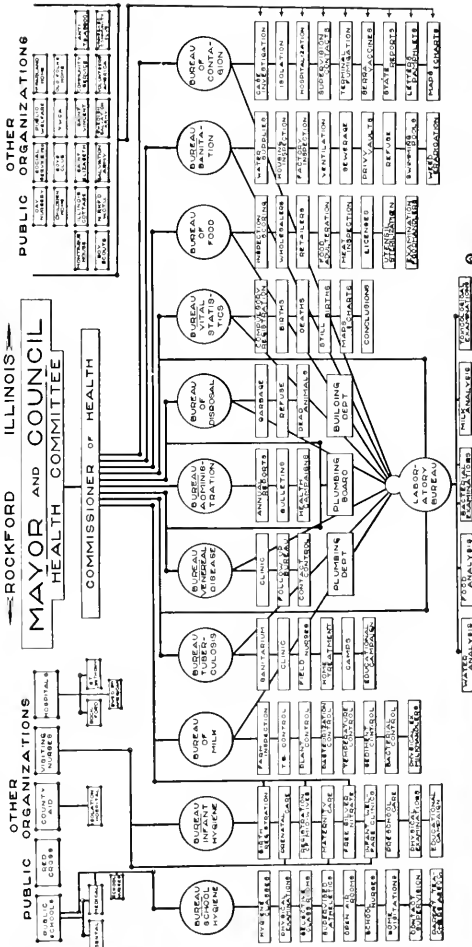
Dr. E. E. Oder	1885-1887	Dr. C. E. Crawford	1907-1910
Dr. W. B. Helm	1888-1890	Dr. W. E. Park	1911-1916
Dr. W. A. Boyd	1891-1894	Dr. G. S. Lundholm	1917
Dr. G. W. Rohr	1895-1900	Dr. W. H. Cunningham	1918
Dr. C. E. Crawford	1901-1902	Dr. J. S. Lundholm	1919-1920
Dr. E. Lofgren	1903-1906	Dr. N. O. Gunderson	1921 to date

Along about 1890 the responsibility for garbage removal was placed in the health department, a common practice of municipalities, and appropriations were made to include that item. The strength of the department may be surmised from the fact that its total appropriation for 1892 amounted to \$2,000 with \$157.50 specified for garbage removal. Most of the money was spent during that and immediately subsequent years in making house to house sanitary inspections, a practice that was believed to be of the greatest importance in disease prevention and one that was probably stimulated by the policy and emphasis of the State Board of Health. Fumigation of premises, especially where contagious diseases had existed and public buildings including schools was also an important function so far as time and expense was concerned.

About 1900 it became the custom to retain on the staff of the health department a regularly employed sanitary inspector. Work of this char-



Charles E. Crawford, M.D.
Commissioner of Health,
1901-1902; 1907-1910

DEPARTMENT OF PUBLIC HEALTH
ILLINOIS
ROCKFORD

aeter frequently required a larger staff but additional help was put on temporary duty from time to time as occasion arose.

The health department continued to grow year by year in size, function and influence until 1917 found it with an annual appropriation of \$8,250.00 and consisting of the commissioner of health, one clerk, two sanitary inspectors and a chemist (part-time). It had a small laboratory for testing samples of water, milk and food and for doing some bacteriological work. The functions of the department embraced vital statistics, communicable disease control, food and dairy inspection, abatement of nuisances, laboratory service and supervision over garbage removal.

Then came the World War that brought with it to Rockford a sudden and tremendous influx of population, due to the proximity of Camp Grant. This created complex health problems of greater magnitude than the city had before experienced. Not only so but the activities of the Federal and State authorities emphasized health more vigorously than that subject had ever before been emphasized. The influence of this general movement fell with particular force upon Rockford not only because of the acute problems that suddenly faced it but because the public conscience had for more than fifty years been growing in its respective attitude toward sanitary and hygienic service.

During the war, therefore, Rockford welcomed the widening scale of public health work made possible by the establishment there of a sanitary district, including the camp, with a State district health superintendent in charge and on its own initiative the city carried out an exhaustive sanitary study, including a house to house canvass, supervised by a staff member of the State Department of Public Health. This project was undertaken with the view of bringing to Rockford a health service organization commensurate with the needs of that rapidly growing municipality.



N. O. Gunderson, M. D.
Commissioner of Health,
1921 to date

As an outcome of all these influences, we find the health department taking on a nursing service in 1918 and by 1920 the personnel included a nurse, a quarantine officer, two sanitary inspectors, a chemist and a bacteriologist. The next year Dr. N. O. Gunderson was appointed health commissioner and this event marked the beginning of a period during which Rockford has enjoyed a public health service of the first rank.

One of the first things Dr. Gunderson did was to complete the organization of the department into bureaus. He charged each with specific



Two views of the Rockford and Winnebago County Tuberculosis Sanitarium.

responsibilities and required from each periodical reports that not only stimulated the best efforts of the staff but provided the commissioner with valuable data serviceable in measuring the capacity of his department, in forming policies and in dealing with appropriating bodies.

Under Dr. Gunderson, who continues as health commissioner at the present time, the health department has developed into a strictly modern public health service organization.

While still falling short of what might be regarded as the ideal, it participates in nearly every phase of work embraced in the modern conception of what official preventive medicine implies and gives to the city a thoroughly sound and well rounded program.

OTHER OFFICIAL AND VOLUNTARY AGENCIES

Like most other communities the public demand for health service in Rockford exceeds that which officials of the municipality have arranged to supply and consequently we find that voluntary organizations and the board of education engage in hygienic and sanitary activities on a considerable scale. Indeed the other agencies combined spend more money than does the health department proper for purely public health work.

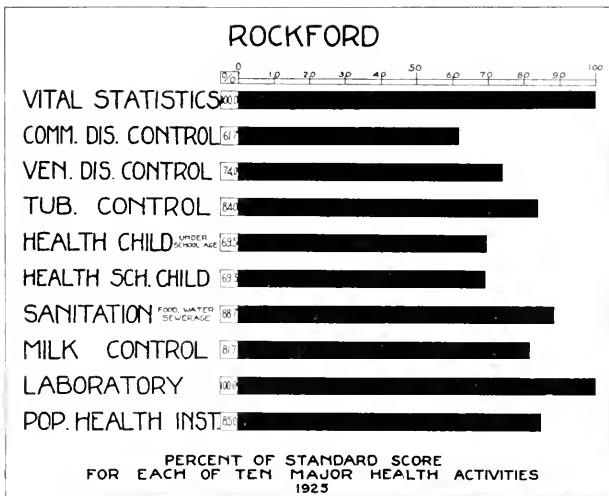
In addition to these organizations the city voted to establish a municipal tuberculosis sanitarium in 1914 and opened the institution two years later. Winnebago county, in which Rockford is located, voted a tuberculosis tax in 1922 and arrangements were made by officials for the city and county to operate the sanitarium jointly for the benefit of all citizens both urban and rural.

In 1926 a study of the health activities in Rockford, including both official and voluntary, was made by the State Department of Public Health. The data collected were compared with similar information gathered in fourteen other cities in the State of comparable rank and were also reduced to a numerical expression in the form of a score, based upon a possible perfection rating of 1000 points. The fact that Rockford earned 770 points, standing next to Evanston with 812 as the highest scoring of the fifteen cities, indicates the character and extent of present day service there.

The following quotation from the report of that study indicates the character and comprehensive nature of Rockford's public health program and organizations:

"Enjoying a public health service far above the average of the fifteen cities studied, Rockford scoring 770, or 77 per cent perfect, ranks second to Evanston only in the appraisal results. All health activities are on a much higher plane than the average. Especially is this true of vital statistics, tuberculosis, milk control, laboratory and health educational services. The health officer gives practically full-time services and administers a very efficient department, although many activities

are not under his direction. The board of education conducts all school hygiene work, employing a part-time physician, dentist and five nurses. The tuberculosis, prenatal, infant and preschool work is conducted by the Rockford Visiting Nurse Association. For the tuberculosis activities the Municipal Sanitarium Board pays \$2,000 per annum to this Association for field nursing service. The city health department conducts all of the other phases of health service and in addition handles garbage collection. The expense of garbage collection has been eliminated in estimating costs. Expenditures for health service by the city health department for 1925 amounted to \$28,500 or 37 cents per capita. Other agencies spent money sufficient to bring this figure up to \$61,267 or a grand total of about 65 cents per capita."



This graph illustrates the strong and weak points in Rockford's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Rockford was 77 per cent of the standard perfection requirement.

The significant developments in the public health machinery of the city may be briefly summarized chronologically as follows:

1854—First board of health organized.

1854—First health officer employed.

1882—Began quarantining for smallpox and scarlet fever.

- 1884—Reorganized board of health and created standing committee on health in city council.
- 1885—Mandatory requirement that health officer must be physician.
- 1891—Plumbing inspector employed.
- 1902—Milk inspections started.
- 1904—Dairy inspection inaugurated.
- 1910—Medical inspection of school children started.
- 1911—Visiting Nurse Association organized.
- 1912—City laboratory opened.
- 1913—Fresh air rooms in schools started operation.
- 1915—Fresh air camp opened.
- 1915—Bureau of communicable diseases established.
- 1916—Municipal Tuberculosis Sanitarium opened.
- 1916—Bureau of food control created.
- 1917—Bureau of vital statistics organized.
- 1918—Tuberculosis clinics started.
- 1922—County adopts Glackin tuberculosis sanitarium tax.
- 1923—Health commissioner began devoting full time to duties.
- 1924—Bureau of ventilation and heating, bureau of publicity and bureau of water safety and typhoid control established.
- 1925—Pre-natal clinics started.

WATER SUPPLY.

The original waterworks were installed in 1874-75 when Rockford had a population of about 12,000. It comprised a pumping station on the west side of Rock River, an infiltration well beneath the station, some tile drains connecting springs to the infiltration well, a pipe line from the river to the infiltration well, and a limited distribution system. Since the original installation, numerous changes and additions have been made from time to time to make available an adequate supply of safe water to meet the growing needs of the city. The city has faced threatened water shortages several times.

By 1881 the first installation had become so inadequate that a dug well about 50 feet in diameter and 38 feet deep with a 12-foot shaft going 10 feet deeper was sunk south of the station. In 1883 the infiltration system was cleaned, possibly with the hope of increasing the yield, but river water had to be admitted from time to time and by 1885 the main part of the supply was being obtained from the river.

In 1885 after consulting Professor T. C. Chamberlain, then of the Geology Department of Beloit College, the first artesian well was sunk at Rockford. The well was about 1,530 feet deep and water rose about 136 feet above the city datum-line or 35 feet above the average Rock River water

level. In each of the four succeeding years another artesian well was drilled. In 1891 the combined flow from the five wells reported as 1,100,000 gallons daily, was not adequate, and an engineering committee was appointed to report on the water question. The static water level of the wells was then about 20 feet above the ground surface, and the water flowed to the old infiltration well below the pumping station, which was used as a suction well for high-service pumps. The engineers recommended the installation of three more wells to be equipped with pumps for discharging the water into a new storage reservoir. In 1892 a 1,000,000-gallon concrete storage reservoir was built, and during that year and the following year four or five new wells ending in St. Peter sandstone were drilled.

In a further effort to increase the supply, all wells were equipped with air-lift in 1895.

In 1896 the so-called shaft-and-tunnel system was installed which consisted of a central shaft about 80 feet deep from which tunnels connected to the tops of the several wells. Pumps located at the bottom of the shaft drew water from the wells and discharged into the reservoir and suction well at the ground surface. This development yielded about 6,800,000 gallons of water a day and proved more or less adequate for about a dozen years. River water had been used more or less frequently since the original waterworks were installed.

In 1897 the sixth artesian well was drilled. By 1900 the water consumption for the population of about 31,000 was about 84 gallons per capita.

In 1910 a second engineering commission consisting of J. W. Alvord, D. H. Maury, and D. W. Mead, leading consulting engineers then practicing in the Middle West, were engaged to make a thorough investigation of water resources and the waterworks system because the supply was again proving inadequate. These engineers recommended the establishment of a new central station on the west side of the city with some wells in that vicinity extending into Potsdam sandstone and other wells at scattered points in the city, from which water could be pumped directly into the distribution system. The first result of this report was the installation of two separate well stations, one in the northwest and one in the southwest part of the city, and a second 1,000,000-gallon storage reservoir near the main station on the river bank. Before these wells were available in 1911 river water was again used. In 1913 three of the wells locally known as the Peach Street wells because of their location in that street near the main pumping station, were temporarily abandoned because they were suspected as one possible source of contamination of the public water supply that had caused a water epidemic the preceding year, and these wells were not again used except for short periods in 1916 and 1920 but are still maintained as a second reserve supply. In 1913 the use of the old infiltration well as a suction well was also abandoned and

repairs made to the original storage reservoir, as result of the water-borne typhoid-fever investigation.

In 1921 the new west side pumping station recommended by the consulting engineers in 1910 was started, together with four drilled artesian wells and a 5,000,000-gallon storage reservoir. At the close of the period covered by this history the water supply was being obtained from the drilled wells near the west side station, the two isolated wells installed immediately after the engineer's report in 1910, and the Peach Street wells and the others near the old station along the river bank are held as a reserve source of supply.

The sanitary quality of the original water supply obtained by tile lines, tapping springs and an infiltration system was of questionable character. Also the river connection subjected the supply to contamination even though there was no city sewer outlet that entered the river above the dam, which dam is below the waterworks station, until 1883 or about nine years after the original waterworks installation. Although there is no record of a water-borne epidemic being caused by the public water supply previous to 1912, it probably was at all times of doubtful sanitary quality and may have been responsible for some scattered cases of typhoid and other intestinal diseases, especially when river water was definitely being admitted into the system.

The typhoid-fever epidemic in 1912 was undoubtedly caused by the public water supply. The investigation made at the time of the epidemic showed that the supply may have been contaminated in any of three ways or a combination of them, namely:—pollution of the Peach Street wells near which a city sewer was located, pollution of the water in the original 1,000,000-gallon reservoir when the water in that reservoir was drawn down in order to fight a fire, and pollution through cross connections with polluted river and creek supplies at factories. Later data showed that although the Peach Street wells and reservoir leakage may have added to the contamination, that the main pollution and cause of the epidemic was the pumpage into the city mains of polluted river water by operation of fire pumps at one factory in order to help supply water for fighting a big fire at another factory.

The city passed an ordinance in 1912 prohibiting the further maintenance of dangerous cross connections, but no special effort was made to enforce this ordinance until 1922 when the danger of the cross connections was brought by the State sanitary engineer to the attention of Dr. N. O. Gunderson, who had recently become commissioner of health. A chlorinator was obtained for emergency use at the main station in 1922 and through the efforts of Doctor Gunderson the cross connection ordinance was enforced, and since that time the water as pumped into the distribution system has been of safe sanitary quality. At times the chlorinator has been operated to take care of any contamination introduced when working on the

wells or when analyses have indicated slight contamination. Some improvements at the waterworks, including drainage of well pits and repairs to the reservoir top in accordance with recommendations made by Health Commissioner Gunderson and endorsed by the State sanitary engineer, remained to be carried out at the close of the period covered by this history.

Since Doctor Gunderson became commissioner, very careful local analytical control supplemented by occasional analyses in the State sanitary engineering laboratories have been maintained. With similar continued control and the carrying out of the recommended improvements mentioned above, the supply should continue to be of safe sanitary quality.

The first record of an analysis is in 1878 when the sample was sent to some laboratory at Bridgeport, Conn., and was reported back as "good". In 1912, 515 samples of water, including many from the public water supply, were analyzed at the city laboratory, and the laboratory control as noted above has been further extended since 1922.

The original distribution system of about ten miles of mains was planned by Engineer Birdsall Holly. For several years the next additions included extensions of laterals so that eventually the larger mains became inadequate. Since then larger feeders have been installed and the distribution system now serves practically all of the built-up territory in the city and the public water supply is in general use throughout the city.

SEWERAGE.

In 1875 an ordinance relating to plumbers was passed, and in 1880 an ordinance relating to sewerage and drainage. In 1880 the drainage system consisted of surface gutters leading to the river.

In 1886 there began the development of a system of sewers by the installation of two sewers, each about one mile long, with an outlet to the river. There were then about 3,500 dwellings in the city and nearly 1,000 cesspools. These original sewers were recorded as being for sanitary sewage only, surface drains and gutters being relied upon to carry storm water to Rock River, on the banks of which the city was developing, or to Kent and Keith Creeks, tributaries of Rock River, which furnished natural outlets for storm waters as the city expanded away from the main stream.

It was reported that by 1887 only about 235 houses were equipped with water-flush toilets, and that one-half of these drained to cess-pools. About 24 out of every 25 houses still had privies.

As the city continued to grow, additional sewers were installed with outlets to the river or the two creeks that are tributary to the river at Rockford. It was reported that shortly before 1900 a rather comprehensive plan for sewerage for the city was prepared, but this plan was not followed.

By 1918 there were 2,142 privies in the city, which indicates that the installation of sewers and plumbing had not kept up with the growth of the city. By 1921 the number of privies had been reduced to 1,345 and there has been a further reduction every year since that time.

At the close of the period covered by this history there were a total of 50 or more public sewer outlets, one-half of which discharge into Rock River above the dam in the southern portion of the city, another one-fourth into the river below the dam, and the remaining one-fourth into Kent Creek. The city has developed so that there were about equal areas on the east and west sides of Rock River, which flows southerly through the city. Near the close of this period additional sewerage facilities were urgently needed to take care of subdivisions that had developed fairly rapidly and also to abate and prevent stream pollution. Consequently, in 1926 Rockford took advantage of the sanitary district law enacted by the legislature in 1917 and organized a sanitary district which included the entire city and some surrounding territory. Just before the close of the period covered by this report Pearse, Greeley & Hansen, consulting engineers for the district, had submitted a report on a sewerage project which included main intercepting sewers on both sides of Rock River to pick up the sewage from the main existing outlets and to carry this sewage to a suitable treatment-plant site south of the city where the sewage will be treated by progressive steps to abate any existing pollution and prevent any objectionable stream pollution in the future. This report has been approved by the State Department of Public Health and also by the board of trustees of the sanitary district, and plans for carrying out the project are under way.

With the carrying out of the Rockford Sanitary District project and some additional lateral sewerage work which is also planned, all built-up territory within the city and district will be provided with sewerage facilities and the collection and disposal will conform to modern sanitary standards.

MILK CONTROL.

For forty years milk control has been a subject of jealous public concern in Rockford and the efforts to provide the city with an adequate, safe and otherwise satisfactory supply have culminated in giving to the municipality a system of sanitary milk supervision that is far superior to that prevailing in most other communities of Illinois.

The first official step toward municipal control of the milk supply took place in 1888 when an ordinance was adopted requiring all dealers to procure a license. The main reason for this step was probably for revenue but it enabled the city to dictate conditions upon which a license would be issued, providing a splendid means of enforcing sanitary or other standards that might be deemed wise.

At first the chief concern was for chemically satisfactory milk. The public wanted a product free from water and with a butter fat content no less than the cow prescribed. It wanted milk without manure and other barnyard filth that frequently finds its way into the milk pail of careless producers. Still it was recognized that milk has some close relation to health because the jurisdiction over milk supplies was placed under the health officer.

Thus in 1902 a special milk inspection service was undertaken by the health department and in 1904 this was extended to include dairy farms. Chief emphasis was placed upon chemical standards and ordinary cleanliness for its own sake. This attitude was disclosed by the number of samples analyzed for chemical contents. In 1907 more than 1200 samples were collected and chemically analyzed.

In 1912 came the first movement toward controlling the bacterial quality of the city's milk supply when an ordinance requiring the cooling of milk and the routine inspection of dairies was adopted. This ordinance was revised a year later and amended in 1914, each time prescribing more stringent sanitary requirements and giving the health authorities more extensive control powers. In 1924 a complete new ordinance which practically requires the pasteurization of all milk except that produced and handled under very high sanitary standards was adopted. The ordinance gave the health officer power enough to carry into effect a thoroughly modern control system.

A rather unique feature of the system so far as the producing farms are concerned, is what Dr. Gunderson calls remote control practice. Daily bacterial and reductase tests are made at the milk-receiving stations of city dealers. When the results suggest insanitary or other undesirable conditions at the farm an inspector is dispatched promptly to the point in question. This method appears to have worked out very satisfactorily in Rockford. Certainly few cities enjoy a more satisfactory supervision over this most important and easily contaminated food supply.

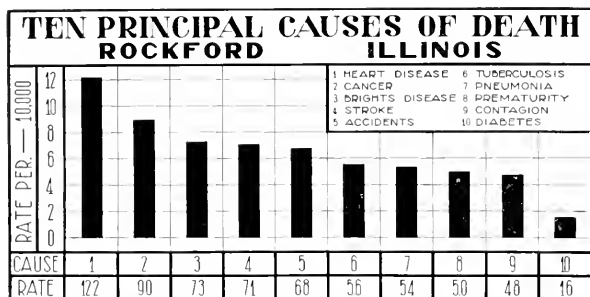
HEALTH CONDITIONS.

What appears to be the earliest historical reference to prevailing health conditions in Rockford is found in a history of that city, covering the period of 1834 to 1861, by Charles A. Church. He says:

"The year 1846 was signalled by much sickness. Nearly every family living on low land had malarial fever, and the doctors were busy people. At one time Dr. Catlin, who settled in Rockford in 1839 could get but four or five hours sleep out of the 24, and he would become so exhausted that he frequently slept while riding from house to house. One day in 1846 he made 30 calls, and prescribed for 60 patients.

"During this season, Dr. Goodhue was asked what to do for the sick. To this grave question the doctor made this characteristic reply: 'I don't know, unless we buy a big smoke house and cure them.'"

No official mortality records were kept in those early days but statistics taken from sexton and cemetery registers indicate an annual death rate of something more than 12 per 1,000 population. The rate fluctuated from year to year with the rise and fall of epidemics but no statistics are available to show how wide the margin of variation was. An annual mortality rate of 12 per 1,000 people suggests favorable health conditions, but it must be remembered that settlers in a new country ordinarily constitute a sturdy group, free from any considerable number of those in the very early and very late age periods of life. Since the highest mortality prevails among



For Year 1926.

persons under one and over fifty it is clear that a rate of 12 or more in a population without many of these is not indicative of so healthful a condition as might be surmised at first impression. The annual death rate in the United States Army in times of peace, for example, is ordinarily less than 5 per 1,000 men.

An epidemic wave of cholera appeared in the United States in 1849 and it appears rather certain that this outbreak reached Rockford in 1853. No authentic records about it have been preserved but tradition informs us that public alarm reached an altitude sufficient to lead officials to procure the use of a new barn on the outskirts of town for housing and caring for patients. It is probable that this unhappy experience led directly to the first efforts in the city toward organizing a public health service.

The next epidemic disturbance of sufficient magnitude to inspire notice on the permanent records of the city took place in 1877 when 300 cases of scarlet fever occurred. That was a terrible experience for a community of less than 14,000 souls. Such wide-spread prevalence of so dangerous an infection is enough to justify a pronounced public demand for every official service that might reasonably be expected to prevent or favorably modify recurrences of that character. It followed very naturally therefore that public sentiment in Rockford resulted in the adoption of various ordinances requiring general cleanliness in the city, sewage disposal and the naming of a committee to form a new and active board of health. No less could be expected from an intelligent people.

Table I.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever*	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1886	158	2	...	...	...	...	...	3	...	...	15	...
1887	228	22	...	...	...	1	...	3	...	...	29	...
1888	...	...	...	...	...	...	...	...	...	...	...	...
1889	...	...	...	...	...	...	...	...	...	...	...	...
1890	340	...	...	...	...	4	1	54	...	...	40	24
1891	355	8	...	...	...	4	...	12	11	...	33	...
1892	389	23	...	...	4	5	...	8	14	...	43	38
1893	409	16	...	1	...	12	2	1	6	...	40	22
1894	298	4	...	...	...	10	3	1	4	...	45	14
1895	350	6	...	...	6	1	8	6	8	...	30	21
1896	283	5	...	...	...	12	1	2	15	3	23	25
1897	335	10	...	...	...	...	1	52	3	...	46	15
1898	272	1	...	...	...	...	...	26	4	...	30	24
1899	272	3	...	...	2	...	1	10	4	1	42	20
1900	200	1	...	...	...	6	1	5	2	...	39	20
1901	429	3	...	...	...	1	3	1	4	...	56	47
1902	403	3	...	...	...	18	...	11	2	...	48	33
1903	433	1	...	...	3	2	6	4	6	1	37	30
1904	460	11	...	...	...	3	...	2	5	...	55	33
1905	739	6	...	...	...	1	1	5	...	1	62	43
1906	416	4	...	...	...	...	...	4	2	...	39	39
1907	498	6	...	...	1	8	3	10	1	...	28	75
1908	450	4	...	...	...	2	...	3	7	...	55	39
1909	503	2	...	...	3	2	...	4	1	...	55	36
1910	610	11	...	...	2	2	...	8	2	...	50	39
1911	720	11	...	...	...	1	...	10	2	...	46	67
1912	582	42	...	...	...	...	...	5	...	...	45	58
1913	363	15	...	...	...	1	3	10	2	...	41	54
1914	562	4	...	...	1	2	2	6	2	...	60	44
1915	605	1	...	...	1	4	5	6	1	...	49	58
1916	661	...	...	...	5	8	1	2	1	...	43	83
1917	723	6	...	1	4	8	7	3	1	...	69	104
1918	1087	2	...	...	2	1	13	323	...	...	65	88
1919	702	1	1	...	6	1	1	7	4	...	52	89
1920	835	3	...	...	3	1	4	9	97	...	61	88
1921	697	1	...	...	1	3	3	12	1	...	50	49
1922	708	1	...	...	...	4	1	3	2	...	48	79
1923	755	1	...	...	9	2	8	9	26	...	24	81
1924	672	2	...	...	4	1	2	2	7	...	33	37
1925	684	2	...	...	3	2	1	1	2	...	23	42
1926	836	3	...	...	3	1	1	1	25	1	38	45

* For Enteric fever for years 1886-99.

NOTE: Slight discrepancies exist between this table and the illustrations made in Rockford due to different methods employed and areas included in the compilation of data.

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever*	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1886	8.1	10.3	...	...	...	...	...	15.4	...	...	77.0	...
1887	11.1	107.6	...	...	...	4.8	...	14.5	...	...	141.8	38.4
1888	...	...	...	...	...	...	...	...	...	...	...	...
1889	...	...	...	...	...	...	...	...	...	...	...	...
1890	14.4	...	...	...	...	16.9	...	229.0	...	...	169.6	101.9
1891	14.6	32.9	...	...	...	16.5	...	49.4	45.2	...	135.6	...
1892	16.6	91.7	...	...	15.9	19.9	...	31.8	59.5	...	171.4	151.5
1893	17.8	62.3	...	3.8	...	45.6	7.6	3.8	22.8	...	152.0	83.6
1894	11.2	15.0	...	...	...	37.6	11.4	3.8	15.0	...	169.3	52.5
1895	12.8	21.9	...	...	21.9	3.6	29.6	21.9	29.6	29.6	109.8	76.1
1896	10.0	17.7	...	...	7.1	3.5	7.1	53.1	10.5	...	89.5	87.6
1897	11.6	34.7	...	...	...	...	3.5	179.9	10.4	...	159.2	51.9
1898	9.2	3.4	...	...	...	...	...	88.4	13.6	...	102.0	81.6
1899	8.9	9.9	...	...	6.6	...	3.3	32.9	13.2	3.2	138.2	65.8
1900	9.6	3.2	...	...	...	19.2	3.2	16.0	6.4	...	115.2	64.0
1901	13.2	9.2	...	...	...	3.1	9.2	3.1	12.3	...	171.9	144.3
1902	11.8	6.3	...	...	...	52.2	...	31.9	6.3	...	139.2	95.7
1903	12.2	2.8	...	...	8.4	5.6	16.8	11.2	16.8	2.8	103.6	81.0
1904	12.5	29.7	...	...	...	8.1	...	5.4	13.5	...	148.5	89.1
1905	19.3	15.6	...	...	...	2.6	2.6	13.0	...	2.6	161.2	111.8
1906	10.4	10.0	...	...	...	...	...	10.0	5.0	...	97.5	97.5
1907	12.1	14.4	...	...	2.4	19.2	7.2	24.3	2.4	...	68.0	182.3
1908	10.5	9.2	...	...	...	4.6	...	6.9	16.1	...	126.5	89.7
1909	11.4	4.5	...	...	6.8	4.5	...	4.6	2.3	...	124.9	81.7
1910	13.4	24.2	...	...	4.4	4.4	...	17.6	4.4	...	110.0	85.8
1911	14.5	22.1	...	...	...	2.0	...	20.1	1.0	...	92.5	134.7
1912	11.2	79.8	...	...	...	...	...	9.5	...	...	85.5	110.2
1913	11.1	27.9	...	...	...	1.9	5.6	18.6	3.7	...	76.3	109.4
1914	10.1	7.2	...	...	1.8	3.6	3.6	10.8	3.6	...	108.0	79.2
1915	10.5	6.8	...	...	1.7	6.8	8.5	10.2	10.2	...	83.3	98.6
1916	11.1	...	...	...	8.5	13.6	1.7	3.4	1.7	...	73.1	141.1
1917	11.7	9.6	...	1.6	6.4	12.8	11.2	4.8	1.6	...	96.6	161.6
1918	17.1	5.1	...	...	5.1	1.6	1.6	20.4	507.1	...	106.8	138.2
1919	10.7	1.5	1.5	...	9.0	1.5	1.5	10.5	6.0	...	78.0	135.5
1920	12.3	4.4	...	...	4.4	5.9	5.9	13.3	143.6	...	90.3	139.2
1921	10.0	1.4	...	...	1.4	4.2	4.2	16.8	1.4	...	70.9	68.6
1922	9.9	1.4	...	...	...	5.6	1.4	4.2	2.8	...	66.7	109.8
1923	10.3	1.4	...	...	12.2	1.8	10.9	12.2	35.4	...	32.6	110.2
1924	8.9	2.6	...	...	5.2	1.3	2.6	2.6	9.1	...	42.9	48.1
1925	8.8	2.6	...	...	3.4	2.6	1.3	1.3	2.6	...	29.7	54.2
1926	10.5	3.9	...	...	3.9	1.3	1.3	1.3	31.8	1.3	48.3	54.6

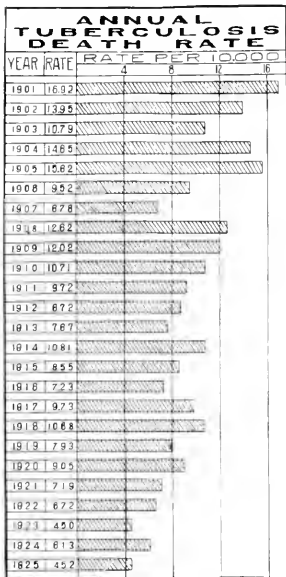
NOTE: The rate from All Causes is per 1,000 population; all others per 100,000 population.

*For Enteric fever for years 1886-99.

Slight discrepancies exist between this table and the illustrations made in Rockford due to different methods employed and areas included in the compilation of data.

For the next four years nothing of extraordinary significance in the health of the city transpired but in May of 1881 smallpox was introduced from Milwaukee and smouldered in the community for fifteen months. Some 23 cases and 3 deaths therefrom are recorded. This experience in itself is not particularly noteworthy except for the fact that Rockford appears to have escaped smallpox prior to that time and the further fact that the outbreak led to the construction of a "pest house" without the walls of the city. Added to the public anxiety created by another visitation of scarlet fever the experience with smallpox stimulated another reorganization of the health department and very likely had to do with the passage of the ordinance in 1884 that required the health officer to be a qualified resident physician.

Another experience that instilled into many hearts an earnest desire for protection against the ills which best humanity was that involving 135 cases of diphtheria in 1890. Those were the days before antitoxin had been discovered when diphtheria ran its dreadful course without stop or hindrance. This particular outbreak resulted, therefore, in 54 deaths, giving a fatality rate of 30 per cent. The number of deaths amounted to about 180 per 100,000 people, a rate nearly two hundred times greater than that which usually prevails now. In 1926 Rockford lost but one life to diphtheria and that gave a rate of slightly more than one per 100,000 population.



About 1900 typhoid fever and tuberculosis began to attract attention in Rockford because of general agitation on these subjects which had found birth in the minds of sanitarians familiar with the new born science of bacteriology. Both diseases had preyed upon the local citizens for years. Indeed they were looked upon rather as an evil habit or pernicious consuming sin that could neither be avoided nor compensated for because they were endemic or chronic in the community.

The general agitation concerning the preventable character of tuberculosis and typhoid fever provoked an examination of the mortality statistics in Rockford. This study revealed that the mortality from tuberculosis was 16.9 per 100,000 population in 1901 and that this disease was the most frequent cause of all deaths.

Typhoid fever had created no little concern in 1892 when a severe outbreak had resulted in 23 deaths. Another epidemic involving upwards of 100 cases occurred in 1904 and then came a frightful experience in 1912 and 1913 when 512 cases carried 57 persons to their graves.

Repeated epidemiological studies by local health officers, State health officials and an epidemiologist from the University of Chicago incriminated both water and milk supplies at various times. The outcome of these investigations together with the propaganda for tuberculosis eradication resulted in the establishment of services that gave to Rockford milk and water supplies

of the highest sanitary quality and a splendid program against the great white plague. The phenomenal reduction in typhoid fever, scarlet fever and tuberculosis all point to the splendid improvements in milk and water supplies and to the effectiveness of the anti-tuberculosis work.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	12	19	10	8	11	16	16	5	9	16	8	13
Smallpox	30	36	9	38	149	391	1	1		9	32	1
Measles	863	394	420	452	120	375	212	931	833	397	1270	45
Scarlet Fever	216	127	64	118	208	113	237	67	28	66	179	247
Whoop, Cough		206	68	21	62	261	39	223	146	364	68	274
Diphtheria	57	42	46	131	97	279	124	58	51	22	25	21
Influenza					99	2	29	30	16	13	82	23
Polyomyelitis						2	4	1	3	11	3	26
Meningitis	1	1	4	1	2	4	2	2	1	2	2	7
Tuberculosis*	118	94	71	68	99	37	256	178	135	185	285	180
Pneumonia*						20	115	163	86	121	129	130
Syphilis						67			38	35	45	58
Gonorrhea						175			91	106	96	87
Chancroid						20						3

* All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. Rockford is one of the cities where notification has reached a reasonably satisfactory status. Slight discrepancies exist between this table and the illustration made in Rockford due to different methods employed and areas included in the compilation of data.

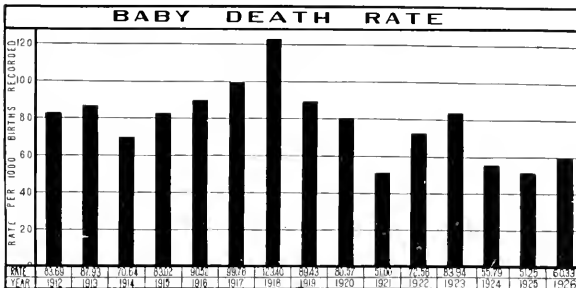
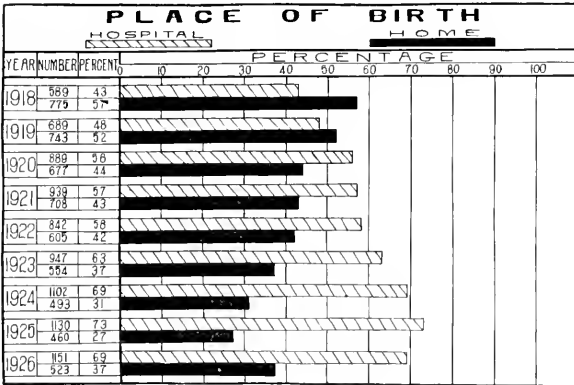
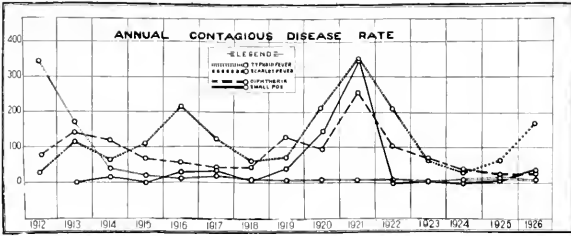
Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1906	757	18.4		
1907	850	19.5		
1908	783	17.9		
1909	706	15.6		
1910	850	18.1		
1911	924	18.6	165	113.6
1912	932	18.0	78	83.7
1913	1069	20.0	94	87.9
1914	1189	21.0	84	70.6
1915	1084	18.9	90	83.6
1916	1276	21.0	127	100.0
1917	1273	20.6	127	99.8
1918	1329	20.9	164	123.4
1919	1420	21.6	127	89.0
1920	1559	22.8	124	80.6
1921	1588	23.2	81	51.4
1922	1477	20.8	105	72.6
1923	1501	19.9	89	83.9
1924	1595	21.3	129	55.8
1925	1600	21.0	82	52.0
1926	1664	21.1	101	60.7

*Deaths of infants under 1 year of age per 1000 births reported.

**Per 1,000 population.

NOTE: Slight discrepancies exist between this table and the illustrations made in Rockford due to different methods employed and areas included in the compilation of data.



Rockford fared far better than many other communities in the State during the 1918 pandemic of influenza. Deaths charged against that infection amounted to 265 per 100,000 population while most of the other communities suffered rates above 300 and not a few above 500. The combined influenza-pneumonia rate in Rockford in 1918 was 640 per 100,000 people whereas eight or ten other municipalities experienced losses that amounted to from 650 to 1,139 per 100,000 population.

Reference to the statistical tables and the illustrations will show that Rockford is now enjoying a freedom from communicable diseases that results in mortality rates both specific and general which compare favorably with those of any comparable city anywhere.

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- Annual Reports of the City of Rockford, 1897 to date.
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Rock Island

The island in the Mississippi River from which Rock Island takes its name was first occupied in 1816 when Fort Armstrong was erected on its lower end.

In 1835, the commissioners of Rock Island County entered at the Galena land office a fractional quarter section of land, in what is now the central part of the city and laid out a town called Stephenson. By an act of the legislature passed in March 1841, the name was changed to Rock Island, and it was incorporated as a town. In 1849 it was incorporated as a city. The population according to the U. S. Census of 1850 was 1,711.

The city stands on a level plateau which is for the most part 10 to 25 feet above the high water mark of the Mississippi River. From one-half to a mile back from the river, rise bluffs generally about 200 feet above high water.

The soil is rich loam, with some deposits of clay, sand and gravel with an underlying bed of magnesium limestone from 3 to 10 feet below the surface of the ground.

A strip of low, marshy land about 500 feet wide extends from the center southwest through the city, and one mile beyond to Rock River. In times of high water, this land in the early eighties was covered to a depth of from 6 to 14 feet of water.

This marsh was formerly a prolific breeding place of malaria carrying mosquitoes, but after the sewer was built draining this slough, malaria practically disappeared from the city.

Rock Island is now a city of 35,177 people (1920 census) being separated from Moline by nothing more obvious than the middle of a street and from Davenport, Iowa, by the Mississippi River across which a bridge facilitates close communication. Settlement began during the first half of the nineteenth century, 1850 finding the community with a population of 1,711. In 1920 the 35,177 inhabitants included 29,064 or 82.6 per cent, native born whites, 5,352, or 15.2 per cent foreign born whites and 754 or 2.1 per cent negroes. The age distribution showed 4,258, or 23.3 per cent, to be 45 or more years of age.

HEALTH MACHINERY

The first ordinance of public health significance was adopted in 1857. It provided for a board of health and stipulated a sanitary code of sufficient breadth to give the board plenty of room to perform any justifiable program which it might have deemed wise to undertake.



G. G. Craig, Sr., M.D.
First Health Commissioner,
1880-1887

But the board did little or nothing and perhaps one paper organization succeeded another until 1880, when the city was organized under the general law. At that time a new board of health ordinance was adopted which provided for six members, the mayor and city clerk being ex-officio. The first board appointed under this new ordinance included three physicians on its membership.

Under this ordinance it at once became the practice to designate some local physician as health commissioner who acted as the executive officer of the board. He received a small salary while board members got two dollars each for attending meetings. At first the board manifested considerable interest in its duties and functions, making periodic tours of inspections and scrutinizing alleged nuisances, etc. This ardor soon waned, however, as had been usual and matters were left more and more in the hands of the health commissioner.

This practice continued until 1911 when Rock Island adopted the commission form of government. The most significant change that the transition brought to the health department was that the health commissioner now had to serve one master instead of half a dozen. At any rate there appears to have been no pronounced difference in the character or volume of the work undertaken.

In 1924 the commission form of government was given up and another board of health made up of the mayor, the city physician, as the health commissioner now came to be called, and the health officer (sanitary inspector) came into being. This system still prevails.

Health commissioners who have served Rock Island include:

Dr. G. G. Craig, Sr.	1880-1887	Dr. Ralph Dart	1907-1909
Dr. Samuel Plummer	1887-1889	Dr. Albert N. Mueller	1909-1911
Dr. G. L. Eyster	1889-1891	Dr. George G. Craig, Jr.	1911-1914
Dr. C. B. Kinyon	1891-1893	Dr. Albert N. Mueller	1914-1915
Dr. G. L. Eyster	1893-1895	Dr. C. T. Foster	1915-1919
Dr. E. M. Sala	1895-1897	Dr. Albert N. Mueller	1919-1923
Dr. Joseph P. Comegys	1897-1899	Dr. Harry Frey	1923-1927
Dr. Joseph de Silva	1901-1903	Dr. J. R. Hollowbush	May-Oct. 1927
Dr. George G. Craig, Jr.	1903-1905	Dr. Albert N. Mueller	1927 to date
Dr. James F. Meyers	1905-1907		



George L. Eyster, M.D.
Health Commissioner,
1889-1891; 1893-1895

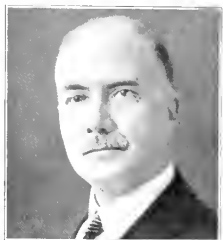


First Infant Welfare Clinic, opened in Rock Island, September 5, 1914.



First Open-Air School for Tuberculous Children, opened in Rock Island, 1925.

Money appropriated to and spent by the health department increased as the demands of the city grew. New functions have been added from time to time while voluntary agencies have arisen to supply services not provided by the city.



George G. Craig, Jr., M. D.
Health Commissioner,
1903-1905; 1911-1914

Rock Island was the second city in the State to establish a municipal tuberculosis sanitarium. It was voted in April, 1910. The institution was opened in 1916 and continued to function as a city project until April 1927, when its operation was taken over by the county as a result of an election in 1920.

Voluntary agencies began infant welfare work in 1914 when the West-end Settlement House and the Visiting Nurse Association opened a station. Mrs. John Hanberg, Mrs. W. B. Barker, Dr. Albert N. Mueller, Edna Flannagan, R. N., and Sophia Rosene, R. N., were the moving spirits in bringing this service into action.

The school board began to participate in health work in 1918 when a full time nurse and a part time physician and dentist were employed.

A social hygiene clinic was operated in the city by the county for a number of years following the World War.

Developments and growth in health work were accompanied by ordinances of various character providing ample authority for the health officials to exercise their full resources in giving the community sanitary and hygienic supervision.

An appraisal of the public health facilities in the city in 1925, made by the State Department of Public Health, gives a rather accurate notion of conditions at that time and they remain much the same. Excerpts from the report of that study read:

"With a score of 469, Rock Island stands eleventh from the top among the fifteen cities in which the public health activities were appraised for adequacy in extent and character.

"The city health department, consisting of a part-time health officer, a full-time inspector (another inspector was added in 1926), and a part-time clerk, undertakes vital statistics work, communicable disease control and supervision over milk supplies and sanitary conditions. The board of education employs a part-time dentist, a part-time physician and a nurse for school hygiene service. Nurses on the Visiting Nurse Association staff do bedside and public health work. In the



Cyrus T. Foster, M. D.
Health Commissioner,
1915-1919

field of tuberculosis a special tax levy by the county provides sanitarium, clinical and nursing facilities.

"Excluding funds appropriated for tuberculosis sanitarium service, in order to conform with the policy followed in computing costs elsewhere, the city spent about 13.5 cents per capita for public health protection last year. Other agencies contributed about 22.5 cents per capita, making the grand total about 36 cents. Expenditures in Danville were the same per capita, no other of the fifteen cities spending so little for this most basic governmental function.

"Practically no tabulations or analyses of vital statistics are attempted. This permits the city to lose all of the benefits that might accrue from these valuable records.

"No communicable disease nurse is employed nor is there provided a physician to visit all cases of contagion. The sanitary inspector placards premises and releases from quarantine.

"Sanitarium care of tuberculous patients is up to standard with the disease incipient only on a goodly percentage of admissions. No open-air classrooms or preventoria for children predisposed to tuberculosis are provided.

"The prenatal, infant and preschool child hygiene program is limited largely to a field nursing service provided by the Visiting Nurse Association. While excellent in character the volume of this work is not commensurate with the needs of the city. A total of 708 visits were made to the preschool age clinic last year.

"The health of the public school children is receiving careful consideration. Under the supervision of school physician and dental surgeon, assisted by the school visiting nurse, the children of the grade schools are given periodic physical examinations, defects listed and parents notified. Contagious diseases are promptly detected and the patients removed from school. Twelve hundred and sixty-five (1265) dental defects were corrected by the school dental surgeon during the past year. Records of the findings of the school physician are tabulated but similar records of corrections of physical defects are not available.



Albert N. Mueller, M.D.
Health Commissioner, 1909-
1911; 1914-1915; 1919-
1923; 1927 to date

"The curriculum of the public schools provides for health instruction in all grades from the first to the sixth inclusive.

"The public water supply is adequate and meets fully all sanitary requirements but only 80 per cent of the dwelling houses utilize it. Likewise 20 per cent of the homes have no toilet facilities other than outside privies.

"An inspector spends part of his time making sanitary investigations. Some of the food handling establishments are required to hold license and are inspected from time to time.

"About 60 per cent of the milk supply is pasteurized. Laboratory examination of samples is not systematically practiced, no inspection of producing farms is attempted and the inspection of pasteurizing plants is inadequate."

WATER SUPPLY

Waterworks were first installed in Rock Island in 1870. Water was drawn from the Mississippi River below the sewer outlets and pumped to the mains without treatment.

In 1878 Mr. P. L. Cable donated the lands and funds for a new plant to be located about two miles upstream. The intake was to be above the sewer outlets and extend into the main channel of the river. This plant delivered a somewhat better water, but it was still contaminated by sewage from cities further upstream. Sedimentation was the only form of treatment until the early 90's when Mr. Cable donated funds for a filtration plant. Wooden tub filters of the Jewell gravity type were installed. These filters did not prove satisfactory, but were used for about ten years.



P. L. Cable

In 1899 a new filtration plant was built by the city. The new plant included sedimentation and three slow-sand filters of one-half acre each. This plant was built up on the bluff in the highest part of the city. The slow-sand filters were not very satisfactory treating such a turbid water and soon became inadequate.

A new rapid-sand filter plant replaced the slow-sand plant in 1911. This plant was modern and adequate, and is still in use.

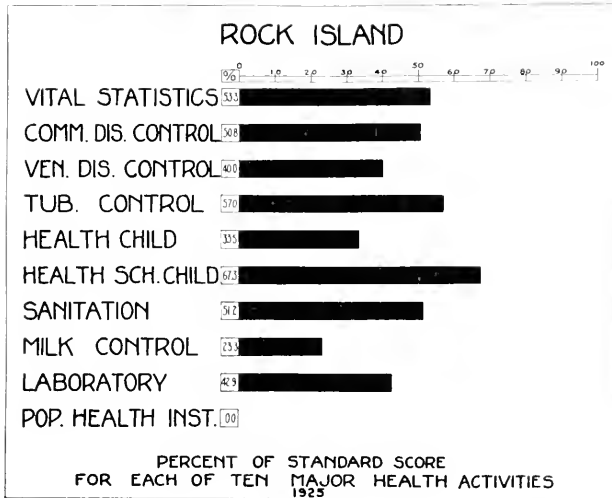
SEWERAGE

A system of sewerage had been started in 1885. About one-tenth of the city was served and there were four outlets discharging into the Mississippi River below the city.

The system has been extended and outlets have been added, until at present the city is well sewered and there are many outlets scattered along the river. There are three small treatment plants on sewers emptying into a small creek tributary to the river.

Mississippi River is badly polluted at this point by sewage, part of which comes from Rock Island.

The city is in need of adequate interceptors and treatment plants.



This graph illustrates the strong and weak points in Rock Island's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Rock Island was 47 per cent of the standard perfection requirement.

HEALTH CONDITIONS

The first statistics regarding diseases and deaths are those for the garrison located at Fort Armstrong during the seven years that followed its establishment in 1816.

During this period the ratio of intermittent fevers was 17 per cent and remittents 10 per cent. The relation of diseases of the respiratory organs to all other diseases, exclusive of accidents and venereal infections was 1 to 3.8. The ratio in all military posts at the time was 1 to 7 or less than half as great as at Fort Armstrong.

During the Black Hawk war in 1832, the fort was a special place of interest and security. Here the early pioneers used to rendezvous when Indian attacks threatened.

It was here that General Winfield Scott met with Governor Reynolds to conclude the treaty of peace with Black Hawk and his warriors.

Governor Reynolds in "My Own Times" says:

"While arrangements were being made to hold the treaty at Rock Island, the cholera appeared in its worst form in that section of the State and amongst the Indians. This disease was a stranger in the country at that day and spread terror and panic wherever it went.

"We were compelled to disperse the Indians while the disease raged at Fort Armstrong on Rock Island some distance from the fort so as to be more healthy.

"After waiting a month or more for the cholera to subside, we concluded the treaty on the 15th of September, 1832."

It is probable that cholera was again prevalent in Rock Island during the general epidemic that swept the country during the middle of the nineteenth century although there are no records to substantiate this conjecture. On the other hand the health commissioner declared in 1885 that cholera, and a few other diseases, had not been epidemic since the organization of the health department in 1882. This implies that the memory of an epidemic still lingered in the minds of public officials.

Such mortality records as are available suggest that smallpox never appeared in epidemics of large magnitude in Rock Island. An outbreak of 15 cases is recorded in 1882 and a few cases at a time have been registered periodically since that date. Posting a police guard at the entrance of premises to insure the rigid quarantine of patients seems to have been the method of controlling smallpox prior to 1900. This, of course, was in addition to vaccination which was made compulsory, so far as school children were concerned, by ordinance.



Fort Armstrong, the nucleus around which the Tri-cities have been built.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1881	255	15	6	...	5	14	12	10	...	...	39	8
1882	225	15	12	12	...	4	1	14	...	...	33	10
1883	134	5	...	...	4	...	...	0	...	...	25	9
1884	161	9	12	...	...	4	12	21	...	...	24	8
1885	...	...	...	...	...	...	...	...	...	...	...	...
1895	148	3	...	...	...	...	12	6	...	...	10	...
1907	211	4	...	...	...	3	...	10	7	...	17	21
1908	188	...	...	...	...	...	...	...	...	...	...	...
1909	298	9	...	...	...	1	...	1	...	...	28	20
1910	350	...	...	...	...	...	...	...	...	...	...	...
1911	356	10	...	...	...	...	...	...	...	...	...	...
1912	312	...	...	...	...	...	...	...	...	...	...	...
1913	366	10	...	...	1	1	7	13	...	...	24	...
1917	482	...	...	...	...	...	...	...	12	...	...	54
1918	561	5	1	...	7	...	4	8	84	...	46	71
1919	347	1	...	...	...	1	1	12	19	...	39	21
1920	407	12	...	...	3	12	7	1	18	...	41	32
1921	356	12	1	...	...	1	3	1	12	...	30	19
1922	335	...	...	...	...	...	...	4	6	...	31	18
1923	315	1	...	...	3	...	5	8	...	...	25	14
1924	343	...	...	12	12	...	...	8	1	...	30	10
1925	325	3	...	...	...	1	...	13	...	...	13	14
1926	404	1	...	...	...	1	1	10	1	...	22	20

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1881	24.7	125.0	50.0	...	42.7	116.6	16.6	83.3	...	...	325.0	66.6
1882	19.2	125.0	16.6	...	...	33.3	8.3	116.6	...	...	275.0	83.3
1883	13.2	41.6	...	...	33.3	...	...	75.0	...	...	208.3	75.0
1884	12.9	75.0	16.6	...	...	33.3	16.6	175.0	...	...	200.0	66.6
1885	...	...	...	...	...	...	...	...	...	...	...	...
1895	8.9	17.6	...	...	...	...	11.7	35.2	...	...	58.8	...
1907	9.2	17.4	...	...	...	13.1	...	43.7	30.5	...	74.2	91.7
1908	9.7	...	...	...	...	...	...	...	...	...	...	...
1909	12.4	37.7	...	...	...	4.1	...	4.1	...	...	117.4	84.8
1910	14.3	...	...	...	...	...	...	...	...	...	...	...
1911	14.0	39.3	...	...	...	...	...	...	...	...	...	...
1912	11.7	...	...	...	...	...	...	...	...	...	...	...
1913	13.2	36.2	...	...	3.6	3.6	25.5	17.1	...	...	86.9	...
1917	15.09	...	...	...	...	...	...	...	6.2	...	...	169.1
1918	16.9	15.1	3.0	...	21.5	...	12.3	24.6	258.4	...	141.5	227.6
1919	10.2	2.8	...	...	...	12.8	2.8	7	54.2	...	111.4	60.6
1920	11.4	5.5	...	...	8.0	5.5	19.4	2.7	50.0	...	113.8	88.8
1921	9.8	5.5	2.7	...	...	12.7	8.2	2.7	5.5	...	82.1	52.0
1922	8.9	...	...	...	...	...	...	10.7	16.0	...	82.8	48.1
1923	8.2	2.6	...	...	7.8	...	13.1	21.0	21.0	...	65.7	36.8
1924	8.8	5.1	...	5.1	5.1	2.5	...	10.2	2.5	...	76.9	25.6
1925	8.1	7.4	...	...	...	2.5	...	5.0	32.4	2.5	57.3	34.9
1926	9.9	2.6	...	...	...	2.6	2.6	12.1	26.0	2.4	53.6	48.9

NOTE: The rate from All Causes is per 1,000 population; all others per 100,000 population.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	16	11	30	9	11	6	20	2	5	12	6	2
Smallpox	75	30	9	142	173	57	...	16	41	5	1	1
Measles	23	75	436	14	580	32	7	881	156	88	368	687
Scarlet Fever	75	31	94	16	17	65	22	19	18	19	44	48
Whooping Cough	9	69	118	21	165	88	21	224	41	243	108	313
Diphtheria	17	37	66	43	16	47	34	100	87	57	57	54
Influenza	...	...	2985	2	497	2	18	6	1	11	16	9
Poliomyelitis	4	9	...	...	1	4	2	2	2	3	1	...
Meningitis	...	1	2	...	...	3	3	1	...	...	1	...
Eubercleosis*	13	13	10	20	34	79	88	31	48	38	39	57
Pneumonia*	...	...	219	95	129	61	69	30	31	45	76	66
Syphilis	...	...	...	...	...	124	...	...	22	45	11	12
Gonorrhea	...	...	...	...	...	166	...	...	44	52	43	22

* All forms.

NOTE: Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates improvement in notification more than anything else.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1881	...	...	74	616.6
1882	...	...	62	516.6
1883	...	...	47	358.3
1884	...	...	41	341.6
1916	496	16.4	56	112.9
1917	432	13.5	52	120.3
1918	460	13.9	58	126.1
1919	475	13.9	39	82.1
1920	481	13.5	62	128.5
1921	494	13.4	41	83.0
1922	466	12.3	24	51.5
1923	420	11.0	31	78.6
1924	450	11.5	24	53.3
1925	390	10.0	30	75.2
1926	410	10.0	20	48.8

* Deaths of infants under 1 year of age per 1000 births reported.

** Per 1000 population.

It was different with typhoid fever. That disease has cost the city dearly in both life, suffering and money. Statistics for the early eighties indicate that 44 deaths resulted from typhoid fever in the four years ended with 1884. That number of fatalities suggests the occurrence of some four or five hundred cases, a severe experience for a community of about 12,000 souls.

It is probable that the disease had fallen upon the inhabitants during earlier years with no less disastrous results. Subsequently to that period epidemics varying from a dozen to 500 cases have occurred. In 1903 there

were about 500 cases and there were about 1150 in 1911. An outbreak of 12 cases in 1890 was confined to the pupils in Augustana College. As late as 1922 there were 20 cases reported from Rock Island. These statistics show what remarkable progress has been made against typhoid fever. In the whole state of Illinois there were but 1,286 cases reported in 1927. Rock Island had two in that year.

Diphtheria, likewise, has spilled its wrath upon Rock Island from time to time. In 1889, for instance, this infection began to spread and continued until 222 cases had been reported, resulting in 45 deaths. Again in 1923 there was a rather peculiar epidemic that seemed to follow and complicate an outbreak of measles. Case reports ran up to 109. Between these two there has been the constant seasonal incidence that hasn't ceased to arrive with the autumn of each succeeding year.

Tuberculosis was once the chief cause of death in Rock Island as it was elsewhere in Illinois and the country. In 1881 the number of deaths attributed to tuberculosis in Rock Island gave a mortality rate of 325 per 100,000 population. In 1926 the rate was 53.6. The most pronounced period of improvement began in 1918 when the rate was 141.5.

Influenza and pneumonia struck Rock Island but lightly in 1918. The combined mortality rate was only 486 per 100,000, a figure lower than from influenza alone in many municipalities. Only four or five other places in the State escaped with such small losses.

The general death rate in Rock Island suggests good health conditions. It is unusually low. It may be that hospital facilities across the river in Davenport attract enough of the sick to be no small factor in the low death rate.

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- My Own Times, Governor John Reynolds, 1855.
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- U. S. Census Reports, Washington, D. C., various dates.

Springfield

The first settlement on the present site of Springfield was made in 1818, the year Illinois entered the Union. At first it was called "Calhoun," in honor of the great nullifier of South Carolina, but the name proved to be unpopular and few people used it. They preferred Springfield, the name given to the postoffice in the embryo city of Calhoun.

Early in the career of Springfield, the municipality began acquiring political honors, a habit which it showed no tendency to forsake. In 1821, two years before it was officially laid out, it acquired the title of county seat of Sangamon County.

In 1837, as the result of a rather strenuous political contest, it became the State capital and the first session of the legislature to meet there assembled in 1839. Abraham Lincoln, as a member of the long-nine, had much to do with the removal of the State capital from Vandalia to Springfield. Among the many rumors of reasons for removing the capital from Vandalia to Springfield are two that relate to health.

One is that the legislature had grown tired of the preponderance of venison, wild turkey, wild duck, and other game meats supplied them at Vandalia, and they moved the capital to Springfield where they could get more pork and beef.

Another is that the Kaskaskia bottoms around Vandalia made the location so highly malarial that the legislature wanted a healthier site for the State House.

The village government in Springfield consisted of a president and a board of trustees of five members. In 1839, Abraham Lincoln was elected a member of the board to fill a vacancy, and was re-elected in the following year.

Springfield is located near the Sangamon River in the very heart of a rich coal mining and agricultural region where the terrane is so flat that adequate drainage of residential districts depends upon unusual engineering skill in the construction of sewer mains. In 1920 it had a population of 59,183, the fifth largest city in Illinois. The number of inhabitants in 1840, the earliest year listed in the United States census returns, was 2,579. Subsequent to that time two decades, 1850-1870, witnessed very rapid growth, the increase amounting to 96 per cent during the twenty years, but later the population has grown more gradually. Of the 1920 population 84.7 per cent were native born whites, 10.6 foreign born whites and 4.7 negroes. Nearly 24 per cent were in the 45 and over age group.

HEALTH MACHINERY

Among the books and papers of the late Dr. A. W. French, a dentist of Springfield, was found an old note book, the binder's title on the back of which reads "Minutes of Springfield, Illinois 1832-1840." On the fly leaf of the book is written: "Minutes of Board of Trustees of the Village of Springfield, Illinois, of its meetings from April 1832 (first meeting) to the organizing of a city in 1839."¹

These minutes show that on July 19, 1832, at an extra meeting of the board, the following preamble and resolutions were read and passed:

"Whereas, we have information that the Asiatic cholera is now prevailing in Chicago, and whereas, it becomes the duty of the trustees to guard the town from infection from that source," etc.

The usual orders were then made as to cleaning up the town. On November 14, orders were given out that the court house be fitted up as a hospital in case it was needed for the cholera patients.

The next event of importance to the health machinery of the city took place in 1840 when the community was incorporated as a city under a special charter granted by the legislature. This charter provided for the annual appointment of a board of health consisting of three or more commissioners, over whom the mayor was designated as the presiding officer and the city clerk as clerk. Broad powers relating to public health were vested in the board. The charter required, among other things, that physicians should report all cases of communicable diseases and that the health officer visit patients suffering from such diseases and report his opinions relative thereto to the city clerk. There is no evidence that any of these provisions were carried out with any degree of regularity or completeness.

Doubtless the board of health became active during epidemic emergencies but for the most part it sank into a dormant or inactive status over long periods of years. In 1877, when public health ideas filled the air about the capital building,

due to the legislative act creating the State Board of Health, the council in Springfield adopted an ordinance requiring the isolation of persons sick with contagious diseases and giving the board of health power to quarantine premises upon which communicable diseases existed. It also prohibited slaughtering in the city and regulated food and milk supplies. Moreover there was an ordinance making vaccination against smallpox compulsory.



George Thomas Palmer, M.D.
Superintendent of Health
1909-1913

¹ Journal Illinois Historical Society, Vol. 2.

In 1880 the board of health was made up of six members, one from each ward, besides the mayor and city clerk. It appears that annual expenditures amounted to about \$300 during ordinary times and that this went largely to inspectors, employed during pleasant weather in order to stimulate general civic cleanliness.

In 1882 a new ordinance introduced the police department into the board of health. It provided that the board should consist of seven members appointed by the mayor, and the mayor, superintendent of police and city clerk as ex-officio members. From this time forward over a number of years the mayor appointed a member of the police force to act as health officer. It seems to have been the practice from the start to select physicians for members of the board and not infrequently all members except the ex-officio were doctors.

Subsequently to 1882 the growing demands of a growing city caused a gradual increase in the appropriations made to the health department and these were expended for the employment of persons who varied in number with epidemic emergencies, for the operation of a "pest house", the removal of dead animals, etc. It soon became customary to employ a full time inspector working directly under the board of health and by 1903 there were two or three inspectors, one acting as health officer.



B. B. Griffith, M.D.
Superintendent of Health
1914-1918

A distinct change came in 1909 when Dr. George Thomas Palmer was appointed superintendent of health in Springfield. He was the first physician to fill the chief executive position of the board of health in Springfield. Since that date a doctor has always filled the office, sometimes on a full time basis, sometimes on part time duty. The health department staff in 1909 consisted of the superintendent, an assistant, a meat inspector, two health officers, a plumbing inspector and the matron of the "pest house."

The next important change came in 1911 when the city adopted the commission form of government. This disposed of the board of health, placing its duties and responsibilities upon the shoulders of the commissioner of public health and safety and bringing closer to political power the office of superintendent of health. The staff of the health department was changed but little, a secretary-clerk replacing the assistant superintendent.

About this time there occurred a pronounced wave of public interest in health and social welfare matters that resulted in an exhaustive sanitary, social and educational study of the city, put on by the Russell Sage Foundation in 1914. This study reduced information concerning the health and

sanitary conditions of the community to a report which detailed all possible shortcomings, featuring infant mortality and other statistics, and offered some very definite recommendations for improvement.

Shortly after the survey the voluntary agencies became active. The study had indicated an unnecessarily high infant mortality rate so in February 1916, the first infant welfare clinic was opened through the initiative of the Springfield Improvement League. This was the beginning of what

proved to be a very important factor in the health machinery of the city, growing in size from one to seven infant welfare stations with a nursing staff of four.

In 1918 a full time physician in the person of Dr. A. E. Campbell, was employed as superintendent of health and since then the office has been rated as a whole time position.

One improvement followed another until at the close of 1925 the health department together with the quasi-public and voluntary agencies, were doing a very creditable volume of work. A good summary of the nature and adequacy of the machinery at that time, which continues to be the case,

is found in a report of a survey made early in 1926 by the State Department of Public Health. From it we read:



Albert E. Campbell, M.D.
Superintendent of Health
1918-1924

"With a total score of 667, Springfield stands fourth among the fifteen cities in which the public health activities were appraised. This is in itself a very creditable record; but the striking fact is the recent development of improvements in health service, some of which were inaugurated too late in the year to be credited in this survey, which is based on the 1925 record. These improvements, set forth in another section of this report, have been due to (1) the hearty cooperation of the local medical profession, (2) the active interest of the citizens, and (3) the initiative of the full-time health officer.

"Springfield takes first place in its venereal disease control program, an important feature of which is the clinical service conducted at St. John's Hospital and financed jointly by the State and county. In vital statistics and health measures for children under school age, Springfield ranks second and third in communicable disease control.

"This city expends \$21,110 or 33 cents per capita through its health department. Expenditures by other agencies bring the grand total to \$46,991 or 73 cents per capita.

"The school hygiene work is under the direction of the board of education, which employs a part-time dentist and four nurses. Last year, upon request of the local medical society, the city health officer was appointed director of hygiene for the public schools. The parochial schools employed a nurse early in 1925. There is no medical examination of school children, although the nurses make physical inspections

and home visits. Health education in the schools is not as thoroughly carried out as is desirable. Springfield is one of the seven cities in this group, all of them much smaller than Springfield, which does not have medical supervision for its school children. Playgrounds are conducted in connection with many schools and in the several parks throughout the city under a well organized recreation commission.

"The most striking fact in connection with Springfield's public health status is the marked improvement which began with the reorganization of the health department in 1924. This improvement has

been manifested (1) by the hearty co-operation of the county medical society with the health department, (2) by the substantial support of the council of social agencies in promoting the health department program, (3) by the coordination of the infant welfare and school hygiene programs with the health department, and (4) by the confidence of the dairy interests expressed in their petition to the city commission requesting supervision of their industry by the health department.

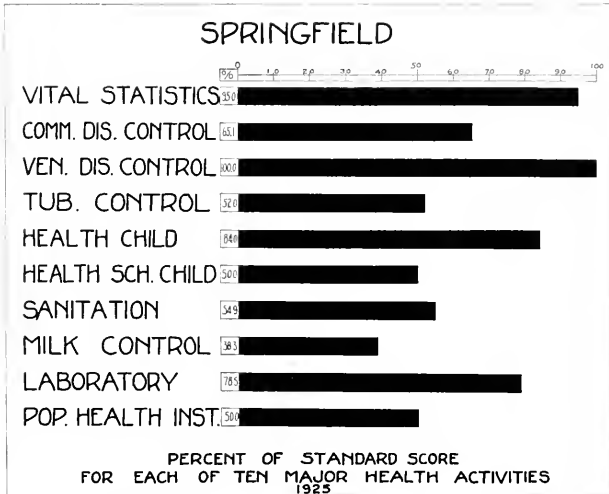


Raymond V. Brokaw, M. D.
Superintendent of Health
1924-1927

"The county medical society endorsed the new isolation hospital project soon to be opened as an integral unit of St. John's Hospital; and also the child guidance clinics which are now conducted in this city by the Institute for Juvenile Research. The society formerly requested the board of education to appoint the city health officer as supervisor of hygiene in the public school system, to establish an open-air school, and to provide facilities for mentally defective children, all of which requests met with favorable action.

"The Council of Social Agencies, representing a large group of influential and interested citizens, has materially advanced Springfield's public health program by raising the standards of social service; by financing the new \$100,000 isolation hospital project; by contributing in part the salary of the health officer, and in full the salary of a director of nurses; by sponsoring the child guidance clinics, and financing a social service worker in this connection; and more recently by promoting a mental hygiene educational program, which is being conducted by the Illinois Society for Mental Hygiene.

"The coordination of the public health nursing activities has provided for direct supervision by the city health department of the communicable disease nurses, the infant welfare nurses, the public school nurses and the county school nurses. A new director of nurses has been added to the staff of the city health department to develop this program."



This graph illustrates the strong and weak points in Springfield's public health service, official and voluntary, as it existed in 1925. It is based upon a personal survey and rated upon the standards evolved by the American Public Health Association. The total efficiency rating in Springfield was 67 per cent of the standard perfection requirement.

The physicians who have served Springfield as superintendents of health are:

George Thomas Palmer, M. D.	1909-1913
O. H. Deichmann, M. D.	1913-1914
B. B. Griffith, M. D.	1914-1918
A. E. Campbell, M. D.	1918-1924
R. V. Brokaw, M. D.	1924-1927
H. H. Tuttle, M. D.	1927 to date

WATER SUPPLY

The public water supply was installed about 1868. The water was pumped direct from Sangamon River and consequently was at times turbid and not safe for drinking purposes. At that time a majority of the inhabitants depended on wells and cisterns for their drinking water.

In order to secure a cleaner and safer water a large well was constructed, in 1884, on the bank of the river. The well soon proved inadequate and in 1888 an infiltration gallery was constructed near the well.

In 1890 the supply again became inadequate and a connection was made between the river and the infiltration gallery to supplement the well water with river water.

The use of river water created much dissatisfaction and several wells were drilled to make the continuous use of river water unnecessary.

In 1918 a chlorinator was installed to make the water safe, but it was still turbid at times.

From time to time additional wells were drilled and the infiltration gallery was enlarged, but in general the water was rather unsatisfactory.

In 1926 a modern water-purification, iron-removal and water-softening plant was completed. A combination of well and river water is still used but the treatment plant makes the water desirable for all household uses.

The construction of a dam to form Lake Springfield is being considered. When the lake is formed it will be used as a source of supply and will furnish a better supply than the river water.

Table 1.
MORTALITY FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever*	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Comp	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1875	...	5	3	...	...	...	1	31	...	...	52	22
1876	...	5	...	...	7	14	...	17	...	...	26	13
1877	...	15	2	...	1	17	...	5	...	...	46	18
1878	...	11	3	...	...	6	12	20	...	...	54	11
1879	...	6	1	...	1	46	...	13	...	...	39	20
1880	...	11	2	...	4	30	12	9	...	...	48	23
1881	...	35	6	...	4	2	502	5	...	...	62	16
1882	...	29	2	...	...	2	...	14	...	...	57	13
1883	...	12	1	...	...	...	...	7	...	...	45	21
1884	...	9	...	...	1	1	3	14	...	...	57	13
1900	605	12	...	...	...	4	6	20	9	...	80	34
1901	674	9	1	...	6	3	10	26	11	...	107	41
1902	640	11	...	...	...	1	3	19	6	...	96	37
1903	598	18	...	1	1	4	7	22	2	...	79	46
1904	801	15	1	1	4	7	6	11	8	...	100	78
1905	...	...	...	...	...	...	...	...	...	...	...	...
1906	750	16	1	...	5	1	6	21	3	...	63	49
1907	831	34	2	...	13	5	3	21	9	...	102	56
1908	764	17	...	...	3	11	4	6	7	...	82	45
1909	851	17	3	...	13	1	1	3	4	...	91	63
1910	866	27	...	...	3	6	2	13	5	...	127	66
1911	867	15	2	...	...	6	6	12	4	...	99	76
1912	866	23	...	...	3	...	...	23	...	...	75	67
1913	994	17	2	...	18	1	14	3	...	...	94	80
1914	902	17	...	...	...	...	4	10	1	...	103	92
1915	995	17	1	...	22	6	1	13	6	...	94	94
1916	976	8	...	...	6	4	10	18	9	...	73	111
1917	979	17	...	...	1	1	...	6	8	...	71	105
1918	1223	12	...	...	12	1	4	9	240	...	93	145
1919	965	5	1	...	1	1	...	11	68	...	84	87
1920	1002	8	1	...	...	8	...	6	46	...	60	101
1921	903	5	1	...	3	7	12	7	7	...	45	62
1922	976	2	...	...	1	4	...	2	32	...	58	64
1923	1049	3	...	...	10	...	1	8	39	...	57	73
1924	969	1	...	...	...	1	3	9	31	...	35	57
1925	1121	4	...	...	1	3	12	3	55	1	56	49
1926	1094	4	...	...	2	1	11	3	45	1	52	64

*Prior to 1900 for Enteric Fever.

Table 2.
MORTALITY RATES FROM CERTAIN CAUSES.

YEAR	All Causes	Typhoid Fever	Malaria	Smallpox	Measles	Scarlet Fever	Whoop, Cough	Diphtheria and Croup	Influenza	Poliomyelitis	Tuberculosis (All forms)	Pneumonia (All forms)
1875	...	26.5	15.9	...	...	...	5.3	164.3	...	...	275.6	118.5
1876	...	26.6	26.6	...	37.2	74.2	26.6	85.1	...	...	190.8	69.1
1877	...	78.0	10.4	...	32.2	88.4	36.4	26.0	...	...	230.2	94.3
1878	...	56.1	15.3	...	...	30.6	10.3	102.0	...	...	265.2	56.2
1879	...	30.0	5.0	...	5.0	230.0	...	65.0	...	...	195.0	101.8
1880	...	56.1	10.1	...	20.2	133.0	10.1	45.9	...	...	244.8	116.4
1881	...	171.5	29.4	...	19.7	9.8	24.5	24.5	...	...	303.8	78.9
1882	...	139.2	9.6	...	...	9.6	...	67.2	...	...	275.6	62.5
1883	...	56.4	4.7	...	...	9.4	9.4	32.9	...	...	211.5	99.0
1884	...	39.6	...	...	4.4	4.4	13.9	61.6	...	...	250.8	58.1
1900	17.7	35.1	...	...	...	11.7	17.6	58.5	26.3	...	234.2	99.5
1901	19.3	25.8	2.9	...	17.2	8.6	28.7	74.6	31.6	...	307.1	117.7
1902	18.0	31.0	...	22.5	...	2.8	8.4	53.5	16.9	...	270.3	104.1
1903	16.5	49.7	...	2.8	2.8	11.0	19.3	60.8	5.5	...	228.1	127.0
1904	21.4	40.0	2.7	10.7	10.7	18.7	16.0	29.3	21.3	...	266.7	208.0
1905	15.5	33.7	...	2.4	2.4	4.8	4.8	26.5	12.0	...	204.6	103.5
1906	19.3	41.1	2.6	...	12.8	2.6	15.4	73.5	7.7	...	161.8	125.9
1907	18.1	73.9	4.3	...	28.3	10.9	6.5	45.6	19.6	...	221.7	121.7
1908	17.3	38.6	...	...	6.8	25.0	9.1	13.6	15.9	...	186.0	102.4
1909	16.8	33.6	5.9	...	25.7	2.0	2.0	5.9	7.9	...	179.8	134.5
1910	16.6	52.0	...	...	5.8	11.5	3.8	25.0	9.6	...	225.2	127.0
1911	16.7	28.2	3.8	...	...	11.3	11.3	22.5	7.5	...	185.8	142.6
1912	16.2	41.8	...	...	5.5	...	14.6	41.8	3.6	...	136.1	121.9
1913	18.4	30.1	3.5	...	31.9	1.8	24.8	24.8	5.3	...	161.2	157.6
1914	16.4	29.3	...	...	...	8.6	6.9	17.2	1.7	...	177.6	158.7
1915	17.8	28.5	1.7	...	36.9	10.1	1.7	21.8	10.1	...	157.6	157.7
1916	17.3	13.1	...	...	9.8	6.5	16.4	29.5	14.7	...	124.1	119.1
1917	17.1	27.1	...	...	1.6	1.6	...	9.6	12.8	...	113.4	167.7
1918	21.1	18.5	...	...	18.5	1.5	6.1	13.9	370.3	...	143.5	223.7
1919	16.4	8.5	1.7	...	1.7	1.7	...	18.7	115.2	...	142.8	145.1
1920	16.8	13.4	1.7	...	...	13.4	...	10.2	76.6	...	100.7	169.5
1921	14.9	8.3	1.7	...	5.0	11.6	3.3	11.6	11.6	...	74.6	102.8
1922	15.9	3.3	...	...	1.6	6.5	11.5	3.3	52.4	...	95.0	104.8
1923	17.0	4.8	...	...	16.1	...	6.4	12.8	63.1	...	92.1	92.2
1924	15.5	6.3	...	...	...	1.5	4.7	14.2	49.2	...	55.5	90.4
1925	17.5	6.3	...	...	1.5	4.6	3.1	4.6	86.0	1.5	87.5	76.6
1926	16.9	6.0	...	...	3.0	1.5	16.5	4.6	67.5	1.5	80.3	98.9

NOTE: The rate from All Causes is per 1000 population; all others per 100,000 population.

SEWERAGE

In 1885 there was a sewerage system with about ten miles of sewers and three outlets discharging into Spring Creek. The system had been enlarged until by 1913 there were twelve outlets.

In 1924 a report on sewage disposal was prepared by Pearse, Greeley & Hansen and Dawson & Walraven. It was recommended that interceptors and a treatment plant be constructed.

At present the interceptors are completed, and construction of the treatment has been started.

HEALTH CONDITIONS

Late in 1832 cholera was responsible for the first grave public health problem that the officials of Springfield were ever called upon to meet. The disease had been introduced into the mid-western territory by troops under the command of General Winfield Scott, moving westward to participate in the Black Hawk War, and spread quickly to Springfield because of close communications maintained between the military forces and the State officials at the Capitol. Lack of statistical records leaves to conjecture an idea of how severe the epidemic proved to be in Springfield.

Again in 1844 the redoubtable Daniel Drake, M. D., while enroute upon one of his many observation tours of the mid-western territory, found in Springfield some cases of intermittent fever declared by him to be as malignant as those ordinarily found upon the banks of the Tuscaloosa or Pearl Rivers, seven degrees latitude further south. He was informed moreover by John Todd, A. G. Henry, William Merriman and Gershom Jayne, four local physicians, that autumnal fevers, probably typhoid and malaria, prevailed in the Sangamon Valley. Later history suggests that both typhoid and malaria were indeed prevalent and caused losses that today would be regarded with the greatest public alarm.

In 1849 another epidemic of cholera occurred in the city. Dr. Gershom Jayne, who came to Springfield in 1821 and who was one of the first commissioners of the Illinois and Michigan canal, was in the thick of the battle against this cholera outbreak and unmindful of danger.



George N. Kreider, M. D.

Cholera morbus was also very prevalent during this period. According to Dr. George Noble Kreider, it was due to spoiled foods. The means of preserving food in the summer time were very poor, and the meat was often spoiled and undoubtedly the milk too. Dr. George Pasfield reported that it was nothing unusual to find on a hot summer that three or four citizens had died of cholera morbus during the night after only a few hours' illness.

A pandemic of influenza occurred in 1849-1850. Not much reference was made to it in Illinois, possibly on account of the cholera epidemics in the same years, which overshadowed it. The outbreak was widely diffused in the population of the United States, and probably more fatal than the statistical records would indicate.

During a long period of its early history Springfield appears to have escaped the uncontrolled outbreaks of smallpox that were attended with so much public alarm and furor in other places. At least there is scant record

of any such experiences except for a mild reference of an epidemic in the early eighties. It must be remembered in this connection that vaccination was compulsory in the city and that Springfield was the capital of the State during those early years of the State Board of Health when the organization promoted vaccination with an overwhelming zeal and emphasis.

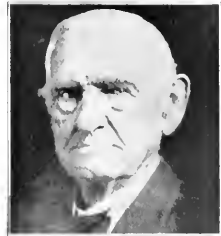


George Pasfield, M. D.

But compulsory vaccination was declared unconstitutional during the nineties and in 1901 Springfield fell victim to an outbreak of smallpox which seemed bent upon avenging itself against people who had enjoyed such a long-time immunity. At any rate 527 cases were recorded in 1901 and 335 in 1902. A "pest house" was constructed in a desolate locality near the cemetery and considerable expenses were incurred in other ways in efforts to control the disease. This epidemic actually smouldered in the city for three or four

years but since that time smallpox has never again appeared in a seriously embarrassing character. While vaccination is not and cannot be compulsory an alert health department has managed to stimulate a considerable degree of vaccination on the one hand and on the other has promptly applied control and preventive measures when smallpox broke out in the community.

Typhoid fever has had a long and ugly history in Springfield. Up to 1918 the annual mortality from that disease rarely fell below 20 per 100,000 population and not infrequently the rate ascended to points above 40. The actual number of deaths ranged from 5 to 35 indicating a very heavy prevalence. It was ascertained through a house to house canvass in 1910 that 7,000 shallow wells and 6,000 privy vaults were in use in the city and very likely this condition had a close relation to the perpetual typhoid problem that cost the community so dearly. By 1918 a big percentage of both privies and wells had been abandoned and subsequently to that date typhoid fever steadily declined.



William Jayne, M. D.

Springfield has suffered from its full share of diphtheria and scarlet fever although both diseases are at present insignificant causes of death compared with what they were up to 1916. Prior to that date both infections paid unwelcomed epidemic visits to the city at periodic intervals, while a kind of normal or residual prevalence prevailed constantly to plague a limited number of unfortunate victims. Diphtheria usually was the more fatal of

the two and was responsible for the heavier mortality. A particularly severe outbreak of scarlet fever occurred in 1879 when 46 deaths were attributed to it. The epidemic stretched out over the next year carrying 30 more victims to their graves. Another widespread outbreak occurred in 1920 and 1921 but it was milder and resulted in but 8 and 7 deaths, respectively. Diphtheria has been more strictly seasonal, the average annual mortality being greater than that from scarlet fever with 31 deaths in 1875 being the greatest number ever registered for a single year. Other bad diphtheria years were 1878 with 20 deaths, 1901 with 26, 1903 with 22, 1906 and 1907 with 21 each and 1912 with 23. The mortality is not always an accurate index to the prevalence, however, because the malignancy of the disease varies considerably from time to time.

Table 3.
CASES OF CERTAIN DISEASES REPORTED.

	1919	1920	1921	1922	1923	1924	1925	1926	1927
Typhoid Fever	13	21	43	27	18	40	24	13	18
Malaria				1			4		
Smallpox	27	32	50	5	3	6	2		9
Measles	11	260	179	43	1203	76	366	452	1589
Scarlet Fever	73	507	638	91	79	64	130	160	187
Whooping Cough			126	309	207	81	58	422	25
Diphtheria	75	41	93	100	98	134	85	36	56
Influenza	573	256	1	31	47	35	51	58	34
Poliomyelitis	3		18	4	2	1	1	1	3
Meningitis	1	2	1	2	3	2	3		2
Tuberculosis*			74	230	273	192	198	145	94
Pneumonia*			70	205	223	191	146	146	169
Syphilis			270			325	257	387	286
Gonorrhea			337			379	285	453	335
Chancroid			29						12

* All forms.
NOTE. Case reports are never complete, but they have been much more so since 1920 than before in Illinois. This table indicates that notification in Springfield is reasonably complete.

The trend of tuberculosis has been distinctly downward since about 1900. Prior to that date the disease was very common in Springfield, as it was elsewhere, causing a very noticeably heavy mortality and incapacitating no small number of citizens. Happily this infection now causes less than a third of the mortality that it did in 1900 and Springfield has a death rate from it which is but slightly higher than that for the State. Mortality from tuberculosis in Sangamon County remains high, however, due to the location of two large sanitariums to which patients come from many other counties.

Influenza was moderate in Springfield in 1918 compared with the havoc it wrought in many other places. The deaths attributed to it numbered 240, giving a mortality rate of 370 per 100,000, compared with figures using above 400 in a number of other municipalities. Even when combined with the mortality from pneumonia the death rate fell a bit short of 600 which was lower than that of a dozen other Illinois cities.

Table 4.
BIRTHS AND INFANT DEATHS.

YEAR	Births		Infant Deaths	
	Number	Rate**	Number	Rate*
1876			64	
1877			64	
1878			56	
1879			52	
1880			85	
1881	499	19.7	87	217.5
1882	386	18.5	77	199.4
1883	410	19.2	61	148.7
1884	239	10.9	73	305.4
1885	297	9.3		
1906			135	
1907			113	
1910			152	
1911			118	
1913			171	
1914			132	
1915			118	
1916			119	
1917			104	107.3
1918			136	105.8
1919			117	
1920	1165	19.6	109	92.7
1921	1350	22.4	120	88.8
1922	1212	19.8	111	91.6
1923	1372	21.9	108	79.9
1924	1412	22.5	98	69.4
1925	1394	21.8	119	85.4
1926	1317	20.4	99	75.2

* Deaths of infants under 1 year of age per 1000 births reported.

** Per 1000 population.

The general mortality rate in Springfield appears to be a little high but an unfavorable influence comes from many factors that do not indicate a low level of general health. For one thing the city has hospital and medical facilities superior to those in many communities of much larger size. This attracts patients from a considerable outlying territory. Another is that the age distribution of the population is unusual. Nearly 24 per cent are 45 or more years old. A home for the aged is located there. Furthermore the fact that it is the capital city brings to it a considerable number of non-residents. Allowing for all of these factors, it is probable that the general mortality rate in Springfield would be no higher than that which obtains in any other community of good prevailing health conditions.

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Edmund S. Kimbely, M. D.
Member of First Board of Health of Chicago, 1934.
Other Member, Dr. William S. Clark.



Daniel Brainard, M. D.
First Health Officer and Member First Organized Board of Health of Chicago
composed of Mayor Benjamin W. Raymond and
Doctors Stephen R. Gay and Josiah
T. Betts, 1837.

HISTORY OF THE DEPARTMENT OF HEALTH CITY OF CHICAGO*

Organization

The health department of the city of Chicago was established by an ordinance passed by the city council on July 19, 1876.

This action was taken in pursuance to an act of the legislature known as the Cities and Villages Act, passed in 1872, and adopted by the city in 1875, in lieu of the charter previously in force. This act provided for the appointment of a board of health and also gave the city council the power, by a two-thirds vote, to create offices, and the mayor the authority to fill these offices, such appointments to be made with the advice and consent of the city council.

The ordinance creating the health department provided for the appointment of a commissioner of health at a salary of \$1500; an assistant commissioner of health at \$1200; a secretary at \$1200; an assistant secretary at \$1000 per annum; two meat inspectors and 13 sanitary policeman at a salary of \$60 per month. The following year the salary of the commissioner was raised to \$3000 per year.

The newly established department of health was vested with all the powers and charged with the duties of the board of health, which had been in existence since 1867.

Dr. Brockhurst L. McVickar was appointed as the first commissioner of health, but resigned the position before the end of the year. On January 29, 1877, Dr. Oscar DeWolf was appointed commissioner and held the office continuously for a period of 12 years.

The population of the city at this time was approximately 407,660 inhabitants. The annual appropriation for the health department, excluding the amounts designated for scavenger service and dead animal removal, was \$36,640, which represented an expenditure of a little less than nine cents per capita for general health work.

The annual death rate from all causes was 21 per 1000 inhabitants. The deaths under one year of age constituted 31.4 per cent of all deaths. The annual death rate from typhoid fever was 41.2 per 100,000 population, and the death rates from diphtheria and scarlet fever were 184.5 and 198.9 per 100,000 population, respectively. The death rate from scarlet fever in 1876 was the highest in the history of the city, and constituted the first big problem confronting the newly established department of health.

* For history prior to 1876 see Vol. I, p. 101, this work.

Pre-Bacteriologic Period

(Pre-World's Fair Period)

The years 1876 to 1892 may properly be called the pre-bacteriologic period of the health department. During this time the office of commissioner of health was filled by Doctors Brockhurst L. McVickar for five months; Oscar C. DeWolf for 12 years; Swayne Wickersham for two years and John D. Ware for two years, in the order as enumerated.

The reason for designating this period of activities of the health department as the pre-bacteriologic period is because it fell in the time before the germ theory of disease had been generally accepted. The filth origin of disease, as pronounced by Pettenkofer in Germany, and Chadwick, Simon and Murcheson in England, was still the basis of sanitation and disease control when the department of health was established.

In Chicago, Dr. John H. Rauch had given impetus to this theory with practicing physicians and the general public, during his work as superintendent under the board of health, and was continuously following its tenets as secretary of the State Board of Health, which position he then occupied. Consequently, there was every reason for the commissioners of health, upon whom now fell the responsibility for directing the public health work, to continue along the lines, the effectiveness of which had apparently been so well established.

During these early years of the department the practice of medicine was not yet subject to State control, and the standard of medical education as a whole was very low. In addition to the physicians who had taken advantage of medical education as offered at that time, there were a host of practitioners who held themselves out as doctors. These were followers of some cult such as the Brownian, or Botanic School, or were quacks preying upon a gullible public.

CONTAGIOUS DISEASE CONTROL

During the pre-bacteriologic period disease ran rampant. The city was growing by leaps and bounds, and the older parts were becoming more and more congested. Chicago had become the metropolis of the West, and a great center of travel and immigration.

It was, therefore, natural that communicable diseases should spread rapidly with the efforts of control then in vogue. How futile it was to stop the spread of scarlet fever, diphtheria and other contagious diseases by overhauling plumbing and relaying drains, or by making efforts to con-



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 Dr. H. A. Smith, M.D., Health Officer.
 Dr. W. C. Bennett, M.D.,
 Dr. J. C. Schaeffer, M.D.

CHICAGO BOARD OF HEALTH 1874

Dr. A. M. Smith, M.D.,
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trol the Stock Yards nuisance, is shown by the bills of mortality during this epoch. As a rule the records show that the death rates from these diseases were the highest in the history of the city.

Scarlet fever was of epidemic proportion when the department of health was first established. The years 1876 and 1877 show the highest death rates from scarlet fever in the history of the city since 1869, as illustrated by the chart in Figure 2.

The chart shows that the death rates from scarlet fever were 198.8 and 190.5 per 100,000 population, respectively, in these two years.

Diphtheria was also very prevalent between 1876 and 1881. It reached its height in 1880, when there occurred 290.7 deaths from the disease for every 100,000 population. This represents the highest annual death rate from diphtheria in the history of the city, as shown by the chart reproduced in Figure 3.

From 1880 to 1891, the death rates from measles were very high. The years 1882, 1884 and 1887 were especially bad in this respect. In 1885, the death rate for measles was 50.6 per 100,000 population, the highest in the history of the city.

In 1876 whooping cough assumed epidemic proportions and the deaths reached 53.8 per 100,000. This is by far the highest death rate from this disease on record.

The great prevalence of these diseases caused the commissioner of health to require the reporting of contagious diseases by physicians. This was first made effective in 1877. At the same time it was also required that cases of scarlet fever should be placarded.

These new requirements, as was to be expected, brought on a protest. The views of the protesting physicians were reflected in an address, delivered by Dr. Henry M. Lyman, at the fifth annual meeting of the American Public Health Association, which was held in Chicago in 1877, in which he protested strongly against the placarding of scarlet fever cases, and deplored the waste of cards and tacks. He stated that the people revolted against the "yellow card nuisance."

In 1888 the foundations were laid for the isolation of persons suffering from diphtheria, by a declaration issued by the commissioner of health to the effect that diphtheria is not a filth disease, but a contagious disease, like smallpox.

In 1881 and 1882, when scarlet fever and diphtheria had "burnt out" and again reached what in those days was considered normal portions, a severe out-break of smallpox occurred. It started among the immigrants that flocked to the city in great numbers in 1881. Altogether there occurred about 6,000 cases during the two years, of which number 2,472 died. The

SCARLET FEVER.
DEATHS PER 100,000 POPULATION.
AVERAGE DEATH RATES FOR STATED DECADES.

1867-76	800
1877-86	635
1887-96	211
1897-06	142
1907-16	196

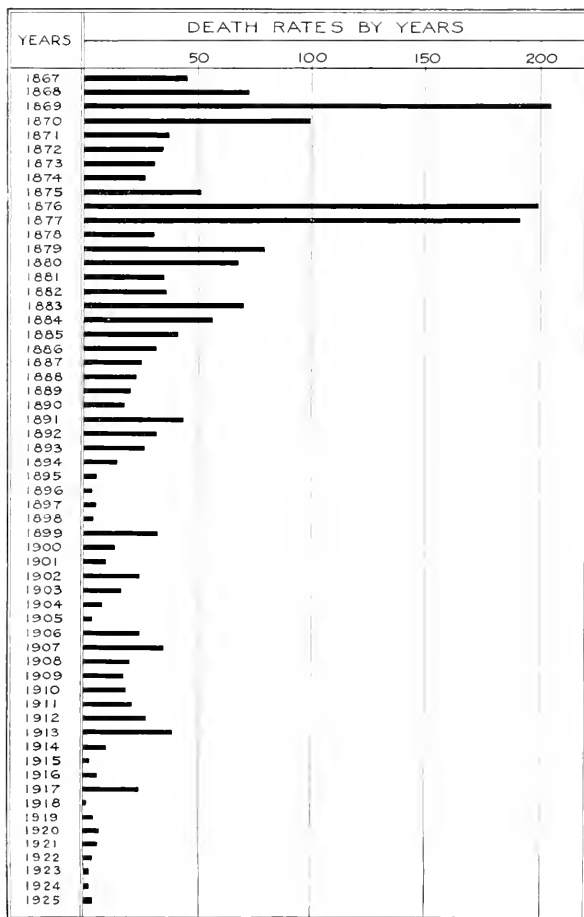


Figure 2.

death rate from smallpox was 218.5 per 100,000 population in 1881, and 230.2 in 1882. These were the highest death rates from this disease in the city to date.

The reason that smallpox gained such headway seems to be that the two measures, always found effective in the control of this disease, were not carried out vigorously. In 1881, the city council revoked the ordinance permitting the forcible removal of cases to the hospital. The smallpox hospital must have been quite unpopular even at that time. To improve this condition it was placed in charge of Catholic Sisters in 1882.

Vaccination was not carried on so vigorously at first as the situation demanded, the reports of the department of health showing that only 48,900 vaccinations were performed in 1881, and 110,504 in 1882. The population of the city in 1880 was 501,185, according to the United States census.

Following this there were no unusual outbreaks of disease, and the general death rate continued irregularly downward until 1891, when it suddenly increased to 24.16 per 1,000 population. This increase was principally due to an outbreak of influenza which started in January 1890, and which was followed by a high acute respiratory disease death rate during the three succeeding years. This reached its height in 1891.

Typhoid fever also became prevalent in 1890, and continued so for three years. It reached its height in 1891, during which year the death rate from this disease was 173.8, per 100,000, which is the highest mortality rate from typhoid fever in the history of the city. The rate remained high during the following year, nearly 124.1 per 100,000 population.

It is interesting to note the attitude of the health department in regard to the origin of this typhoid epidemic. In his annual report to the mayor for 1892, Commissioner Ware commented on the origin of the typhoid outbreak as follows:

"The examination showed that in almost every case where death had occurred, the plumbing was notoriously bad, the drainage worse and in many instances not the slightest effort had been made to keep the house and surroundings in sanitary condition; drains under houses had been broken into, the drain overflowed cellars, and the openings left for months until discovered by our inspectors; dwellings by the hundreds built on undrained ground and where it is impossible to dig twelve inches into the ground without finding water. Is it any wonder that typhoid should exist under such circumstances? * * * * We have typhoid and always will have so long as there remains so much undrained property. There are 40,000 old-fashioned privy vaults in the city. * * * * Never, in the history of Chicago, has the water supply been better. * * * * Chemists of reputation have made tests during the past year and the finding in every case demonstrated that Chicago has every reason to be proud of the results obtained."

DIPHTHERIA AND CROUP.
DEATHS PER 100,000 POPULATION.
AVERAGE DEATH RATES FOR STATED DECADES.

1867-76	91.6
1877-86	168.7
1887-96	129.1
1897-06	37.2
1907-16	33.4

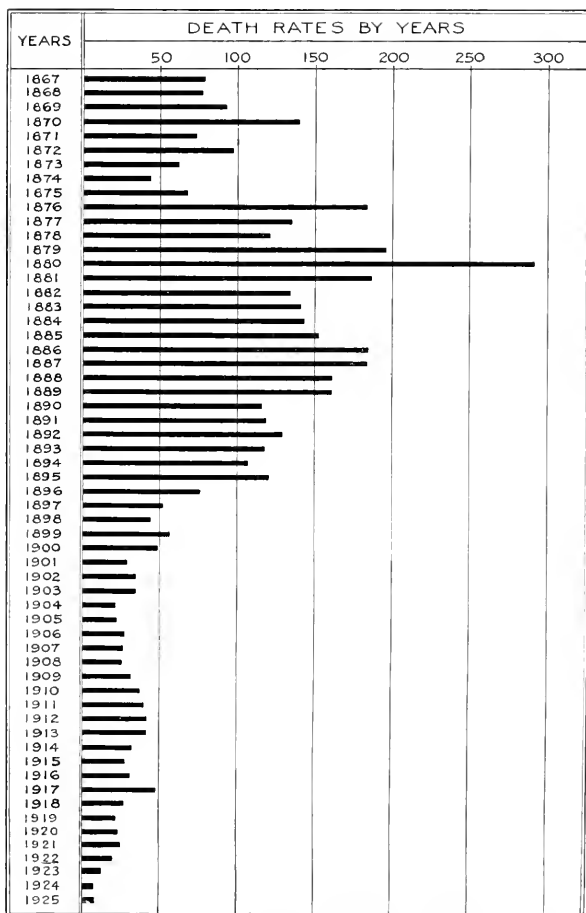


Figure 3.

The typhoid outbreak was of particular significance, not only on account of its severity, but also on account of the approaching World's Fair, which was scheduled to open in the following year.

The State Board of Health took cognizance of the typhoid epidemic in Chicago, and made an investigation and report of the extent and apparent causes of the outbreak. This, together with the report previously made by Sedgewick and Hazen, and the observations of the Chicago department of health, hastened the improvement of the water supply, the bad condition of which appeared to be the cause of the epidemic.

An ordinance was passed in 1892 adding diphtheria, typhoid fever and typhus fever to the list of reportable diseases, and the method of reporting contagious diseases by postal cards was inaugurated.

GENERAL SANITATION

Much attention was given to general sanitation during this period. This was to be expected in view of the fact that the diseases coming under the attention of the health department, on account of their epidemic or local appearance, were thought to be due to filth.

Even in diphtheria, scarlet fever and erysipelas, there was a strong suspicion that filth played a major role in their development and spread. Where no visible filth could be found sewer gas and other effluvia were suspected as the causative agents. Plumbing and drainage of buildings consequently received a great deal of attention.

In 1879 a survey of tenement houses was made by a volunteer corps of thirty-three physicians. An ordinance was passed, providing for the inspection of all places of employment, and six inspectors were provided for its enforcement.

On account of the threatened invasion of cholera from Europe in 1885, an appropriation of \$100,000 was made for a general sanitary inspection and cleaning of the city. This was a part of the comprehensive general survey and cleanup campaign conducted by Dr. John H. Rauch, secretary of the State Board of Health, to ward off the invasion and spread of cholera.

In 1881 a State law was passed which gave the health department full control over the plumbing, drainage, light and ventilation of tenements, workshops and lodging houses, and required that plans must be submitted to the health commissioner for approval of any such buildings to be erected.

Following the passage of this act, considerable attention was given to tenement house and workshop inspection. A total of 2,444 plans for tenements were approved in 1883, of which number 1,142 were for so-called "flat buildings."

A moderate degree of plumbing control was exercised by the health department in the years immediately following the passage of this act.

In 1889 following the failure of the legislature to pass the compulsory plumbing law, drafted in cooperation with the Illinois Association of Architects and the Chicago Plumbers' Association, the health department promulgated a set of rules governing the drainage and plumbing of new buildings.

In 1890 an ordinance was passed prohibiting privy vaults on sewerred premises, and in 1891 the council passed a comprehensive plumbing ordinance.

The general housing conditions were bad, largely because no control had been exercised over building construction, plumbing, drainage, light and ventilation until the early eighties. The city passed the 500,000 mark in 1880, and it was only in the year following that the building department was established and the health commissioner was given jurisdiction over the sanitation of tenements, workshops and lodging houses.

The bad tenement house and workshop conditions, although primarily due to a lack of building control in earlier years, in the course of time became associated with the problems of poverty and the living conditions of the working classes.

In the early eighties the conditions of the laboring people became acute and caused a class consciousness which was reflected in the efforts to organize labor and to improve the conditions of the laboring classes.

It was, therefore, natural that the health department, in connection with the intensive efforts that were being made to investigate and improve tenement house conditions, should also collect statistics in regard to conditions of employment, wages and cost of living.

In 1883 the city council passed an ordinance requiring the commissioner of health to make such investigations and to report the findings annually. This work was at once undertaken by the department and continued for a period of 12 years. Even at this time the reports are valuable because they show the wages received and the working conditions of the laboring classes at a time when they were making vigorous efforts to improve their conditions through collective bargaining.

The Citizens' Association, in a report issued in 1884, called attention to the wretched condition of tenements, and in 1889 this same condition was again pointed out in a report made by the City Homes Association.

Although the health department paid more or less attention to these conditions, and at times paid especial attention to the inspection of workshops, and made a study of employment conditions, not much improvement was accomplished except in the better construction and sanitation of new buildings.

In 1891 and 1892, which was a period of great municipal development and growth, brought on by the oncoming World's Fair, the great increase in population resulted in overcrowding and congestion of existing tenements

and the building of many cheap structures, which afterwards proved to be not only a fire hazard, but also a menace to health and sanitation.

On account of the possibility of the invasion of cholera from Hamburg and other European cities in 1902, the sum of \$30,000 was appropriated to clean the city. The cleanup order included even the wood-heds among the structures to be cleaned. "Great care was exercised to thoroughly clean the paved alleys; nothing was left that could possibly become a breeding place for cholera germs, and each load of refuse removed was sprinkled with lysol after being dumped."

The two outstanding sanitary problems for which Chicago had become famous, or rather infamous, namely, the Chicago River and the Stock Yards, loomed as large as ever when the department of health was organized.

The board of health, which had been created ten years previously, was established largely with a view to dealing with these problems and, primarily, because the great fatality from cholera in the previous year had stimulated the citizens, interested in sanitary reform, to action. The newly established board set out vigorously to study and to improve these conditions, but in 1874, the year after Dr. Rauch resigned as sanitary superintendent, the annual report of the board of health states that "there is much nuisance from slaughter houses." Those in the neighborhood of Eighteenth Street and the Chicago River are particularly mentioned in this connection, on account of their location near the residential section. It was also reported that the South Branch of the Chicago River is a stagnant pool of abomination.

In 1877 the Stock Yards nuisance became very acute. Prosecutions in the police court proved unsuccessful. The city then attacked the problem from a new angle. Attorney R. S. Tuthill, later Judge Tuthill, prepared an ordinance providing for the licensing of slaughtering and rendering plants. Vigorous procedures were now undertaken to rid the city of the Stock Yards nuisance. In 1878, twenty-seven indictments were voted by the grand jury against operators of slaughtering and rendering plants for maintaining public nuisances.

The licensing ordinance was sustained in the supreme court, and it was this carefully drawn ordinance that brought the Stock Yards plants under control and laid the foundation for future licensing ordinances passed as sanitary control measures.

The result of this movement was that all the slaughter houses were moved outside the city limits, but soon the city grew and embraced their new location.

The Chicago River also received much attention by the department of health during this period. In 1879 the State Board of Health, after an investigation of the canal in the DesPlaines Valley, recommended that the

pumping works at Bridgeport be rebuilt and operated to cleanse the channel. These were completed and put in operation in 1884.

In 1880 the Fullerton Avenue conduit was completed. This was twelve feet in diameter and served to supply fresh lake water to the North Branch. The water was forced through the conduit by two screw pumps. At times when the river was very bad, water was pumped from the river to the lake through this conduit.

This additional supply of water, flowing down from the North Branch, and the increased velocity, caused by the operation of the pumps at Bridgeport, improved the condition of the river for a time; but the rapid increase in population and in industrial development resulted in the discharge of increased amounts of waste material to offset the good effects of these measures and the result was that the river was as bad as ever.

The sewage-laden river was a constant menace to the water supply. The water pollution, resulting from the flow of the river into the lake, varied with the rainfall and the height of lake levels, but was always sufficient to contaminate the water near the short intakes of the water supply system. The typhoid fever death rates were high and rarely fell below 50 per 100,000.

In 1885 a final and definite solution of this problem was suggested and taken up with avidity. A subcommittee of the Citizens' Association on drainage and water supply, of which Messrs. Lyman E. Cooley, Ossian Guthrie and Dr. Frank W. Reilly were members, after a comprehensive survey, suggested that a new drainage canal be dug, so as to reverse the flow of the river. Dr. Rauch, the secretary of the State Board of Health in 1886, in a report based upon examinations made by Professor J. H. Long, recommended the diversion of the sewage from the lake into the river and canal, and the dilution of the same with an average of 24,000 cubic feet of water per minute for every 100,000 inhabitants. The board urged that a proper waterway to carry out this plan be constructed.

In the following year the drainage and waterway committee, appointed by the mayor, in accordance with a resolution of the city council, with Rudolph Hering as chief engineer, made a report recommending the construction of a new drainage channel. In the meantime, comprehensive examinations of the water in the Illinois and Michigan Canal and Illinois River were continued by Professor J. H. Long, and reported in 1888.

In the following year the establishment of the Chicago Sanitary District was authorized by the legislature, following which the district was organized and the plans formulated for the digging of the canal. Actual work on the canal was begun on September 3, 1892, and thus the problem of sewage disposal and river and lake pollution was brought to what at that time seemed a favorable solution.

Garbage removal and other scavenger work, such as the removal of dead animals, was one of the principal activities of the health department during this period. Approximately one-half of the already meagre appropriations of the department were for this work. In 1885 the contract system of garbage removal was adopted. This cost the city \$75,000, which was about one-third of the cost of the old system. In 1886 the sum of \$176,196.34 was set aside for scavenger service, out of a total appropriation of \$258,356.34 made for the health department for this year. In 1887 a garbage furnace, capable of consuming 150 tons daily, was built at Seymour Street and Grand Avenue at a cost of \$7,000. The cost of maintaining this crematory in 1888 was \$11,643. Garbage receptacles of standard style were designed this year, but in spite of these improvements the garbage question was pressing, demanded much attention and was subject to considerable criticism.

In 1890 garbage disposal was placed under the direction of a general sanitary officer in the department. A study was made of garbage removal in other cities. A survey showed that there was much nuisance from manure. It was found that there were about 100,000 horses in the city at that time.

An odor division was also organized this year. Necessity being the mother of invention, it is to be presumed that there was an urgent necessity for such a division.

In 1881 a smoke-control ordinance was passed by the city council, and its enforcement was assigned to the laboratory of the department. In 1884 a smoke inspector, under the jurisdiction of the health department, was appointed to handle this work.

WATER, FOOD AND MILK.

The work of the health department in the control of water and milk during the years 1876 to 1892, inclusive, the so-called pre-bacteriologic period, was almost entirely based on chemical examinations and attention to chemical standards of purity.

In reference to the condition of the water supply the records show that a study was made of lake pollution in 1877, and that it was found to be due to two sources, namely, the Chicago River and the dumping of refuse.

In 1881 typhoid and diarrheal diseases were very prevalent. There was also a high mortality of children under one year of age. Whether the increased prevalence of these diseases was due to polluted water, or infected milk, was not determined.

In 1886 a report on the water supply of Chicago was made by Dr. Rauch of the State Board of Health. This showed that it was polluted, by sewage entering the lake through numerous sewer outfalls, and the Chicago River.

SANITARY MAP OF CHICAGO: SHOWING TYPHOID-FEVER REDUCTION

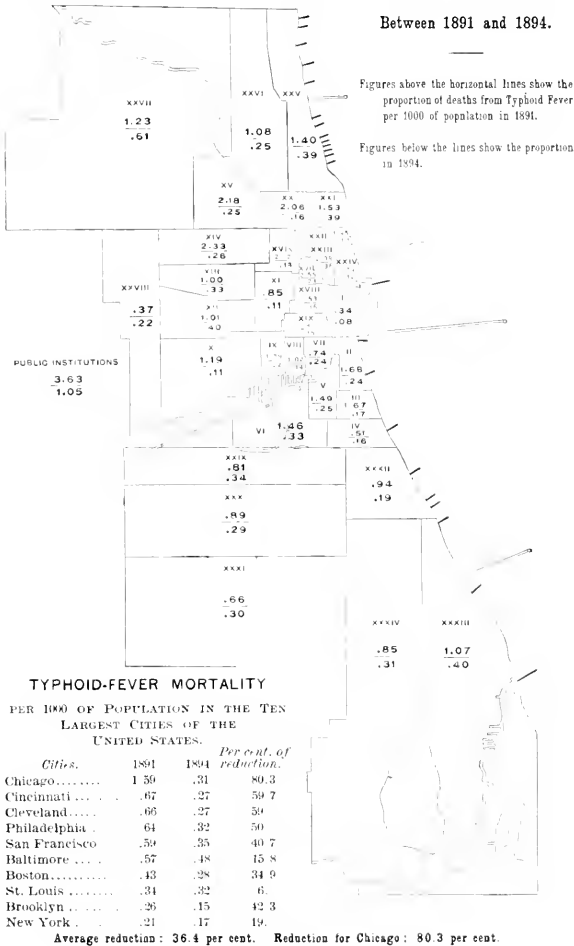


Figure 4

The Hyde Park water tunnel, one mile long, was completed this year. Before this the Hyde Park pumping station was supplied through an iron pipe extending 1,400 to 1,800 feet into the lake.

A tunnel, 3,000 feet long, was completed in 1887 at the Chicago Avenue pumping station for emergency use in case of fire. This was used for the regular water supply at times, and especially in 1892. There was a similar shore intake for the Lake View pumping station.

The location of the water intakes to the sewer outfalls along the Lake Shore is shown in Figure 4.

This map also shows the death rate from typhoid in the various sections of the city during 1891 and 1894. The typhoid rates in 1891 were highest in the territory supplied by the Chicago Avenue and the Fourteenth Street intakes. This was before the latter intake was extended four miles out into the lake in December 1892, after which there occurred a marked reduction in the territory supplied by the new Four Mile Crib and tunnel system.

The Chicago health department reports for this period do not make any reference to any examination of water made by the department. The reports on the work of the laboratory, which was established in 1894, relate only to smoke inspection and later to examination of milk samples.

Light on the condition of the milk supply which existed at the time the department was organized, is shown by investigations made in 1874 and 1875. These showed 4,372 cows fed on distillery slops from the seven distilleries in the city. A large amount of the milk supply, especially on the West Side, was obtained from cows fed on brewery slops. This milk sold for half the price of country milk.

In 1877 an ordinance was passed regulating the sale of milk and providing for the appointment of a milk inspector. Twenty-nine convictions of milk dealers for violations of the milk ordinance were obtained during the year.

Approximately one-half of the sixty-seven milk samples examined in 1879 contained less than two and one-half per cent butter fat. The following year thirty-four per cent of 101 samples collected contained less than this amount of fat.

In 1879 a State law was passed prohibiting the sale of adulterated milk and milk obtained from cows which were diseased or fed on distillery slops. In 1885 another bill was passed by the legislature regulating the production and sale of dairy products.

This year Professor J. H. Long made chemical examinations of the city's milk supply for the Chicago health department, and found half of the samples below grade. This work was started in a drug store on Cottage

Grove Avenue near 39th Street, and was continued for a period of three years. In 1886 efforts were made to stop the coloring of milk, which was extensively practiced at that time.

In 1892 a division of milk inspection was created by city ordinance independent of the health department, and a comprehensive milk ordinance was passed requiring the licensing of milk dealers and the maintenance of sanitary conditions in establishments handling milk. This ordinance also established chemical standards of purity for milk sold within the city limits.

It was found that, of the 500 samples of milk first examined, 75 per cent were below the standards set by the ordinance, while only 8 per cent of a similar lot taken from trains on arrival were below grade.

Milk inspection was carried on only spasmodically during this period, and the results of analyses of samples reported in 1892, showed that no marked improvement of the milk supply resulted therefrom.

The attitude of the department, as set forth in the report of the general sanitary officer to Commissioner John D. Ware, in the 1891 annual report of the department, shows an attitude that was not provocative of remedying the bad conditions of the milk supply that had been previously pointed out by Professor John H. Long, when he served as city chemist.

The report of the general sanitary officer of that year on milk and food inspection, read in part as follows:

"The price per quart of milk paid by the consumer is generally the best test as to quality: milk sold at three cents per quart is skimmed. Look at the can from which the milk is taken, and you will find it plainly marked 'skimmed'. The State says it must be so marked and it is. The city milk supply is all drawn within a radius of fifty miles. The railroads handling the milk take an interest in it. They have their own milk agent and he is alive to their interests. The milk leaves the farmer all right and gets into the hands of the dealer all right.

"Consumers, if you pay a good price for your milk and it is not satisfactory, change milkmen until you get value received. The poor man who purchases his milk at the corner grocery will say he receives no assurance that his milk is not adulterated. To him the department of health will say 'Bring your sample, and if it is suspicious from the crude means of test at our command, the taste and microscope, the department will take the risk of error and dump the milk in the sewer.'"

Other food inspection was almost entirely limited to inspection of meat at slaughtering houses. Two meat inspectors were provided for this work when the department was first organized in 1876. In 1892 this number had been increased to nine. Three of these were assigned to inspection outside of the Stock Yards.

The first comprehensive federal meat inspection law, applying to inter-state shipment of meat, was enacted by Congress in 1891. The institution of federal inspection had a salutary effect upon the meat inspection maintained at the abattoirs located within the city. The city continued its service, and at times there were misunderstandings between the two corps of inspectors.

In 1890 a dispute developed with the State Live Stock Commission in regard to bringing of diseased or condemned animals into the city and slaughtering them in establishments under city inspection. This controversy was adjusted by both parties agreeing that a special place should be provided for the slaughter of such animals.

Period of Development

The years 1892 and 1906, inclusive, may well be designated as the time of development of health conservation and sanitation in Chicago.

During this period the office of commissioner of health was occupied by Dr. Arthur R. Reynolds for two years, William R. Kerr for two years, Dr. Arthur R. Reynolds a second time for eight years, and Dr. Charles J. Whalen for two years. Dr. Frank W. Reilly who became associated with the department in 1894, was appointed assistant commissioner in January of the following year, and served in this capacity through this entire period.

Although the great discoveries in bacteriology were announced around the early eighties, such as the discovery and description of the anthrax bacillus by Pasteur and Koch in 1877, staphilococci by Pasteur, Billroth and others in 1880, typhoid bacillus by Eberth in 1880, tubercle bacillus by Koch in 1882, diphtheria bacillus by Klebs in 1883, cholera vibrio by Koch in 1883, they did not become generally applicable, either in the practice of curative or preventive medicine until the early nineties.

In 1881, Koch made his epoch-making report, in which the method of using solid culture media for obtaining pure cultures of bacteria and the fundamental postulates for determining the specific pathogenicity of bacteria, were first announced.

The first course of lectures on the germ theory of disease was given by Dr. Henry Gradle in 1883, at the Chicago Medical College. Dr. Wm. T. Belfied also gave a course of lectures on this subject in the early eighties. Twelve years later, Dr. Isaac D. Rawlings gave the first laboratory course in bacteriology at this college.

Dr. Christian Fenger came to Chicago in 1878, thoroughly imbued with the European views in regard to the role of bacteria in surgical infections and began to teach and demonstrate these principles at his clinics at Cook

COMMISSIONERS OF HEALTH CITY OF CHICAGO And Date of Appointment



Brock L. McKim, M.D.



Oscar Lorenson DeWitt, M.D.



Swayne Wetherham, M.D.



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Arthur R. Fennolds, M.D.



William F. Foy, M.D.



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William A. Evans, M.D.



George B. Young, M.D.



John Doll Robertson, M.D.



Herman N. Bondesen, M.D.



Arnold H. Engel, M.D.

Commissioners of Health City of Chicago
1876 to 1928

County Hospital. Among the students who clustered around him were Ludvig Hektoen and others who later played a prominent role in teaching the bacterial origin of disease to medical students and in popularizing these facts with the practicing physicians.

It was natural that the older practitioners and the followers of other schools of practice, should be reluctant to accept the new theories and findings in regard to the origin of infectious diseases. Dr. N. S. Davis, who had taken such an active part in improving the health of the city and State, was one of the outstanding figures in the medical profession who refused to accept the germ theory of disease at this time.

In the 1884 edition of his lectures on the *Principles and Practice of Medicine*, he said:

"If we adhere impartially to well ascertained facts, we must admit that diphtheria often makes its appearance in families, asylums and schools, as well as at the beginning of epidemics, under such circumstances that it is impossible to trace it to any form of communication with previous cases, either in the same localities or elsewhere. In other words, it is capable of spontaneous development, and consequently does not depend for production and spread upon any specific contagious germs or virus generated in the bodies of the sick."

Such views were hard to dispel in the minds of the older practitioners. With but few exceptions, the germ theory of disease was, however, quite generally accepted in the early nineties. The same change in views were gradually being applied in preventive medicine.

In 1888, Health Commissioner De Wolf had declared that diphtheria was not a filth disease, but an infectious disease, like smallpox. In 1885, Dr. Frank W. Reilly first called attention to flies as carriers of disease. The report of Sedgewick and Hazen had definitely called attention to the relation of the polluted water supply to the prevalence of typhoid fever in the city.

In 1893, F. L. Dibble, in his book entitled *The Vagaries of Sanitary Science*, presented a scathing denunciation of the filth theory of disease and the methods previously in vogue for controlling diseases, and showed more or less accurately the futility of proceeding along these lines.

This status of sanitary science, and the development and quite general acceptance of bacteriology, made it possible for Dr. Arthur R. Reynolds, when he was appointed commissioner of health in 1893, to direct the work of the health department along scientific lines.

One of the first steps taken by him in this direction was the establishment of a laboratory. In 1894 Dr. Adolph Gehrman was appointed director of the laboratory, which was equipped to make analysis of milk and water. This avoided the necessity of sending such samples to private laboratories, as had been the custom. In September, examinations of diphtheria cultures were begun. The first Widal tests were made in 1896.

A total of 12,580 analyses of all kinds were made in the laboratories during 1894, 12,093 of these were of milk and cream, 239 were of the city water supply, 95 diagnoses of diphtheria were made, 26 of bread, 8 of air and various food products. In all 21 different things having a bearing on health were analyzed.

The department's crusade to BOIL THE WATER during 1893 and 1894 was very effective in reducing typhoid fever. Some of the daily papers carried the phrase—BOIL THE WATER—in large type on the front page.

The first diphtheria antitoxin was issued by the health department on October 5, 1895. At the same time a corps of antitoxin administrators was appointed. The results obtained, when tabulated, showed a great lowering of the mortality in the cases where this remedy was used. A circular of Information on the Antitoxin Treatment of Diphtheria was issued by the department, with a view to popularizing this form of treatment.

INFECTIOUS DISEASES.

During the World's Fair which was held in Chicago in 1893, and visited by millions of people, there was much overcrowding in the city. The lodging houses were crowded, and the outbreak of smallpox among the lodgers led the department to inaugurate a vigorous campaign of vaccination, but in spite of this 140 cases of smallpox occurred, of which number 23 ended fatally.

The next year, during which there was much unemployment, many labor disputes and strikes, smallpox assumed epidemic proportion. A total of 2,332 cases and 1,033 deaths from the disease occurred during the year. A vigorous vaccination campaign, in fact, the most extensive of its kind in the history of the city, was carried on by the department, with a result that 1,084,500 vaccinations were performed in the city during the year. The "vaccination creed" of the department, first issued at this time, was distributed in large numbers.

Additional hospital accommodations had to be provided for persons suffering from smallpox. The Visiting Nurse Association furnished the nursing service for these hospitals.

Plans were made for the construction of a large municipal smallpox hospital, and the foundations laid for it, but in the following year, when smallpox had subsided, the plans were modified and the size reduced to about 125-bed capacity. The new hospital, located at 34th Street and Lawndale Avenue, was completed in 1896.

The next increase in the smallpox incidence was in the years 1903 and 1905. In 1905 there were 546 cases of the disease reported, with 61 deaths.

A marked reduction in the incidence of typhoid was speedily accomplished. The death rates from typhoid fever in the various wards of the city during 1894, as compared with 1891, are shown in the map, Figure 4, page 339, reproduced from annual report of the department for 1894.

This also shows the four water intakes and the sewer outlets along the shore line.

All of the other infectious diseases, with the exception of tuberculosis and pneumonia, were brought gradually under control during this period, and the only outstanding epidemics that occurred from these diseases, were a moderate outbreak of epidemic cerebrospinal meningitis in 1898, and an outbreak of typhoid on the West Side river wards, due to a pollution of the water supply in this district. A typhoid rate of 44.5 per 100,000 for the city was recorded that year.

An extensive outbreak of scarlet fever occurred at the end of this period, affecting especially the North and West sides of the city, due to the infection in the country of the milk supplied by a large dealer. This outbreak reached its height in January 1907, during which month 3,058 cases were reported.

The disease, although widespread, was mild in character, and, therefore, many cases were not reported. These served as new sources of infection, and helped to augment and prolong the epidemic.

During the year, a total of 718 deaths from scarlet fever were recorded, representing a death rate of 35.1 per 100,000 population.

In 1903 the death rate from the acute respiratory diseases, was 313.4 per 100,000 population, which was the high mark from this class of diseases during this period.

A marvelous reduction was accomplished in the death rate from diphtheria and croup. This was reduced from 129 per 100,000 population in 1892, to 27.1 in 1907. The reduction was especially marked after 1895, and followed the introduction of the use of antitoxin in the treatment of this disease.

Diphtheria, for which the new science of bacteriology had found not only the causative germ and an accurate method of diagnosis, but also a curative and preventive agent in the form of an antitoxin, was especially amenable to preventive measures. It was the application of these that brought the death rate down as indicated.

In 1896 the laboratory was equipped with an incubator to facilitate diagnosis work. The following year four antitoxin and incubator stations for diphtheria cultures were established in different sections of the city.

Better methods of disinfection were employed. In 1898 the use of formaldehyde for this purpose was introduced, first by the use of generators, and later in the year, by the sheet method.

In 1905 antitoxin became very high priced, and in order to make it generally available, the department took a hand in lowering the price and also resumed the free distribution of this product. The next year these efforts culminated in an arrangement with the McCormick Memorial Institute for Infectious Diseases whereby the Institute supplied antitoxin to physicians and the health department at cost. By this means the combine of manufacturers to hold up the price was broken.

To overcome the objections to the placarding of premises on which a person suffering from a contagious disease was isolated, the department in 1896 began to allow physicians to assume the responsibility of quarantining cases of contagious disease under their care. This procedure remained in effect until 1909, when it was rescinded because it was found that it retarded the reporting of cases and was a hardship on physicians who could not conscientiously assume this responsibility.

Following the death of Chief Medical Inspector Garrot, Dr. Heman Spalding was appointed to that position on May 1, 1899. He held the office continuously until his death in 1926. Dr. Isaac D. Rawlings entered the

department in March 1899, as a medical inspector and was appointed assistant chief medical inspector five years later. These two officials played an important role in the development of communicable disease control and school inspection in Chicago.

Dr. Spalding, ever reminiscent of his early experience in the smallpox epidemic of 1893 and 1894, specialized in the diagnosis and control of this disease, and was an ardent advocate of vaccination at all times.

Upon Dr. Rawlings fell the responsibility of attending to the endless details necessary to carry on the measures required, to guard the inhabitants of a large and growing city against the inroads of contagious disease. His careful planning and systematizing of the work laid



Heman Spalding, M. D.

the foundations for the methods of communicable disease control now in effect in the City of Chicago and the State of Illinois. On February 3, 1921, he was appointed Director of the Department of Public Health of the State.

An ordinance was passed in 1895 licensing and regulating undertakers. Dr. O. M. Heckard was appointed registrar of vital statistics this year. The same year funeral inspection was inaugurated by the department.

Efforts were also made to lower the high infant mortality that prevailed in the early nineties. The deaths of infants under one year of age then constituted about 30 per cent of all deaths.

In 1894 the department started to distribute its circular on the hot weather care of babies. In 1896 rules were promulgated regulating the practice of midwifery. In 1898 a system of reporting births by postal cards was inaugurated and remained in effect for three years.

The first comprehensive step taken to combat the annual hot weather toll of infants was in the summer of 1899, when a volunteer corps of 73 physicians was detailed in the congested districts of the city to give instructions to the mothers on the care of babies.

Medical inspection of schools was started by the department of health at the beginning of the school year, September 3, 1896, when eight of the ten medical inspectors in the service were detailed to this work. This work was continued until January 8, 1900, when through the efforts of Dr. W. S. Christopher, 50 medical inspectors were detailed by the board of education for this work, with the understanding that they would work under the direction of the commissioner of health. They remained on duty until nearly the end of the school term. Only ten were reassigned to this work with the opening of schools in September, and continued to visit the schools on emergency calls, and made inspection for contagious diseases. In the fall of 1900, the Compulsory Education Department assumed control over this corps of inspectors. This led to duplication of work and misunderstandings, so that the commissioner of health in 1902 found it necessary to protest against this arrangement but not much improvement resulted therefrom.

During the extensive outbreak of scarlet fever in the early part of 1907, 250 school inspectors were provided during the emergency, of which number 100 remained after the epidemic was over until the end of that school year.

The reductions in the death rates from contagious diseases, and efforts made to conserve the health of infants and children, reflected themselves in the decline of the general mortality rate during this period. During the first 17 years following the establishment of the health department, the so-called pre-bacteriology period, the average annual death rate was 20.3 per 1,000 population. During the last three years of this same period the average annual death rate was 21.9, showing that practically no inroad had been made on the ravages of disease, with the armamentarium used during the pre-bacteriology period.

With more scientific methods, and a more accurate knowledge of the causes of disease, the death rate was reduced nearly 25 per cent in the first 14 years of the bacteriologic era. In 1901 the annual death rate for the first time reached the low minimum of 13.9 per 1,000 and from there on averaged about 14.7 per 1,000 annually during the last six years of this period.

The average age at death in 1905 was 31 years, 9 months and 18 days, as compared with 16 years, 2 months and 12 days in 1875, the year preceding the establishment of the health department.

SANITARY ENGINEERING.

The completion and opening of the new drainage channel on January 17, 1900, was a great accomplishment from a sanitary engineering standpoint. The object of the new canal, with the tributary branches which were to be dug subsequently, was to divert all of the sewage of Chicago and adjoining territory in Illinois from the lake. To do this for Chicago, north of the Calumet district, it was necessary to intercept all of the sewers emptying into the lake, and then to divert the sewage from the interceptors, by great cross-town sewers, to the Chicago River and drainage channel. Although a commission had been appointed in 1896 to prepare plans for diverting the city sewers to the river, the major portion of the intercepting sewer system was not ready when the drainage channel was completed in 1900.

In 1898 the main sewers in Twelfth and Twenty-second streets had been changed in grade, so as to discharge into the river instead of into the lake. The Thirty-Ninth street intercepting sewer, diverting all sewage between Thirty-first and Seventy-fifth streets, was opened in December, 1905, but the Lawrence avenue sewer, receiving the intercepted sewage from along the North Shore, was not completed until 1908.

On the same day that the drainage channel was opened the State of Missouri started an injunction proceeding against the State of Illinois, seeking to restrain the sanitary district from discharging its drainage into the Mississippi River, via the Illinois and Des Plaines Rivers. In anticipation of these proceedings, Doctor Reynolds, commissioner of health of Chicago in 1898, inaugurated the work of stream examination for the Sanitary District of Chicago.

No plan of water analysis of such broad extent and great magnitude had heretofore been undertaken. It covered the waters between Chicago and St. Louis and was national in its influence and significance.

The reason for the work was a persistent rumor that the State of Missouri would take steps to enjoin the State of Illinois from opening the drainage channel that was built to carry the sewage of Chicago, together with the waters of dilution, from Lake Michigan in its course to the Mississippi River.

Three laboratories, making individual examinations, were brought into the service. Dr. A. S. Draper, head of the University of Illinois, appointed Professor Arthur W. Palmer and Dr. T. P. Burrill for the work. Dr. W. R. Harper of the University of Chicago appointed Dr. Edwin O. Jordan and Dr. Adolph Gehrman was appointed for the laboratory of the department of health of Chicago.

These men organized the work, agreed upon methods, went over the streams from Bridgeport, where the drainage channel began in Chicago, to St. Louis, in Missouri. They selected the different points at which samples of water were to be taken, selected and instructed those who would collect the samples and ship the containers. The samples were collected in triplicate at stated periods and shipped one to each of the laboratories.

A small laboratory was set up by Dr. Jordan at Grafton, Illinois, where determinations were made at once. It was presided over by Dr. E. E. Irons of Chicago, who was then an under-graduate in medicine.

Dr. Reynolds alone held the conference with the trustees of the sanitary district that secured their consent to undertake the work, and he is authority for the statement that the letter of the department of November 28, 1898, urging the policy of making the examinations, and the letter of transmittal of the results in their literary excellence and final form, are the work of Dr. Frank W. Reilly. These two letters were considered by the department of health as its masterpieces as state papers. The full report was printed by the trustees of the sanitary district in 1902.

This work was started in May, 1899, and continued until July, 1900, and showed that all of the pollution in the Illinois River from Chicago sewage had disappeared before reaching Peoria, also that the water at the mouth of the Illinois River was purer on an average than that of the Mississippi above this junction.

These findings were used, together with those obtained by Professors J. H. Long and F. R. Zeit, in another somewhat later comprehensive chemical and bacteriological examination of the Illinois, Missouri and Mississippi Rivers made in 1902, in the injunction proceedings which were heard in St. Louis before a commissioner of the United States Supreme Court and finally decided by the United States Supreme Court against the State of Missouri in May, 1906.

Following the extensive prevalence of typhoid fever in the years just preceding the World's Fair, greater attention was given to the purity of the water supply. Owing to an unavoidable delay in extending the Hyde Park Crib, it was found necessary to purify all the water used on the World's Fair grounds by Pasteur filtration. An attempt was also made to lay a pipe line from Waukesha, Wisconsin, to supply the Fair with spring water from that locality.

The Four-Mile Crib off Fourteenth Street was put into operation in 1893, and the use of the shore intakes at the Chicago Avenue and Lake View pumping stations was permanently discontinued. Doubtless the water from these sources played an important role in the high typhoid incidence in the city during the years 1890 to 1892.

Extensive examinations of the city's water supply were inaugurated in the city laboratory in 1894. The following year daily examinations were started, and after that the department published the results in the daily papers and inserted a warning notice and advice to BOIL THE WATER whenever the findings were especially bad.

The Hyde Park intake was extended two miles in 1894. The Northwestern Lake and Land Tunnel System, supplying the Central Park and Springfield Avenue pumping stations, was completed in 1900. The use of the Rogers Park pumping station, which received its water through a short shore intake, was discontinued in 1906 and the territory was supplied from the Lake View Pumping station.

A State law was passed in 1897 providing for the licensing of plumbers and inspection of plumbing by municipalities. Acting in accordance with the provisions of this statute, a city ordinance was passed providing for the licensing of plumbers by a board of examiners and also setting forth standards for plumbing installations.

The first free public bath house, the Carter H. Harrison at 759 Mather, was established in 1893. From then up to 1907 the number was gradually increased to fourteen.

GENERAL SANITATION.

The scavenger service, the operation of which had given the health department so much vexation, was transferred to the department of public works in March, 1893, but this did not settle the garbage problem. Complaints in regard to garbage accumulations on premises and in alleys continued to come to the health department daily in large numbers, and the public had the same reasons for being dissatisfied with the service as before. In 1900 an ordinance was passed requiring the separation of garbage and rubbish.

The wooden refuse receptacles, one side for ashes the other side for garbage, maintained in the alleys in the rear of every building, were usually in bad repair or, as often happened, wrecked by a passing vehicle. These receptacles were neither rat nor fly-proof and offered, especially when filled to overflowing, as was often the case, the best sort of habitation and food supply for such vermin. The garbage, after collection, was dumped in low places or in available holes or excavations. These "dumps" were the source of much nuisance in the summertime, and the odors from them often per-

meated the surrounding neighborhood. Strange to say, they attracted hordes of women and children from the poorer sections who picked over the refuse and garbage and carried or carted home anything that they thought was worth salvaging.

This condition prevailed until 1906, when the first contract was made for the disposal of the city's garbage at a reduction plant. The storage and disposal of manure remained under the jurisdiction of the health department. The quantity of manure produced increased from year to year, and the nuisance created thereby presented a problem which became greater as the population of the city increased and its area was extended.

The study of typhoid fever, which was so prevalent among the troops during the Spanish-American War in 1898-1899, had demonstrated the role of flies in the transmission of this disease. In 1902 the relation of flies to the spread of typhoid was studied by Alice Hamilton in the epidemic of the disease which occurred on the West Side.

These and numerous other observations had established the danger of flies, so that in the early nineties cognizance began to be taken of their sanitary significance, but it took nearly another decade to educate the general public sufficiently in regard to their danger so as to demand the enforcement of laws intended to prevent the breeding of flies in the city.

The numerous privy vaults in the city were another matter that received closer attention when the role of flies as carriers of disease had been demonstrated.

A census and canvass in 1907 showed that there were 66,000 horses and 14,047 privy vaults in the city.

In 1902 a comprehensive tenement house ordinance was passed, modeled after the New York law. At the beginning of this period women were added to the corps of sanitary inspectors, with the idea that they might be more alert in detecting and remedying insanitary conditions found in the inspections of homes and premises.

An ordinance prohibiting spitting in public places was passed in 1901. Smoke inspection, which had been under the jurisdiction of the health department since 1881, was transferred to the newly created department of boiler inspection in 1903.

FOOD AND MILK INSPECTION.

The division of milk inspection, which had been organized as a separate department, was brought under the jurisdiction of the health department in 1893, and operated in connection with the laboratory, which was established at the same time. Milk samples were now taken more or less regularly.

A study of the milk supply of the city, made by the University of Illinois Agricultural Experiment Station in 1899, showed that much of the supply was of inferior grade.

In 1900 the health department laboratory detected formaldehyde in 293 samples, and a campaign was started to stop its use as a milk preservative.

Dairy inspection was inaugurated in 1902. At first the Chicago Civic Federation paid the salaries and expenses of two dairy inspectors. More attention was also paid to city milk inspection. In 1904 the country dairy inspection was taken over by the health department. This work as first was largely educational and was principally concerned with the feeding of wet malt, which was found in about 20 per cent of the farms inspected. An ordinance was passed requiring milk cans to be sealed in transit.

An independent examination of the milk supply, made by P. G. Heinemann in 1904 for the Civic Federation, showed that 26.8 per cent of the samples were below grade in butter fat, 30.9 per cent in solids not fat, also that 15 per cent of the restaurant samples contained formalin. The average bacterial count of samples taken on May 18 of that year was 942,000 per cubic centimeter.

In 1905 the making of sanitary inspections of milk depots in the city was inaugurated, also bacteriologic examination of samples. A total of 5,838 samples were thus examined and most of the samples showed over 500,000 bacteria per cubic centimeter, and some ran as high as 10,000,000. In the following year bacteriologic examinations were first made of milk samples collected on dairy farms, but only thirty samples were examined.

The bureau of food inspection was established by an ordinance in 1905, but the work of the bureau was performed at first under the supervision of the director of the laboratory. The same year Commissioner Whalen concentrated on meat inspection at the Stock Yards, and gave much attention to the inspection of canned goods and of foods in cold storage.

The Jungle, by Upton Sinclair, published in February, 1906, portraying the picture of a workman employed at the Stock Yards, was embellished with incidents relative to insanitary conditions of the slaughter houses and the laxity of meat inspection which were so revolting that they received general public consideration and ultimately brought about a federal investigation.

The report of this investigation, the so-called McNeil-Reynolds report, showed that the conditions depicted in *The Jungle*, although written as fiction, were indicative of the insanitary conditions and inadequacy of the meat inspection service of many of the slaughter houses investigated. The revelation of these facts and the public attention they received caused Congress to pass a comprehensive meat inspection law, effective in 1906, regulating the sanitary condition of plants and requiring the inspection and approval of all meats and meat products prepared in establishments shipping products via interstate commerce.

In 1906 the city council passed an ordinance providing for the licensing and control of restaurants.

The ice supply received attention in 1896. It was found that ice obtained from clayholes, the Chicago and Calumet Rivers, was unfit for domestic use. To prevent the sale of this ice for such purposes an ordinance was passed licensing ice dealers and regulating the production and sale of ice. Following this the department carried on a systematic inspection of the ice supply, sending inspectors to the sources of production each winter to make inspections and take samples.

PUBLICITY AND EDUCATION.

Publicity and education in public health work was given an impetus by the acceptance of the bacteriologic origin of disease. It was soon evident that in order to prevent effectively the spread of infection it was necessary that the public should be familiar with the simple facts in regard to the origin and spread of contagious diseases. Consequently, much attention was given to educational propaganda during this period.

In 1894 the *Monthly Statement of Mortality*, published by the department, first contained notes by Commissioner Reynolds on health conditions in the city. Following the appointment in 1894 of Dr. Frank W. Reilly, a trained sanitarian with newspaper experience, there came from the department a series of circulars and bulletins, which were dignified by literary style and a conservative and accurate statement of the facts in simple language.

The first of these publications was *The Vaccination Creed* and the circular on the *Hot Weather Care of Babies*, issued in 1894, already referred to. These were followed the next year by circulars on the *Prevention of Smallpox*, *The Anti-toxin Treatment of Diphtheria* and *Advice to the Family in the Care of Contagious Disease*.

In the appointment of E. R. Pritchard as secretary in 1899, another newspaper man was added to the staff of the department. In 1901 the department started publishing the *State of the City's Health* every week in the newspapers, and discontinued the publication of the *Monthly Statement of Mortality*.

The following year the *State of Chicago's Health* was published as a weekly bulletin. For the first time *Fourth of July Don't's* were promulgated by the department.

In 1906 the *Bulletin of the Department of Health* was first issued as a weekly publication, and mailed to physicians and others interested in public health work in the city.



E. R. Pritchard

The Chicago health department was awarded a gold medal at the Paris Exposition in 1900 for an exhibit showing methods of work and results accomplished. The following year it received a medal at the Pan-American Exposition in Buffalo. At the Louisiana Purchase Exposition in St. Louis in 1904 the department was given the highest award for the best and most comprehensive display of public health methods.

QUASI-PUBLIC AGENCIES.

During this period the advances in preventive medicine came so fast, one after another, and the opportunities of the application became so numerous that it was impossible for the constituted authorities, with the funds available, to do all the things that should be done to improve the public health.

Although the population of the city increased from 1,253,022 in 1893 to 2,047,690 in 1907, or in other words, nearly doubled in numbers and the area was increased nearly four-fold, the 1889 annexation alone adding 133 square miles of territory to the 43.9 square miles which constituted the city's area prior to this annexation, the appropriation and personnel of the health department were not increased proportionately.

At the end of 1892 the health department report listed 101 employes; by 1905 this number had been increased to only 160. Correspondingly, the expenditures, exclusive of scavenger service, increased from only \$120,-596.87 in 1893 to \$243,209.76 in 1905.

It is for these reasons that this period is characterized by the organization of many societies interested in promoting certain fields of public health or social welfare endeavor, and in numerous instances, actually engaging in this line of work at the expense of private philanthropy.

Among these institutions was Hull House, established in 1889. This was followed by the Chicago Lying-in Hospital and Dispensary in 1895, the Chicago Association of Day Nurseries, in 1897, the City Club in 1903, and the Juvenile Protective League, in 1904. The Chicago Visiting Nurse Association, founded in 1888, rendered valuable service during this period, especially during the smallpox epidemic in 1893 to 1895.

In 1903 the city milk committee was organized for the distribution of modified and pasteurized milk, also the tuberculosis committee of the Visiting Nurse Association. In 1906 this was organized as the Tuberculosis Institute. This group held a tuberculosis exhibit at the public library in 1905, which gave a great impetus to anti-tuberculosis work in the city.

In 1904 Dr. T. B. Sachs published a report on the prevalence of tuberculosis in the West Side Jewish district, which attracted considerable attention. The next year the City Homes Association presented the results of its study of tuberculosis in the city.

The Chicago Society of Social Hygiene was organized in 1906. The Chicago Pediatric Society assisted in carrying on infant welfare work in the summers of 1905 and 1906. One feature of this work was the conduct of improvised infant welfare stations in tents, erected in the poorer sections of the city, where pediatricians selected by the society gave advice to mothers on the care of babies during the hot weather.

Period of Systematic Control

Starting with the year 1907, the efforts of the health department have been directed towards the systematic control of the various preventable diseases. Likewise, the other activities of the department, such as the control of the milk supply, meat and food inspection, ventilation inspection, and control of the purity of the water supply, have been undertaken on a comprehensive scale, in accordance with well understood principles intended to accomplish the object in view, namely, the conservation of the public health.

It is on account of these facts that this has been designated as the Period of Systematic Control.

The commissioners of health who served successively during this time were Doctors William A. Evans, four years; George B. Young, four years; John Dill Robertson, seven years; Herman N. Bundesen, five years and from December, 1927, to date, Arnold H. Kegel. The term of the commissioner was lengthened to four years in 1907, which gave the incumbents a more nearly sufficient time to put into effect their policies. The salary of the commissioner was raised to \$8,000 in 1907 and to \$10,000 in 1914.

COMMUNICABLE DISEASE CONTROL.

In 1907 the department for the first time had an adequate appropriation to carry on its activities. This amounted to \$848,966 and represented an increase of nearly 200 per cent over the \$288,733 available in 1905. This appropriation had been obtained by Commissioner Whalen, in part for increased activities in meat, milk and miscellaneous food inspection, and at the end of his term, for medical inspection of schools, quarantine service, and other activities in connection with the outbreak of scarlet fever, which occurred at that time.

The communicable disease situation that presented itself to Commissioner Evans at the beginning of his term in 1907 was approximately as follows: There had been no substantial reduction in the death rates from tuberculosis and the acute respiratory diseases. In fact, in recent years these diseases had shown a tendency to increase. The tuberculosis

(all forms) death rate had reached 197.2 per 100,000 in 1907, which represented the highest annual death rate from this disease since 1893. The deaths from the acute respiratory diseases stood at 282.1 per 100,000, which was higher than the average annual death rate for the preceding three decades.

All the other infectious diseases had been reduced in the preceding 14 years, but all were still far too prevalent. The typhoid death rate had dropped to 18.2 per 100,000 and even diphtheria, in the reduction of which such marvelous results had been obtained in the preceding decade, showed a death rate of 27.1 per 100,000 at the beginning of this period.

The infant mortality, greatly decreased in the '90's, had shown a tendency to increase since 1901. It reached the figure of 3.2 per 1000 population in 1907. Births were only partially registered and consequently the only fair way of calculating the death rates of infants was in relation to the whole population.

From the foregoing data, it is plain that the great problems confronting the health department at the beginning of this period were the control of tuberculosis and the acute respiratory diseases and the reduction of infant mortality.

Tuberculosis.

Conditions were favorable from the outset for active measure to lower the tuberculosis mortality. The public had been awakened to the gravity of the situation. A tuberculosis exhibit had been held at the public library in 1905. The Chicago Tuberculosis Institute had been organized in 1906, and in the following year opened seven dispensaries for the diagnosis and treatment of cases.

The health department took immediate steps to enforce the reporting of cases. A definite pronouncement was made in 1908, adding tuberculosis and pneumonia to the list of reportable diseases. All cases of tuberculosis reported were entered on the records of a house file, which was started in 1909 and continued by the health department until about 1920.

Active anti-spitting crusades were conducted in the campaign against tuberculosis. After a trial at arresting and fining violators, Commissioner Evans in 1909 resorted to the use of a warning card as illustrated on page 369 of Volume I. These cards, bearing a picture of a crusader with a red cross on the shield, were carried by all employes of the department, and politely handed to anyone seen spitting on the sidewalk or in public places or conveyances.

After repeated efforts of the State Board of Health to pass a law providing for the establishment of a State tuberculosis sanitarium had resulted in failure the Glackin law, providing for the establishment of

tuberculosis sanitariums by municipalities, passed the Legislature in 1908. The following year the city, by a referendum vote, decided to establish a sanitarium under the provisions of this act. The vote taken was 167,230 for and only 39,410 against the proposition. Thereupon Mayor Busse appointed Harlow N. Higginbotham, Dr. Theodore B. Sachs and Dr. William A. Evans as the first board of directors under the provisions of this act. This board elected Mr. Higginbotham president, and Dr. Sachs secretary, and proceeded at once to secure grounds, and to build a sanitarium, all to be paid for out of the succeeding annual tax levies of one mill on a dollar of the assessed valuation. This gave the board approximately a million dollars annually.

In 1910 the board took over the operation of the seven tuberculosis dispensaries maintained by the Chicago Tuberculosis Institute. A nursing service was conducted in connection with the dispensaries, which served to supervise and care for persons infected with the disease. As far as possible restrictive measures were enforced in open cases in the home or industry.

The sanitarium, located at Bryn Mawr and Crawford avenues, was completed and opened on March 9, 1915. This provided 380 beds for the isolation and treatment of early cases of tuberculosis, which were increased to 1,000 the following year. Thereafter only late cases were cared for at Cook County Hospital, and after December 1, 1910, also at the County Tuberculosis Sanitarium at Oak Forest. In this connection it should be noted that after the passage of the registration law in 1915, tuberculosis deaths at the Oak Forest institution were no longer included in the Chicago count.

In 1916 a house-to-house survey was made by the Municipal Tuberculosis Sanitarium in the district between Twenty-second Street and North Avenue, extending from the Lake to Ashland Avenue, comprising a total of approximately eight square miles. In 1917 this survey was extended to embrace the territory south to Fifty-Fifth Street between Wentworth Avenue and the Lake. This territory had a total population of 371,259.

A total of 165,700 persons in this area were examined and 8.6 per cent were found afflicted with tuberculosis. One result of this entire survey was that 14,282 unregistered cases of tuberculosis were found and brought under observation.

In 1917 all physicians in the Municipal Tuberculosis Sanitarium dispensaries were placed on a full-time basis. A quarantine system was instituted and no open cases of tuberculosis were allowed to remain in contact with children in the home. Where cooperation on the part of such patients could not be obtained the premises were quarantined or the cases were hospitalized.

As a result of the systematized efforts and others, to be referred to later, such as the pasteurization of the milk supply and the attention to the health of children in the schools, the tuberculosis death rate was lowered from year to year and reached a minimum of 78.3 per 100,000 in 1922, since which time it has shown a slight tendency to increase.

Acute Respiratory Diseases.

The fight against the acute respiratory diseases, although also actively started in 1907, has not shown such good results as the campaign for the suppression of tuberculosis, largely owing to the fact that many of the factors in the transmission and the susceptibility to these diseases are still wrapped in obscurity.

After pneumonia was added to the list of reportable diseases in 1907, the reporting of cases was by no means complete at once, and it was not until 1914 that the number of cases of pneumonia reported exceeded the number of deaths recorded from this disease.

Much effort was expended in directing public attention to the necessity for adequate ventilation and ordinances were passed in 1910 requiring proper ventilation for places of public assembly, public conveyances, factories and workshops. Much attention was also given to the ventilation of theatres and street cars, with the result that the ventilation of these, even as early as 1917, was better in Chicago than in any other city in the country. It was in this year that all street cars were equipped with proper ventilation appliances.

During this time the acute respiratory disease rate began to drop, but in the spring of 1917 a sharp rise occurred and the death rate from these diseases reached a total of 214.6 per 100,000 during the year.

In November, 1917, the laboratory started typing pneumococci. In December the same year it was first required that cases of pneumonia be placarded. This action was taken none too soon, for in the following year, when Chicago was reached by the pandemic of influenza which encircled the globe, the death rate from the acute respiratory diseases jumped to 552.1 per 100,000.

This pandemic of influenza reached Chicago September 21, 1918, attained its maximum on the following October 17, on which day 381 deaths from pneumonia and influenza occurred in the city. Following this it declined until the death rate from all causes fell to normal again during the week ending November 23. The total number of deaths from influenza and pneumonia during the outbreak was 8,510. The total excess death rate during the 25 weeks following September 8, 1917, was 3.8 per 100,000, which was the second lowest increase in mortality recorded for any city in the United States with a population of 500,000 and over.

Vigorous measures were taken to combat this epidemic. Influenza was made reportable on September 16. Public funerals were prohibited on October 12. Smoking on street and elevated railroad cars was prohibited on October 13. This order was not rescinded after the epidemic, with the result that smoking, together with the accompanying spitting nuisance on these cars, has been abolished in Chicago since that date.

Theatres, skating rinks, night schools, and lodge halls were closed on October 15 and kept closed for 15 days.

A mixed vaccine was prepared under the auspices of a laboratory committee appointed to handle this phase of preventive work, and a total of 313,028 doses were issued up to January 1, 1919.

A distinct recurrence of the influenza occurred from January to March the following year, but Chicago was not as hard hit during this epidemic as some of the other communities. The death rate from the acute respiratory diseases in 1919 reached 206.6 per 100,000 population and 231.5 in the following year.

A pneumonia commission was appointed in the fall of 1924, to study the prevalence of the acute respiratory diseases and recommend measures for their control. After a survey and detailed investigation of all the cases reported during a season and a review, reclassification and study by Dr. William H. Evans, of the reports of deaths from pneumonia during the same period, the commission made its recommendations which were embodied in a set of rules and regulations governing the handling of pneumonia cases, issued by the State Department of Public Health in December, 1925.

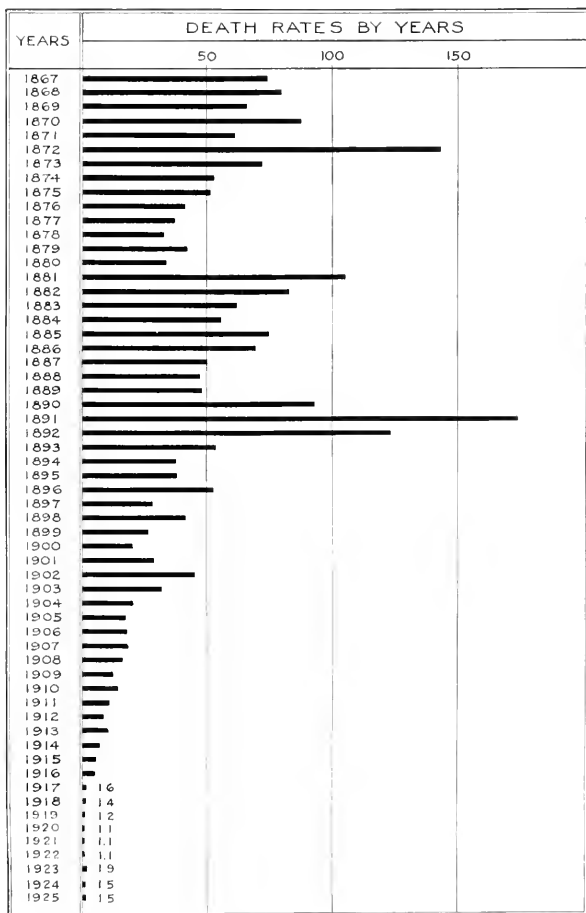
Typhoid.

A marked reduction in the typhoid death rate was accomplished during this period. The steps taken to bring this about were the pasteurization of the milk supply, which was first required by an ordinance passed July 13, 1908, on the recommendation of Dr. William A. Evans, and the chlorination of the water supply, started March 15, 1912, by Dr. George B. Young, and applied to the entire water supply of the city by Dr. John Dill Robertson on October 6, 1916. On July 22 of the same year, during an outbreak of infantile paralysis, it was definitely required by Dr. John Dill Robertson that all milk and cream, except certified, be pasteurized at a temperature of 145 degrees Fahrenheit for 30 minutes. This executive order has not been rescinded to date, and as a result, no milk borne outbreak of typhoid fever has occurred in the city since that time.

Previous to the application of these measures, local milk-borne epidemics of typhoid had been noted almost annually since the systematic inspection of typhoid cases had been inaugurated in 1908.

TYPHOID FEVER.
DEATHS PER 100,000 POPULATION
AVERAGE DEATH RATES FOR STATED DECADES.

1867-76	72.7
1877-86	59.6
1887-96	71.6
1897-06	27.8
1907-16	10.7



In this connection it is interesting to note that the *Annual Reports of the Health Department*, prior to 1907, record but one local outbreak of typhoid due to milk and that is the one reported by Commissioner Whalen in 1906. From the history of typhoid as it is now known, it is safe to presume that such outbreaks occurred frequently but were not recognized, because they occurred in the midst of a heavy typhoid incidence due to polluted water or infected shell-fish, and were not separated from the sum total of cases that occurred.

On January 26, 1916, an outbreak of typhoid fever occurred in the district supplied by the Sixty-eighth Street water pumping station. The water at this station became polluted by sewage getting into the pumping wells as a result of flooding of the basement of the pumping station during a general flooding of the territory drained by the South Side intercepting sewer system. A total of 105 cases developed, of which number eight died.

More and more attention was paid to carriers to avoid contact infection. Persons afflicted with typhoid were hospitalized as far as practicable. Nurses were detailed to make periodic visits to cases isolated in the home.

The effect of all these efforts was reflected in the lowering of the typhoid death rate from year to year. In 1917 it dropped to 1.7 per 100,000. This established a record for Chicago of a typhoid death rate lower than that of any city in the United States with a population of 100,000 or over. The following year the rate was reduced to 1.4 and again Chicago held the record of the lowest rate in cities of the 100,000 population class and over.

In 1922 the record was established for Chicago of having had the lowest typhoid death rate of any city in the country with a population of 500,000 or over for six consecutive years. The rate this year and the preceding three years was 1.1 per 100,000.

From October 13, 1923, to January 25, 1924, an outbreak of typhoid occurred in the territory supplied from the Hyde Park Crib. A total of 288 cases were reported, with 23 deaths.

The waters along the South Shore had been, and at the time of the outbreak were, found contaminated with sewage from the Calumet River and the Thirty-ninth Street sewage pumping station, which followed heavy rainfalls on October 17 and 18.

The State Department of Public Health detailed Chief Sanitary Engineer Harry F. Ferguson to make an investigation. Based upon the results of his findings, it was concluded that the lake water carried more than average pollution at the critical period of reversal of flow of the Calumet River and the outflow of some sewage from the Thirty-ninth Street pumping station, and that the chlorine and analytical control was not adequate and sufficiently responsive to changing conditions in the lake water to assuredly provide for a safe water as pumped into the distribution system.

The State Department thereupon made recommendations for the better sanitary control of the public water supply of the city and urged the employment of a sanitary engineer to supervise this work.

On November 30, 1924, another outbreak of typhoid occurred and lasted until the following January 21. A total of 129 cases with 16 deaths occurred. The cases were reported mostly in the better residential districts of the city. A careful study of the cases, made by the health department, and later reviewed by Dr. L. L. Lumsden of the United States Public Health Service, showed the infection to be due to shell oysters shipped from the Great South Bay region in Long Island, New York.

After these outbreaks, the usual low typhoid record was again maintained.

Diphtheria.

It was in the suppression of diphtheria, even more than in the control of typhoid and tuberculosis, that a full understanding of the disease made it possible to institute an almost perfect system of control. With the discovery by Von Behring of a method of active immunization against this disease, and the perfection of a method by Schick for determining immunity against the infection, health officers were supplied with all the weapons necessary to control diphtheria effectively.

How successfully these measures were used is shown by the course of the death rate from this disease during this period. From 1907 until 1917 the rate remained practically stationary and averaged 33.3 per 100,000 population.

Early in this period it was first required that cases should be terminated only if these showed two negative cultures, and after 1908, that cultures from persons in contact with cases should be similarly negative. After 1909 it was also required that such person should receive an immunizing dose of antitoxin.

Police stations were made distributing depots for culture media and antitoxin in 1908, and were also designated as receiving stations for cultures for transmission to the health department laboratory. In order to make antitoxin generally available in the handling of diphtheria, the State Board of Health in 1909 established 28 free distributing stations in Chicago.

At the same time the old smallpox hospital was converted into a municipal hospital for the reception and care of diphtheria cases.

In 1917 diphtheria became very prevalent, especially in October and November. A total of 10,290 cases and 1,216 deaths from the disease occurred during the year, representing a mortality rate of 47.8 per 100,000 population.

Active immunization against diphtheria with toxin-antitoxin mixture was inaugurated in the public schools, and in institutions caring for infants and children.

Since that time greater efforts were made from year to year to apply this method of immunization to all susceptible infants and children. In 1921 such immunizations were offered at infant welfare stations in addition to the work carried on in the schools, with the result that within recent years an average of 40,000 injections of toxin-antitoxin have been given annually.

In immunization with toxin-antitoxin, an effective weapon has been found to wipe out this disease but its application is as yet far from universal.

The death rate from diphtheria dropped from an average annual rate of 33.5 per 100,000 population to 7.3 per 100,000 in 1926, the lowest in the history of the city.

In 1927, diphtheria again became much more prevalent and more fatal. The death rate rose to 14.1 per 100,000, and the fatality rate among reported cases was 10.6 per cent, as compared with an average of 7.4 per cent in the preceding three years.

Scarlet Fever.

Scarlet fever remained fairly prevalent after the milk-borne outbreak in 1907 up to 1913. During that year a death rate of 38.5 per 100,000 population was recorded. Only once since then has mortality from this disease approached such a rate. That was during 1917, when a total of 13,444 cases were reported with an annual death rate of 24.4 per 100,000 population was recorded.

Since that time the disease has not been very prevalent and the death rate from it has been very low, especially in the years 1923 to 1927, inclusive, during which the death rate reached the phenomenally low average figure of 2.8 per 100,000 population.

Smallpox.

No epidemic of smallpox occurred during this period. A new smallpox hospital was finished in 1908, with a bed capacity of 40 but only on a few occasions has the hospital been filled with patients.

The law requiring the compulsory vaccination of school children was held unconstitutional by the Illinois supreme court in 1908, and following that the department was able to enforce vaccination only in the presence of an epidemic.

The ruling of the court was given rather broad interpretation by the department until 1922, when in a case against the school board, which was appealed to the supreme court, the court held against the board.

No deaths occurred from smallpox in the years 1908, 1909, 1915, 1916 and 1919.

The highest incidence of smallpox was in 1917 and 1918 when 296 and 266 cases occurred annually.

Miscellaneous Infectious Diseases.

An extensive milk-borne outbreak of streptococcus sore throat occurred in December, 1911, and lasted until the following February. An investigation showed that the milk responsible for the epidemic was improperly pasteurized on a number of days. It was estimated that approximately 10,000 cases, due to milk infection, occurred in the city during the two months.

An outbreak of infantile paralysis started on July 14, 1916, six weeks after an extensive epidemic in New York City. It lasted until November 10, and resulted in a total of 254 cases with 34 deaths from the disease. A system of train inspection was inaugurated immediately after the disease occurred in New York. All cases were hospitalized, and children that had been in contact with cases were kept under observation.

Another outbreak of infantile paralysis occurred in 1917, beginning July 1 and lasting until December 1 of that year. A total of 527 cases with 177 deaths were reported during this outbreak.

Moderate outbreaks of infantile paralysis and meningitis occurred in 1927, when a total of 148 cases and 29 deaths from the former, and 193 cases with 92 deaths from the latter disease, were reported.

Tetanus, which had occurred rather extensively after each old-fashioned Fourth-of-July celebration, was greatly eliminated as a cause of death in the annual bills of mortality by the passage of the "Same Fourth Ordinance" in 1911, prohibiting the sale of fireworks.

Beginning in March, 1919, cases of encephalitis lethargica began to occur as is usual after an epidemic of influenza. A total of 69 such cases with 25 deaths were reported during that year.

Malaria contracted locally disappeared entirely from the mortality tables during the latter part of this period.

General Measures.

In addition to the specific procedures instituted to control the various communicable diseases, certain general measures were inaugurated during this period which are worthy of mention.

The first of these was taken in 1907, when the rules allowing physicians to assume responsibility for quarantining cases of contagious diseases were rescinded and the corps of disinfectors were detailed as quarantine officers to watch cases isolated in the homes.

At the same time the policy of hospitalizing cases as far as practicable was adopted. At first, in addition to the old smallpox hospital made available for diphtheria cases, already referred to, the County Hospital and the Durand Hospital, established in 1909, were used for the hospitalization of scarlet fever and other contagious cases. Typhoid cases were cared for in private hospitals or in Cook County Hospital.

On January 8, 1917, the new Municipal Contagious Disease Hospital was opened at California Boulevard and Thirty-first street. The administration building and one ward building were completed at that time. Separate cubicles enclosed with glass, and so arranged that visitors can see the patients from the visitors' aisle, were provided for all the patients in this hospital, and proved successful in popularizing the hospitalization of children, to which parents were so prone to object, especially when they were not allowed to visit their children while in the hospital.

In 1921 another wing was added to this hospital, which gave a total bed capacity of 400. One ward, or approximately 60 beds, was set aside for the isolation of women infected with venereal disease, and the rest of the hospital was used principally for diphtheria and scarlet fever cases.

In 1913 a classified system of quarantine worked out by Dr. Isaac D. Rawlings, head of the division of contagious diseases, was adopted for cases of diphtheria, scarlet fever and whooping cough, which modified the quarantine of the cases with a trained attendant, so as to place fewer restrictions on the other members of the family. This was kept in effect until 1915, when the health department rules on quarantine were superseded by those issued by the State Board of Health. These have been followed ever since and in a way have served to absolve the health commissioner from making any changes and concessions in the isolation of cases or maintenance of quarantine.

In July, 1924, terminal gaseous disinfection was abolished and rules were promulgated requiring concurrent disinfection during isolation, and cleansing of the rooms after the termination of a case of communicable disease.

In August, 1924, the department adopted a series of normals or expectancies for comparison with the number of cases of a given communicable disease reported each week in order to watch and pre-judge the trend of the disease. These were adopted after a thorough study by A. W. Hedrick of the long-time trends, seasonal cycles, epidemic occurrences and irregular movements of the principal communicable diseases occurring in Chicago.

By this comparison, the ratio of reported cases to the normal or expected number, termed the epidemic index, is used as the basis of indicating the trend of any disease during a given period and serves as a standard in forecasting epidemics.

VENEREAL DISEASE CONTROL.

The control of venereal diseases was a new activity, undertaken by the health department during this period. The vice commission appointed by Mayor Busse in 1910 made certain recommendations in regard to it.

Commissioner Evans was a member of this commission and helped to draft these recommendations, and this doubtless prompted him to start certain measures of venereal disease control by the health department at that time.

In the same year advice in regard to the prevention of venereal disease was first published in the bulletin of the health department and pamphlets on the subject, published by the Chicago Society of Social Hygiene, were distributed in the lodging houses. An ordinance was passed requiring dispensaries to report cases of venereal disease.

A few premises were placarded and quarantined in 1910 where cases were reported in houses of prostitution. Infected prostitutes convicted and sentenced to the Bridewell were held until cured.

A municipal venereal disease clinic conducted by a volunteer staff was opened and maintained for about six months at the Iroquois Memorial Hospital.

In 1911 the segregated vice district was abolished by State's Attorney John E. Wayman, following which efforts to control venereal disease lagged. Attempts made by Commissioner Young to have an ordinance passed by the city council requiring the reporting of venereal disease remained unsuccessful. The laboratory began making Wassermann tests in 1911.

In the meantime nothing further was accomplished until Commissioner Robertson, on June 29, 1917, had an ordinance passed much more comprehensive in its scope than was formerly attempted. This ordinance was modeled after the South Australian law and required the reporting of cases without giving the name of the patient, required the patient to remain under treatment and provided that in cases where the patient failed to continue the treatment until cured his name and address should be reported to the health department.

This ordinance served as a basis for many of the laws that were adopted subsequently during the World War by numerous states and cities of the country.

A municipal venereal disease clinic was opened at the Iroquois Memorial Hospital in 1918. Prostitutes arrested by the police were examined for venereal disease, and if found infected, were hospitalized until free from infection. At first the old smallpox hospital, which had been used for diphtheria cases and had been vacated upon the opening of the new Contagious Disease Hospital, was used for this purpose and renamed the Lawn-

dale Hospital. This hospital remained in use until 1920, when the patients were transferred to a ward of the new Contagious Disease Hospital.

A total of 7,235 cases of venereal disease were reported during the first year that the ordinance was in effect. Within recent years this number reached approximately 25,000 annually, and is interpreted by the health department as indicating not that venereal disease is on the increase but that better reporting of cases has been attained.

The control of venereal disease was systematized in 1922 when the State Department of Public Health promulgated rules and regulations applying to this work. These were drafted in cooperation with an advisory committee of the Chicago department of health. At the same time the State Department adopted standards of infectivity and approved methods of diagnosis for the handling of venereal disease cases.

In 1923 the four neighborhood venereal disease clinics were consolidated into a central clinic located at the Iroquois Memorial Hospital. Clinics for the diagnosis and treatment of venereal diseases were also established at the Cook County Jail and the House of Correction.

A special edition of the bulletin prepared by Commissioner Bundesen dealing with prevention of venereal disease was distributed to 500,000 homes in the city during December, 1924.

CHILD HYGIENE.

Much consideration was given to conserving the lives of infants and children during this period.

One hundred physicians were assigned to the congested districts in July and August, 1908, to instruct mothers in the care of babies. The following two summers the work was carried on by a corps of nurses making house-to-house visits under the direction of Dr. Caroline Hedger. The campaign was conducted in cooperation with the United Charities and Visiting Nurse Association.

The Infant Welfare Society was organized in 1910 as a successor to the Chicago Milk Commission and opened its first infant welfare station in December of this year. In May, 1911, a child welfare exhibit and conference was held at the Coliseum under the auspices of the Infant Welfare Society, United Charities and Visiting Nurse Association. This helped a great deal to stimulate interest in infant welfare work.

In 1913 four infant welfare stations were established by the health department and in the following year a division of child hygiene was created.

The lack of complete birth records was a great obstacle in carrying on infant welfare work during the early part of this period. In 1908 the health department ceased entirely to enforce birth registration on account of inade-

quate laws and the divided authority between the city and county. Following this the county clerk received the small number of birth reports presented for registration.

Dr. C. St. Clair Drake of the Chicago department of health was appointed secretary of the State Board of Health in April, 1914, and proceeded at once to secure a State registration law for births and deaths. At the following session of the legislature the passage of such a law was secured and on January 1, 1916, when it went into effect, the health department again resumed the function of registering births.

Efforts were made at once to enforce this law, with the result that 47,760 births were registered during the year, which constituted approximately 85 per cent of the number estimated as occurring in the city.

A hearing board was appointed in July, 1920, to hear the cases of physicians and midwives who had failed to report births. Since then much attention has been given to compelling the reporting of births with the result that during the last few years over 99 per cent of all births were reported.

A fund of \$50,000 was appropriated by the city council in 1922 for additional infant welfare work. This was used in part for the establishment and maintenance of 18 infant welfare and five prenatal care stations. In 1923 the total number of stations in the city was increased to 48, of which number 27 are operated by the Infant Welfare Society.

Conferences for the attention to children of pre-school age were established at nine infant welfare stations during 1925. The practice of mailing a handsome certificate of registration to the parents of all children whose births were reported was begun in March, 1924.

A profusely illustrated baby booklet was prepared and subsequent to October, 1925, a copy was delivered by the health department nurses to all mothers upon the report of a birth. This was followed by circulars of instruction mailed to the mother every month until the baby reached the age of one year.

In November, 1925, the department began to enforce vigorously the provisions of the State registration law requiring births to be reported within 10 days. This was found essential in carrying out the program of breast feeding, which had been started during the year. An illustrated booklet on the prenatal care of mothers has been distributed since 1926.

The efforts to prevent infant mortality have proved highly successful. The rate declined steadily during this period reaching 62.7 in 1926 per 1,000 births reported. The reduction of the diarrheal diseases in children under two years of age was even more pronounced. The death rate from these diseases was approximately only 20 per 100,000 population during the last three years as compared with 119.7 at the beginning of this period.

Since 1916 the acute respiratory diseases of infants showed a tendency to increase and since 1921 have caused more deaths at this age period than the diarrheal diseases.

SCHOOL INSPECTION.

School inspection was also systematized and greatly extended. The 100 school medical inspectors, left on the payroll after the scarlet fever outbreak in the early part of 1907 had subsided, were the first adequate force available by the health department for this purpose. It was soon discovered that correction of the physical defects found in school children would not be corrected to any great extent, unless a force of nurses were available to follow up such cases.

Consequently a school nursing service was organized in 1908, under the supervision of the Visiting Nurse Association, for which this organization and the city each furnished part of the 100 nurses employed. In 1910 this work was taken over by the city health department.

In order to attack the tuberculosis problem as it affected children of school age, fresh air schools were established. In 1908 the health department established an open window room at the Graham School. This experiment proved so successful that it led to the establishment of the Elizabeth McCormick Open Air School on the roof of the Mary Crane Nursery. The board of education was also persuaded to follow the example and established its first open air school, the same year at the Harvard School.

The school dental service was inaugurated by the Chicago Dental Society in 1910 and was taken over by the health department three years later. In 1921 the Municipal Tuberculosis Sanitarium established dental clinics at eight of its dispensaries.

In 1915 the Municipal Tuberculosis Sanitarium provided 50 school health officers and 50 field nurses for the school inspection and follow-up work, with the understanding that a certain portion of the time of the entire force would be devoted to the early diagnosis of tuberculosis and preventive treatment of school children found suffering from malnutrition and tuberculosis.

At the beginning of the fall term of school in 1916 a doctor's certificate of health was required of all children for readmission to school. This was tried for a few years, and discontinued because the parents seemed unwilling to pay private physicians the proper fee for making the necessary examinations.

In September 1922 the medical inspection of school children for contagious and parasitic diseases was transferred from the division of child hygiene to the division of contagious diseases, and combined with the work

of the 150 field health officers. A corps of 10 school health officers was assigned to make physical examinations, Schick tests and immunize against diphtheria in the schools.

Beginning with the opening of schools in 1924 the corps of physical examiners assigned to the schools began making a thorough physical examination of pupils in the kindergarten and primary grades. The records show that a total of 101,376 physical defects were corrected during the year and an equally large number in the succeeding years.

AIR, WATER, MILK AND OTHER FOODS.

The reductions in mortality accomplished during this period were to a large extent due to efforts made to conserve the purity of the air, water, milk and other foods. Of these milk received the first and the most consideration.

Milk.

The condition of the milk supply of Chicago in 1907 may be visualized by the findings of John M. Trueman of the Illinois Agricultural Experiment Station. His examination of 325 samples showed 19 per cent below grade in total solids, and 88 per cent containing a visible dirt sediment. A bacteriological examination of 1,271 raw milk samples made by the health department in 1909, showed an average bacterial count of 5,547,502 per cubic centimeter.

That the milk was bad was further indicated by the high mortality among infants from diarrheal diseases, and the frequent outbreaks of infectious diseases traced to the milk supply.

The Hygienic Laboratory Bulletin No. 41 on *Milk in its Relation to Public Health* was issued by the United States Public Health Service in 1908. In this comprehensive review of the subject, Trask listed 260 outbreaks of typhoid, scarlet fever, diphtheria, and streptococcus sore throat, traced to milk infection. The clinical and experimental evidence in regard to the frequency and dangers of tubercle bacilli of bovine origin in milk was presented by Mohler and Schroeder, and showed emphatically the necessity of dealing with this problem. Rosenau presented a review of the literature, and the results of some personal experiments on the thermal death point of bacteria, with special reference to the tubercle bacillus. The conclusion arrived at from the facts presented was that it was relatively simple to kill the bacteria in milk by heating it to a temperature short of the boiling point, or so-called "pasteurization".

Dr. Evans, soon after assuming the office of commissioner of health, became convinced that radical measures were necessary to improve the milk supply of the city. That tuberculin testing of the cattle would not solve the

problem was self-evident, and furthermore there was the opposition of the farmers to this procedure to contend with. When the State a few years previously had attempted to test some of the cows in McHenry County, the farmers drove the veterinarians from the farms with shot guns.

In the meantime a milk commission was appointed by the commissioner to help solve the problem. Dr. G. Koehler was appointed chief of the bureau of food inspection in August, 1907. Efforts were made to improve the conditions by concentrating on inspection of milk plants and dairies. The score card system of grading these establishments was adopted.

An ordinance was also passed this year prohibiting the sale of bulk milk in stores. This helped materially to uphold the butter fat standards for such milk and eliminated the likelihood of contamination.

A sediment test, showing the amount of dirt in the milk was developed by the chief of the bureau of food inspection, and extensively employed for the detection and exclusion of dirty milk.

After a year's study and investigation of the local situation, as well as of the milk supply and inspection methods of other cities, Commissioner Evans had an ordinance passed on July 13, 1908, requiring all milk to be pasteurized unless obtained from tuberculin tested cows. About 45,000 cows were tested in the following three years, and the milk supply from the remaining 75,000 cows had to be pasteurized.

Systematic bacteriological examinations of the milk supply and testing of pasteurizers were inaugurated in 1909. Rules were promulgated regulating the pasteurization of milk. These were made the basis of the requirements for pasteurized milk embodied in the milk ordinance passed in 1912.

The small milk dealers, numbering about 1,800 at that time, were not prepared or, as in the case of the majority, unwilling to comply with these requirements. Consequently there developed considerable opposition to the ordinance. Numerous unsuccessful efforts were made to get it repealed. In 1910 a commission was appointed by the legislature upon the instigation of Speaker Shurtleff from Marengo to investigate the milk question. This commission, after lengthy hearings, made a report which advised against the tuberculin testing of cows but did not particularly condemn pasteurization.

In the following year the legislature passed a law prohibiting municipalities to require a tuberculin test for dairy cattle.

It was held that this law invalidated the Chicago milk ordinance, and after a year's investigation it was decided by Commissioner Young to draft an ordinance eliminating the tuberculin test requirement and embodying specific requirements for two grades of milk, namely, pasteurized and inspected. The task of preparing this ordinance was assigned to Dr. Koehler, who after careful consideration of all the details to be covered, drafted an ordinance which was presented to the city council and passed August 14, 1912.

This ordinance required all milk to be pasteurized by prescribed methods, unless produced on approved, inspected farms and as an original feature contained a requirement for thermostatic control and recording of pasteurization temperatures. It also required the refrigeration of milk in transit, established a standard of purity for each grade, including a requirement in regard to the maximum amount of visible sediment permissible, and provided that all milk sold to the consumer must be contained in tightly closed receptacles, properly labelled and dated.

The enforcement of this ordinance at first presented numerous difficulties. The small milk dealers continued their opposition and sought to restrain the city from enforcing it by an injunction, but on appeal to the Supreme Court in 1914 the health department was sustained and the ordinance was upheld.

This occurred none too soon, because in the fall of this year a widespread outbreak of foot and mouth disease occurred among cattle. This epizootic started on October 15 at Niles, Michigan. In November cattle of the dairy show held in the Union Stock Yards became infected. It also spread to the dairy district in and around Chicago and during the following two years recurred in various localities.

Additional safeguards to protect the milk supply were taken during this outbreak, but the pasteurization of the entire milk supply was not consummated until Commissioner Robertson issued the order on July 16, 1916, during an epidemic of infantile paralysis, that all milk and cream sold in the city unless certified must be pasteurized. This was directly in line with the doctrine that Dr. Robertson practiced and preached during his term as commissioner of health of the city for seven years, namely that the purity of the milk, water, and air must be insisted upon without fear or favor. This policy carried on in earnest meant difficulty for the non-progressive milk dealers and the consequence was that many had to go out of business. During his term of office their number was reduced from 1,260 to 545 and pasteurization was universally adopted by those remaining in business.

The chemical sterilization of milk bottles was permitted by the department in 1922, after an inquiry into this method had been made by a committee of experts.

Beginning in March 1924 all restaurants were required to furnish milk in bottles or from approved urns. Following this the percent of low grade samples collected from restaurants dropped to 5.9 during the year, as compared with 24.8 percent in the previous year. The hand capping of milk bottles was also prohibited at that time.

A rule requiring that the ice cream "mix" must be pasteurized before being frozen was promulgated in 1925. This was followed by a great improvement of the ice cream sold in the city, as shown by the bacterial content of the samples examined.

That the campaign to improve the pasteurization of the milk supply was successful is shown by the bacteriological examination of milk samples collected during recent years.

Only 33.6 per cent of the pasteurized milk samples examined in 1925 showed bacterial counts above the legal number. The 4,360 samples of pasteurized milk collected during the year showed an average count of 194,000 bacteria per cubic centimeter. The significance of this is most striking when these counts are compared with the count of 2,350 samples of raw milk examined in 1910, which showed an average count of 11,574,000 per cubic centimeter. In 1910 only 50 per cent of the entire milk supply was pasteurized. The raw milk was largely sold in the poorer sections of the city.

The legislature in 1925 enacted a comprehensive law, providing for the tuberculin testing of cattle, the establishment of accredited herds and the enrollment of counties under the accredited plan. An appropriation of two million dollars was also made by the State for the eradication of bovine tuberculosis.

Other states, notably Wisconsin, had made great progress in the eradication of bovine tuberculosis. In Illinois not much had been accomplished in the dairy district in the northern section of the State from which Chicago received its milk supply, although certain breeders and cattle raisers' associations were strongly advocating the eradication of bovine tuberculosis in the State.

The tuberculin testing of cattle was given a great impetus in the latter part of 1925 when Commissioner Bundesen announced that after April 1, 1926 all milk and cream sold in Chicago must be derived from herds free from disease and under federal and State supervision. On December 23, 1925 the city council passed an amendment to the milk ordinance embodying such a requirement.

This order met with much opposition from the dairymen with untested herds who tried to stop its enforcement by a temporary injunction obtained in the circuit court of Kane County but which was later dismissed. On April 1, 1926, when the order went into effect and was strictly enforced by the department, the milk supply from a large number of farms in northern Illinois was excluded from the Chicago market and the city reached out into new territory and especially into Wisconsin for milk from accredited farms, the supply of which was found ample to meet all needs and which could readily be brought into the city with refrigerated tank cars that had come extensively into use within recent times.

In order to insure the safety of the milk supply and especially of that derived from the territory which had not been subject to periodic dairy inspection by the department, as had been done in the old dairy district for

over 20 years, special attention was given to the efficiency of pasteurization. A sanitary engineer was put in charge of milk and dairy inspection, who at once undertook a survey of pasteurizing plants, with a view to eliminating the by-passing or imperfect pasteurization of the whole or part of the milk, as had been found in the experiments made at Endicott, New York, and reported in Public Health Bulletin No. 147.

The conditions found such as leaky valves, dead ends in pipes, formation of foam, spashing and short circuiting, were largely corrected by the end of the year and the quality of the milk as shown by the bacterial count was improved.

Water.

The question of the purity and safety of the water supply was also taken up systematically during this period. By 1909 it was found after investigation of the reported cases of typhoid fever that aside from infected milk there remained a large percentage of cases apparently due to other causes. At the request of Commissioner Evans, Dr. L. L. Lumsden of the United States Public Health Service, in 1909 made an intensive study of the typhoid situation in Chicago and found that aside from carrier and contact infection the water supply was responsible for a large per cent of the cases. This directed attention, first of all, to lake dumping, which was carried on rather extensively at that time.

In 1910 a federal law was passed prohibiting the dumping of refuse in the lake within eight miles of the shore. In 1912 the city council passed an ordinance prohibiting such dumping within four miles of any water intake.

In the following year an ordinance was passed prohibiting the discharge of any refuse or sewage from boats within four miles of any water intake.

Finally in 1914 an ordinance was passed prohibiting dumping in the lake within 10 miles of the corporate limits of the city which meant 13 miles from shore.

The enforcement of these provisions unfortunately did not eliminate the "water typhoid." The Calumet River remained as a source of infection, as was shown by the preponderance of typhoid from year to year in the southern section of the city. In addition there occurred periodic reversals of the Chicago River and much shore pollution, beside the wash-off from dump scows or the dumping in violation of the ordinances, as constant sources of water pollution.

In the meantime, work had been done by C. A. Jennings in 1908, that later served as a temporary remedy for these ills. Jennings, in attempting to purify and render potable the effluent from an experimental sewage treatment station, used for the treatment of Bubbly Creek sewage, had found that the application of a solution of calcium hypochlorite (chloride of lime)

was most efficient in sterilizing the effluent, and at the same time was entirely harmless. Subsequently, this procedure was applied to water supplies by sanitary engineers.

On March 15, 1912 Commissioner Young applied this treatment to a portion of the Chicago water supply, mainly in an experimental way at the E. F. Dunne water intake. On July 16 in the same year, this treatment was extended to the Hyde Park Crib, on August 15, 1913 to the Lake View Crib supply and used when the wind was offshore. The treatments were discontinued during the winter months on account of the solutions freezing in the temporary installations.

On September 16, 1916 the use of liquid chlorine was started at the Chicago Avenue pumping station, and next at the 22nd Street pumping station on December 15 during the same year. Dr. Herman N. Bundesen was assigned to supervise the application of chlorine at these stations and kept a close watch over the effects of the treatment on the incidence of typhoid in the districts supplied by the treated water. The results obtained were so striking that they led Commissioner Robertson to recommend that liquid chlorine be applied to the entire water supply of the city. This was accomplished on October 6, 1916, with the completion of the installation at the Springfield Avenue station.

This chlorination of the entire water supply was an important factor in reducing the typhoid death rate in Chicago to the low minimums that have been recorded annually since 1916. Only one outbreak of typhoid due to infected city water occurred since October 6, 1916, and that was the one that developed in the winter of 1923-24 in the territory supplied from the Hyde Park Crib, already referred to.

Following this additional precautions were taken. In January 1924 a sanitary engineer was placed in charge of the application of chlorine and the control of the safety of the water supply. Since then hourly tests were made for residual chlorine in samples taken from the discharge mains at each pumping station and the total amount of chlorine applied was practically doubled. A total of 23,000 samples of water were examined in 1924; only 0.3 per cent of 9,638 samples of chlorinated water examined showed colon bacilli in 10 cubic centimeters and none showed them in 1.0 of 0.1 cubic centimeter portions.

In 1921 the supervision of lake dumping and dredging was placed under the jurisdiction of the department of health, and thus the approval of the department was required for all such undertakings.

The constantly increasing magnitude of lake shore improvements which have been going on during recent years has demanded a continual vigilance on the part of the health department to prevent gross pollution of the water supply.

In February, 1924 the policy was adopted by Commissioner Bundesen of having all dredged material deposited behind tight bulkheads. During this year a total of 3,479,700 cubic yards of lake bottom material and 1,273,800 of dredged and excavated material were deposited behind bulkheads in connection with the lake shore improvement projects.

A sanitary survey of Lake Michigan was begun in July, 1924, in conjunction with the United States Public Health Service and the Sanitary District. Thirty-six modern water chlorinators were purchased this year at a cost of \$250,000 and their installations at the pumping stations were completed in 1925.

This same year a survey was started to find and break all cross connections between the city and other water supplies, which resulted in the finding and abolishing of approximately 500 such connections.

In February, 1926 the supervision over the application of chlorine and the control of the safety of the water supply system was transferred to the departments of public works.

The excessive quantities of chlorine required whenever the water was badly polluted has, during the last three years, given rise to much complaint about the bad taste of the water. This was especially notable when the pollution consisted of industrial wastes, containing phenol and other soluble coke-oven products. To abate this condition Mayor William Hale Thompson, on January 3, 1928, upon the recommendation of Health Commissioner Arnold H. Kegel, appointed a commission consisting of five city officials with the health commissioner as chairman, to take steps to prevent the pollution of the lake with such industrial wastes. The matter was taken up at once with the officials of the Indiana cities and the industrial plants concerned and it was agreed that all would work together to correct the condition as soon as possible.

Air.

Inasmuch as serious efforts were made during this period to reduce the prevalence of tuberculosis and the acute respiratory diseases it was natural that much attention should be given to the purity of the air.

A comprehensive smoke abatement ordinance was passed in 1907 and its enforcement was placed under the newly created department of smoke inspection with Paul Bird, a competent combustion engineer, in charge.

In the same year an ordinance was passed providing for the ventilation and heating of street cars.

Commissioner Evans in 1910 appointed a commission on ventilation which made an intensive investigation of the ventilation of school buildings and assisted in drafting a ventilation ordinance embodying for the first time definite standards of ventilation for public buildings, conveyances, factories,

and workshops. This ordinance was passed by the city council this same year and has been a big factor in bringing about better ventilation. Its application to theatres and similar places of assembly was especially timely, in that it was applied to the construction of the numerous moving picture theatres, which began to be built at that time, and which have since become such a big factor in the city's amusements.

In 1912 a ventilation division was created in the bureau of sanitation for the enforcement of the ventilation ordinances. Dr. V. E. Hill was appointed as head of this division. The division proceeded to make an exhaustive study of street car ventilation on the basis of which a new ordinance was formulated and enacted, following which its enforcement was gradually accomplished. By 1917 all street and elevated railroad cars were equipped with proper ventilation and thus another source of danger from bad ventilation was largely eliminated.

Continued progress was made in the installation of ventilation equipment in existing theatres and places of assembly. A survey in 1915 showed that nearly all were thus equipped. When the wave of acute respiratory diseases and influenza struck the city in 1917, 1918 and 1919 the places of public assembly were found well ventilated, and this condition doubtless helped to save many lives.

In October, 1919, smoke inspection was again transferred to the health department, following which a railroad smoke abatement board was appointed by the commissioner with the object of obtaining the cooperation of the railroads in abating the smoke nuisance.

The smoke inspection was carried on by the health department until July, 1927, when it was transferred to the department of boiler inspection.

Foods.

The inspection of foods was directed into channels tending to conserve the public health. Early in 1907, an agreement was made with the State Food Commission whereby the city was to direct its efforts to food inspection as related to health and the State to control measures relating to fair trade.

After the United States Bureau of Animal Industry had assumed control of meat inspection, in accordance with the provisions of the Federal Meat Inspection law of 1906, the city passed an ordinance requiring all meat sold in the city to be inspected and passed by some governmental authority.

The city's power to seize and condemn foods was questioned by the operators of cold storage warehouses and the case was taken to the United States Supreme Court. In 1907 this court rendered a decision completely upholding the city in its contention. This established the city's power to

control food supplies very decisively, and it was not again questioned thereafter until 1911.

The health department had in the previous year attempted to prohibit the sale of ice cream containing an excessive number of bacteria. Because the State standard did not contain any reference to the number of bacteria permissible the city's right was questioned, but the State supreme court in passing upon the case in 1911 ruled that the city's food regulations may be more stringent than those of the State, provided that they are not otherwise in conflict therewith. This established another principle which tended to aid the health department in its efforts to prevent the sale of unwholesome food.

The only food establishments or purveyors of foods that were subject to control by licensing at the beginning of this period, were slaughter houses, milk dealers, ice dealers, restaurants, butcher shops, fishmongers and poulterers. This list has been gradually extended until now all classes of food establishments or purveyors of food or food products are subject to licensing and regulation.

In 1910 the manufacturers of carbonated beverages were added to this list. Following this a survey of the industry showed that quite a per cent of samples of carbonated beverages examined contained lead derived from lead stoppers or from piping in the plants. The correction of this condition was required immediately.

All other meat food products establishments were required to be licensed and were subjected to control by an ordinance passed in 1914. By an ordinance passed in 1919 all groceries, delicatessen stores, butcher shops and meat food products establishments were reclassified for licensing purposes into two classes of food establishments, namely, wholesale and retail, and uniform sanitary requirements were adopted for the same.

A comprehensive and definite food covering ordinance was passed in 1915 after repeated unsuccessful efforts had been made to secure this desirable legislation.

Egg breaking establishments, which had been the source of considerable complaint, were in 1917 brought under State control by an act requiring the licensing of this class of establishments.

The cold storage warehouse problem was finally settled in the same way when the State in 1917 assumed control of this industry.

Retail beverage dealers were required to be licensed by an ordinance passed in December 1920.

The proper disinfection with heat or chemicals was required of utensils in public eating places by an order issued in November, 1926.

HOUSING AND GENERAL SANITATION.

Upon the appointment of Charles B. Ball as chief of the bureau of sanitation in 1907 the work of this bureau was to a large extent directed toward improving housing conditions and to securing better light and air in places of employment.

In this connection the underground bakeries, of which there were 581 in the city in 1907, received first attention. An ordinance requiring their abolishment and maintenance of so-called "daylight bakeries" was passed in 1907. Its enforcement met with bitter opposition, but after eight years of concerted effort practically all of the underground bakeries were moved into approved quarters.

A policy of strict enforcement of the provisions relating to light and air in the new building and tenement house code was adopted and carried out against considerable opposition on the part of speculative builders for a period of approximately ten years, after which time they were more or less educated to the new requirements.

In 1911 a revised and comprehensive building code was passed. Advanced housing and ventilation standards were embodied in this code upon the solicitation of the department of health.

Early in 1907 the drastic requirements in regard to the disposal of night soil were revised so as to allow its deposit properly diluted with water in the city sewers.

Common drinking cups were abolished by an ordinance passed in 1911. The same year common roller towels were also prohibited.

Screening against flies in tenement houses and the screening of stables were required by ordinances enacted in 1917.

Adequate heat in dwelling apartments and places of employment was required by an ordinance passed June 10, 1922. Since then the department has devoted considerable time each winter to the enforcement of this provision.

A comprehensive ordinance licensing and regulating laundries was passed in 1920. This prohibited the establishment of laundries in tenement houses and sleeping in laundries.

On June 28, 1921, an act was passed by the legislature authorizing cities to adopt a comprehensive zoning plan, following which Mayor William Hale Thompson on July 22 appointed a commission to study the problem and prepare a zoning ordinance for the city of Chicago. A comprehensive zoning ordinance was drafted and was adopted by the city council on April 5, 1923.

Building operations in the city dropped off considerably during the war but were actively resumed in 1921 when 10,300 building permits were issued. This activity has continued and reached a climax in 1925 and 1926.

In the summer of 1923 the department began the inspection and sanitary supervision of summer outing camps for children.

The various general sanitary activities of the department were reorganized and placed in a bureau of sanitary engineering which was established in January, 1925.

After this the policy was adopted of giving more attention to matters of public health significance in carrying out the sanitary inspection and food stores inspection work of the department. All public toilets were subjected to periodic inspection since 1924.

SANITARY ENGINEERING.

Water Supply.

The extensions of the water works system during this period were made for the purpose of keeping up with the rapid growth in population. A new intake, known as the E. F. Dunne Crib, was completed in 1912, opposite the Hyde Park Crib. The Southwest Land and Lake tunnel supplying the Roseland pumping station was completed in 1911. By these works the far southwest side was for the first time adequately supplied with water.

A large intake, known as the Wilson Avenue Crib, on account of its location four miles out in the lake opposite Wilson Avenue, was completed in 1918 with a tunnel to the Mayfair pumping station in the northwestern section of the city. Following this the use of the Lake View intake was abolished and the Montrose Avenue pumping station supplied from the new crib.

In August, 1927, the William Hale Thompson pumping station on Western Avenue and 57th Street was opened. This is supplied by the Hyde Park and the E. F. Dunne intakes and serves to supply a section of the near southwest side of the city, which was badly in need of additional water.

Since the two water-borne typhoid epidemics in 1916 and 1923 surveys have been made of all the old tunnel systems and changes made to prevent the contamination of the water enroute to the pumping stations.

Garbage.

In 1913, when the city refused to renew the contract with the Chicago Reduction Company, the health department was once more charged with the disposal of the city's garbage. Pending the rehabilitation of the old reduction plant which the city purchased a temporary garbage disposal station was maintained at Grace Street and the Chicago River until August, 1914, when the municipal plant was completed.

A waste commission was appointed by the city which employed Engineers J. T. Featherstone and J. S. Osborn to make a technical survey and recommendations for handling and disposing of the city's wastes.

From January 15, 1914, the health department operated the reduction plant located at 39th and Iron streets, after which time it was transferred to the department of public works.

A garbage incinerator with a daily capacity of 50 tons was completed on the House of Correction grounds in 1915.

COMFORT STATIONS.

Two public comfort stations were opened by the health department in 1916, another in 1919, and since 1925 the West Park Board has established a number in convenient locations in the park and boulevard system under its control.

PUBLICITY AND EDUCATION.

Publicity and education of the public in matters relating to health and sanitation were relied upon extensively to accomplish the prevention of sickness and deaths that was attained in the last two decades.

Three of the commissioners who held office during this period were masters in the art of publicity and the other, Commissioner Young, carried on the educational work of the department in a reserved yet persistent manner, so that substantial results were derived therefrom.

Under Commissioner Evans the publicity work of the department was greatly extended, especially along the lines of infant mortality and respiratory disease prevention. Much attention was given to pure milk and fresh air. A weekly foreign language and neighborhood press service was established. A lecture bureau was established and some lecturers were made available to give talks in foreign languages.

In 1907 the health department bulletin was issued as the "*Bulletin of the Chicago School of Sanitary Instruction*," which had been organized in the department. This made it possible to enter the bulletin as second class matter and to greatly extend its circulation.

E. R. Pritchard succeeded Dr. C. St. Clair Drake as editor of the bulletin in April, 1914, and continued as editor until 1924.

The use of moving pictures was first introduced for health educational work in 1910.

Little Mothers' Clubs, for the practical education of girl pupils in the care of babies, were first organized in the public schools in 1912.

Commissioner Robertson during his term of office relied largely on the newspapers to transmit a health story, knowing that in that way millions could be reached instead of thousands by a pamphlet or bulletin.

By giving wide newspaper publicity to such health demonstrations as the diet squad, which was conducted in 1916, for the twofold purpose of

showing how to reduce in weight and also how to live on a daily bill of fare costing not over 30 cents, millions were reached where a pamphlet or report on the experiment could have reached only thousands.

He conceived the idea of holding a large health show and succeeded in holding such a show at the Coliseum in November, 1920, which was attended by thousands of people. In the succeeding two years this health show was merged with the Pageant of Progress held on the Municipal Pier.

He also established a school of home nursing in August, 1919, which was largely an educational feature. An eight weeks' course was given on the home care of the sick and hygiene to approximately 10,000 women during the first two years of its existence.

Beginning with the issues in August, 1923, a change was made by Commissioner Bundesen in the bulletin published by the department. The numbers were made more attractive by the use of cartoons and neat illustrations. Larger type was used and only one subject was treated in each issue. Positive health has been stressed. The circulation of the bulletin was also greatly increased. A number of special editions of the bulletin have been issued and widely distributed. In addition to the one on venereal disease prevention already referred to, one was issued on diphtheria prevention in December, 1923, in an edition of 400,000 copies.

Another special number was issued in April, 1924, featuring milk, and sent to every home in the city. At the end of the school term in 1924 a special bulletin relating to physical defects was distributed to 500,000 school children. In June, 1925, one featuring ice cream was distributed to every household in the city.

A series of very complete annual reports were issued by the department during this period. Beginning with the octennial report for the years 1911-18, which is in fact a 1,540-page handbook, the reports have been compiled and edited by Dr. G. Koehler, who following the death of Dr. Frank W. Reilly on December 16, 1909, was appointed assistant commissioner of health February 25, 1910.



G. Koehler, M. D.
Assistant Commissioner of
Health, 1910 to date

FUNCTIONS AND APPROPRIATIONS.

In the 20 years since 1907, the department of health showed a tremendous growth and was almost completely transformed. From a department occupying a few rooms on the first floor of the old city hall it had developed into one of the major branches of the city government occupying nearly the entire seventh floor of the new city hall.

The total appropriations for the department increased from \$848,966 in 1907 to \$1,560,157 in 1922, and reached the grand total of \$2,291,240 in 1927. The expenditure for health department activities in 1907 was 22.6 cents per capita, from which time they have gradually increased and in 1926 amounted to \$1.22 per capita, including the expense of maintaining the Municipal Tuberculosis Sanitarium. The number of employes has also increased annually, reaching 976 in the 1927 budget, as compared with 403 at the beginning of this period in 1907.

The work of the department has been systematized and routine procedures have been adopted for all the major activities. Following the administration of Commissioner Evans, during which the work of the department was greatly expanded and inspection and other services were rendered more efficient by the introduction of report forms and office procedures for the keeping of records, the time arrived under Commissioner Young when it was advisable to outline definitely all of these methods of procedure in department and bureau orders. Such orders were issued during a period of three years. In 1914 and 1915 they were codified and issued as department and bureau handbooks of rules and regulations.

A control system of handling and filing correspondence was established during this period.

In the meantime a comprehensive efficiency survey of the department was made. The findings of this and other studies of department procedure served as a basis for Dr. Koehler, the assistant commissioner of health, to make the following recommendations in 1914 for the improvement of the service:

1. The establishment of a central stenographic division.
2. The holding of hearings by a board preliminary to starting suits, for violation of sanitary regulations.
3. The re-arrangement of the department office space and the establishment of a central stock room.
4. The establishment of a statistical division to handle the statistical work of the entire department, and the use of machines for compiling all statistics.
5. The unification of the inspection service so as to combine the food, sanitary and quarantine inspection work, to be handled by one inspector in a district.

The first two recommendations were made effective by Commissioner Robertson and the others by Commissioner Bundesen, during their respective terms of office.

Their adoption and further perfection has helped materially to improve the administration of the department and served to make it function more efficiently.

Numerous changes in the organization and personnel occurred during this period, especially in the last five years.

The bureau of food inspection was split off from the laboratories in 1908, and handled all food inspection until 1926, when it was divided into the bureau of dairy products and the bureau of food inspection.

The Iroquois Memorial Hospital, donated to the city by the Iroquois Memorial Association, was opened as an emergency hospital and first aid station in 1910. The bureau of ambulance service was transferred to the health department in 1907 and transferred back to the police department in 1910.

A bureau of hospitals was established in the health department in 1912 which lasted until 1922, when it was abolished.

The Municipal Lodging House, which the health department had operated since 1908, was transferred to the department of public welfare in 1917.

From 1913 to 1918, the department of health was charged with the disposal of the city's wastes and the building and operation of the garbage reduction plant.

The operation of the public bath houses and comfort stations was transferred to the bureau of small parks of the department of public works. An advisory staff of 100 members was appointed in 1922.

In January, 1921, a bureau of water safety and typhoid control was established, the functions of which were transferred to the division of sanitary engineering and bureau of medical inspection in 1924. The water safety control and direction of the chlorine applications was exercised by the division of sanitary engineering until January 1, 1926, when this activity was transferred to the bureau of engineering of the department of public works. The bureau of medical inspection was divided into the bureaus of communicable diseases and child welfare in January, 1923.

In May, 1924, the health department was divided for administrative purposes into medical and technical sections, with an assistant commissioner in charge of each section. In 1927 an assistant commissioner and executive officer was appointed and the secretaryship was abolished.

A bureau of inspection was organized in July, 1924, under the jurisdiction of which were consolidated all the quarantine and non-technical inspection work of the department. In 1925 the bureau of sanitation was reorganized as a bureau of sanitary engineering.

In October, 1919, the health department was again charged with the smoke inspection and handled this work until 1927, when it was merged with the department of boiler inspection. The same year an ordinance was passed transferring the inspection of plumbing and ventilation installation in new buildings to the department of buildings.

The Illinois supreme court, in the case of *People ex rel. Jennie Barmore vs. John Dill Robertson, et al*, rendered a decision in 1922 which had a far-reaching effect on the department of health. Although the case was taken up primarily on the right of the commissioner of health to quarantine carriers of typhoid, the question of the legal powers of the commissioner was raised and the court held that the cities and villages act, under which the department of health was organized, provided for a board of health and that therefore the commissioner of health had no power to make rules and regulations.

In the crisis which resulted when the commissioner issued the order in 1925 that all milk must be derived after April 1, 1926, from healthy cows under governmental supervision, an ordinance was passed January 13, 1926, providing for the appointment of a board of health consisting of five members. Mayor Deyer appointed five members of his cabinet as members of the board.

In May, 1926, the legality of the health commissioner's appointment on the board of directors of the Municipal Tuberculosis Sanitarium was questioned and F. N. Busch, corporation counsel, and member of the board of health, was appointed to take the place of the health commissioner on the board of directors of the sanitarium, because it was held that the health commissioner was ineligible to the appointment because he was not a member of the board of health.

On November 30, 1927 Dr. Arnold H. Kegel was appointed commissioner of health and on January 3, 1928, he was appointed a member of the board of health and also a member of the board of directors of the Municipal Tuberculosis Sanitarium.

REDUCTION OF DEATH RATE.

A review of the mortality records for the city shows that the systematic repressive measures against the various preventable diseases, during this period resulted in the lowering of the death rates from all the diseases towards which they were especially directed.

Principally on account of the control and prevention of the communicable and diarrheal diseases that was accomplished during this epoch, as chronicled in this article, the death rate from all causes was lowered 24 per cent, or 3.5 per 1000 population.

During 1906 and the three following years the average annual death rate from all causes was 14.8 per 1000 population. This was gradually reduced, except during the influenza years, to an annual average of 11.4 for the seven years ending in 1925. This represents a saving of approximately 10,500 lives in each of these years over the number that would have occurred if the death rate prevailing at the beginning of this period had continued.

The records also show that heart disease and cancer for the prevention of which no special efforts were made showed a marked increase as a cause of death. For example, the annual death rate from heart disease in 1906 was 109.8 per 100,000 population, from which it steadily rose, reaching 210.6 in 1925. Similarly the cancer death rate climbed from 66.5 in 1906 to 107.5 in 1925. In other words, the annual number of deaths from these two diseases nearly doubled in the twenty years.

Inasmuch as heart disease and cancer are a frequent cause of death this increase in the rates alone represented 3,250 more deaths in 1925 over the number that would have occurred if the death rates from these two diseases had remained as low as it was in 1906.

This increase and others such as apoplexy, nephritis and violence have counteracted the lowering of the total death rate, brought about by the prevention of the communicable and diarrheal diseases, and must therefore be taken into consideration in estimating the total saving of lives accomplished in this period. If this is done then it is found that the actual saving of lives within recent years amounts to nearly 14,000 annually, as a result of the systematic application of disease preventive measures instituted and carried on during the last two decades.

WATER SUPPLY.

The original water supply was installed in 1840 and was taken over by the city in 1854. The supply was obtained from Lake Michigan and pumped to the mains without treatment.

As the demand increased pumps and intakes were added and the mains were extended.

Before the direction of flow of Chicago River was changed, in 1900, the lake not only supplied water for Chicago, but received all of its sewage.

During 1893-94 everyone was advised to boil the water and the result was a reduction in typhoid fever.

Extensive examinations of the city's water supply were inaugurated in the city laboratory in 1894. The following year daily examinations were started and the results were published with a warning to boil the water whenever it was especially bad.

In the past, many outbreaks of typhoid fever have been traced to the city water supply, the most recent of which was in the winter of 1922-23.

Chlorine has been in use as a sterilizing agent since 1912, and since that time there has been a marked reduction in typhoid.

Investigations and experiments are now being made on the possibility of filtering the lake water.

Table 1.
MORTALITY STATISTICS—CITY OF CHICAGO 1850—1926

YEAR	Population	All Causes		Typhoid Fever		Smallpox		Measles	
		Rate	Rate	Rate	Rate	Rate	Rate	Rate	
1850	29,963	1,467	48.9						
1851	31,000	927	27.2	10	29.4	2	15	2	6.0
1852	38,734	1,809	46.7	18	123.7	9	23.3	17	46.5
1853	59,130	1,325	22.4	35	59.2	19	32.1	31	52.5
1854	65,872	1,217	24.0	86	130.5	12	18.2	46	70.0
1855	80,023	2,181	27.3	43	53.7	30	37.5	9	11.2
1856	84,113	2,086	24.8	66	78.5	16	19.0	16	19.0
1857	87,600	2,414	27.6	82	93.6	10	11.4	39	44.5
1858	90,000	2,255	25.1	49	54.4	5	5.5	22	24.4
1859	93,000	2,008	21.6	31	31.0	...	...	10	10.8
1860	109,266	2,264	20.7	46	42.2	3	2.7	15	13.7
1861	120,000	2,279	19.0	74	51.6	...	...	26	21.7
1862	138,186	2,835	20.5	85	62.0	5	3.6	38	27.7
1863	150,000	3,875	25.8	149	99.3	115	76.6	28	18.7
1864	169,353	4,448	26.3	192	113.3	283	167.4	135	79.9
1865	178,492	4,029	22.6	140	106.7	57	32.6	20	11.2
1866	200,418	6,524	32.6	203	102.5	9	4.4	166	83.0
1867	225,000	4,773	21.2	165	73.3	123	54.7	88	39.1
1868	252,054	5,984	23.7	200	79.3	146	57.9	107	42.5
1869	280,000	6,488	23.2	183	65.3	17	6.1	169	38.9
1870	306,605	7,323	23.9	268	87.1	15	4.9	95	31.0
1871	334,270	6,976	20.3	204	61.0	73	21.8	156	46.7
1872	367,396	10,156	27.6	524	112.6	655	178.3	37	10.1
1873	380,000	9,557	25.2	272	71.6	517	136.1	105	27.6
1874	395,408	8,025	20.3	211	53.4	96	22.8	15	3.8
1875	400,500	7,839	19.7	207	51.7	10	2.5	117	29.2
1876	407,461	8,573	21.0	168	41.2	29	7.1	15	3.7
1877	430,000	8,626	18.7	159	37.0	43	10.0	59	13.7
1878	426,731	7,422	17.0	146	33.4	21	4.8	36	8.2
1879	491,516	8,644	17.5	208	42.3	1	...	51	10.4
1880	503,185	10,462	20.8	171	34.0	43	8.5	129	25.6
1881	540,000	14,191	26.1	568	105.2	1180	218.5	110	20.4
1882	560,693	13,234	23.6	462	82.4	1292	230.2	244	43.5
1883	580,000	11,555	19.9	361	62.2	46	7.9	44	7.6
1884	629,885	12,471	19.8	354	56.2	...	...	319	56.6
1885	665,000	12,474	18.8	496	71.6	8	1.2	76	11.4
1886	703,715	13,639	19.1	483	68.6	2	...	126	17.9
1887	750,000	15,409	20.3	382	50.3	2	...	341	44.9
1888	802,651	15,772	19.7	375	46.7	...	...	151	18.8
1889	835,000	16,946	18.1	453	48.4	2	...	204	21.8
1890	1,009,836	21,809	19.9	1008	91.6	...	...	67	6.1
1891	1,118,795	27,754	24.2	1997	173.8	...	...	265	23.1
1892	1,199,730	26,219	21.9	1489	124.1	2	...	185	15.4
1893	1,233,922	27,083	21.6	670	53.5	23	1.8	234	18.7
1894	1,208,682	33,892	18.3	491	37.5	1033	78.9	182	13.9
1895	1,306,813	24,219	17.7	518	37.9	160	11.5	156	11.4
1896	1,427,527	23,257	16.3	751	52.6	...	...	73	5.1
1897	1,490,937	21,809	14.6	437	29.3	2	...	139	9.3
1898	1,557,164	22,793	14.6	636	48.0	...	...	55	3.5
1899	1,626,333	25,503	15.7	442	27.2	1	...	168	10.3
1900	1,698,575	24,941	14.7	337	19.8	2	...	194	11.4
1901	1,751,968	24,406	13.9	509	29.1	4	...	158	9.0
1902	1,801,255	26,455	14.7	801	44.5	5	...	123	6.8
1903	1,850,542	28,914	15.6	788	31.8	47	2.5	276	14.9
1904	1,899,829	26,311	13.9	573	19.6	29	1.5	47	2.5
1905	1,949,116	27,212	14.0	329	16.9	61	3.1	231	11.9
1906	1,998,403	29,048	14.5	370	18.5	...	...	128	6.4
1907	2,047,690	32,198	15.7	372	18.2	1	...	262	12.8
1908	2,096,977	30,588	14.5	332	15.8	...	...	169	8.1
1909	2,146,264	31,296	14.6	271	12.6	...	...	165	7.7
1910	2,196,238	33,241	15.1	500	13.7	1	...	191	8.7
1911	2,249,563	32,571	14.5	241	10.7	3	...	129	5.7
1912	2,301,946	31,031	14.8	175	7.6	7	...	128	5.6
1913	2,354,529	35,298	15.0	249	10.6	1	...	292	12.5
1914	2,410,806	33,952	13.9	167	6.9	1	...	73	3.1
1915	2,464,189	34,891	14.2	152	5.3	...	...	140	9.8
1916	2,517,172	36,304	14.4	128	5.1	...	...	131	5.2
1917	2,569,755	38,027	14.8	45	1.6	2	...	245	9.5
1918	2,622,348	41,605	17.0	38	1.4	4	...	68	2.4
1919	2,674,921	33,494	12.5	31	1.2	...	...	197	7.4
1920	2,728,692	34,841	12.8	30	1.1	1	...	89	3.3
1921	2,780,655	30,819	11.1	30	1.1	4	...	127	4.6
1922	2,833,288	31,700	11.2	51	1.1	15	...	152	5.2
1923	2,886,971	33,771	11.7	57	1.9	1	...	206	7.1
1924	2,939,605	32,918	11.2	45	1.5	1	...	72	2.5
1925	2,995,239	31,318	11.5	41	1.5	12	...	116	3.9
1926	3,048,000	35,623	11.7	24	...	2	...	58	1.7

NOTE: The rate from All Causes is per 1000 population; all others per 100,000 population.

Table 2.
MORTALITY STATISTICS—CITY OF CHICAGO.

YEAR	Tuberculosis (All forms)	Rate	Pneumonia	Rate	Cancer	Rate	Bright's Disease	Rate	Heart Disease	Rate
1851	42	123.5	30	23.5	1	3.0	...	...	3	2.7
1852	116	300.0	30	77.5	2	5.1	...	...	3	7.5
1853	176	298.3	28	47.5	4	6.8	...	...	5	8.5
1854	216	327.3	35	53.1	5	7.6	...	...	5	22.7
1855	162	202.5	47	38.7	3	3.8	...	...	19	23.7
1856	288	342.9	46	51.8	2	2.4	...	...	7	8.3
1857	255	291.1	50	57.0	...	...	...	...	12	13.7
1858	334	371.1	77	83.5	4	4.4	...	...	17	19.0
1859	236	275.2	33	37.0	...	...	...	...	17	18.3
1860	276	252.8	48	44.0	5	4.6	...	...	22	20.2
1861	320	266.6	55	45.8	7	5.8	...	...	32	26.7
1862	348	252.2	88	64.2	3	2.2	...	...	26	19.0
1863	283	188.7	126	84.6	9	6.0	2	1.3	32	21.3
1864	410	242.6	163	96.2	11	6.4	4	2.3	52	30.8
1865	310	190.5	170	84.0	16	8.9	7	3.9	39	21.8
1866	406	203.0	187	93.3	36	18.0	3	1.4	61	30.5
1867	541	240.4	171	76.0	45	20.0	8	3.6	65	28.9
1868	626	248.4	311	135.3	82	32.5	27	10.7	121	48.3
1869	754	269.3	313	111.8	63	22.5	37	13.2	130	46.4
1870	863	281.5	314	102.4	87	28.4	36	9.8	140	45.6
1871	829	248.0	386	115.5	68	20.3	28	8.4	133	39.8
1872	1009	274.6	462	125.7	75	30.4	51	14.7	199	46.0
1873	950	241.7	435	114.5	107	28.2	52	13.7	179	47.1
1874	864	218.5	377	95.4	109	27.6	50	12.6	189	47.8
1875	880	219.7	493	123.1	122	30.5	56	14.0	213	53.2
1876	886	217.3	364	89.3	122	29.9	84	20.6	189	46.4
1877	913	212.3	345	80.2	130	30.2	81	18.8	183	42.6
1878	856	196.0	377	86.3	177	10.5	97	22.2	302	69.2
1879	854	173.7	469	95.6	177	36.0	131	26.7	354	72.0
1880	981	195.0	633	125.8	163	32.4	179	35.6	303	60.2
1881	1191	226.0	707	130.9	217	40.2	161	29.8	335	62.0
1882	1183	211.0	829	148.0	220	39.2	184	32.8	374	66.7
1883	1150	198.3	694	119.7	232	46.0	223	38.4	421	72.6
1884	1185	188.1	713	113.2	265	42.1	253	37.0	388	61.6
1885	1289	193.8	756	110.7	249	37.4	255	37.3	460	69.2
1886	1377	195.7	880	125.1	230	32.7	300	42.6	453	64.4
1887	1546	202.6	1008	132.6	364	39.6	320	42.1	549	72.2
1888	1616	201.3	1105	137.7	361	44.0	336	41.1	619	77.1
1889	1609	181.0	1170	125.0	379	40.5	373	39.9	664	71.0
1890	2221	201.9	2073	188.5	461	41.9	509	46.3	816	74.2
1891	2100	208.0	2898	251.8	545	47.4	591	51.7	927	80.9
1892	2383	198.6	2397	199.8	539	44.9	610	50.8	1058	88.2
1893	2947	211.2	2457	196.1	609	48.6	753	60.1	1106	88.3
1894	2499	191.0	1520	116.1	639	48.8	680	52.0	1058	79.3
1895	2463	180.2	2359	172.6	682	49.9	701	51.3	1361	99.8
1896	2667	186.8	2149	150.0	734	51.4	818	57.3	1289	90.3
1897	2774	172.6	2152	141.3	742	49.8	937	62.8	1365	91.6
1898	2829	181.7	2477	159.1	791	50.8	1051	67.5	1399	89.8
1899	2910	178.9	3138	211.4	890	51.7	1189	72.6	1492	91.7
1900	2953	173.9	3389	199.5	986	58.0	1117	65.7	1893	111.4
1901	2874	164.0	3127	178.5	1003	57.2	1016	57.9	1947	111.1
1902	2979	165.4	3433	190.6	1074	59.6	1075	61.8	2098	116.5
1903	3577	182.5	4629	250.1	1063	57.4	1516	81.9	2692	113.0
1904	3435	166.5	4138	217.8	1124	59.2	1848	97.3	2043	107.5
1905	3674	188.8	3582	184.4	1191	61.1	2017	103.5	2110	108.3
1906	3837	192.0	4047	202.5	1328	60.5	2128	106.5	2195	109.8
1907	4039	197.2	4733	232.4	1558	75.1	2496	121.9	2338	114.1
1908	3915	186.7	3511	167.4	1574	74.9	2138	102.0	2686	128.1
1909	3885	181.0	4713	219.6	1646	76.7	2273	105.9	3163	147.4
1910	3608	177.9	3286	240.7	1894	82.1	2500	113.8	3323	151.3
1911	3726	165.6	4929	219.1	1799	80.9	2460	109.4	3546	157.6
1912	3763	163.5	4892	212.5	1778	77.2	2377	103.3	3488	151.5
1913	3866	164.2	4871	206.9	2064	85.1	2325	98.7	3466	147.2
1914	3908	162.1	4077	169.1	2115	87.7	2066	83.3	3900	161.8
1915	4294	170.6	3860	156.6	2081	81.4	2168	88.0	4195	170.2
1916	3731	148.3	3862	153.5	2267	90.1	2069	82.9	4121	179.7
1917	3806	147.9	5018	195.3	2256	87.8	2293	89.2	4767	185.5
1918	3827	145.9	5000	206.9	2407	91.8	2540	89.2	4936	188.2
1919	3944	131.3	3333	125.3	2554	94.7	2125	79.4	4410	154.8
1920	2662	97.2	3845	139.8	2573	94.3	2218	81.3	4999	179.9
1921	2325	83.6	2246	79.6	2663	95.8	2122	76.3	4790	170.1
1922	2220	78.3	2779	98.4	2800	98.8	2313	81.6	5498	194.1
1923	2335	80.8	3745	129.7	2949	102.1	2737	91.8	5547	192.1
1924	2434	82.8	2892	98.4	3177	108.1	3232	109.9	7617	191.1
1925	2489	83.1	3075	102.7	3219	107.5	3092	103.2	6309	210.6
1926	2530	83.0	3238	106.2	3283	107.7	3691	121.1	6547	214.8

Rates per 100,000 population.

Table 3.
MORTALITY STATISTICS—CITY OF CHICAGO.

YEAR	Scarlet Fever		Whoop Cough		Diphtheria and Croup		Influenza		Dysentery	
		Rate		Rate		Rate		Rate		Rate
1861	17	50.0	7	20.6	...	...	...	...	22	64.7
1862	46	118.9	7	18.1	...	...	...	...	53	136.6
1863	36	61.0	17	28.8	...	...	...	...	54	91.5
1864	24	36.4	35	53.3	...	...	...	...	242	367.8
1865	15	6.2	19	23.7	...	...	...	...	150	187.5
1866	15	17.9	9	10.7	...	...	...	...	305	363.1
1867	75	85.6	20	22.8	164	187.2	...	...	465	536.8
1868	233	259.0	19	21.1	190	211.1	...	...	224	248.8
1869	253	272.0	12	12.9	169	181.7	...	...	110	118.3
1860	125	114.7	24	22.0	279	255.9	...	...	101	92.4
1861	45	37.5	24	20.0	236	196.7	...	...	57	47.5
1862	335	244.5	27	19.7	175	119.4	...	...	65	47.4
1863	405	270.0	91	60.7	314	209.3	1	1.7	44	29.3
1864	70	41.4	19	11.2	295	178.3	...	...	119	70.2
1865	89	49.9	15	8.4	490	231.3	1	1.6	85	47.6
1866	127	63.5	184	91.8	283	144.6	...	...	99	49.9
1867	101	44.9	62	27.6	178	79.4	...	...	79	35.1
1868	182	72.2	63	25.0	195	77.4	...	...	122	48.4
1869	573	294.6	131	46.8	257	91.8	...	...	137	46.3
1870	305	99.5	91	29.7	427	139.3	...	...	142	46.3
1871	124	37.4	63	18.8	244	73.6	...	...	125	37.4
1872	128	34.8	124	33.8	337	97.2	2	2.5	166	45.2
1873	115	30.3	155	40.8	236	62.1	2	1.5	166	43.7
1874	105	26.6	107	27.1	174	44.0	3	1.8	74	18.7
1875	206	51.4	106	26.5	269	67.2	3	1.7	96	23.9
1876	811	198.9	133	32.6	772	184.5	...	...	63	15.4
1877	819	190.5	52	12.1	584	135.8	...	...	70	16.2
1878	133	30.5	235	53.8	525	120.2	...	...	35	8.0
1879	389	79.1	33	6.7	968	196.9	...	...	53	10.7
1880	339	67.4	68	13.5	1493	290.7	1	1.2	52	10.3
1881	187	34.6	157	29.1	1009	186.9	...	...	63	11.7
1882	206	35.7	101	18.0	753	134.3	...	...	79	14.1
1883	400	69.0	92	15.9	817	140.9	...	...	76	13.1
1884	354	56.2	112	17.8	995	143.7	...	...	77	12.2
1885	279	41.1	94	14.1	1012	152.2	...	...	58	8.7
1886	220	31.5	112	15.9	1303	185.2	...	...	64	9.1
1887	190	25.0	104	13.9	1495	184.9	...	...	121	15.8
1888	184	22.9	183	22.8	1297	161.6	...	...	103	12.8
1889	185	19.8	96	10.3	1509	161.4	1	1.1	133	14.2
1890	193	17.5	201	18.3	1261	114.7	112	10.2	156	11.3
1891	499	43.4	194	16.9	1348	118.2	20	1.7	100	8.9
1892	382	31.8	164	13.7	1548	129.0	103	8.6	54	3.7
1893	329	26.3	210	16.8	1467	117.1	88	7.0	67	4.2
1894	190	14.5	210	16.0	1406	107.4	51	3.9	64	4.0
1895	77	5.6	122	8.9	1642	120.1	165	12.1	64	4.0
1896	51	3.8	187	13.1	1098	76.2	17	1.2	69	4.3
1897	81	5.4	160	10.7	774	51.9	15	1.0	68	4.2
1898	67	4.3	208	13.4	680	43.7	281	18.0	63	4.0
1899	533	32.8	77	4.7	917	56.4	311	19.1	65	3.9
1900	226	13.3	285	16.8	840	49.5	160	9.4	58	3.4
1901	165	9.4	207	11.8	515	29.4	204	403.4	88	5.0
1902	445	24.7	266	14.8	627	34.8	118	416.8	89	4.9
1903	296	16.0	270	14.6	637	34.4	166	495.9	68	3.6
1904	143	7.5	113	5.9	409	21.5	114	444.3	57	2.9
1905	79	4.1	359	18.4	433	22.2	153	424.3	69	3.4
1906	493	24.7	167	8.4	554	27.7	119	436.8	...	...
1907	718	35.1	246	12.0	555	27.1	238	479.4	...	...
1908	440	19.6	134	6.4	555	26.5	334	407.6	...	...
1909	369	17.2	139	6.5	680	31.7	186	116.1	...	...
1910	404	18.4	173	7.9	822	37.4	146	433.1	...	...
1911	474	21.2	55	2.5	877	39.1	179	400.6	40	1.7
1912	920	26.9	142	6.2	940	40.8	72	385.9	39	1.6
1913	666	38.5	101	4.3	952	40.4	85	380.2	61	2.5
1914	228	9.5	230	9.6	764	31.9	117	345.2	47	1.4
1915	78	3.4	59	2.4	679	27.7	287	351.4	31	2.0
1916	146	6.4	111	4.4	787	31.3	401	330.8	46	1.8
1917	623	24.4	211	8.2	1228	47.8	202	362.8	198	7.7
1918	48	1.8	184	7.1	720	27.4	6971	698.2	101	3.8
1919	118	4.4	140	5.2	592	22.4	1757	327.9	...	...
1920	181	6.6	152	5.6	630	23.1	2037	328.8	...	...
1921	177	6.4	148	5.3	676	24.3	114	179.9	...	...
1922	110	3.9	97	3.4	561	19.8	317	200.2	...	...
1923	84	2.9	137	4.7	365	12.6	428	237.8	4	1.3
1924	75	2.6	108	3.7	216	7.4	184	196.4	7	2.3
1925	128	4.3	146	4.9	240	8.9	270	293.8	6	2.0
1926	78	2.3	84	2.5	224	2.3	405	12.1	13	4.2

Rates per 100,000 population.

Table 4.
MORTALITY STATISTICS—CITY OF CHICAGO.

YEAR	Cerebro- spinal Meningitis	Rate	Poliomyelitis	Rate	Diphtheria and Epidemic	Rate	Puerperal Septicemia	Rate**
1854	...	...	...	...	18	33.0	1	.1
1855	...	...	...	...	51	131.8	1	.05
1856	...	...	...	...	31	32.5	1	.08
1857	...	...	...	...	216	349.7	...	...
1858	...	...	...	...	92	115.0	1	.05
1859	...	...	...	...	67	79.9	0	.29
1860	1	1.1	...	...	63	71.9	33	1.37
1861	3	3.3	...	...	17	18.9	47	2.11
1862	2	2.2	...	...	37	39.8	33	1.64
1863	1	.9	...	...	37	33.9	10	.44
1864	...	...	...	...	31	25.8	3	.13
1865	1	.7	...	...	11	32.1	10	.35
1866	1	.7	...	...	49	32.7	10	.26
1867	2	1.2	...	...	77	45.6	26	.58
1868	20	11.1	...	...	85	47.6	10	.27
1869	12	6.0	...	...	125	62.5	18	.50
1870	22	9.8	...	...	147	65.3	29	.62
1871	44	17.5	...	...	184	75.0	39	.85
1872	39	13.9	...	...	229	81.8	60	.92
1873	31	19.1	...	...	260	84.7	55	.75
1874	42	12.6	...	...	169	50.6	68	.97
1875	300	81.7	...	...	262	71.3	131	1.29
1876	129	34.0	...	...	288	75.8	133	1.38
1877	89	22.5	...	...	223	56.1	64	.79
1878	85	21.2	...	...	252	63.0	57	.72
1879	115	28.2	...	...	160	39.2	49	.57
1880	102	23.7	...	...	227	52.8	43	.54
1881	111	25.4	...	...	153	35.0	58	.78
1882	101	21.2	...	...	215	43.8	59	.68
1883	76	15.1	...	...	147	29.2	69	.66
1884	320	39.3	...	...	317	56.9	114	1.03
1885	120	21.4	...	...	242	43.2	107	.81
1886	108	18.6	...	...	219	37.8	152	1.32
1887	89	14.1	...	...	244	38.7	108	.86
1888	142	21.4	...	...	171	25.7	107	.86
1889	103	14.6	...	...	130	18.5	126	.92
1890	81	10.7	...	...	162	21.3	149	.91
1891	138	17.2	...	...	148	18.1	186	1.18
1892	110	11.8	...	...	167	17.9	137	.81
1893	112	12.9	...	...	245	20.4	166	.76
1894	301	26.2	...	...	375	30.0	176	.63
1895	223	18.6	...	...	224	15.5	174	.66
1896	388	30.9	...	...	115	9.1	181	.67
1897	249	19.0	...	...	136	8.7	214	.89
1898	8	.58	...	...	110	6.9	140	.58
1899	2	.14	...	...	150	9.3	116	.63
1900	...	...	...	...	37	2.3	143	.66
1901	...	...	...	...	761	40.8	114	.50
1902	18	1.1	...	...	788	48.4	143	.56
1903	6	.35	...	...	861	50.8	101	.40
1904	9	.51	...	...	832	47.5	113	.64
1905	4	.22	...	...	713	39.5	108	.59
1906	1	.05	...	...	720	38.9	165	.56
1907	3	.15	...	...	1762	89.6	131	.69
1908	16	.8	...	...	2189	111.8	142	.73
1909	6	.3	...	...	2236	111.9	133	.67
1910	*15	.7	...	...	2451	119.7	197	.96
1911	*12	.57	...	...	3076	146.7	179	.85
1912	3	.14	...	...	3116	145.2	189	.88
1913	43	2.0	...	...	3111	159.9	178	.81
1914	40	1.8	...	...	2983	152.6	204	.91
1915	41	1.7	...	...	3030	152.4	194	.83
1916	61	2.5	4	.17	3214	156.4	295	1.46
1917	48	2.0	10	.41	3029	125.6	119	4.9
1918	51	2.1	10	.40	2623	107.1	72	2.9
1919	53	2.1	19	1.9	3129	137.9	99	3.9
1920	198	7.7	187	7.2	2845	111.7	69	2.6
1921	93	3.5	25	.95	2960	111.0	75	2.8
1922	46	1.7	17	.63	2536	91.8	54	2.0
1923	37	1.4	8	.29	2203	80.7	76	2.8
1924	31	1.1	14	.50	1755	63.1	68	2.5
1925	27	.9	91	.73	1245	43.9	56	2.0
1926	32	1.1	4	.13	1065	37.9	91	3.2
1927	19	.6	2	.06	876	29.8	131	4.5
1928	31	1.0	7	2.3	887	29.6	80	2.7
1929	29	.9	3	1.0	600	16.4	102	3.4

* Encephalitis.

** Rates for puerperal septicemia percentages of total mortality.

Other rates per 100,000 population.

Table 5.
MORTALITY STATISTICS—CITY OF CHICAGO.

YEAR	Malaria	Rate	Reported Births	Rate*	Infant Deaths Under 1 yr.	Rate per 1000 Live Births
1861	17	50.0	.....	.....	.....	.....
1862	38	98.1	.....	.....	.....	.....
1863	34	57.5	.....	.....	.....	.....
1864	70	106.3	.....	.....	.....	.....
1865	30	37.5	.....	.....	.....	.....
1866	22	26.4	.....	.....	.....	.....
1867	47	33.6	.....	.....	.....	.....
1868	16	17.7	.....	.....	.....	.....
1869	10	10.7	.....	.....	.....	.....
1860	24	22.0	.....	.....	.....	.....
1861	15	12.5	.....	.....	.....	.....
1862	19	13.8	.....	.....	.....	.....
1863	27	18.0	.....	.....	.....	.....
1864	32	18.8	.....	.....	.....	.....
1865	43	24.1	.....	.....	.....	.....
1866	74	36.9	.....	.....	.....	.....
1867	39	17.3	.....	.....	.....	.....
1868	29	11.5	.....	.....	2530	16.0
1869	32	11.4	.....	.....	2251	8.0
1870	19	15.9	.....	.....	2700	8.8
1871	35	10.4	.....	.....	2475	7.4
1872	57	15.5	.....	.....	3451	9.4
1873	63	16.5	.....	.....	3570	9.4
1874	31	7.8	.....	.....	3508	8.4
1875	45	11.0	.....	.....	3024	7.6
1876	62	15.2	.....	.....	2694	6.6
1877	20	4.8	.....	.....	2432	5.7
1878	59	13.5	.....	.....	2465	5.6
1879	49	9.9	.....	.....	2549	5.2
1880	71	14.1	.....	.....	3147	6.3
1881	124	22.9	.....	.....	4374	8.1
1882	89	15.8	.....	.....	4059	7.2
1883	95	16.3	.....	.....	3850	6.6
1884	98	15.5	.....	.....	4179	6.6
1885	111	16.6	.....	.....	4000	6.02
1886	118	16.7	.....	.....	4084	5.8
1887	87	11.4	.....	.....	4483	5.9
1888	96	11.9	.....	.....	4718	5.9
1889	105	11.2	.....	.....	5098	5.4
1890	121	10.0	.....	.....	6630	6.0
1891	143	11.4	.....	.....	8008	7.0
1892	139	9.6	.....	.....	7574	6.3
1893	83	5.1	.....	.....	8125	6.5
1894	34	2.1	.....	.....	7336	5.6
1895	56	3.5	.....	.....	6817	5.0
1896	32	2.0	.....	.....	6512	4.6
1897	24	1.5	.....	.....	5735	3.9
1898	27	1.7	28,609	18.5	5415	180.2
1899	.....	.....	29,065	17.8	5520	189.9
1900	32	1.9	29,568	17.4	5341	180.6
1901	21	1.2	26,648	15.2	5044	189.2
1902	16	.9	27,343	15.1	5144	188.1
1903	18	1.0	29,633	15.6	5516	183.1
1904	9	.5	27,803	14.6	5025	180.7
1905	..	.9	26,092	13.3	5831	223.4
1906	9	.4	25,171	12.5	6114	242.8
1907	8	.3	25,702	12.5	6699	260.6
1908	11	.5	27,533	13.1	6888	250.1
1909	9	.4	34,729	25.5	6384	116.6
1910	11	.5	355,914	25.4	6841	122.3
1911	8	.4	356,111	24.9	6293	112.1
1912	1	.2	356,379	24.4	6689	118.6
1913	7	.3	356,626	24.0	6928	122.3
1914	9	.4	356,895	23.5	6880	120.9
1915	9	.4	357,045	23.1	6265	108.7
1916	6	.2	37,760	18.9	6497	144.6
1917	4	.2	49,536	19.2	6657	134.3
1918	4	.2	51,255	19.5	6636	129.4
1919	7	.3	47,853	17.9	5739	119.9
1920	6	.3	55,720	20.4	5674	112.8
1921	4	.1	60,902	21.9	5051	89.3
1922	..	.2	56,724	20.0	4850	85.5
1923	4	.1	55,935	19.4	4833	87.3
1924	7	.2	58,900	20.0	4528	76.9
1925	4	.1	60,155	20.0	4457	74.7
1926	4	.03	60,200	19.8	4067	66.6

* Per 1000 population.

† Estimated.

Birth rates per 1000 population.

Infant deaths under 1 year, period 1868 to 1897 rates per 1000 population.

Infant deaths under 1 year, period 1898-1926, rates per 1000 live births.

Other rates per 100,000 population.

SEWERAGE.

The first sewers were designed with outlets direct to Lake Michigan and into Chicago River, then a tributary of the lake. It was obvious that the lake could not be used both for a water supply and as a means of sewage disposal. As no other source of supply was available it necessitated the disposal of sewage in some other manner.

The Chicago Sanitary District was organized in 1889 under a special law enacted by the legislature in that year. When the district was organized it included 185 square miles and served 1,150,000 people. Now the district covers 37 square miles, serves 3,465,000 people and includes part or all of 57 suburbs.

Construction of the main channel of the drainage canal was started in 1892 and completed in 1900, reversing the flow in Chicago River. During that period and the following few years interceptors were constructed to carry the sewage to the river.

Due to the amount of sewage and restrictions on the amount of diluting water that could be taken from the lake it became necessary to consider treating the sewage.

In order to treat the sewage the district was divided into various treatment projects. At present the Calumet and DesPlaines River projects are in operation, the North Side project is nearly finished, the West Side project is started and small treatment plants are being operated at Morton Grove, Glenview and Northbrook.

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THE SANITARY DISTRICT MOVEMENT

Drainage for sanitary as well as agricultural purposes is a subject that has bewildered the inhabitants of Illinois from the time when a desire to till the soil and escape from malaria first burned in the hearts of early settlers. For more than a hundred years the thought of satisfactorily solving this problem has agitated the minds of public officials and private citizens.

Before a State government was organized a number of communities were either moved or abandoned outright because of difficulties in draining the original sites. The settlers at Cahokia abandoned the place in favor of Belleville in 1813 and the original community that ultimately grew into Peoria was moved a mile and half further up the river at an even earlier date.

In 1819 the first legislature to meet after Congress had formally admitted Illinois to the Union passed a law legalizing lottery for the purpose of raising funds with which to drain the American Bottoms. About the same time a voluntary organization, the Illinois Agricultural Association, specified as one of its functions the promotion of drainage for sanitary and agricultural purposes.

Then followed a long period when local governments managed in one way or another to get rid of community sewage and drain the community grounds in a manner that made the places habitable, if not sanitary.

At length the lack of drainage facilities in Chicago, coupled with the rapid growth of that municipality, created sanitary problems that demanded solution by some extraordinary means. This led to the beginning of what may be called the sanitary district movement in the State, which bids fair to give to the drainage problem the most satisfactory solution of any method yet devised.

This movement began when Chicago, in 1889, persuaded the legislature to pass a law authorizing that city to create a sanitary district with power to levy taxes, build sewers and drainage channels and participate otherwise in relieving the community of its problem of sewage disposal.

The next step in the movement took place in 1911, when the legislature authorized the creation of the North Shore Sanitary District. Then in 1917 a law was passed which authorized the creation of sanitary districts generally in the State wherever citizens manifested an interest sufficient to get the names of 100 voters attached to a petition. More detailed account of the development of the sanitary district movement is presented hereafter in this chapter.

Even more recently, in 1925, the general sanitary district movement idea was enlarged when a law granted local communities the privilege of creating by popular vote what are known as river conservancy districts. These districts or organizations have many powers and functions similar to those of the sanitary districts.

Sanitary District of Chicago

The Sanitary District of Chicago was formed primarily to cope with the sewage disposal of the city of Chicago. Before the opening of the sanitary channel the sewers of Chicago emptied direct into Lake Michigan, the Chicago River and into its north and south branches. The pumpage into the old canal from the river was never sufficient to prevent the periodic flow of its sewer-laden contents into the lake.

The fouling of the river became greater from year to year, as the population of the city increased and the industries on its banks and tributary sewers developed. The nuisance from the river became the subject of continual public complaint, with increased emphasis during each succeeding summer season. This condition and the nuisance from the stock yards were outstanding features associated in that day with the name of Chicago, and were commented on disparagingly by the press of the country and travelers from other lands.

While the greasy, bubbling scum and the nauseating odor from the river were the ponderable evidence of pollution and the subject of comment, the real danger lay in the discharge of typhoid-laden sewage into the lake from the numerous sewer outlets along the lake shore. In time of freshets from heavy rainfalls, the contents of the river were also swept into the lake and materially added to the pollution of the water supply.

EARLY EFFORTS TO PURIFY THE RIVER.

When the Illinois and Michigan Canal was completed in 1848, the Summit level was eight feet above the low level of the lake. Pumps were installed at Bridgeport which fed the canal from the South Branch of the Chicago River to furnish the needed water to make the canal navigable during the dry season.

In 1849 a crude system of drainage with heavy box sewers, discharging into the river was installed in the territory between State Street and Fifth Avenue, from Randolph Street to the river. The project proved unsuccessful because, when most needed, the drains were below the level of the water in the river.

In 1855 a board of sewerage commissioners was created by an act of the legislature, and Mr. E. S. Chesbrough was appointed chief engineer. A system of sewers was designed to discharge into the river by gravity. This necessitated the raising of the grade in the central business district.

Mr. Chesbrough also presented a plan for purifying the river dependent upon the introduction of water pumped from the lake through a covered canal in Sixteenth Street.

In 1865, the condition of the Chicago River and the measures necessary to reduce the pollution, were studied by a commission of engineers with the result that a recommendation was made that the Summit level of the canal be lowered so as to create a continuous flow of water from the lake. An amendment to the city charter gave the board of public works power to execute this project for the cleansing of the Chicago River.

Between 1866 and 1871, the city deepened the canal at a cost of \$3,300,883. The pumps at Bridgeport were considered of no further use now. After two years of idleness, they were sold for \$2,500 and the site of the pumping station was leased to private parties.

After a few years, the city deplored the sale of the pumps because, due to fluctuations in lake levels, it was soon found that the flow in the river was insufficient to prevent its fouling.

The Sag feeder, which had been constructed to feed the canal below the Summit level by water drawn from Stony Creek, a branch of the Little Calumet at Blue Island, and from the swamps, known as the "Sag Slough", was dammed four miles west of Blue Island in order to increase the flow of water through the Chicago River.

The Ogden-Wentworth Canal was completed in 1872 as a private undertaking for the purpose of draining Mud Lake. This established a communication between the West Fork of the Chicago River and the Des Plaines River. The additional water thus supplied through the West Fork had the effect of lessening the flow in the main channel of the river.

In 1877, a dam was built in the branch of the DesPlaines River, communicating with the Ogden-Wentworth Canal, after the city had filed a complaint that the flow of water through this channel had the effect of lessening the current in the South Branch of the Chicago River.

The foul condition of the canal and the DesPlaines River at Joliet, were brought to the attention of the State Board of Health in 1878. Investigations made under the direction of Dr. John H. Rauch, secretary of the board, showed that a low stage of water was already accompanied by increased offensiveness of the canal and river. It was estimated that from 60,000 to 100,000 cubic feet of water per minute would be required to cleanse the canal.

As a result of these investigations, and in view of the serious complaint of the citizens of Joliet, the secretary of the State Board of Health made a recommendation to the city of Chicago in 1879 that the pumping works at Bridgeport be rebuilt.

After some delay, during which time the Chicago River became worse from year to year, new and more powerful pumps were installed by the city of Chicago at a cost of \$250,177 and put into operation in 1884.

In order to supply the North Branch with a flow of fresh water, the Fullerton Avenue conduit, 12 feet in diameter, was completed in 1880. By means of two screw pumps, water was forced through it from the lake, and at times the water from the north branch was pumped lakeward, with a view to cleansing this part of the river. The net result of all these efforts was that the river and shore of the lake remained foul. Professor John H. Long made a series of chemical examinations for the State Board of Health from September 5, 1885 to August 28, 1886, of the water supply of Chicago, Hyde Park, Lake View and Evanston. The sewage of the river had been flowing into the lake for nearly a month when the examinations were begun. The analysis of the Chicago supply taken from a hydrant showed .0105 parts per million of free ammonia, and .085 parts of albuminoid ammonia. The greatest contamination was found during the week ending February 27 when thawing weather had set in, with light rainfalls and the pumps at Bridgeport were not operated. The best results were obtained between May and August when the operation of the pumps promoted the outward flow of the river.

The city was increasing in population beyond all expectations, and the rather desperate situation was a constant source of discussion and even dismay until the celebrated downpour of August 2, 1885 when it rained with violence for nearly two days. The Chicago River, augmented by a large overflow from the DesPlaines through the Ogden-Wentworth Canal, rushed in a torrent into the lake, and its foul contents were swept out as far as the Two Mile Crib off Chicago Avenue, which was the sole source of the city's water supply at that time.

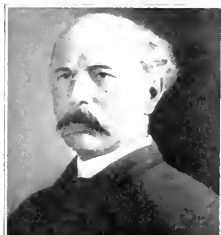
The people were aroused and the Citizens' Association appointed a committee consisting of Mr. Ossian Guthrie, Mr. Lyman E. Cooley, and Dr. Frank W. Reilly, then assistant secretary of the State Board of Health, to inquire into the situation and report. Evidently no time was wasted for the committee reported on August 27 and recommended the construction of a ship canal substantially as the drainage channel exists today. The report was promptly adopted, was given wide publicity by the press and the agitation for the construction of the canal was continued until results were ultimately obtained.

In January 1886, the city council provided for the appointment of a water-supply commission. Mr. Rudolf Hering of New York, a celebrated

engineer, Mr. Samuel G. Artingstall, city engineer, and Mr. Benezette Williams, also an engineer, were appointed as members of this commission. They made a preliminary report in January 1887. No final report was ever made, but all three, in their individual capacity, rendered valuable aid in finally securing the passage of the Drainage District Bill.

SANITARY DISTRICT CREATED.

The efforts to improve the drainage system of Chicago finally culminated in an effort to secure the necessary enabling legislation during the legislative session of 1886-1887. Two bills were introduced to provide for an adequate drainage system for the city. The one, known as the Winston Bill, proposed to raise money, by special assessment, to construct an outlet through the DesPlaines Valley. The other, the Hurd Bill, proposed the creation of a metropolitan district with power to issue bonds and levy taxes.



Murry Nelson
First President, 1890

The Hurd bill, as amended, was reported favorably but the question developed such broad relations that a general conviction prevailed that the problem should be fully considered before legislative action was taken. Consequently, a joint resolution was passed which provided for a committee of five to consider "the subject of the drainage of Chicago and its suburbs" and to report to the next legislature. The committee consisted of Mayor John A. Roach of Chicago, two senators, B. A. Eckhart of Chicago and Andrew J. Bell of Peoria, and two representatives, Thomas C. McMillan of Chicago and Thomas H. Riley of Joliet. Mr. John P. Wilson of Chicago was employed as counsel and Mr. Lyman E. Cooley as engineer. The report of this committee was submitted to the General Assembly on February 1, 1889, in the form of a bill which provided for the creation of the Chicago Sanitary District.

After many hearings and amendments, the bill was finally passed and received the signature of the Governor on May 29, 1889. It became a law in force and effect on the following July 1st.

In accordance with the provisions of the act a petition was made to the county judge of Cook County in which it was requested that he appoint two judges of the circuit court to act as commissioners with him for the purpose of fixing the boundaries of the district. The commissioners fixed the original boundaries of the district as shown in Figure 1. It comprised about 185 square miles.

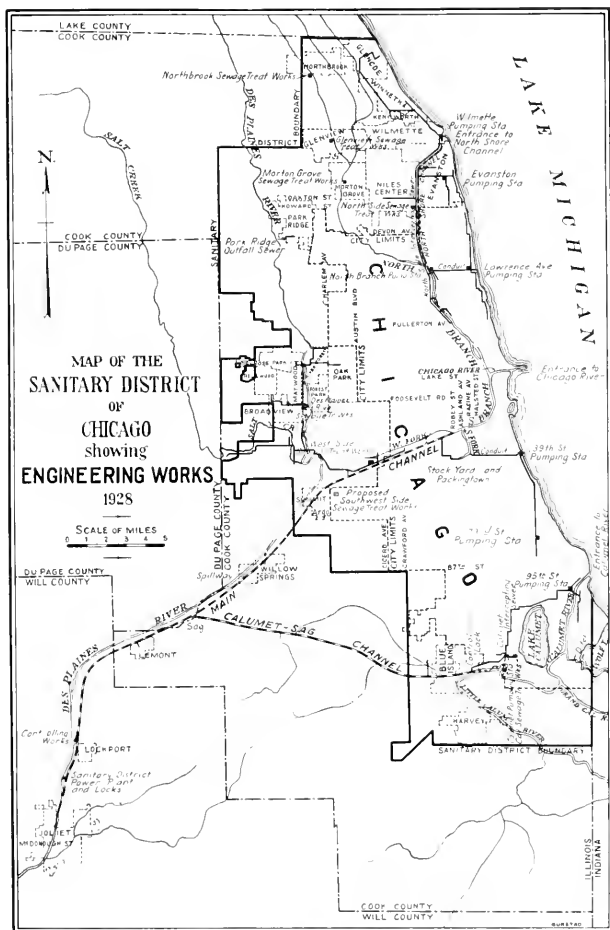


Figure 1.

The matter of organizing the district was then submitted to the voters at the general election held November 5, 1889, with a resulting vote of 70,958 for, and only 242 against the proposition. This vote showed the sentiment that prevailed in favor of the project in the city of Chicago.

The press had played an important part in crystalizing this sentiment. Dr. Frank W. Reilly, who spoke as a representative of the press, at the ceremonies inaugurating the digging of the channel said:

"The Sanitary District is essentially and distinctively the creation of the public press of the city of Chicago and of the Illinois Valley. The egg from which it was hatched was laid in a newspaper office, a little over seven years ago. It was incubated by the newspapers and the newspapers did the proper and necessary cackling at the various stages of its evolution. * * * * No one subject has been given so much space in the columns of the daily press as this enterprise."

Dr. Reilly was in a position to speak knowingly on this subject for it was he who had inaugurated this publicity campaign and as a newspaper man and a sanitarian, had inspired its continuation until the object sought was obtained.

On December 12, 1889, at a special election, the first board of trustees of the Sanitary District was elected. Dr. Arnold P. Gillmore was a member of this board. Soon afterwards the validity of the act was tested in two suits and sustained by the Illinois supreme court.

Surveys and estimates of the cost of the channel were ordered made. After several changes of engineers, and the consideration of various courses, a plan was finally agreed upon by the new and reorganized board of trustees elected November 3, 1891.

Frank Wenter was chosen president of this board and trustee Lyman E. Cooley, former chief engineer, was made chairman of the committee of engineering. Benezette Williams was appointed chief engineer.

The route of the channel, between Willow Springs and Lockport, was agreed upon and contracts for its construction were awarded on July 13, 1892. The route from Bridgeport to Willow Springs was reported by the engineers on June 7, 1892.

The work on the main drainage channel was begun on September 3, 1892. No sanitary undertaking of such magnitude had been undertaken previously in the State or Nation. It provided for the digging of a canal thirty miles long, 202 feet wide in the earth section, 161 feet wide in the rock section, and 24 feet deep. It cut across the divide that separated the St. Lawrence watershed from the Mississippi Valley and renewed the flow of water from Lake Michigan to the Mississippi, as it had flowed in prehistoric times.

MEMBERS FIRST BOARD OF TRUSTEES The Sanitary District of Chicago



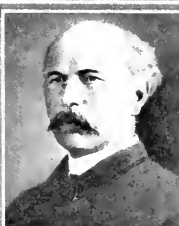
John J. Allpeter



Christoph Hotz



John A. King



Murry Nelson



Richard Prendergast



H. J. Willing



Frank Wenter

Two other members of the first board were Arnold P. Gillmore, M. D., and W. H. Russell.

The purpose of the canal was to furnish an outlet for the drainage of the city of Chicago and aid toward a waterway or ship canal from Lake Michigan to the Mississippi.

Isham Randolph was appointed chief engineer on July 7, 1893, and served until 1907.

SANITARY CHANNEL COMPLETED.

During the World's Fair of 1893 in Chicago, a trip to witness the blasting and the new and successful cantilever cranes removing the rock and earth from the channel to the spoils banks was one of the sights shown to visitors. The work was finally finished and the waters of Lake Michigan turned into the channel to flow by gravity in its course toward the Gulf of Mexico at 11:15 A. M. on January 17, 1900. The cost of the project was \$45,220,588.

Continued expansion of the drainage channel system was marked by the completion of the North channel in 1910, and the Sag channel in 1922.

When the work on the Sag channel was first started in 1906, the Sanitary District made application to the War Department for the necessary diversion of water from the lake, to reverse the flow of the Calumet River. This was refused and litigation was started, which was finally adjudicated in an injunction proceeding in the United States District Court, seeking to restrain the Sanitary District from withdrawing more than 4,167 feet per second of water. After a lengthy hearing, in a decree issued on June 18, 1923, the Court rendered a decision against the Sanitary District and required it to hold to the provisions of the 1901 permit, allowing the diversion only of the aforesaid quantities of water.

The district appealed from the decision to the United States Supreme Court. This Court affirmed the injunction of the district court on January 5, 1925, and ordered the decree to go into effect in sixty days, without prejudice to any permit that might be issued by the Secretary of War, according to law.

In the meantime, the district had gone ahead with a program of sewage treatment. The first of the proposed sewage treatment plants was the one in the Calumet district, designed to treat the sewage from 42½ square miles in that territory, with an estimated cost of \$17,360,000, including the contributory sewers. This was started in 1920, began treating sewage in 1922, and was completed recently.

The construction of the Howard Avenue sewage treatment plant was started in 1923. This will serve an area of 62 square miles and will be the largest activated sludge plant ever built. The estimated cost is \$27,433,000, of which \$11,000,000 is for the contributing and intercepting sewer system.

The 95th Street sewage pumping plant was completed in 1925. The total estimated volume of sewage and industrial wastes of the Sanitary

District was 835,000,000 gallons daily in 1925, with an average of 147 parts per million of suspended matter and .176 parts per million of bio-chemic oxygen demanded.

A bill was introduced in Congress permitting the district to withdraw 10,000 cubic feet of water per second, on which hearings have been held, but which has not been passed.

Upon making application to the Secretary of War, after the United States Supreme Court decision, it was agreed on March 3, 1925, that a permit would be issued to the district to withdraw an annual average of 8,500 second feet, and an instantaneous maximum of 111,000 second feet for a period of five years, provided that the district would construct sewage treatment plants to provide for the complete treatment of wastes from 1,200,000 persons within that time, and that the universal metering of the water supply of the city of Chicago would be undertaken at the rate of 10 per cent annually.

The Sanitary District's definite construction program for sewage treatment works, which was approved by the War Department, conditioned on issuing the permit, contemplates the expenditures of \$73,419,000 for such plants and allied works during the years 1925-29 inclusive.

EXTENSIONS AND SEWAGE INTERCEPTION.

The Sanitary District act was amended in 1903 by providing for the annexation of the North Shore and Calumet regions and authorizing the development of water power.

The 39th Street sewage pumping station was completed by the city of Chicago in December 1904 and a part of the sewage from the south side was diverted from the lake. In the following year, the south side intercepting sewer system was completed as far south as 75th Street.



T. J. Crowe
Present President

The main channel extension was completed in 1907 at a cost of \$4,489,913. It was constructed in order to preserve navigation after the Illinois and Michigan Canal was cut by the Sag channel. The project is 4.25 miles long, extending from the Lockport controlling works to the upper basin in Joliet.

The north-side intercepting-sewer system, and the Lawrence Avenue pumping station were completed by the city in 1908. The pumping of flushing water from the lake was started on November 28, this year.

The operation of the 39th Street and Lawrence Avenue sewage and flush-water pumping stations was turned over to the Sanitary District in 1910.

This year the North Shore channel was completed, and a conduit was constructed in Western Avenue to flush the west arm of Bubbly Creek.

On September 10, 1911, the construction of the Calumet-Sag channel was begun with a view to diverting the flow of the Calumet River, through a channel from the Little Calumet in the neighborhood of Blue Island to the main drainage channel at the Sag. In the meantime, dredging was begun in the main channel, between Robey Street and Summit, to enlarge this section.

The diversion of the Evanston sewage by the completion of the intercepting sewer system in that city in 1921, and the completion of the Calumet-Sag supplementary channel in 1922, completed the main dilution and diversion projects of the district.

SEWAGE TREATMENT.

The refusal by the federal government of a permit to divert additional water from the lake, for the creation of a flow in the Calumet-Sag channel, emphasized the importance of sewage-treatment projects in the disposal of the sewage handled by the district.

Study of the sewage-treatment problem was first inaugurated in 1909, when an experimental sewage-testing station was established at the 39th-Street pumping station. In 1912 the studies were extended to the stock yards sewage. A sewage-treatment plant, handling the sewage of Morton Grove, was completed in 1913. Experimental testing and treatment stations were maintained in 1920 for the purpose of studying the disposal of tannery wastes, and the wastes from the corn products plant at Argo in the following year.

In the meantime, Mr. Langdon Pearce, the sanitary engineer of the district, made studies and observation of sewage-treatment plants in all parts of the country, and the trustees accompanied by the sanitary engineer, made numerous annual inspection tours with a view to keeping in touch with the results of the various treatment projects in all parts of the United States.

The first large sewage-treatment project undertaken by the Sanitary District for the treatment of Chicago sewage was the Calumet sewage treatment plant. This was started in 1920. It is located at 125th Street and Cottage Grove Avenue and is designed to treat the sewage of the territory of approximately 53 square miles in the city south of 87th Street.

The initial installation was designed for a population of 225,000, and an average sewage flow of 50 million gallons per day. The treatment is by Imhoff tanks. Experimental activated sludge units and trickling filters were installed in connection with the plants.

CHIEF ENGINEERS

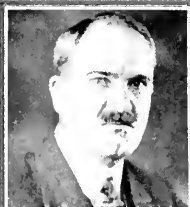
The Sanitary District of Chicago



Lyman E. Cooley



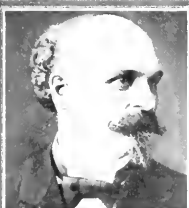
Isham Randolph



Landon Pearse



George M. Wisner



Zina R. Carter*

*PRESIDENT OF BOARD OF



Edward J. Kelly

Underdrained sand beds are provided for drying the sludge, covering an area of 3.5 acres. A part of the bed is covered with a green-house type of construction.

The plant cost \$6,601,120, and was put into operation in September 1922.

A large intercepting sewer, with pumping stations at 95th and 125th Streets, delivers the sewage to this plant from the Calumet district and from the territory as far west as Halsted Street.

The DesPlaines River sewage-treatment works was also completed in 1922. This is an activated sludge plant and serves for the treatment of the sewage of Elmwood Park, River Forest, Melrose Park, Maywood, Forest Park, Bellwood, the Speedway Hospital and a portion of Oak Park. The plant, which is located in Broadview, is designed for a population of 45,000, and an average sewage flow of 4.5 million gallons per day. The total construction cost was \$1,136,044.

LITIGATION OVER WITHDRAWAL OF WATER.

The hearing on the litigation, which started in 1906, when the Sanitary District was refused a permit by the Secretary of War for the necessary diversion of water from the lake to reverse the flow of the Calumet River, was finally adjudicated in an injunction proceeding in the United States District Court, seeking to restrain the district from withdrawing more than 4,167 cubic feet of water per second. On June 18, 1923, the Court rendered a decision against the Sanitary District, requiring it to hold to the provisions of the 1901 permit, which allowed only for the diversion of the aforesaid quantities of water.

The district appealed from this decision to the United States Supreme Court. In 1922, the state of Wisconsin filed a suit in the United States Supreme Court, also seeking to restrain the district from diverting more water from the lake than that allowed by the aforesaid permit.

The average diversion of water by the Sanitary District in 1924 was 9,465 cubic feet per second. The Sag channel carried normally about 700 cubic feet per second of this amount.

In a decision, handed down by the United States Supreme Court on January 5, 1925, the injunction of the district court was affirmed, the decree to go into effect in sixty days, without prejudice to any permit that might be issued by the Secretary of War, according to law.

In the meantime, a bill had been introduced in Congress, permitting the district to withdraw 10,000 cubic feet of water per second. Hearings were held on this bill, but to date it has not been passed.

Upon making application to the Secretary of War, after the United States Supreme Court decision holding the district to the terms of the original permit, it was agreed on March 3, 1925, that a permit would be issued,

allowing the district to withdraw for a period of five years, an annual average of 8,500 second feet, and an instantaneous maximum of 11,000 second feet, provided that the district would construct sewage-treatment plants, to provide for the complete treatment of wastes of 1,200,000 persons within that time, and that the universal metering of the water supply of the city of Chicago could be undertaken at the rate of ten per cent annually.

The Sanitary District was required to submit a definite construction program before the permit was issued. The program that was submitted and accepted contemplates the expenditure of \$73,419,000 for sewage treatment plants and allied projects during the years 1925-29.

An ordinance providing for the metering of the water supply in accordance with the terms of this agreement was passed by the city council on September 1, 1925.

The same year the states of Ohio, Pennsylvania, Minnesota, and later, New York, were permitted by the United States Supreme Court to join with the State of Wisconsin in its suit seeking to restrain the Sanitary District from withdrawing an excess of 4,167 second feet of water from Lake Michigan. Subsequently, this case was referred to Justice Charles E. Hughes, as master, to hear the evidence for the court and submit his findings.

After a lengthy hearing, he found against the states praying for the injunction. On account of this litigation, the district appropriated \$419,540 for legal expenses in 1926, and \$499,940 in 1927.

In 1928, an appropriation of \$294,270 was made for a health department, with a director at a salary of \$15,000 per annum.

WORK ON SEWAGE TREATMENT PROJECTS CONTINUED.

The trend of the litigation over the withdrawal of water made it more apparent that the treatment of the sewage discharged into the channel was imperative.

In 1925, the legislature increased the bonding power of the district to four per cent of the assessed valuation of the property in the district. This helped to provide the funds necessary to carry out the construction program agreed to with the Secretary of War.

A new and larger sewage laboratory was established at the main offices of the district in 1924, after which the one at 39th Street pumping station was discontinued.

The Glenview sewage treatment plant was completed in 1924. This is an Imhoff tank trickling filter plant, costing \$70,783, and designed to serve a population of 1,200. A similar plant was completed in 1925 to handle the sewage of Northbrook, designed for a population of 1,500. Its cost was \$71,065.

Work was started on the North Side treatment works and its supplemental-intercepting-sewer system in 1923. This plant is being built to treat the sewage from Chicago, north of Fullerton Avenue, and from Evanston, Wilmette, Kenilworth, Glencoe, Niles Center and Niles, an area of about 87 square miles.

The plant is located at Howard Street west of the North Shore channel. It is of the activated-sludge type and designed to handle the sewage of a population of 800,000, with an average sewage flow of 175 million gallons per day.

The total cost of the project is estimated at \$17,500,000.

In 1926 the first contract was let for the construction of the West Side treatment works. This is located in the village of Stickney at the intersection of West Pershing Road and 52d Avenue. It is being built to treat the sewage from the part of Chicago between Fullerton Avenue and the Chicago River, the Loop district, limited areas south of the river, and communities along the lower DesPlaines River and Salt Creek.

The plant will be essentially of the Imhoff tank type and is designed to digest the waste sludge from the north side plant and will be provided with extensive sludge-drying beds.

The plant, when completed, will serve a population of 1,850,000 and an average flow of 400 million gallons of sewage a day. The estimated cost is \$19,500,000.

The total volume of sewage and industrial wastes of the sanitary district in 1925 was estimated at 835,000,000 gallons daily. The estimated concentration, including industrial wastes, was 147 parts per million of suspended solids, and 176 parts per million of bio-chemical oxygen demanded. The industrial wastes were estimated at equivalent to a population of 1,500,000.

The figures show the magnitude of the problem that confronts the Sanitary District in attempting to treat and render innocuous and nonputrescible the wastes in the territory where it assumes jurisdiction over this disposal. The area of the district is now 437.4 square miles, 207 square miles of which are in the city of Chicago. The population of the district is estimated at 3,465,000.

In 1926 there were 314 sewer outlets into various streams in the district, as follows: Into the Chicago River and its branches, 221; into the Calumet River and Sag channel, 34; and into the DesPlaines River and Salt Creek, 59. Nearly all the sewers in the 57 municipalities, wholly or partly within the territory of the districts, are constructed on the combined plan, that is, they are designed to carry both the storm water and the domestic and industrial sewage and wastes. The per capita consumption of water in the city of Chicago is about 280 gallons daily.

The average annual rainfall in the Chicago area is 33.11 inches.

These factors render the problem of treating the sewage more difficult and exceedingly expensive, it being estimated that the total cost of the sewage-treatment plants and intercepting sewer systems necessary to handle all the sewage and storm water of the district, will excel the amount of \$150,000,000, the largest sum ever expended for any sanitary project and in comparison with which the amount originally expended for digging the sanitary channel seems small.

NORTH SHORE SANITARY DISTRICT.

The North Shore Sanitary District in Lake County was organized in pursuance to an Act of the legislature passed in 1911. This Act provides that "whenever any area of continuous territory within the limits of a single county shall contain two or more incorporated cities, towns or villages owning and operating * * * and procuring a supply of water from Lake Michigan, the same may be incorporated as a sanitary district." In accordance with this law, a part of the territory along the lake shore in Lake County was organized as a sanitary district in 1914. It has since been expanded to include all the territory from the Cook County line which is contiguous with the Chicago Sanitary District line, northward to the Illinois-Wisconsin state line, which is the northern boundary of Lake County.

The district embraces the cities and village of Deerfield, Highland Park, Highwood, Lake Forest, Lake Bluff, North Chicago, Waukegan and Zion City. The population of the district was 36,000 in 1920 and estimated at 58,000 in 1927. Sewage-treatment plants have been built at Highland Park, Highwood, Deerfield, Lake Bluff and Waukegan. The plant at Lake Forest was remodeled. Some of the plant sites are in high-class residential districts and, therefore, the plants represent especially good design and also architectural appearance.

The management of the district is vested in a board of five trustees appointed by the county judge and two circuit court judges. The district is divided into five wards and one trustee is appointed for each, they elect a president from among their number.

With popular approval the board of trustees is authorized to issue bonds not to exceed five per cent of the valuation of the taxable property in the district. This power has not been exercised. All the treatment works thus far constructed, costing \$350,000, have been paid out of current and accumulated taxes. The Board is not vested with authority to construct sewers or other works by special assessment.

SANITARY DISTRICTS ORGANIZED UNDER ACT OF 1917

In 1917 an Act was passed by the legislature providing for the establishment of sanitary districts, generally throughout the State, upon petition of 100 legal voters, to the county judge of the county in which the major

portion of the proposed district is located. Upon such petition the county judge and two judges of the circuit court fix the boundaries of the district and the proposition is submitted to the legal voters for approval. No territory located more than three miles from the corporate limits of any city, town or village can be included in such a district but it may include contiguous territory of one or more incorporated communities.

The management of such districts is vested in a board of three trustees appointed by the county judge. The trustees elect one of their members to act as president. The salary of the trustees was originally fixed at not to exceed \$100 per annum and by legislature in 1927 was increased to \$300 per annum. In addition to providing for the treatment and disposal of sewage of the district, the trustees are empowered to preserve the purity of the water supplied to the inhabitants and to this end are given power to prevent the pollution of any waters from which a water supply is obtained by any community within the district within a radius of fifteen miles from the intake or source of such water supply.

The districts are authorized to levy and collect taxes not to exceed one-third of one per cent of the assessed valuation of the taxable property and upon vote of the people to levy an additional one-third of one per cent tax and to issue bonds not to exceed five per cent of the assessed valuation.

In 1923 the law was amended so as to give the trustees power to construct and pay for sewers, drains, laterals and appurtenances by special assessments, in accordance with the Local Improvement Act of 1897.

The first sanitary district established under the Act of 1917 was organized at Decatur in August, 1917. The districts that have been established under this Act are given in the accompanying table:

SANITARY DISTRICTS ESTABLISHED UNDER ACT OF 1917.

<i>Location</i>	<i>Date established</i>	<i>Area Sq. Miles</i>
Decatur	1917	33
Bloomington-Normal	1919	8.3
El Paso	1919	2.3
Champaign-Urbana	1921	8.5
Downers Grove	1921	5.6
Elgin	1922	8.3
Taylorville	1923	3.5
Springfield	1924	36.2
Galesburg	1924	17.2
Wheaton	1925	15.5
Clinton	1925	1.6
Aurora	1925	10
Lincoln Highway	1925	10.5
Hinsdale	1926	13
Rockford	1927	44.5
Beardstown	1927	11.6
Peoria	1927	28.0

The establishment of the sanitary districts has and is making possible the abatement of nuisances and protection of water supplies and fish life. The remedy applied is the interception of the sewage, and delivery to a treatment plant for purification.

In the communities with combined storm and sanitary sewers, intercepting sewers are built with a capacity of 400 gallons per capita in 24 hours, with overflows into the nearby streams. In Springfield, where four combined sewers discharged ten miles above a proposed waterworks impounding dam, the intercepting sewer system was constructed so as to carry up to 325 gallons per capita per 24 hours to the treatment works at a point below the proposed dam and to chlorinate any overflow at the pumping station before allowing it to discharge into the stream higher up. This was found necessary because the cost of diverting the entire flow during storms to below the dam was estimated at \$2,250,000, which was a prohibitive expense under the limited taxing and bonding powers granted to the district under the general statute.

Other districts were also compelled to retrench, on the expenditures for treatment or intercepting works on account of lack of available funds. At Decatur, where the cost was increased by the large volume of industrial wastes, that from the starch works amounting to about 4,500,000 gallons per day, the first funds available covered but little more than half the necessary total expenditures. The total flow of sewage is over 10,000,000 gallons per day, which is over 25 per cent of the voted capacity of the plant. At this rate of flow the displacement period in the Imhoff tanks is about 1.15 hours, but the tanks have reduced the suspended matter about 75 per cent by weight. This, however, leaves a heavy burden on the sprinkling filters. Pre-aeration units have been added in order to make possible increased filtration rates.

Sewage-treatment plants operated by sanitary districts formed under the Act of 1917 are:

<i>District</i>	<i>Date first units completed</i>
Downers Grove	1921
Decatur	1922-1924
Champaign-Urbana	1923-1924
Elgin	1925-1926
Wheaton	1925

All of these plants include tanks and sprinkling filters except Wheaton, which has intermittent sand filters. Decatur also has pre-aeration units.

In three other districts, namely, Bloomington-Normal, Taylorville and Springfield, major construction work on sewage treatment plants is under way. Up to 1926, the total bonds authorized to cover the cost of sewage-treatment pumping and intercepting works in the various districts of the

State, organized under the law of 1917, amounted to \$4,504,000. In addition the cost of part of some works was defrayed out of accumulated taxes. The per capita cost of the sewage-treatment plants constructed thus far varied from \$9.46 in Decatur to \$12.17 in Elgin for the basis capacity of the plants.

RIVER CONSERVANCY DISTRICTS.

The establishment of River Conservancy Districts was provided for by an Act of the legislature passed in 1925. Such districts are authorized to provide for sewage-disposal, development of water supplies, roads and sanitary policing. Provisions are contained in the law providing for the transfer of sewage works from existing municipalities or sanitary districts upon a favorable referendum vote and the compensation of such communities for works constructed and transferred.

The Fox River Conservancy District is the only one organized under this law. The Fox River confederation was organized in 1923, with the object of preventing the pollution of the Fox River, regulating the flow, and restoring it for recreation purposes. Also with a view to securing a pure water supply for the communities located on the river. To carry out this program, the confederation secured the passage of the River Conservancy Act, under which a district was approved by the voters in 1926, and organized to carry out the general provisions of the law.

REFERENCES.

- Some projects for Sewage-Treatment Works under the Illinois Sanitary District Act of 1917, Samuel A. Greeley.
Transactions of American Society of Civil Engineers, Vol. 51, p. 441, Dec. 1927.

THE PUBLIC TUBERCULOSIS SANITARIUM MOVEMENT

Strike a match, light the fuse of a giant firecracker, watch the nervous spark that hastens along the full length of the fuse cord, listen to the ear-splitting explosion and you have the story of the public tuberculosis sanitarium movement in Illinois. Back in the nineties somebody struck the match when an agitation about tuberculosis control was started. That agitation sputtered along, like the nervous spark in the fuse cord, mostly in the form of legislative bills providing for a State sanitarium or system of sanitariums, for about ten years.

Then in 1908 the movement took on new life when the General Assembly enacted a law that authorized cities to construct and maintain tuberculosis sanitariums where popular favor expressed itself through the ballot box. Four cities, Chicago, Rock Island, Peoria and Rockford, in the order named, took advantage of this law and actually acquired sanitariums which were placed in operation. Two of these, Rockford and Rock Island, were later transferred to the county tuberculosis sanitarium board when the counties in which these cities are located undertook to maintain sanitariums.

This municipal sanitarium law of 1908 was a sort of preliminary burst that kept the fuse cord spark alive and gave it a fresh start sufficiently strong to carry it over seven more years of agitation. During this period the idea of a State sanitarium was definitely abandoned and in its place grew up the county sanitarium idea.

This new notion found favor with the legislature so that in 1915 a law was enacted which reposed in counties the same privileges extended to cities under the 1908 sanitarium law. The next year eight counties took advantage of the law and then the major explosive outburst occurred in 1918 when 33 counties decided by popular vote to levy upon themselves the tax provided for under the sanitarium law. Since that time only six additional counties have adopted the tuberculosis sanitarium proposition.

Observation of the table reveals the fact that sentiment in favor of the sanitarium project prevailed in eight counties. Rock Island County later (1920) voted favorably on the question but Greene has steadfastly refrained from adopting the measure. The vote cast on the sanitarium proposition in these ten counties trailed a trifle behind that cast for United States President in the same election.

In 1916 the tuberculosis project was voted on in ten counties. These included:

VOTES CAST.			
	For	Against	Total
Adams.....	14,094	7,263	21,357
Champaign	11,655	5,576	17,231
Greene	2,182	2,907	5,089
Kane	20,230	9,192	29,422
LaSalle	15,394	5,893	21,287
Livingston	7,875	4,337	12,212
Morgan	7,371	2,335	9,706
McLean	9,661	7,714	17,375
Ogle	5,098	4,284	9,382
Rock Island	6,331	18,370	24,701

For the big, popular explosive outburst of favor that occurred in 1918 sentiment had broadened considerably in volume. This was manifested by the size of the vote and the favorable majority. The election was cleverly timed and the campaign ingeniously conducted. Under the strain of war activities health was a subject greatly stressed by the Government. People had reached the point where they fell whole-heartedly in line with anything the Government favored. Not only so but markets were good, wages were high and the people were getting accustomed to the sound of big figures when public appropriations were talked of. Forty or fifty thousand dollars sounded like a family budget schedule compared with the gigantic sums that Congress prodigiously appropriated daily for war activities and yet the tuberculosis people asked for amounts of that character for sanitariums.

Furthermore, people had come to respond quickly and generously to the "drive" method introduced by the Government in connection with the sale of loan securities. The tuberculosis people were not slow to recognize the importance of the drive and they utilized this campaign method effectively in the thirty-three counties.

Thus we find a proponent of the measure enthusiastically observing:

*"The table shows the result of the election in thirty-three Illinois counties where the county tuberculosis sanitarium measure was submitted to a popular referendum.

"It was a landslide.

"The sanitarium proposition carried by an overwhelming majority in every county. In nine counties more votes were polled on the sanitarium measure than were cast for United States Senator. There were four issues, including the sanitarium proposition, on the little ballot, and in twenty-one counties the sanitarium project led the entire ticket.

*Illinois Arrow, December 1918.

"There are 102 counties in Illinois. The majority of votes on the sanitarium proposition in the thirty-three counties where the measure was submitted to the people was 101,209, or nearly twice the majority given the successful candidate for United States Senator in the entire State. The sanitarium measure polled a larger majority in these thirty-three counties than any other issue on the little ballot polled in the entire State.

"This result astounded even the most sanguine of our enthusiastic sanitarium boosters—and it was accomplished in the face of a series of handicaps, the like of which is seldom encountered in any campaign."

Counties included in this "landslide" were:

Boone	Grundy	Marion
Bureau	Henry	Piatt
Christian	Jackson	Pike
Clark	Jefferson	Randolph
Clay	Kane	Scott
Coles	Lee	Stephenson
Crawford	Livingston	Tazewell
DeKalb	Logan	Vermilion
DeWitt	McDonough	Whiteside
Douglas	Macon	Will
Fulton	Madison	Winnebago
	Woodford	

Subsequently the project was voted on in six other counties. It was carried in each. The counties and years of election were:

Alexander*	1921	Montgomery	1920
Knox	1920	Sangamon	1922
Menard	1922	Shelby	1920

Sanitariums have not been constructed in all of the counties which levy taxes for sanitarium purposes. The law does not make the acquisition of a sanitarium mandatory but it does specify that the funds collected shall be used for no purpose except to combat tuberculosis. Accordingly most of the counties have seen fit to hire sanitarium care for their tuberculous citizens rather than to construct and operate sanitariums of their own.

Thus at the close of 1927 there were 46 counties collecting taxes under the provisions of the tuberculosis sanitarium law, commonly known as the Glackin law, but only 15 of these counties owned sanitariums. Not only so but sentiment favoring the construction of sanitariums is much milder now than it was at the close of the World War. Depreciation of farm land values, decline in the price of farm products and the rather chaotic condition of agricultural economics in general have been very important factors at work on the public mind in Illinois. These have influenced the trend away from addi-

*Subsequently abandoned through litigation initiated by certain taxpayers.

tional tax levies and especially for purposes like tuberculosis sanitariums. It would probably be very difficult to carry an election now in any county of the State where the sanitarium law is not already functioning. The project might even be defeated in some counties that have already adopted it, were the proposition brought to a vote.

Table 1.
COUNTY TUBERCULOSIS SANITARIALS IN ILLINOIS.

County	Location	Voted	Opened	Capacity
Adams.....	Quincy, Ill.....	1916	May 1, 1920	60
DeKalb.....	DeKalb, Ill.....	1918	1920	18
Champaign.....	Urbana, Ill.....	1916	Feb. 16, 1922	48
Cook.....	Oak Forest, Ill.....	1912	Jan. 22, 1912	634
Kane.....	Aurora, Ill.....	1916	Sept. 1920	85
LaSalle.....	Ottawa, Ill.....	1916	Mar. 3, 1919	60
Livingston.....	Pontiac, Ill.....	1916	Sept. 22, 1922	30
Macon.....	Decatur, Ill.....	1918	July 14, 1923	45
Madison.....	Edwardsville, Ill.....	1918	May 6, 1926	100
McDonough.....	Bushnell, Ill.....	1918	Jan. 14, 1926	36
McLean.....	Normal, Ill.....	1916	Aug. 17, 1919	56
Morgan.....	Jacksonville, Ill.....	1916	Feb. 1, 1922	35
Tazewell.....	Mackinaw, Ill.....	1918	Sept. 11, 1921	41
Will.....	Joliet, Ill.....	1918	Apr. 1925	61
*Winnebago.....	Rockford, Ill.....	1918	Jan. 1916	105
Woodford.....	Minonk, Ill.....	1918	Mar. 1, 1921	14

The Chicago Municipal Tuberculosis Sanitarium was the first public institution of the kind to open in Illinois. It was authorized by popular vote in 1909 and was opened to patients in 1915. It was not, of course, the first tuberculosis sanitarium in the State. More than a dozen sanitariums and preventoriums, promoted and operated by private individuals for profit and by voluntary organizations for public benefit, were functioning prior to 1910 and had already demonstrated the important fact that tuberculous patients could be successfully treated under the climatic conditions found in Illinois. This demonstration and the momentum given to the movement through the initiative of the voluntary organizations were very important factors in the ultimate magnitude of the sanitarium program.

The first public county tuberculosis sanitarium to open in Illinois was the one at Ottawa, La Salle County. This institution authorized at the ballot box in 1916, was dedicated on Sunday, February 2, 1919, amid ceremonies almost sacred in character. Dr. David R. Lyman of Wallingford, Connecticut, president of the National Tuberculosis Association and Dr. C. St. Clair

*First opened as a municipal sanitarium Jan. 1, 1916, taken over and maintained by county after vote in 1918.

Drake, director of public health in Illinois at the time, participated in the program.

Table 2.
MUNICIPAL SANITARIALS IN ILLINOIS.

City	Voted	Opened	Capacity
Chicago.....	1909	1915	1,101
Peoria.....	1913 or 1914	Feb., 1919.....	80
Rock Island.....	1910	Oct., 1916.....	*
Rockford.....	1914	1916	*

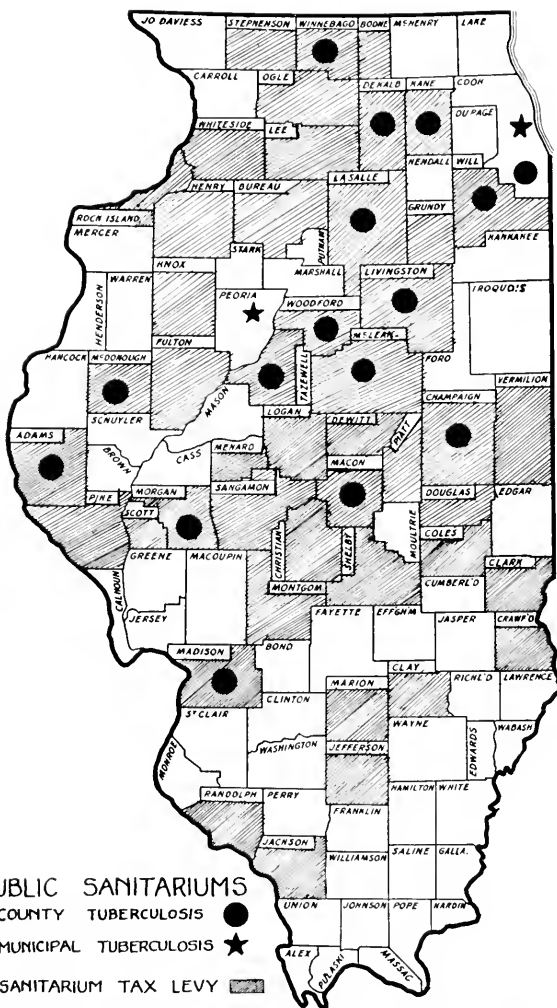
Table 3.
TUBERCULOSIS INSTITUTIONS IN ILLINOIS PRIOR TO 1915.

Institution	Location
Edwards Sanitarium.....	Naperville
Ottawa Tent Colony.....	Ottawa
Illinois Homoeopathic Open Air Sanitarium.....	Buffalo Rock..
Lake County Sanitarium.....	Waukegan
Cook County Infirmary Tuberculosis Department.....	Oak Forest....
Chicago Winfield Sanitarium.....	Winfield
Springfield Open Air Colony.....	Springfield
Harrison Tuberculosis Colony.....	Collinsville
Olney Sanitarium	Olney
Ridge Farm Preventorium	Deerfield
Lake Breeze Sanitarium.....	Waukegan
Chicago Fresh Air Hospital.....	Chicago
Otto Young Pavilion—Home for Incurables.....	Chicago
Cook County Hospital, Tuberculosis Department.....	Chicago

It seems fittingly coincidental that the first public county sanitarium in the State opened at Ottawa. There Dr. J. W. Pettit, moving spirit in the initiative efforts that started the anti-tuberculosis movement in Illinois, made his home. There Dr. Pettit had opened in 1904 a tent colony for tuberculous patients, the very first institution of a sanitarium character in Illinois. There Dr. Pettit had demonstrated to his own satisfaction the possibilities of successfully managing tuberculous patients in this latitude, a knowledge in which he found an inspiration that led to the organization of the Illinois Tuberculosis Association.

Similarly there are stories filled with human interest features, manifesting hope, confidence and faith in the possibilities of medical science and betraying a deep sympathy for the unfortunate victims of a wasting disease, that associate themselves with the construction and final opening of many

*Converted into county sanitarium.



Alexander County Collected Tax under the Glackin Law for One Year Only.

of the county sanitariums. Thus "Hillcrest", the Adams County sanitarium, located at Quincy, was started by the D. A. R. as a memorial to Mrs. T. Woodruff. A public tax for carrying out the project to a successful culmination was voted in 1916 and subsequently the institution became the beneficiary of gifts left by Mrs. Rose Neal of Mendon and others.

Table 4.
FUNCTIONAL CHARACTERISTICS OF COUNTY SANITARIALS.

County	Appropriations		No. Patients Present May 1928	Field Workers 1927-28	Outside Clinics 1927	Number employees
	1927	1928				
Adams	\$40,000	\$48,000	48	1	0	17
DeKalb	25,000	20,000	12	0	4	8
Champaign	45,000	45,000	46	3	98	20
Cook	150,480*	150,000	531	**	0	86
Kane	48,000	48,000	55	9	52	16
LaSalle	37,500	30,000	37	**	...	14
Livingston	20,000	20,000	26	1	62	14
Madison	82,000	82,000	14	1	4	29
Macon	80,000	80,000	35	2	48	14
McDonough	35,000	35,000	26	0	0	16
McLean	57,380.50	55,000	50	1	52	16
Morgan	23,000	27,000	28	1	48	15
Tazewell	28,000	28,000	39	1	4	14
Woodford	15,000	12,000	4	0	0	7
Winnebago	182,000	182,000	...	11	116	33
Will	62,000	62,000	55	0	0	21

Again, in Madison County, the sanitarium is really the child of the county medical society. Through the influence of Dr. E. W. Fiegenbaum, of Edwardsville, the medical profession took hold of the tuberculosis movement and actually became and continues to be the principal factor in the life of the organized effort which resulted in the opening of a splendid hundred bed capacity sanitarium in 1926.

Again in Macon County the various organizations and officials interested in the matter struck upon the happy idea of consolidating the sanitarium and hospital facilities of the county and of Decatur in one center. This brought into existence the Decatur-Macon County Hospital which includes the county sanitarium and concentrates laboratory and medical service in a way that gives the best available service to all patients no matter what the ailment.

*Food appropriation only.

NOTE: Some appropriations include building funds and variation in practice to laundry service, etc., which makes it unfair in many cases to estimate per capita costs on the basis of available data.

**A full time county health department in Cook and the staff of the Hygienic Institute in LaSalle make field workers in these institutions unnecessary.

These illustrations show how varied are the influences and factors that are and have been operative in the tuberculosis sanitarium movement of the State. For these reasons the success that has attended the work of each individual sanitarium has varied. Some of the institutions find difficulty in providing space for the tuberculous citizens of the counties in which they are located. Others find empty beds upon their hands and resort to the practice of taking pay patients from other counties.

Altogether the public sanitariums appear to be fulfilling the purpose for which they were built in a satisfactory way. Tuberculous citizens of the county are cared for at public expense in all of them. This practice is expensive but doubtless worth what it costs. Appropriations for the county sanitarium vary from fifteen thousand dollars a year up to one hundred and fifty thousand. The Chicago Municipal Tuberculosis Sanitarium spends upwards of two million dollars annually. Annual appropriations do not always indicate the anticipated operation expenses for the year concerned, however. Some of the institutions look forward to expansion and deliberately make appropriation with the view of accumulating unexpended funds for buildings purposes.

RURAL HEALTH SERVICE

Efforts at promoting rural health service in Illinois have involved a peculiar mixture of sporadic local initiative and stubborn legislative indifference about the matter. Practically the whole story dates back no further than 1921. Shortly after the World War a kind of make-shift arrangement whereby certain physicians designated by county medical societies could be detailed for temporary duty in emergency situations was put into operation by the State director of public health but nothing substantial came of the attempt.

When Dr. Isaac D. Rawlings became State director of public health in 1921 he undertook to improve local public health administration principally by promoting full time county health departments. The idea was new in Illinois, so far as any determined initiative effort was concerned, and it was relatively new in the United States. Indeed the first full time county health department was organized about 1908 and there were less than 200 operating in 1921, the majority of these being in the South where peculiar problems and population distribution had favored the movement.

By 1921, however, sanitarians everywhere had become so thoroughly convinced that the county is the most efficient unit through which to administer rural health service that the International Health Board and the U. S. Public Health Service were unequivocally committed to the policy of extending the movement. For nearly a decade these two organizations had promoted full time county health departments by contributing substantially toward their financial support provided the State and local county concerned would do likewise and meet other reasonable requirements.

When Dr. Rawlings became State director of public health in February 1921, Illinois had no rural health service. No funds had been appropriated for that purpose. No plan for providing rural health service had been worked out except so far as the limited resources of the State Department of Public Health permitted sporadic attempts at disease control under epidemic conditions.

ATTEMPTS AT LEGISLATION.

Doctor Rawlings started at once to promote the county health unit idea in Illinois. The first step involved legislation. Two bills were introduced in the General Assembly that was sitting at the time. One would have made the appointment of county health officers mandatory upon county boards in counties of major financial rating and permissive in all others. The other would have provided for the appointment of county health officers

by the Governor whose choice of candidates would have been limited to physicians nominated by county boards and endorsed by county medical societies. The second found more favor than the first of these two bills but neither became a law.

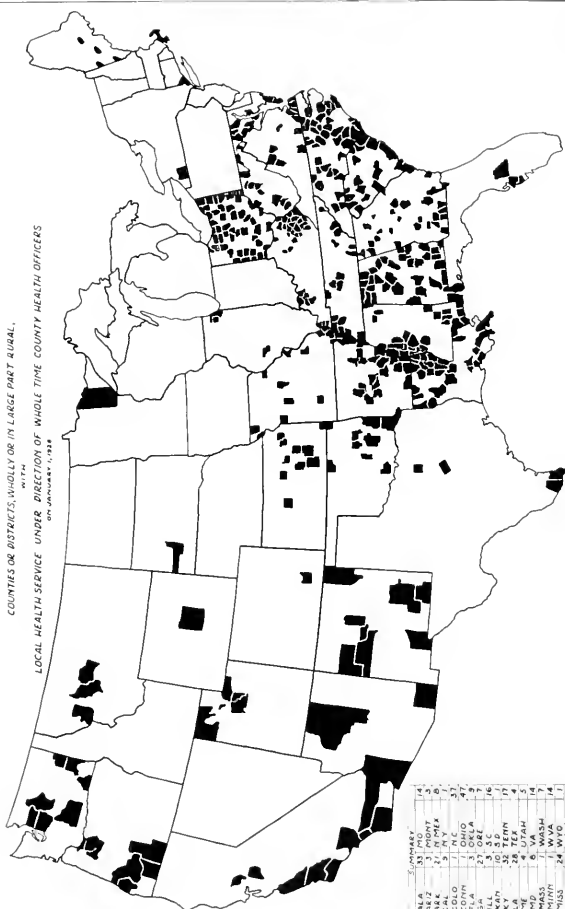
AT THE 1923 GENERAL ASSEMBLY.

Again in 1923 the subject of rural health service came before the legislature in the form of two bills, both introduced at the suggestion and with the endorsement of the State director of public health, Dr. Isaac D. Rawlings. One, known as Senate Bill No. 500, would have authorized any county board after favorable popular vote, to establish and maintain a county health department and to levy and collect a tax therefor of not to exceed two mills in addition to the general county tax levy. It would have provided for the appointment of a county health board by the chairman of the county board and the former would have had power to appoint a full time health officer and necessary assistants; to provide quarters, transportation and equipment; to make rules in conformity with State regulations and to have charge of matters pertaining to changes in personnel. As a check against possible insidious political influence and as a means of guarding against the employment of poorly trained and inefficient health officers the bill provided that the county boards should submit to the State director of public health five names as candidates for county health officers and of these five the director should choose two (if properly qualified), one of whom the board should appoint. As a further precaution the bill vested in the State director of public health the power of veto against the removal from office of a county health commissioner for political purposes. The powers, duties and activities of a well organized and properly functioning health department were provided for and vested in the proper persons.

The other, House Bill No. 828, would have provided for the creation of county health units in the same way as Senate Bill 500, except that the State would have paid one-third of the health officer's salary and no local election would have been necessary to authorize the county board to appropriate available funds for a health department. The State subsidy feature was planned to extend over a period of ten years, the idea being that counties would not permit the work to stop after a demonstration over that length of time.

Neither bill became a law so that the proponents had to content themselves with the notion that the educational work incidental to the legislative effort had been worth the energy spent.

COUNTIES OR DISTRICTS, WHOLLY OR IN LARGE PART RURAL,
WITH
LOCAL HEALTH SERVICE UNDER DIRECTION OF WHOLE TIME COUNTY HEALTH OFFICERS
ON JANUARY 1, 1938



SUMMARY			
ALA	53	MO	4
ARK	27	NEA	6
CAL	57	N.H	3
COLO	31	N.C	37
CONN	1	OHIO	47
DELA	23	OREA	9
ILL	3	SC	16
KAN	10	SD	1
KY	32	TENN	17
LA	28	TEX	4
ME	4	UTAH	5
MD	6	VA	14
MASS	7	WASH	7
MINN	1	WVA	14
MISS	24	WYO	1
TOTAL		414	

A BILL INTRODUCED IN 1925.

Still another proposal was offered to the General Assembly of 1925 in the form of a bill. This time the proposed law would have been purely enabling except that it carried an appropriation rider, the purpose of which was to provide subsidy funds for meeting the requirements of outside agencies willing to lend financial support to the movement. Had the bill become law, county boards would have been authorized to employ health officers and other personnel and to have incurred other expenses deemed wise in connection with public health service.

THE 1927 BILL.

Again in 1927 a bill seeking to authorize counties to employ health officers was introduced in the legislature. This bill was quite similar to that of 1925. It was introduced by Senator Florence Fifer Bohrer of Bloomington who was particularly interested in the measure on her own account and because public sentiment in McLean County was favorable to it. The bill suffered the same fate that had befallen each of its predecessors. All died in the House. At each session a bill satisfactory to the sponsors passed the Senate. None ever passed the House.

FIELD EFFORTS.

Efforts at organizing county health departments under existing circumstances proved to be more successful than legislative attempts in that direction. Thus in 1921, after the legislature adjourned, Dr. Rawlings arranged with the International Health Board and the U. S. Public Health Service to participate in the financial support of a limited number of projects and thereupon presented the matter to Jacksonville and Morgan county. The city and county accepted the proposal and began to operate the first full time county health department in Illinois in May 1922. This department has continued to date although outside financial support has been completely withdrawn except for a small amount contributed by the State.

The arrival of Dr. Thomas Parran, Jr., in the Spring of 1924 gave the movement its next significant impetus. His services were lent to Illinois by the U. S. Public Health Service at the request of Dr. Rawlings. He had been particularly successful in establishing county health work in a number of states and the prospects looked bright for Illinois.

Within a few months Dr. Parran succeeded in establishing a full time health department in Crawford County, at Robinson, with Dr. E. C. Price at its head. Two or three other counties were about to undertake similar projects when the question of legal authority to spend funds for that purpose came up. The Attorney General of the State ruled that county officers had

no legal authority to appropriate money for health work except in the face of epidemics and this ruling embarrassed the county boards which had the matter under advisement. It also discouraged Dr. Parran in his efforts. As a result the development of county health service has been much slower than it otherwise would have been and several projects have been abandoned.

The Crawford County health department functioned for a year and then stopped. On the other hand a few county boards have proceeded to establish health departments on the grounds that public health service is a legitimate function of government and therefore justified. Thus Cook County, acting upon the suggestion of State health officials, created a health department in 1924. The staff of this department in 1928 was made up of the director, Dr. Herbert L. Wright, a sanitary engineer, 15 nurses and 15 other employes.

Likewise the DuPage County board established a health department in May 1926. It started to operate on a budget of \$10,500, most of which was contributed by voluntary agencies. It ran for two years under the direction of Dr. William K. Murray, whose staff consisted of three nurses and four other employes.

The latest venture is in Pulaski County. There Dr. R. M. Hathaway took charge as medical director on February 21, 1928. This is a part of the rehabilitation movement promoted for the benefit of flood sufferers in the Mississippi Valley. The International Health Board, the U. S. Public Health Service and the State are participating in the financial support of the project.

The outlook for further developments on a significant scale is not bright until enabling legislation makes more definite the legal position of county boards on the subject.

SANITARY SUPERVISION OF MILK

The sanitary supervision over market milk supplies in Illinois is a curious outcome of complicated motives that involve commercial, economic, agricultural and public health interests. Economic greed that fattened producers' bank accounts through pump handle exercise was probably the first specific cause leading to public regulation of the sale of milk.

At the same time public officials recognized a more intimate connection between the character of milk and the health of the individuals who drank it than that involved in nutrition alone. This notion was betrayed in the fact that health departments were usually given jurisdiction over milk ordinances. It may also be a fact that the local officials recognized in milk regulating ordinances a new source of revenue in license fees.

About the first evidence of serious concern over the character of market milk in Illinois manifested itself in Chicago in 1869 when the local board of health undertook to inspect depots and other retailing places. Gross unsanitary conditions and evidence of adulteration were about all that the inspectors looked for since little was known at that time concerning bacteriological qualities.

Then in 1870 Chicago passed a milk regulating ordinance, requiring license of retailers and giving the health officer jurisdiction over the sanitary quality of milk. During the same period other municipalities in the State began to exercise concern about their milk supplies and all of this sentiment expressed itself in a law enacted by the General Assembly in 1879. The first section of this law reads:

"AN ACT to regulate the sale of milk, and to provide penalties for the adulteration thereof. Approved May 29, in force July 1, 1879. Laws 1879, p. 111.

297. Milk, Adulteration, Strippings, Diseased Cows, Penalty.

SECTION 1. Be it enacted by the People of the State of Illinois, represented in the General Assembly: That whoever shall, for the purpose of sale for human food, adulterate milk with water or any foreign substance, or whoever shall knowingly sell for human food, milk from which cream has been taken, without the purchaser thereof being informed or knowing the fact, or whoever shall knowingly sell for human food, milk from which what is commonly called 'strippings' has been withheld, without the purchaser thereof being informed or knowing the fact, or whoever shall knowingly sell for human food milk drawn from a diseased cow, knowing her to be so diseased as to render her milk unwholesome, or whoever shall knowingly sell for human food milk so tainted or corrupted as to be unwholesome, or whoever shall knowingly supply, or bring to be manufactured into any substance for human food, to any

cheese or butter factory or creamery, without all interested therein knowing or being informed of the fact, milk which is adulterated with water or any foreign substance, or milk from which cream has been taken, or milk from which what is commonly called 'strippings' has been withheld, or milk drawn from a diseased cow knowing her to be so diseased as to injure her milk, or milk so tainted or corrupted as to be unwholesome, or whoever shall knowingly, with intent to defraud, take from milk after it has been delivered to a cheese factory, or butter factory, or creamery, to be manufactured into any substance for human food, for or on account of the person supplying the milk or cream, or shall with like intent, knowingly add any foreign substance to the milk or cream, whereby it, or the products thereof, shall become unwholesome for human food, shall be guilty of a misdemeanor, and for each and every such misdemeanor shall be fined not less than twenty-five (\$25) nor more than one hundred dollars (\$100), or confined in the county jail not exceeding six (6) months, or both, in the discretion of the court."

It is very clear from this quotation that the fear of watering milk or otherwise reducing its natural food value was the main concern of the law makers. The folks back home wanted their milk to have the nutritional value contributed by the cow and the law makers tried to legislate these wishes into actualities.

A little later, in 1885, the chemical analysis of milk was started in Chicago by Professor J. H. Long who really initiated the present sanitary supervision system. This sort of work spread into other municipalities, so far as any determined effort to safeguard milk supplies was concerned, and continued to be the principal means of determining the quality of milk until 1906 when the first bacteriological tests in Illinois were made at Chicago.

In the meantime, while health officers, sanitarians and politicians were busying themselves with the procedures already enumerated, the milk industry was undergoing a profound transformation that replaced numerous small producer-retailers with large dealers who purchased milk in bulk from many sources and resold it in small quantities to individual customers. This change automatically tended to eliminate the milk depot to which patrons were wont to come with pitchers to get the daily milk ration from an open can and in its place came the bottle and the delivery wagon.

This change brought with it two other factors of tremendous importance to both dealer and consumer. One was the possibility of infecting large numbers of people with diseases that might be carried in milk. Contaminated milk from a single, isolated producer was liable to pollute the entire output of a given dealer and thereby endanger the health of all of his customers. During the period of the little producer-retailer the danger of a contaminated milk supply was limited to the relatively small number of customers who bought from him. With a large corporation buying milk

from hundreds of sources, mixing it together and delivering it in small quantities to hundreds and even thousands of homes, the possibilities of spreading an infection were equalled only by a public water supply.

The other factor of unusual importance was commercial in nature. Supply and demand both varied, making disposition of surplus milk a problem. Sweet milk is a perishable product and in its natural condition it will sour within a few hours unless kept at a relatively low temperature. This situation led the large milk dealers to introduce pasteurization, a process that extends the keeping quality of milk for several days.

Both of these factors were of particular interest to health officers and sanitarians as well as to the milk dealers. Why health authorities would be concerned with a new means of spreading disease of great potentialities is perfectly obvious. Their interest in the pasteurizing process grew out of the discovery that this process, when done in a given way, will destroy all pathogenic organisms in milk and at the same time leave the nutritional elements and cream rising qualities undisturbed for all practical purposes.

This situation opened the way for sanitarians to insist on pasteurization as a public health measure and since the procedure carried with it an important commercial value there was no serious opposition to the idea except from small dealers who delivered their product to consumers within a short time after milking.

Thus in 1907 when Chicago found herself with a serious milk-borne epidemic of scarlet fever on her hands the question of sanitary supervision became a public concern of no little magnitude. This led directly to the adoption of an ordinance in 1908, prohibiting the sale of all milk except that drawn from tuberculin tested herds or that which had been pasteurized. Then in 1910 the practice of making sediment tests for dirt in milk was started in Chicago.

In the meantime the milk question had come again before the General Assembly and that body had in 1907, enacted another law known as the Dairy, Food and Adulteration Act, which prohibited the sale of unwholesome milk or dairy products made therefrom and required certain sanitary precautions such as the cleansing of cans and other containers. But the Chicago ordinance had evidently provoked a lot of sentiment about milk from tuberculosis cattle because the legislature again was besieged in 1911 by a milk regulating lobby. This time it was the producing interests. To offset the possibility of an embargo on their products the dairymen succeeded in getting enacted a law that prohibited cities from excluding milk drawn from herds that had not been tuberculin tested.

All of this agitation kept the milk question constantly before the public. Health officers were demanding increasingly stringent sanitary practices in connection with the production, distribution and sale of milk.



Ready for Business at a Pasteurizing Plant.



Testing Samples of Milk for Sanitary Quality.

Producers and dealers on the other hand were fearful lest the sanitarians should go to unreasonable lengths in their requirements. Thus first one side and then the other had a grievance or an alleged grievance that was duly aired before the law makers and the public and sometimes in the courts.

The agitation led to activities. The State Board of Health exercised itself over the matter, manifesting an ambition to inspect all the dairy farms in the State. An effort in that direction was actually made in 1915 when the appropriations to the Board carried an item authorizing the employment of dairy farm inspectors. A number of inspectors were actually put into the field and were active over a period of two or three years. The State Food and Dairy Commission, later the State Department of Agriculture, likewise employed a staff of field inspectors.

All of these projects and activities led to the present system, the origin of which is explained on page 202 Vol. I, this work, which is operating in a way that provides the State with a better milk supply, from a sanitary standpoint, than it ever before enjoyed.

The most recent improvement in the system was the addition of a mobile laboratory to the equipment of the State Department of Public Health. This outfit manned by a staff of two experts is moved from place to place where pasteurizing plants are inspected, samples of milk collected from delivery wagons are analyzed and the whole local milk situation studied from a sanitary point of view.

Municipalities have done something along this line. In a few cities very good supervision is maintained. Many cities have adopted ordinances, those in the accompanying table having adopted the one recommended by the State Department of Public Health.

Milk sold in Illinois today may be grouped roughly into three classes, (1) raw milk, (2) certified milk, and (3) pasteurized milk.

Approximately 30 per cent of the milk sold in Illinois today is raw milk. This milk is produced within a very short distance of where it is sold and is distributed by a large number of dealers having small investments in milk-handling equipment generally poorly equipped to properly handle milk, and whose daily output is very seldom greater than 50 gallons per day. In addition these men generally are very poorly trained in sanitation.

The sanitary control of the raw milk dealer is a function of the State Department of Agriculture, Division of Foods and Dairies. The supervision consists essentially of a system of sample collection and analysis together with an occasional sanitary inspection. The department has adopted standards for the composition of milk and dairy products, and food-stuffs that do not meet these standards are declared to be illegal. Some local departments of health also assist in the supervision of these dairies. In only

a few cities, however, have suitable standards been drawn up and properly enforced which require that the raw milk sold will be handled in a satisfactory manner.

About seventy-five Illinois cities have adopted some sort of a milk ordinance which is unquestionably a step in the right direction but unless some provision is made for carrying out the requirements of the ordinances it cannot be assumed that the milk supply is being properly regulated.

Table 1.
CITIES THAT HAVE ADOPTED STATE MODEL MILK ORDINANCE.

City	Population	City	Population
Arlington Heights*	2,250	Heroin	14,100
Aurora	46,600	Hinsdale	4,513
North Aurora	500	Joliet	41,500
Batavia	4,395	Kankakee*	19,100
Belleville	27,800	Kewanee	20,500
Belvidere	7,804	La Grange	6,525
Berwyn	20,500	Lincoln	12,600
Bloomington	31,000	Maywood	15,000
Brookfield	3,589	Matteson	485
Cabinett		Moline	35,100
Carle	15,600	Murphysboro	15,300
Carbondale	6,267	Ottawa	12,100
Carpentersville	1,036	Pana	6,122
Charleston	9,615	Pekin	13,900
Chicago Heights*	23,100	Peoria	83,500
Clinton	5,898	Pittsfield	2,129
Danville	38,200	Pontiac	6,664
Decatur	56,000	Princeton	4,126
DeKalb	7,871	Riverside	2,532
Downers Grove*	3,543	Rockford*	80,900
East Dundee	1,303	Rock Island	41,900
East St. Louis	73,100	Sandwich	2,109
Edwardsville	5,336	Savanna	5,237
Elgin	35,300	Shelbyville	3,608
Elmhurst	4,394	Stamton	6,927
Elburn	571	Streator*	15,100
Elmwood Park	1,380	St. Charles*	4,099
El Paso	1,638	Summitt	4,019
Forest Park*	14,100	Urbana	11,700
Galeana	4,742	Tuscola*	2,564
Galesburg	25,200	Waukegan	22,600
Gillespie	2,241	Wheaton	1,137
Greenville	3,071	Wood River	3,476
Granite City	19,000	Western Springs	4,258
Harrisburg	7,125		
		Total Population	1,029,959

* Exclusively pasteurized.

Certified milk is the product of dairies operated in accordance with accepted rules and regulations formulated by authorized medical milk commissions. Certified milk is the highest grade of raw milk anywhere obtainable, but because of its exceedingly high price required by the extreme care exercised in handling it, there is but a small amount of certified milk sold in the State away from the Chicago market. In this connection it must be remembered that it is exceedingly important for the county medical milk commission authorizing the labeling of milk "certified" to be sure that that milk is being handled in accordance with the rules of the American Association of Medical Milk Commissions.

Pasteurized milk in Illinois is milk that has been heated to at least 142 F., never more than 145 F., and held at that temperature for at least

30 minutes. The milk is never boiled, and nothing is added to the milk or taken from it. Approximately 50 per cent of the milk sold in Illinois outside of Chicago is pasteurized, and more than 70 per cent of the milk sold in the entire State is pasteurized.

With this large percentage of milk being pasteurized the State Department of Public Health takes advantage of the law of 1925 to exercise sanitary supervision over it in a way that is providing Illinois with a reasonably safe milk on a rather extensive scale. The law gives the department authority to make minimum sanitary standards for pasteurizing plants and forbids the sale of milk as a pasteurized product by any concern that is unable to secure annually a certificate of approval from the department.

APPENDIX

Annals of Health, Sanitation and Hygiene

IN

ILLINOIS



State District Health Superintendents and Quarantine Officers, 1927.

ANNALS OF HEALTH, SANITATION AND PUBLIC HEALTH SERVICE IN ILLINOIS

1674: A diarrheal attack which kept Father Marquette encamped all winter near the mouth of the Chicago River established the **first recorded illness** within the boundary lines of what is now Illinois.

1675: A surgeon, probably Louis Moreau, visited Father Marquette at Chicago portage on January 16.

1682: Surgeon Jean Michel accompanied LaSalle through Illinois territory on the journey to the mouth of the Mississippi.

1700: (Oct. 15) Tertian fever attacked Father Jacques Gravier and two of his exploring party while in the neighborhood of the Junction of the Ohio and Mississippi Rivers.

LeSuer described the river of the Mines at Galena, which the Indians later called the Fever River.

1711: Missionary station established at Fort Massac, where the priests administered to the medical wants of the savages.

1712: (Nov. 9) Father Gabriel Marest wrote from the mission of Kaskaskia (the first): "The care we ourselves have taken of the sick and the remedies that we give them which effect the cure of most sick persons have ruined the credit and reputations of the charlatans."

1720: Fort de Chartres established; Pierre Ignace de la Plone served as surgeon major at this fort.

1760: Alex. Henry reports that illness among Indians is rare and that sickness among the settlers was unknown, although mosquitoes abounded along the river, evidently not yet infected with malaria.

1763: Dr. Auguste Conde appointed surgeon at Fort de Chartres.

1766: Morgan complains of prevailing sickness from first of June to October in American Bottoms.

1767: George Croghan reports that all the garrison at Fort de Chartres are ill.

1768: Highly fatal fever depletes the garrison at Fort de Chartres, sparing neither private nor officer, old nor young, male nor female.
Indians accuse English of infecting them with smallpox.

1772: The Trappist monks abandoned their first location in the American Bottoms because it was unhealthful.

1780: A severe winter killed nearly all the game, with the result that the Indians nearly starved during the succeeding winters.

1782: Dr. Israel Dodge settled in Kaskaskia. He was the first American physician to settle there.

1785: A flood in the American Bottoms was followed by an epidemic among cattle, which spread to man.

1789: Severe outbreaks of intermittent fever at Port Vincennes at Fort Knox.

1797: Outbreaks of malignant fever proved fatal to one-half of a party of 154 Virginians who settled at Kaskaskia and New Design and to 126 who settled at Peoria.

1799: (July 2) A court of Quarter Sessions at Cahokia issued an order prohibiting anyone from crossing the river to the Spanish, because of smallpox. **First quarantine regulation** in the State.

1803: Bilious fever broke out among the troops at Fort Dearborn. Dr. William C. Smith arrives in Chicago, being the first regular physician to settle there.

1804: Surgeon Forry, medical statistician of the army, makes a sanitary report upon the establishment of Fort Dearborn, declaring "This position is one of our most salubrious stations."

1805: (June) A terrific tornado swept over the American Bottoms, making it a veritable lake.

1807: Pandemic of influenza reached the Illinois country in October.

1808: Dr. Daniel Drake says that scarlet fever began to appear in the Ohio Valley after this year.

1812: An epidemic of smallpox led Dr. George Fisher, first speaker of the house of representatives of the Illinois Territory, to erect the **first isolation hospital** in what is now Illinois, which he called a house of refuge.

Bad health conditions starts depopulating movement in American Bottoms.

1815: Madam Benlieu served as director general in moral and medical matters at Cahokia. Zench refers to her as the **first health officer** in the State.

1817: The Territorial General Assembly passed **first Illinois Medical Practice Act**

1818: State government established. Illinois admitted to Union.

1819: The stigma of unhealthfulness was fastened upon English Prairie. The legislature passed a lottery law to promote drainage of American Bottoms and thereby improve health.

First medical practice and vital statistics laws passed by State legislature.

1820: An epidemic occurred in the vicinity of Vincennes, which Dr. H. Smith believed was yellow fever.

The "cold plague" (probably influenza) struck White County.

1821: Medical practice act of 1819 repealed.

A seven-year compilation of mortality and morbidity statistics for the garrison located on Fort Armstrong at Rock Island was published.

1822: **First vital statistics for the Chicago** area recorded.

William Blaine in traveling through the southern part of the State, found that the people everywhere complained of illness.

1824: Another pandemic of influenza occurred.

1825: Another medical practice act passed by General Assembly.

1827: Severe epidemic of dysentery prevailed in Galena and other parts of Jo Daviess County.

1829: **First record of morbidity statistics** for the Chicago area published in reports of the United States Army.

1830: Milk sickness extensively prevalent. Dr. Joseph Gates active over an extensive area in treating patients.

First State report on the health of Chicago made by the Canal Commissioners who, in their report to the legislature this year say: "This town is situated on the Chicago River near its mouth, and possesses many advantages. * * * It is the only eligible site for a town on the lake, * * * and from the long experiences of its inhabitants is decidedly healthy."

1831: **First general law** for the incorporation of towns passed.

1832: Cholera outbreak following the Black Hawk War, credited with responsibility for the beginning of most of the country graveyards in the State. This plague continued in sporadic epidemics at various points.

1833: Milk sickness again prevalent in American Bottoms.

1834: Fear of cholera leads to the establishment of temporary board of health in Chicago, the appointment of vigilance committee and vigorous community clean-up efforts.

1835: (Feb. 11) Legislature authorized Chicago to make regulations to secure the general health of the inhabitants. **Chicago thereupon created a board of health of seven members.**

Dr. Daniel Drake made one of his famous sanitary observation tours and found autumnal, intermittent and remittent fever everywhere in Illinois, the settlers attributing it to the plowing of the prairies.

Widespread epidemic of ophthalmia in Illinois. It lasted about two years.

Thirty families of Norwegians abandoned a settlement on Beaver Creek, Iroquois County, after losing 50 members to an attack of "fever of the lowlands."

1836: J. M. Peck of Illinois, in his "Guide for Immigrants" published this year, devotes an article to the subject of "Advice to recent settlers for the preservation of health." He points out "that it is impossible to prevent the influence of an atmosphere pregnant with the causes of disease." Uniform exposure of the system to the weather, he says, is favorable to health, and states that "it is common for a frontier man whose health is on the decline and especially when indications of pulmonary affection appear, to engage in a hunting expedition to renovate his health."

Work on Illinois and Michigan Canal started (July 4) at Bridgeport, Dr. W. B. Egan delivering the address.

Fort Dearborn permanently evacuated. According to published returns for ten years the annual rate of intermittent fevers in the garrison was 23 per cent; of remittents, 4 per cent.

Yellow fever said to have prevailed in Peoria and vicinity.

1837: "The summer of this year was rendered memorable in Indian history by the ravages of smallpox," wrote Dr. F. S. Williamson.

Charter granted to Rush Medical College.

First organized board of health under charter of March 4, 1837, created in Chicago.

On May 12 the city council of Chicago passed the first code of ordinances.

1839: This was known as the sick year along the Mississippi River near Rock Island and Fulton Counties. The fever and ague prevailed. A great deal of sickness also occurred in DeKalb County.

1840: The Hydraulic Company began to distribute water in Chicago through bored logs laid underground.

Preliminary steps taken at Springfield to organize a State Medical Society.

1841: Franklin Medical College established at St. Charles.

First attempt made to gather complete vital statistics in Chicago.

1843: Outbreak of erysipelas reported at Bloomington. Such outbreaks were common at this time.

Another pandemic of influenza occurred.

1844: Cholera reported in Green, Will and Tazewell Counties and at Pekin. Erysipelas made its appearance in Edwards and neighboring counties.

1845: Epidemic of meningitis occurred in southern Illinois.

Typhoid first reported as having invaded the State.

1846: Fifteen hundred cases of fever and ague treated by two physicians in Stark County.

Typhoid fever first observed in McLean County.

Aesculapian Society of the Wabash Valley and Rock River Medical Society organized.

1847: By act of legislature the city of Chicago was given power to make, maintain, and repair all sewers in city, said sewers to be the property of the city.

Illinois State Medical Society met in Springfield and elected Dr. John Todd president, and David Prince, secretary. This society was ultimately supplanted by a new State society in 1850.

1848: Dr. J. Murphy says when he first settled in Peoria this year "The entire area of central Illinois was an emporium of malaria."

According to Dr. N. S. Davis, **typhoid first became epidemic** this year and was highly fatal.

Peoria City Medical Society organized.

1849: Chicago undergoes rigid community cleaning to ward off cholera, but the attempt proved futile, a fatal epidemic developing fast upon the heels of this precaution.

Wave of cholera sweeps State during this and the next three years.

1850: Illinois State, Adams County and Chicago Medical societies organized, with Dr. William B. Herrick, Dr. Joseph N. Ralston and Dr. Levi D. Boone as presidents, respectively.

An epidemic of diarrheal diseases occurred in Union County which proved fatal to many.

1851: Committee on Mortality and Hygiene of the Chicago Medical Society made a report on mortality rates in Chicago from 1846 to 1850.

1852: Epidemics of cholera, smallpox, erysipelatous ophthalmia, dysentery, typhoid, scarlet fever and malaria prevailed.

Shanty hospital for cholera patients built on lake shore in Chicago, **introducing the "pest house" period.**

Board of health appointed and organized in LaSalle.

United States Marine Hospital opened in Chicago with Dr. W. B. Herrick in charge.

1853: A board of health was established in Peru.

Puerperal fever was rife and unusually fatal.

1854: Board of health organized in Rockford.

Quarantine system for cholera and smallpox victims established by ordinance in Chicago. Chicago city council authorized establishment of a cholera hospital at 18th and Arnold streets.

Sporadic outbreaks of cholera and smallpox.

1855: Board of health established at Belleville.

Legislature enacted a law providing for a board of sewerage commissioners in Chicago and board organized with E. S. Chesbrough as chief engineer.

First use of quarantine placard in Chicago.

1856: Evidence of malaria decline observed by Dr. Fred Gerhard and others. Nursing sore mouth prevalent, also reported two years later.

1857: Great wave of diphtheria started in Chicago. It lasted ten years.

Boards of health established in Cairo and Rock Island.

1858. Tuberculosis killed nearly 4 out of each 1,000 people in Chicago, giving the city its highest mortality rate from that disease.

1859: Malaria death rate 67 per 100,000 population, **highest in history of State.**

All health officials and equipment abolished in Chicago account of financial depression. Work turned over to superintendent of streets.

1861: Aesculapian Society supported unsuccessful legislative lobby for a medical practice act.

Code of sanitary regulations passed by city of Rockford.

Official sanitary and health functions transferred to police department in Chicago.

1862: Dr. N. S. Davis chided Chicago in these words: "I know of no city, except Chicago, with a population of 110,000, that has neither a health officer, a board of health, nor any other official sanitary organization."

1863: The condition of the pest house was made a subject of inquiry by the Chicago Medical Society. Frightful mortality among prisoners at Camp Douglas.

1864: Severe epidemics of fatal erysipelas at various points.

1865: An amendment to the charter gave the board of public works of Chicago power to execute a plan for cleansing the Chicago River.

Victor C. Vaughn reports that every man, woman and child in southern Illinois within his range, shook with ague every other day.

Board of health of Quincy organized, with Dr. E. G. Castle president.

1866: New cholera wave strikes Illinois with deadly force, stimulating feverish interest in sanitary and public health organizations everywhere, especially in Chicago, where Herculean but futile efforts to ward off cholera were expended.

Losing 32.5 per 100 inhabitants, Chicago experiences the highest mortality rate in her history.

1867: A board of health was established in East St. Louis.

Board of health re-established and started functioning in Chicago under new State law that made it appointive by superior court.

1868: Exhaustive sanitary surveys of Chicago completed.

Report of first study of prostitution and venereal diseases in Chicago made public.

1869: Sanitary supervision over milk supply first attempted in Chicago.

Board of health of Quincy reorganized. Dr. Francis Drude appointed health officer, in which capacity he served for about 20 years.

Position of health officer abolished in Cairo and sanitary work assigned to day police.

1870: Diarrheal disorders killed nearly 2 per 1,000 people in Illinois, giving the State its highest rate from these diseases.

The measles death rate of 29 per 100,000 population also **established the highest State record** for that disease.

United States weather bureau observation station established in Chicago.

The winter peak in the annual death rates of Chicago began to appear in the following ten years. This was in part due to the disappearance of the summer peak.

Waterworks first established at Rock Island.

1871: Ordinance adopted in Cairo requiring the reporting of births and deaths.

Summer characterized by a period of prolonged and severe drought. October 8-9, the great Chicago fire, followed by a month of very high mortality.

Records of health department lost in fire, including all records of births and deaths.

A sanitary history of Chicago, from 1833 to 1870, by Dr. John H. Rauch, published with the annual reports of the board of health.

1872: **Blanket legislative authority** to organize and maintain boards of health given to municipalities under provision of Cities and Villages Act.

American Public Health Association organized in New York with Dr. John H. Rauch of Chicago as treasurer.

Board of health organized in Edwardsville.

According to Dr. C. B. Johnson, of Champaign, the last great endemic wave of malaria in central Illinois occurred this year.

A public water supply system established in Quincy.

Cairo built a pest house.

1873: Chicago Society of Physicians appointed a committee to investigate the history and nature of the disease then prevailing in the Bridgeport district, and Dr. I. N. Danforth made microscopic examination of lesions, which was the first use of the microscope in the study of disease in the United States.

Board of health organized in Mattoon.

Pandemic of influenza universal in America.

1874: The village of Evanston provided for the appointment of a board of health.

A public water supply system was established in Rockford.

Law enacted by legislature prohibiting licensing of houses of ill-fame.

1875: Waterworks system of Bloomington established.

First public waterworks completed in Evanston at a cost of \$100,000.

1876: A great wave of diphtheria destined to stretch out over two decades started in Illinois.

The Illinois State Medical Society appointed a **committee to secure a law** providing for the regulation of the practice of medicine and a State Board of Health.

A department replaces the board of health in Chicago.

A mortality of 19.9 per 100,000 population marks the progress of Chicago's worst scarlet fever epidemic, which carried over into 1877.

Dr. N. S. Davis made report on progress of medical education in the United States. This was published by the National Bureau of Education and was an epoch-making factor in raising the standard of medical education in this country.

1877: **First State Board of Health in Illinois authorized and organized.** First meeting July 12.

First permanent medical practice act passed by legislature.

Seventeen municipal water supply systems were in operation at this time.

Chicago passed an ordinance regulating sale of milk and providing for a milk inspector.

Reporting of contagious diseases by physicians **first enforced** by city of Chicago.

1878: Meeting of National Board of Health held in Chicago, June 20-30, to consider grave smallpox situation.

An outbreak of yellow fever at Cairo alarmed the State and led to quarantine measures that practically paralyzed traffic from the south.

First attempt made by State Board of Health to collect vital statistics.

Sanitary authority in Peoria vested in board of health.

1879: Dr. John H. Rauch made secretary of the State Board of Health, a position which he filled with great distinction for 12 years.

Illinois health officials participate in the organization of the Sanitary Council of the Mississippi Valley.

State Board of Health launches plans for a gigantic sanitary survey of State.

State legislature enacted laws relating to public graveyards, municipal sewage disposal and the sale of adulterated or insanitary milk.

Congress appropriated sum of \$500,000 to National Board of Health for yellow fever control.

Ordinance passed by city council of Chicago providing for the inspection of all places of employment, and six inspectors appointed to enforce it.

1880: The summer peak in the annual death rates began to subside noticeably.

Highest diphtheria death rate in the history of Chicago, 29.07 per 10,000.

Investigations of stream pollution made at Chicago, Springfield, Peoria, Quincy, Rock Island and Rockford.

First year for which vital statistics were collected and published for the State. Diphtheria death rate 122.9 per 100,000 population, **highest on record** for the State.

1881: Board of health adopted rules and regulations pertaining to the transportation of the dead.

Causing 66 and 90 deaths per 100,000, respectively, typhoid fever and meningitis yielded their **highest State mortality rates**.

Severe epidemic of smallpox started among immigrants in Chicago.

Sanitation of tenements, workshops and lodging houses brought under the control the department of health of Chicago by the enactment of a State law which required all plans of such buildings to be submitted to the health commissioner for approval.

Another great epidemic of cerebrospinal fever occurred. This lasted until 1883.

Death rate from diarrheal diseases 181.5 per 100,000. After this the incidence of these diseases began to decline.

1882: Smallpox in 77 of the 102 counties during epidemic caused 3,978 deaths. Smallpox death rate 81.8 per 100,000, highest in history of State. State Board of Health prosecuted **most vigorous vaccination campaign** in history of Illinois.

Boards of health organized in Springfield and Greenville.

Scarlet fever provokes first use of quarantine placards in Rockford.

1883: State Board of Health **begins publication** of educational literature.

First course of lectures on Germ Theory of Disease in the city of Chicago given by Dr. H. Gradle at the Chicago Medical College.

United States Marine Hospital branch station established in Cairo.

1884: Gigantic house-to-house sanitary survey of State completed during this year and 1885.

Public waterworks first installed at Joliet.

Apparent infant mortality for State was 246.4 per 1000 births reported, **the highest on record**. Incomplete birth returns doubtless was an unfavorable factor.

Smoke inspector appointed in Chicago under the jurisdiction of the department of health.

Highest annual mortality from measles in Chicago on record, 5.06 per 10,000.

1885: **First State pure food law enacted.**

Three deaths reported among humans from glanders in Kane, Peoria and Boone Counties.

Chicago's present milk inspection service started when Professor J. H. Long found one-half of the samples he collected below grade.

First attention called to flies as carriers of disease by Dr. F. W. Reilly in an editorial in the Chicago Morning News.

Heaviest rainfall on record—6.19 inches in 24 hours on August 2 and 3.

First intubation in diphtheria patients done by Dr. F. E. Waxham.

Boards of health organized in Carrollton and Lemont.

Public waterworks established in Cairo and East St. Louis.

1886: A water plant was completed in Aurora at a cost of \$137,000.

Dr. John H. Rauch, secretary of the State Board of Health, recommended the diversion of water from Lake Michigan as a solution of Chicago's growing sewage-disposal problem.

1887: Board of health ceased the compilation and publishing of vital statistics for the State.

Drainage and Water Supply Commission appointed by mayor of Chicago in accordance with a resolution of the city council, with Rudolph Hering as chief engineer, made report recommending the construction of a new drainage channel.

1888: **First Illinois conference** of State and local health officials held at Springfield.

Waterworks established in LaSalle.

1889: A pandemic of influenza reached Illinois this year.

1890: Since this year the **winter peak has been a striking feature** of the annual death rates.

A water filtration plant was installed at Rock Island.

1891: Dr. J. H. Rauch was succeeded as secretary of the State Board of Health by Dr. Frank W. Reilly.

United States meat inspection law passed, applying to interstate shipments.

Lake Michigan water level lowest in history of city of Chicago.

Public waterworks established in Peru.

1892: State Board of Health began publishing a monthly bulletin called "State Medicine."

Ordinance passed by city of Chicago, adding diphtheria, typhoid fever and typhus to the list of reportable diseases. System of postal card reports for contagious diseases inaugurated.

Work on the new drainage channel inaugurated on September 3. Dr. F. W. Reilly delivered one of the addresses.

1893: Dr. J. W. Scott appointed secretary of State Board of Health.

Ordinance passed in Chicago establishing the municipal laboratory.

1894: This was largely a smallpox and vaccination year so far as principal activities of the State Board of Health was concerned.

1895: Supreme Court ruled that **compulsory vaccination against small-pox is unconstitutional.**

Legislature appropriated \$2,000 for starting a vaccine farm at the University of Illinois in Urbana. Also \$5,000 for water laboratory.

First diphtheria antitoxin issued by Chicago health department October 5. Corps of antitoxin administrators appointed. Effects obtained tabulated and "the great change wrought by antitoxin in the mortality of the disease demonstrated."

New form of death certificate drafted by Chicago health department and adopted by State Board of Health, requiring physicians to fill out only the cause of death.

1896: In Chicago physicians allowed to assume the responsibility of quarantining cases of contagious disease under their care.

By authority of the State Board of Health, the Chicago health department promulgated rules regulating the practice of midwifery in the city.

Board of health established in Granite City.

1897: Dr. James A. Egan appointed secretary of State Board of Health. Four diphtheria antitoxin and culture stations established in Chicago.

1898: Peoria adopted ordinance relating to sanitary supervision over milk supplies.

Public agitation for State tuberculosis sanitarium started.

First effort made to establish under the State Board of Health a **sanitary engineering bureau** that would exercise general supervision over water supplies and sewerage installations.

State Board of Health adopted first plumbing and ventilation code.

Disinfection with formaldehyde begun, first by use of generators and later in the year by the sheet method.

1899: Hotel and lodging house inspection started by State Board of Health with Homer C. Fancher in charge.

Milk-testing and dairy inspection started by city of Evanston.

Medical practice act amended. All previous laws repealed. This provided for examination and licensing of persons who desire to practice medicine and surgery, midwifery or any other science or system of treating human ailments.

Legislature **provided for appointment** of a State Food Commission.

State Board of Health resolution adopted establishing interstate reciprocity, in the licensing of practitioners of medicine.

A law enacted giving the State Board of Health supervision over all lodging houses in cities of 100,000 population or over.

Joint resolution of 41st General Assembly directed the Board of Health to investigate advisability of building a State tuberculosis sanatorium.

State Board of Health started exhaustive study of pollution of Illinois River.

1900: East side levee and sanitary district organized in East St. Louis.

The Chicago drainage canal was opened January 17, total cost \$45,220,588.

Interstate litigation initiated by Missouri led to an exhaustive study of stream pollution that yielded invaluable knowledge concerning natural purification capacity of river water.

1901: State Board of Health **first declared tuberculosis** an infectious disease. Source of first reported epidemic of anthrax, which started at Palatine, was traced to a local tannery.

An epidemic of typhoid fever this year traced to ice from contaminated water, caused the State Board of Health to adopt and promulgate sanitary standards for ice.

Rural boards of health authorized by legislation.

Chicago passed anti-spitting ordinance.

Second State vital statistic law enacted.

1902: Evanston health department started making a diagnostic culture in all cases of diphtheria reported and maintaining quarantine until cultures were negative.

Children's Hospital Society of Chicago organized.

Attorney General ruled that for purpose of quarantine cities and villages have jurisdiction over territory within one-half mile of city limits.

Chicago health department starts publication of a weekly bulletin entitled "State of Chicago's Health."

1903: Milk commission of Chicago organized with Dr. L. A. Abt as chairman.

The Illinois Association for the Prevention of Tuberculosis organized.

Chicago Medical Society started giving a course of public lectures on health. Committee on Tuberculosis of the Chicago Visiting Nurse Association organized.

Third State vital statistics law enacted.

Bacteriological and chemical analysis made of all public water supplies in cities having over 2,500 population.

On March 1, 1903, was published the **first issue** of the "Bulletin of the Illinois State Board of Health" and distributed to all physicians in the State. Another issue was published in April of this year, after which this monthly publication was suspended for three years.

Revised vital statistics regulations issued making returns much more complete and satisfactory.

1904: **State diagnostic laboratory established.** W. H. Hoyt placed in charge.

State health service greatly improved by the **organization of a corps of medical inspectors** located in all parts of the State who, on call, could be sent to assist local health officers in suppression and control of epidemics.

State health authorities officially declared tuberculosis curable in Illinois.

State Board of Health initiated vigorous tuberculosis educational campaign involving many exhibits, much publicity and the publication of a pamphlet that subsequently ran through numerous editions over many years.

Country dairy inspection inaugurated by city of Chicago which adopted an ordinance requiring milk cans to be sealed in transit.

1905: **First State antitoxin distributing** and specimen collecting system established by law.

Sale of Christmas seals for raising funds, inaugurated by Illinois Society for the Prevention of Tuberculosis.

Act passed providing for the regulation of embalming and the disposal of dead bodies.

Law passed providing for treatment of hydrophobia and for the prophylactic treatment of those bitten by rabid animals or otherwise put in danger of infection with rabies, and appropriation made to provide for this.

First step toward making tuberculosis a notifiable disease in Illinois taken by Peoria in adopting an ordinance requiring the reporting of cases in the city.

The Chicago Tuberculosis Institute chartered.

The bulletin of the Illinois State Board of Health which was discontinued in 1903, was revived this year.

1906: Arrangement made with the State Water Survey to make water analyses gratis for State Board of Health as a part of Water Survey's service to citizens of Illinois.

Interstate stream pollution litigation terminated favorably to Illinois by decision of United States Supreme Court.

Chicago Sanitary District made application to the War Department to reverse the flow of the Calumet River.

Chicago Society of Social Hygiene organized.

A public health laboratory was opened in Peoria.

Chicago Tuberculosis Institute inaugurated free clinics and started operating the Edward Sanitarium at Naperville.

State Board of Health first began the **free distribution** of diphtheria antitoxin in October.

Reporting of tuberculosis enforced in Chicago. School nursing service inaugurated.

Chicago health department bulletin issued as the *Bulletin of the Chicago School of Sanitary Instruction*, and entered as second class matter.

1908: Legislature authorized **cities to establish and maintain tuberculosis sanitariums** through special tax levy upon favorable popular vote.

System of raising funds by the sale of Christmas seals was started by Chicago Tuberculosis Institute.

Health department of Evanston equipped a laboratory.

Supreme court decided cities have no power to require vaccination as a qualification for attendance on school.

Ordinance passed by city of Chicago July 13, requiring all milk to be pasteurized unless obtained from tuberculin-tested cows.

Solution of calcium hypochlorite used for purification of the effluent by C. A. Jennings at the experimental sewage-treatment station on Bubbly Creek, Chicago.

Chicago adopted ordinance prohibiting sale of bulk milk in stores.

Open-air school-room movement started in Chicago—first in State.

1909: Health department of Evanston started medical school inspection.

Illinois Society for Mental Hygiene founded.

Legislature appropriated \$10,000 for a committee to inquire into the reliability, efficiency, and necessity of adopting the tuberculin test in Illinois.

First recognition of serious pellagra situation in the State institutions for the insane.

By a referendum vote Chicago decided to establish the first municipal tuberculosis sanitarium in the State under the provisions of the Glackin law.

International classification of causes of death adopted by the health department of Chicago January 1. At the same time the death certificates were changed to conform with the United States standard.

1910: The Illinois State Tuberculosis Society organized out of the State Society for the prevention of Tuberculosis. Dr. W. A. Evans was elected president.

Rock Island city voted a tax for a municipal tuberculosis sanatorium, the second in the State.

Federal law passed prohibiting the dumping of refuse in Lake Michigan within eight miles of the shore.

The Chicago Commission on Ventilation organized.

1911: Infant Welfare Society of Chicago formed by the reorganization of the Milk Commission.

Dairy inspection inaugurated by city of Rockford.

A new water-filtration plant in Rock Island was completed.

Anti-typhoid inoculation first advocated by State Board of Health

Mr. F. W. Matthiessen established the Emma Matthiessen Chancellor Memorial milk laboratory in LaSalle for supplying milk to babies.

State Board of Health **organized into four divisions**:—Vital Statistics, Diagnostic Laboratory, Contagious Diseases and Sanitation, Lodging House Inspection. Appropriation for diphtheria antitoxin was exhausted in this year and the supply for Chicago was cut off during six months.

Occupational disease bill became a law after four years' fight.

State law passed prohibiting cities from requiring tuberculin testing of herds from which their milk supplies were drawn.

Illinois Supreme Court decided that city food regulations may be more stringent than those of the State.

Segregated vice district abolished in Chicago.

Chicago health department laboratory **began making Wassermann** tests for syphilis.

"Sane Fourth" ordinance passed in Chicago prohibiting the use of fireworks and explosives except at public displays for which a permit is required.

1912: A tuberculosis survey throughout the State made under the auspices of the Illinois Federation of Women's Clubs.

Elgin health department established a laboratory.

Six inspectors employed to **initiate State dairy-inspection** service.

Chlorination of Chicago's water supply begun.

Illinois Supreme Court upheld Chicago city ordinance prohibiting cellar bakeries.

1913: A privately-endowed health department for LaSalle, Oglesby and Peru, known as the Hygienic Institute, was provided for at LaSalle through the generosity of F. W. Matthiessen.

A city laboratory established and a milk ordinance passed in Cairo.

Death of Dr. James A. Egan, secretary of the State Board of Health resulted in the appointment of Mr. Amos Sawyer as acting secretary.

Legislature appropriated \$6,000 per year for free distribution of vaccine.

Publication of monthly bulletin abolished by State Board of Health.

Journal of the American Medical Association started publishing annual reports on the prevalence of typhoid fever in large cities of the United States.

1911: Dr. C. St. Clair Drake of Chicago appointed secretary of the State Board of Health.

Dr. Gustav F. Ruediger, M. D., was appointed director of the Hygienic Institute at LaSalle, **thereby becoming the first full time municipal health officer in down-state Illinois.**

Sanitary inspection of summer resorts was undertaken.

First mechanical educational exhibit at the Illinois State Fair presented by the State Board of Health.

Silver nitrate furnished to health officers to be distributed among legal practitioners.

Illinois Supreme Court upheld city of Chicago ordinance controlling pasteurization.

North Shore Sanitary District organized.

Widespread outbreak of foot and mouth disease started October 15 at Niles, Michigan. The disease recurred in various localities during the following two years. In November it appeared at the Union Stock Yards. Cattle at dairy show, then in progress, infected and quarantined. Stock Yards closed, renovated and disinfected.

Free distribution of anti-typhoid vaccine started by the State Board of Health. Evanston water-filtration plant completed.

The health department of Aurora established a laboratory.

1915: The State Board of Health resumed publication of a monthly bulletin under the title of "Health News."

Branch State diagnostic **laboratories for making diphtheria tests established** at Chicago and Mount Vernon.

Motion-picture film loan library started by State Board of Health.

First effective quarantine rules and regulations including notification requirements adopted by State Board of Health.

Model law providing for the registration of births and deaths passed.

First **budget system** adopted by State Board of Health and appropriations made accordingly.

Law passed providing for free distribution of smallpox vaccine.

Numerous laws relating to sanitation and health passed. These included **county tuberculosis sanitarium law** and those pertaining to prevention of blindness, sanitation of school buildings, delinquency, medical practice, etc.

First better-baby conference conducted at the State Fair.

Bureau of sanitary engineering established by State Board of Health with Paul Hansen as chief engineer.

On March 9, Chicago Municipal Tuberculosis Sanitarium opened.

Municipal tuberculosis sanitarium provided for by popular vote in Peoria. Patients were admitted four years later.

Rockford tuberculosis sanitarium opened.

A health survey was made of White County under the auspices of the Illinois State Association for the Prevention of Tuberculosis and the Illinois State Board of Health.

Tuberculosis was made a reportable disease by the State Board of Health.

Illinois Society for the Prevention of Blindness organized.

Mobile diagnostic laboratory outfits for field use secured and placed into service by State Board of Health.

Rockford health department established a laboratory.

1916: Two new State branch diagnostic laboratories established, one at Galesburg and one at Urbana.

State was divided into **five sanitary districts with full-time medical health officer** employed by the State Board of Health for service in each.

Infantile paralysis epidemic created a new public health problem which caused much investigation and activity.

Adams, Champaign, Morgan, McLean, Ogle, Livingston and LaSalle counties voted to take advantage of the Glackin tuberculosis sanitarium law.

Illinois Social Hygiene League organized.

1917: The adoption of the **Civil Administrative Code by the State** government dissolved the State Board of Health and created in its stead the present State Department of Public Health with Dr. C. St. Clair Drake as director.

A State branch diagnostic laboratory established at Rockford, making a total of five for the State.

A law permitting the **organization of public health districts** authorizing the levy of a tax for the purpose was enacting.

Clinical service at various points in the State for the after-care of infantile paralysis victims was inaugurated by the State Department of Public Health.

Call of military service depleted personnel of State Department of Public Health.

New sanitary district law enacted.

Morbidity reports compiled and published for the first time by the official State public health organization.

Mortality and birth reports for 1918 were published.

Another outbreak of infantile paralysis occurred beginning July 21 and lasting to December 1.

Immunization against diphtheria with Von Behring's **toxin-antitoxin mixture** inaugurated by Chicago health department in public schools and institutions.

Oak Park health department established a laboratory.

School-nursing service started in Cairo.

1918: Illinois **admitted to United States death-registration** area.

First annual report of the State Department of Public Health published.

The appointment of Dr. A. E. Campbell as health commissioner of Springfield made him the **first full time health officer in down-state Illinois** whose services were devoted to one municipality.

Influenza pandemic swept the State.

Illinois Influenza Commission appointed under auspices of the Council of National Defense.

State division of social hygiene created on the fifty-fifty federal-subsidy basis and first local venereal disease clinic established.

State makes first attempt to instruct graduate nurses in public health service. Eight week's course offered by Health Department.

An isolation hospital for the cities of LaSalle, Peru and Oglesby completed.

The Aurora isolation hospital was opened.

Thirty-three counties vote favorably on tuberculosis sanitarium question.

1919: **First county tuberculosis sanitarium** created under the provisions of the Glackin law opened at Ottawa on March 3rd. The second opened at Bloomington on August 17.

Enabling act passed by legislature, giving cities the right to "piecemeal" zoning.

First nurse as State supervisor of public health nurses employed.

State Department of Public Health **established a permanent weekly press service** for newspapers.

Chicago Training School for Home and Public Health Nursing opened.

The holding of an annual **health-promotion-week inaugurated** by the State Department of Public Health.

Biological and research laboratory established in the State Department of Public Health.

Bloomington employed a full time medical health officer and continued the practice.

1920: A movement for the standardization of public health nursing services was initiated.

Began the publication of a social hygiene monthly.

A trachoma clinic was established at Mount Vernon.

Practice of terminal disinfection in scarlet fever and diphtheria discontinued as a State health policy.

November 24-29 Health and Sanitation Exposition held in the Coliseum at Chicago.

First public health district in State erected in Quincy township by popular vote.

Three counties voted favorably on the tuberculosis sanitarium question.

A summer peak in the annual death rates disappeared.

1921: Dr. Isaac D. Rawlings was appointed director of the State Department of Public Health.

An increase of \$200,000, principally for employment of district health officers, in the annual appropriation to the State Department of Public Health was granted by the legislature.

A campaign for stimulating complete birth registration was launched by the State Department of Public Health.

An official **public health advisory board was created**, the first in the State, was appointed by the Governor.

A movement for **organizing full-time county health departments** was initiated.

A close **coordination of the various divisions** of the State Department of Public Health effected through a weekly conference of division chiefs with the director.

The holding of better-baby conferences extended to include any point in the State.

Infant-mortality statistics for the State **compiled and published for the first time**. These covered the years 1919 and 1920.

Dr. John W. H. Pollard became the first full time medical health officer of Quincy.

Monthly bulletin issued promptly each month.

A special maternity and infant-hygiene program involving the promotion of public-health-nursing services, and infant-welfare stations, inaugurated.

State regulations providing for **modified types of quarantine** in places with efficient local health departments adopted.

Sanitary engineering division of the State Department of Public Health organized mosquito-control work at Carbondale.

Campaign started by State Department of Public Health to locate all typhoid carriers. Quarantine rules for typhoid revised so as to require negative results of specimens of excreta from the patient.

Doctors George F. and Gladys H. Dick of Chicago, discovered that a certain strain of streptococci is the cause of scarlet fever and that a toxin produced by this organism may be used to determine susceptibility to this disease by a skin test.

1922: Illinois was admitted to the United States Birth Registration Area.

First full-time county health unit in Illinois organized at Jacksonville in Morgan County.

A safe-milk campaign was started by the State Department of Public Health. Incidental to this undertaking a model milk ordinance was drawn up by the Department and subsequently adopted by many municipalities in the State.

Public health nurses in the State were organized into district associations through the activity of the State supervising nurse.

Medical inspection of rural school children was initiated by the State Department of Public Health.

Physical examination of adults at the State and county fairs, for the purpose of popularizing periodic health examinations inaugurated.

The Illinois Health Society was organized.

Policy of investigating every reported case of smallpox, chickenpox, typhoid fever and meningitis adopted by the State Department of Public Health.

A branch diagnostic laboratory established in East St. Louis.

Diphtheria toxin-antitoxin for the immunization of children against diphtheria was added to the State list of biological products distributed free.

The Railway Sanitary Code, promulgated by the United States Public Health Service was adopted by the State Department of Public Health and put into operation.

Right of health officials to require hospitalization and quarantine of typhoid fever carriers upheld by the Illinois Supreme Court.

Started rural sanitation surveys including a systematic study of summer resorts in the upper Fox River Valley.

The Illinois Supreme Court rendered a decision that the word "physician" in the vital statistics act is not limited to any particular school of medicine.

The State Department of Health began to advocate the use of toxin-antitoxin in children under eight years, without regard to the Schick test.

Two counties voted favorably on the tuberculosis sanitarium question.

Chicago Heart Association organized.

1923: Clinical service for post-infantile paralysis cases transferred from State Department of Public Health to the Illinois Society for Crippled Children, a voluntary agency.

Legislature rejected federal aid in maternity and infant-hygiene program.

Practice of placing typhoid fever carriers under personal contract regulating their occupations and hygienic habits inaugurated.

State social hygiene monthly discontinued.

Medical classification revised and developed in accordance with the International List of Causes of Death (third revision) as promulgated by the United States Bureau of the Census.

A formal decree entered by the United States District Court finding against the Sanitary District of Chicago in the suit brought to enjoin the district from diverting more water than authorized by the 1901 permit, namely, 4,167 cubic feet per second. An appeal was taken by the Sanitary District to the United States Supreme Court.

1924: Illinois Public Health Association formed.

Rules and regulations relative to sanitary conditions of tourist camps adopted. State Health Department **started inspection and labeling of roadside water supplies.**

State Department of Public Health with the co-operation of the State University, held first Illinois conference for operators of water purification plants at Urbana.

First vigorous anti-cancer campaign in Illinois conducted under direction of the American Society for the Control of Cancer.

State Department of Health inaugurated vigorous campaign for promoting full-time county health departments which proved futile on account of inadequate laws.

A total of 41 new public water-supply systems and 58 important improvement projects to existing water supplies were undertaken in the State during this and previous year.

Crawford county established full-time county health unit, shortly abandoned.

Correspondence course of instruction for prospective mothers inaugurated by State Department of Public Health.

Illinois Medical Laboratory Association organized.

The Chicago health department started making hourly tests for residual chlorine in the water in the discharge mains of pumping stations.

Decatur employed a full time medical health officer but abandoned the practice in 1927.

Rockford placed municipal health officer on a full time basis.

Pneumonia commission appointed to study the prevalence and recommend measures for the control of acute respiratory diseases.

Typhoid fever outbreak in Chicago due to oyster infection.

Berwyn employed a full time health officer under the provisions of the public health district law being the second community in the State to take advantage of the law on this matter.

Cook County employed a full time health officer and staff.

1925: State law **requiring milk-pasteurization plants** to be certified by State Department of Public Health upon minimum sanitary standards enacted.

Facilities for typing of cases of pneumonia made available in the State diagnostic laboratory.

Certification of laboratories offering public health diagnostic service in Illinois started.

First general branch public health laboratory of the State established at Carbondale.

Survey made of child-health work done by counties.

Disastrous tornado killing upwards of 700 people and injuring 3,000 others swept over southern Illinois, leaving a great sanitary problem in its path. The State Department of Public Health promptly and adequately dealt with the latter.

A new water-treatment plant was completed in Springfield.

The Kahn precipitation test for syphilis was adopted as a regular procedure in the State diagnostic laboratory.

Oyster-borne typhoid fever in Illinois and the consequent activity of the State Department of Public Health resulted in adoption of **nation-wide sanitary code affecting the oyster industry**.

The State Department of Public Health started issuing certificates of approval to milk-pasteurizing plants in Illinois.

Illinois Federation of Women's Clubs undertook a comprehensive child-health campaign.

A survey and appraisal of public health facilities was completed in Cicero, Decatur, East St. Louis, Rockford and Springfield by the American Child Health Association.

State Department of Public Health adopted a set of rules and regulations for the control of pneumonia.

The United States Supreme Court affirmed the injunction of the United States District Court in restricting the Sanitary District of Chicago from withdrawing any more water from Lake Michigan than is allowed by permit issued by the Secretary of War.

Secretary of War Weeks issued a provisional permit for the Sanitary District to withdraw an annual average of 8,500 second feet and an instantaneous maximum of 11,000 second feet.

1926: State Department of Public Health made a survey and appraisal of public health facilities in the 15 leading cities, except Chicago.

A dentist was added to the staff of the State Department of Public Health on August 15th through funds provided by the State Dental Society.

Evanston employed her first full-time health officer.

State Department of Public Health prepared and made available a model municipal plumbing ordinance.

The State Department of Public Health **started a weekly communicable-disease-index service** for the benefit of health officers in the 44 largest municipalities in Illinois.

The State Department of Public Health joined with the University of Illinois in a plan to **stimulate a more extensive use of running water** and flush-toilets in the farm homes of the State.

Dr. Henry P. Carr of the International Health Board, made a survey of malarial conditions in southern Illinois for the Department.

Stearate of zinc toilet powders in any but safety-top containers **prohibited from sale in Illinois** by rules and regulations adopted by the State Department of Public Health, effective June 10, 1926.

Water-supply and sewage-disposal facilities on local fair grounds throughout the State were **inspected for first time by sanitary engineers** from the State Department of Public Health.

First state-wide short-term intensive campaign for promoting the use of diphtheria toxin-antitoxin carried out in November and December.

A full-time county health department with Dr. William K. Murray at its head was established in DuPage County.

Infant **breast-feeding demonstration** in McLean county undertaken by the State Department of Public Health.

1927: General revision of the rules and regulations relating to the control of communicable diseases made. The change embodied **greater dependence on laboratory procedures**, more rigid requirement of case reports and a substitution of indeterminate for specific long time quarantine.

Full-service branch State diagnostic laboratory established at the Medical School of the University of Illinois in Chicago with Dr. Lloyd Arnold in charge.

The State Department of Public Health **celebrated its Semi-Centennial anniversary** and published health history of the State.

(June 1) Kahn test adopted and the Wassermann discarded as a routine procedure in the State diagnostic laboratory.

A mobile laboratory equipped to make bacteriological and other tests of milk was built by State Department of Public Health and put into the field. It was manned by a milk bacteriologist and a milk sanitarian.

Legislature enacted law authorizing the erection by popular vote of mosquito-abatement districts.

Appropriations to the State Department of Public Health made possible the addition of one physician, specialist in education, two dentists, one dietician and twelve nurses to the staff of the division of child hygiene.

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