

Annual Report

Department of Health CHICAGO, 1898.

GEO, W. WEBSTER. M. D



ANNUAL REPORT

OF THE

Department of Health

OF THE

CITY OF CHICAGO

FOR THE

YEAR ENDED DECEMBER 31, 1893



ARTHUR R. REYNOLDS, M. D., COMMISSIONER

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Department of Realth

City of Chicago

ARTHUR R. REYNOLDS, M.D.

Commissioner

J. F. McCARTY Secretary

Chiefs of Bureaus

REPORT OF THE

Commissioner of Health

DEPARTMENT OF HEALTH.

OFFICE OF THE COMMISSIONER, CITY HALL, CHICAGO: 1894.

To the Honorable JOHN P. HOPKINS, Mayor, and the Honorable, the CITY COUNCIL of Chicago:

GENTLEMEN: Unusual demands upon the Department of Health and upon the Commissioner since the beginning of the present year, have delayed the completion of the Annual Report, which is herewith submitted, for the year ended December 31, 1893.

Chicago was fortunate, even beyond its proverbial good fortune, during the year of the World's Columbian Exposition. Not alone were the eyes of the civilized world centered upon the city in connection with the financial, artistic and social features of that event, but the attention of sanitarians and health authorities, both at home and abroad, had been attracted to its public-health conditions, and predictions of disaster and warnings of inevitable sickness and increased mortality were freely indulged in by envious rivals and prophets of evil. The resources of the city for properly and healthfully feeding and housing a great multitude were pronounced inadequate; the water supply was condemned as insufficient in quantity and unfit in quality; influential journals, both lay and medical and upon both sides of the Atlantic, gravely warned their readers against the dangers of a sojourn in a place where, as alleged, they would be compelled to drink Chicago-river water; and death by typhoid, small-pox or other zymotic disease was predicted as the fate of those who should venture to visit the World's Fair city.

To such an extent had this sentiment been spread and fostered that, when he came to deliver his last inaugural message, the one topic which the lamented Mayor HARRISON thought it necessary to single out for especial stress and mention was the health of the city: "Our first duty, Gentlemen of the City Council of Chicago, is to keep the city in a healthy condition, so that when the world comes here it will not enter upon a charnel-house. I pledge my honor to you and to my fellow citizens to do all that lies in my power to protect the health of the city."

How well he exerted that power, how efficient was the co-operation of the City Council, of which he was proud to claim himself a part, and how thoroughly and successfully his policy in this respect has been carried out by his successor—all this is shown in the fact that the Department of Health is able to claim that the death rate of Chicago for the year 1893 was the lowest of any large city in the world (except, possibly, that of Berlin) and the lowest for any year in its history.

To the German capital is generally accorded the claim of the Imperial Health Department, to-wit, that it is the healthiest large city in the world. In 1893, with a population of 1,600,000, its death rate was 16.3 per thousand. Upon the same basis of population the death rate of Chicago for the same period was 16.9 per thousand. But the actual population of Chicago during the World's Fair year was largely in excess of 1,600,000; and this excess, while it contributed to the total number of deaths would correspondingly reduce the mortality rate.

What the exact population of the city was in 1893 may never be known, but it is comparatively easy to determine the minimum below which it could not possibly have fallen.

MINIMUM POPULATION IN 1893.

The United States census of 1890, gave Chicago a population of 1,099,850; the school census of 1892 found a population of 1,438,010—an increase of a fraction over 15 per cent. per annum for the two years.*

This remarkable growth is attributed to two causes: First, the enormous immigration movement—a factor of population with which Chicago's rate of growth has always kept pace, and that for the fiscal year ended June 30, 1893, was the heaviest in the history of the United States; second, the phenomenal construction activity of the period, which brought to Chicago a vast army of artisans, skilled workmen and laborers from all parts of the country, who found employment at high rates of wages not only on the World's Fair grounds, but in the construction of nearly 22,000 buildings, with a frontage of 102 miles and a valuation of more than \$92,000,000.

Both of these causes culminated about the close of June, 1893, up to which time the rate of growth of the previous two years was at least fully maintained by the arrival of exhibitors at the Exposition, their employes, workmen, etc.,

^{*}The exact percentage of increase of the two sums—1,439,010 over 1,099,850—is 30.74, or 15.37 per cent. per annum. But there should be subtracted from the census of 1892 the population of the villages of Washington Heights, West Roseland and Fernwood, which were not included within the city limits at the time of the 1890 census, and should, therefore be excluded from the census of 1892. In 1890 these villages had an aggregate population of 4,508 and in 1892—on the same basis of increase—had 5,860. Deducting this sum from the aggregate of the 1892 census still leaves the annual increase for the two years 15.10 per cent.

and of whom Director-General Davis estimates, from reports of bureau officers not yet published and from other sources of information, that there were fully 25,000 added to the population in the early part of the year, and that between July 1 and October 30, there was a daily average of 150,000 non-resident visitors living in Chicago.

Adding the increment of the 15 per cent. increase to the census figures of 1892 gives Chicago an average population of 1,653,711 living during the year 1893. And this is believed to be a most conservative estimate. Well-informed railway officers, hotel managers and house-renting agents of long experience assert that there were periods in August, September and October—frequently during the latter month when more than 2,000,000 individuals were housed within the city limits.

The population of Chicago during the past year was certainly in excess of 1,650,000; the death rate is computed on 50,000 less*.

PREVENTABLE CAUSES OF DEATH AND DISEASE IN 1893.

More than one-half the deaths in 1893—13,664 out of the total 27,083—were of infants and children under six years of age. Study of TABLE I, *Deaths From All Causes* (in the Appendix), shows that an enormous preponderance of this mortality of children and infants is due to the miasmatic diseases and to diseases largely due to faulty or imperfect nutrition caused by improper food and feeding. Among the deaths of children from the so-called miasmatic diseases there were 1,613 from cholera infantum, 975 from scarlet fever, 234 from measles and 210 from whooping cough—all more or less preventable, and all but the first contagious or infectious. Among the diseases due largely to faulty or

^{*} It is to be noted in this connection that 2,567 bodies were shipped beyond the city for burial in 1893, showing that they did not belong to us, though they are included in the list of Chicago's dead and swell Chicago's death rate.

imperfect nutrition there were 1,326 deaths from infantile convulsions, 651 from inanition (starvation), 378 from infantile marasmus or wasting.

Of the causes of death at all ages during the year, the most important from the standpoint of sanitary administration were the diseases of the respiratory apparatus pneumonia and bronchitis causing 3,710 deaths; the tubercular diseases—consumption causing 2,315 deaths; and, from its recent fortuitous prominence, typhoid fever, which caused 670 deaths in 1893, as against 1,489 deaths in 1892 and 1,997 deaths in 1891. There were, in addition, 3,369 deaths from diseases of the digestive apparatus and alimentary canal, a large proportion of which were due to preventable causes.

With reference to the work of the Department for the reduction of the mortality from the preventable causes above specified, not the least important has been that of the Bureau of Milk Inspection-now a department of the Municipal Laboratory-established with a view to securing a better food supply for that factor of the population which depends so largely upon milk for nutrition, and which suffers so much from disease and premature death caused by an impure, unfit and adulterated article. That such inspection was necessary is shown in the fact that 75 per cent. of the samples examined in the early part of the year, and 46 per cent. of the total number of samples examined during the whole year, were below standard quality; that it has been beneficial is shown in the diminishing ratio of such defective samples, and the marked general improvement of the supply. This cannot fail to have a like beneficial effect upon the diseases and death rates of infant and child life.

When the Bureau was transferred to this Department, the City Council authorized the creation of a Municipal Laboratory, in which more extended investigations of water, ice and food products generally, as well'as of milk, are now being made. As the revenue from milk licenses is largely in excess of the appropriation made for the maintenance of the Laboratory, the public is to be congratulated upon the prospect of permanence of this part of the equipment of the Department, which may be made of the highest utility.

For details of the work of the Bureau during 1893, reference is made to the report in the Appendix.

To the improved character of the water supply, caused by the opening of the four-mile tunnel and the extension of the Lake View tunnel, as well as by the closing of the polluted shore intakes at Chicago avenue and in Lake View, is due the gratifying reduction of typhoid fever and of diarrhœa and other intestinal diseases. A compilation of typhoidfever statistics from the official reports of the Health Departments of seventeen principal cities shows Chicago to have had next to the highest average annual death rate from typhoid during the past four years-1890 to 1893, inclusive-Pittsburgh only ranking higher in this undesirable preeminence. Last year, that is 1893, Chicago moved down to tenth place from second-the deaths from this cause in 1893 being at the rate of 4.1 per 10,000 of population, as against 10.6 in 1892 and 15.4 in 1891. This rate is still far too high. certainly more than double what may be reasonably expected after the Sanitary Drainage Channel is in successful operation.

SMALL-POX AND VACCINATION.

This country is the mixing ground of the peoples of the earth, and Chicago is the center and focus of the mixture. Representatives of all nations and of all races throng here, and bring with them their diseases and disabilities, together with their other and more desirable possessions. Experience has taught health authorities to expect the appearance of small-pox in the United States whenever the disease becomes prevalent in Europe coincidently with an increased emigration from that country. The disease had begun to attract attention in England and on the Continent in 1892, and simultaneously therewith began the largest immigration movement to this country on record, culminating in the summer of 1893. In addition to the usual trend of the immigrant to Chicago, there was the influx from all parts of the country to the World's Fair, and to these again were added large numbers of persons thrown out of employment elsewhere by the suspension of industries and the business depression of the spring, and who crowded into the already congested lodging-house districts and the poorer quarters of the city during the summer months.

The expected happened. On the 12th of June the first case of small-pox was discovered, and this was closely followed by two more cases, each remote from the other-the three districts being nearly six miles apart, thus showing three separate and nearly simultaneous introductions of the contagion. Each of these outbreaks was promptly met by isolation of the patient in the small-pox hospital, vaccination of those exposed and disinfection of the premises, and no other case resulted from any of these. In July there were six new cases, in August 9, in September 3, and in October 9all treated as above and from none was there any spread. With colder weather, and from the secretion of cases and suppression of information by families and friends of patients and the consequent inability of the Department to interfere in timeas well, also, as from the mild type of some of the early cases, which recovered without medical attendance, and so were not detected as small-pox until they had infected others-there was an increase of new cases to the number of thirty-five in

November and sixty-six in December. In all there were 140 cases of small-pox, with 23 deaths, during 1893.

Recognizing that the long period of freedom from smallpox prevalence—nearly ten years—had resulted in a neglect of vaccination and an aggregation of susceptible individuals, systematic efforts were made to arouse public interest in the subject; vaccinators were put at work in exposed districts, and the authorities of the public and parochial schools were appealed to, to assist in securing the general vaccinal protection of all school children—the most susceptible element of the population as to age.

The following "Circular to the Public," was issued by the Commissioner:

DEPARTMENT OF HEALTH,

OFFICE OF THE COMMISSIONER, CITY HALL, CHICAGO.

It is proven beyond doubt that vaccination and revaccination prevent small-pox.

A scar does not necessarily mean that the vaccination has been successful.

Vaccination to be effective against small-pox must be repeated until the virus no longer "takes."

Vaccination will "take" on everyone if tried often enough. To our own knowledge vaccination has failed to "take" until the fourteenth attempt.

Pure vaccination never has and never will injure anyone, and may be done at any time through life from the moment of birth to old age.

It should be done on the arm, which should be clean.

After vaccination is done the arm should remain exposed till the virus is dry.

ARTHUR R. REYNOLDS, M. D., Commissioner of Health.

The appended correspondence explains itself :

CHICAGO, August 4, 1893.

MOST REV. ARCHBISHOP P. A. FEEHAN:

Your Grace-Within the past month we have found several cases of small-pox located in different parts of the city, and have not been able to trace any of the cases to their origin, leading us to infer that there may be more or less widespread sources of contagion.

The remedy lies in vaccination, which is a very potent preventive, and years of scientific observation have demonstrated that it is entirely harmless where pure bovine virus is used.

It has occurred to me that if all parochial schools would make it one of the requirements of admission that children present evidence of being successfully vaccinated, it would be a valuable aid to this Department in its work in the endeavor to prevent an epidemic of this loathsome disease.

Believing that an order from you to that effect to the schools in the city under your charge would bring about its enforcement, I write you to know if such would be feasible and meet with your approval. It would further have the effect of disarming whatever prejudice there is among parents against vaccination.

Very respectfully,

ARTHUR R. REYNOLDS, M.D., Commissioner of Health.

Approved :

CARTER H. HARRISON, Mayor.

CHICAGO, Nov mber 14, 1893.

MR. ALBERT LANE, Supt. of the Board of Education :

My Dear Sir—An occasional case of small-pox has occurred in this city during the summer, and now, as the cold weather advances, the number is increasing, leading me to believe that unless unusual precautions are taken, we will surely have an epidemic of small-pox this winter. In every case that we have found the patient has been imperfectly, or not at all, protected by vaccination.

Everybody in the city who has not within the past few years been successfully vaccinated should be vaccinated and revaccinated until a successful result is obtained.

From personal examination of many public schools we find that many of the pupils who hold physicians' certificates of successful vaccination have not the evidence of it upon their arms. I respectfully suggest to you and to the Board of Education that you insist upon it that all pupils again visit their physicians for vaccination.

Respectfully yours,

ARTHUR R. REYNOLDS, M.D., Commissioner of Health. In response to these appeals, the Board of Education took action with respect to the children of the public schools, and the Archbishop issued the following circular-letter to those in charge of the Catholic parochial schools:

CHICAGO, November 17, 1893.

Rev. Dear Sir—To prevent the spread of small-pox in the city and to protect our school children, I very kindly request you to insist upon all being vaccinated.

I also suggest that we lend every possible aid to the city health officials to stamp out the disease.

Yours faithfully in Christ,

P. A. FEEHAN, Archbishop of Chicago.

P. J. MULDOON, Chancellor.

Meantime the work of vaccination was pushed by the Department Medical Inspectors in the exposed and infected districts, in factories, business houses, schools and elsewhere, with the result of securing a total of 110,820 vaccinations between June 1 and December 31.

In further proof of the relation between small-pox and vaccination, and of the protective virtue of vaccination properly performed, the following figures are furnished from the records of the Small-pox Hospital:

Total number cases of small-pox treated in the Chicago	,
Small-pox Hospital during 1893146	ł
Number vaccinated 42	
Number unvaccinated	
— 140)
Number recovered 117	
Number died 23	
<u> </u>)
Number of deaths of unvaccinated 23	
Number of deaths of vaccinated 0	
23	3
Percentage of deaths of unvaccinated23.4	ł
Percentage of recoveries of vaccinated100.0)

Further details of the small-pox outbreak of 1893 will be found in the report of the Chief Medical Inspector in the Appendix.

OTHER PREVENTABLE DISEASES.

Zymotic diseases, so far as these depend upon the "adjustable conditions"—cleanliness, ventilation, plumbing, sewerage, etc.,—have received the especial attention of the Department through the work of the corps of Tenement and Factory Inspectors. These have inspected 17,649 work places in which 306,432 persons were employed during the year; have examined 17,177 houses and premises complained of on account of unsanitary conditions; and have secured the abatement and remedy of over 25,000 nuisances and defects of plumbing, drainage, filthy premises, foul privy-vaults, etc.

The vault is still an intolerable nuisance, and the cause of much avoidable sickness; it can only be dealt with by its abolition by ordinance on all streets where sewers are laid. There were over 700,000 lineal feet of new sewers laid during the year, and the settled areas of the city are now so generally sewered that there is no longer any reason for the continued existence of the unspeakable privy-vault. Unfortunately, Sections 1925 and 2053 of the Municipal Code not only permit but direct the connection of vaults with the sewers, and the abomination is thus perpetuated. An ordinance should be passed to remedy this defect.

Special inspections of the premises where-cases of diphtheria, scarlet fever and typhoid fever occurred were made by the Medical Inspectors of the Department, with the view of discovering and securing the correction of any local causes for the diseases in the conditions of the houses or their surroundings. This special inspection was also extended to premises wherein clothing and other garments and articles of wearing apparel are made up, including the so-called "sweat shops," and such work was prohibited in these places during the existence of small-pox, diphtheria or other infectious disease in the families, and until the premises had been properly disinfected and other precautions taken against spread of the contagion.

Inspection was made of the vaccinal status of the 306,000 work people and their families, and all found unprotected were either vaccinated on the premises or sent to the nearest free vaccination station or to the Vaccine Bureau of the Department in the City Hall. For details of this work—as well as of the work of the Female Inspectors of shops, stores and work-places in which women and children are employed reference is made to the report of the Bureau of Tenement and Factory Inspectors, to be found in the Appendix.

Section 2029 of the Municipal Code directs that "every physician shall report to the Commissioner of Health, in writing, every person having a contagious or infectious disease, that he has prescribed for or attended for the first time since having such disease, during any part of the preceding twenty-four hours." The object of this requirement is, obviously, to secure prompt notification of the existence of contagious or infectious diseases, to the end that the Department may take the necessary action to prevent any spread of contagion or infection, and to remedy any conditions upon which such diseases may depend.

But it is a requirement directly in the interest of the public, and not at all, or only remotely, in the interest of the physician—who is called upon to fill out a blank with date, disease, location of case by number, street and ward, name of patient, age, nativity, color, sex, date of attack, length of time in the city, his own name and address, and a statement as to whether the patient attends a school or kindergarten. He is not only required to do this without compensation for the time spent in ascertaining facts of personal and social history, etc., that have no bearing on his treatment of the case with which alone he is concerned—but he frequently incurs the hostility of the family and friends, who object to the publicity which follows the report, and thereby suffers in his practice.

That there should be some opposition to the requirement is only natural, and it cannot be said to be unreasonable; the Commissioner has, therefore, modified the previous practice of the Department, which has been to prosecute physicians failing to comply. But in order to secure without friction the information so necessary to the usefulness of the Department and to the public welfare, the following appeal to the profession was made:

CITY OF CHICAGO, Department of Health. May 16, 1893.

Dear Doctor: As Commissioner of Health, I realize that the only persons in the community who give intelligent and systematic attention to the prevention of disease are the medical practitioners. Physicians devote from one-eighth to one-third of their time, their strength and their talent to charity, in caring for those who are unable to pay, and I sympathize with them when a law requires from them a service without remuneration, in reporting to the Health Department all contagious diseases occurring in their practice. Being unable to offer any remedy at present, I must appeal to the self-sacrificial spirit of the profession to be faithful in this particular, and aid in the important work of isolating all such cases, and, as far as possible, destroying the germs of infection.

In contagious diseases, where warning cards are posted, the Department will lend every aid possible as to their prompt removal, when the physician in attendance guarantees that all danger of contagion is past.

In addition to reporting the usual contagious diseases, I desire you to report cases of typhoid fever, so that our inspectors can investigate the sanitary surroundings. Cards will not be posted in typhoid fever.

If I can receive the needed aid from the medical profession, this Department of the City Government will be enabled to give to the profession and the public important facts concerning the large mortality from diseases that are, in a great measure, preventable.

> ARTHUR R. REYNOLDS, M.D., Commissioner of Health.

It is gratifying to be able to state that the notification of contagious diseases has been at least as full and complete during 1893 as in any previous year, and the thanks of the Department are cordially tendered to the medical profession for its support and efficient co-operation in efforts to protect the public health, not alone in this but in many other ways.

The subject of the notification of consumption has received the consideration of the Department, but without arriving at a conclusion favoring its adoption. After consultation with prominent physicians, and a careful review of the conditions, it has been decided that, at least for the present, the imparting to the patient and family of the necessary information as to the contagious character of the disease, and as to the simple precautions to be observed to prevent its spread, may best be left to the attending physician. The profession, however, is fully advised that the services of the Department are at the command of any of its members who desire, for example, to secure the disinfection and treatment of rooms or premises infected by tuberculosis or by occupancy of consumptive patients.

In the same direction arrangements are being perfected in the Municipal Laboratory to assist physicians in a prompt recognition of the true character of certain other diseases. Diphtheria, for instance, which of late years has become one of the most destructive diseases of urban life, is not readily distinguished in some of its forms from milder and non-contagious affections of the throat and air-passages. This difficulty of detection sometimes leads to the infection of others not warned of the unrecognized danger ; and then, too, in the treatment of diphtheria the life of the patient may hang on the few hours spent in developing the true character of the disease. Fortunately, modern science enables us, by the culture tube and microscope, to discover the specific cause of certain diseases long before their nature is manifested by the symptoms. In the nature of things this important work cannot be done by each practitioner for himself, and it is conceived that no more valuable service can be offered the community than that 'afforded in this direction by a properly equipped laboratory under the charge of experts in this branch of modern preventive medicine. By this means it is intended to put at the disposal of every physician the necessary agencies through which he can secure in a few hours the positive determination of any case of suspected diphtheria which may occur in his practice.

A beginning has, also, been made in the direction of securing the benefits to health of the cleanliness to be secured by free public baths. Through the efforts of the ladies of the Municipal Order League an appropriation of \$12,000 was made for this purpose, and a building has been erected at No. 192 Mather street, on a lot kindly placed at the service of the Department by Mr. A. E. Kent, who gives its use rent free for two years and thereafter at a rental of \$300 a year for eight years and \$500 a year for an additional twenty years, with privilege of purchase for \$5,000 at any time within that period.

The total expenditures from the appropriation for the first free public bath-house—which has been named the CARTER H. HARRISON—were \$11,263.25.

RAILROAD SLAUGHTER.

Nearly one-third of the total deaths from violence during 1893 were the result of railroad accidents within the City limits. This sacrifice of human life, as well as the maiming and mangling of the still greater number of survivors of such accidents, is due to the fact that there are over 2,000 miles of railroad tracks within the corporate limits of Chicago, with more than 3,000 street-crossings at grade, over which nearly 1,400 trains run daily.

These accidents and the resulting slaughter and disabilities, cannot, probably, be wholly or in any large measure obviated without an abandonment of the surface crossings. But it may be noted that one of the main lines east from Chicago, using the block system of signals, claims to have carried 428,000 passengers during the World's Fair period without so much as injuring a single individual. Fortunately, the attitude of the present Municipal Administration is pronounced in favor of the abolition of the grade crossing; and, although the task of raising or depressing 2,100 miles of tracks is a serious and costly undertaking, there is more reason for believing that it will be accomplished in the near future than ever before.

SMOKE AND DUST.

The magnitude and the complications of the smoke problem in Chicago are not generally recognized. Competent engineering authorities assert that more water is boiled, more steam generated and more power produced every year in the business district of Chicago than in any area of the same size in the world.

Nearly 5,000,000 tons of soft coal were consumed, mainly in power production, in Chicago during 1893. Almost onehalf of this coal came from Illinois mines, and 80 per cent. of the total was from Illinois and the adjoining State of Indiana. To shut this coal out of the Chicago market and to compel the substitution of anthracite coal, as has been seriously advocated, would be to paralyze these mining interests and to impose a serious handicap upon the mechanical and manufacturing interests of the city.

Chicago has a direct investment of more than \$360,000, 000 in mechanical and manufacturing industries; pays out annually \$125,000,000 in wages, to the employes of these industries; and uses considerably more than \$400,000,000 worth of materials—the products amounting to upwards of \$665,000,000 in value. And the basis of these enormous figures is the combustion of our cheap coal.

Where there is so much fire there must be some smoke, and those of us who prefer spotless linen and object to an occasional soot-smut must be patient and reasonable while the remedy is being sought and a Parisian purity of atmosphere attained. Chicago is not yet on dress parade, but is still at work—the most marvelous hive of industry and enterprise on the globe, laying the foundation of a civilization such as the world has not yet seen.

The public spirit and civic pride of Chicago had much to do with the mitigation of the so-called "smoke nuisance" during 1893. Manufacturers, merchants, railroad companies, and other large consumers of bituminous coal made unusual effort, at no inconsiderable expense, to render the city more attractive to the World's Fair visitor by reducing the volume of smoke usually poured into the atmosphere. Nearly 4,000 large power-producing plants, including many of the greatest smoke producers, made radical changes for the more perfect combustion of the fuel used—both by the adoption of mechanical devices for that purpose and by the employment of greater care and skill in firing; while others resorted to the use of anthracite coal, coke, fuel oil* or gas instead of bituminous coal, and more than 2,700 railroad engines entering the city are now equipped with smoke-preventing devices.

^{*}A striking object-lesson in the use of fuel oil was given at the World's Fair, where the enormous battery of boilers was fired with fuel oil without smoke, smell, ashes or dirt.

The work done during the year indicates the lines upon which the remedy or remedies for the "smoke nuisance" will finally be reached. Improved furnace construction and proper care in firing have shown that our soft coal may be burned without any objectionable amount of smoke.

So much improvement, indeed, has resulted from skillful firing—which secures economy in the use of fuel, by its more perfect combustion and consequent minimum of smoke production—that it is worthy of consideration whether firemen should not also be licensed, as engineers are; the license to be based on proof of competency and qualification, as in other pursuits. If an engineer also acts as fireman, as is not infrequently the case, he should be required to take out a license as such. In this way the responsibility for any excessive production of smoke in a given case could be definitely located and suitable penalties provided, even to revocation of license.

It seems worth while in this connection to point out that it is not only smoke which beclouds and pollutes the Chicago atmosphere. An examination of the dust which settles upon surfaces, especially in residence districts remote from smoke-emitting chimneys, will often show an entire absence of unconsumed carbon or soot. This dust is composed of minute particles of metal, stone, vegetable fibre, animal tissue—with the ubiquitous microbe—and, largely, of an impalpable powder of the blue clay and friable, peaty soil upon which the city is built, and which constantly oozes up through the street pavements.

It is not proposed at this time to enter upon a discussion of the street-paving question. It is one which has not yet been settled in any of the large cities of the country. It is one of unusual magnitude in Chicago, where there are 1,007 miles of improved and 1,460 miles of unimproved streets, a total of 2,467 miles of roadway, including more miles of paved streets than in New York and Boston combined.

It may be said, however, that a continuous, impermeable surface, unbroken by seams or joints or interstices through which the underlying soil can work up, would aid materially in the purification of the city atmosphere, as well as facilitate street cleaning of surface refuse and accumulations. Such a pavement would also greatly reduce the prevalence of the dust-borne diseases—pulmonary ailments, consumption, pneumonia, bronchitis, etc.

But, as before observed, it is not proposed to discuss this question in the present report. So far as this Department is concerned, its duty is discharged when it indicates the sanitary requirements of a street pavement under the peculiar conditions and characteristics of the site of Chicago. Economic considerations of durability, adaptation to the varying kinds and intensities of traffic—from the heavy truck of the business and manufacturing districts to the carriage of the residential quarters—are all to be taken into the account, and the problem is one with which much older cities are still struggling.

INCREASING HEALTHFULNESS OF CHICAGO.

With whatever drawbacks of immaturity, rapid development and a heterogeneous population, life is steadily becoming more vigorous in Chicago, as shown by the death rate, especially of infants and children; growth more perfect, as seen in the improved physique of each succeeding generation; and death and decay more remote, as witnessed by the increasing numbers of those among us who have passed the scriptural limit of three-score years and ten.

The death rate of 1893 is, with one seeming exception, the lowest of any recorded for Chicago in over fifty years. In 1878 the death rate is stated at 16.50 per thousand; but this rate was obtained by assuming a population of 450,000, whereas the city census, taken in that year, fixed the population at 436,731. On this latter basis the rate should be 16.99, while the rate for 1893 was 16.92. So that, not only was Chicago's last year's actual death rate the lowest of any large city in the world, but it was the lowest in the history of the city itself.

The first computation of the mortality of Chicago is that made for 1843, and thenceforward, for a period of fifty-one years, the vital statistics of the city have been recorded and compiled with increasing accuracy and fullness.

In another part of this report will be found a table giving the population, total number of deaths and annual death rate for each year from 1843 to 1893, inclusive. (See Table XXI.) Analyzing this table, it is found that the average annual death rate from 1843 to 1853 was 36.32 per thousand of population. During the subsequent decades these rates were as follows: Annual average from 1854 to 1863, inclusive, 25.94 per thousand; from 1864 to 1873, 24.34 per thousand; from 1874 to 1883, 20.48 per thousand; from 1884 to 1893, 18.89 per thousand. This shows a decrease in the mortality rate of 48 per cent. during the half century.

And it is to be noted that this decrease is a permanent and progressive one. The reduction in the rate of the second period (1854–1863) from that of the first (1843–1853) was 28 per cent.; of the third (1864–1873) from the first was 33 per cent.; of the fourth (1874–1883) from the first, 46 per cent.; and of the last (1884–1893) from the first, 48 per cent.; while the mortality rate of 1893 was considerably less than one-half (only 46.5 per cent.) of the average mortality of fifty years ago.

That Chicago was not originally a healthful locality is clearly shown by the records of its early history. Its average mortality rate in the '40s, before given—excessive as that was—fails to indicate the fearful loss of life inflicted by frequent visitations of Asiatic cholera, dysentery and smallpox, and by the then prevalent malarial and other zymotic diseases.

Even so late as 1849 there were 1,701 deaths in a total population of 23,047—the frightful mortality of 73.8 in every thousand. And again in 1854 there were 4,217 deaths in a population of 65,872—a death rate of 64 per 1,000.

These figures seem incredible: We must turn to Vera Cruz and Valparaiso, to Madras and Alexandria in Egypt, to the unhealthiest cities of Russia and Hungary, the overcrowded centers of squalid populations of long-settled countries, for their parallel. And yet it is known that they understate the facts, because the system of registration was then faulty and imperfect as compared with that of the present.

The improvement in the health conditions of Chicago since the close of the first half of the century is marvelous. The last epidemic of cholera, that of 1866,* only increased the death rate from an annual average of 24.34 per thousand for the decade to 32.20 per thousand, as against an increase from the annual average of 25.94 to 64.00 in 1855, and from 36.32 to 73.80 in 1849. We have had no epidemic erysipelas since 1863, nor epidemic small-pox since 1882; the malarial fevers have disappeared as a noteworthy factor of the mortality tables; the typhoid death rate has been reduced from an annual average of 7.57 per 10,000 of population during the decade to 4.18 per 10,000—the lowest since 1880; and the general zymotic death rate has fallen from 25.63 per cent. of all deaths during the decade to 22.12 per cent. for 1893.

^{*}The few sporadic cases of Asiatic cholera in 1873 do not warrant the use of the term "epidemic."

Even in infant mortality and in the mortality of children under five years of age there is the same gratifying improvement; the deaths of children under five years in 1893 being 7.72 per 1,000 of the total population—the lowest point ever reached, the annual average for the preceding ten years being 9.34; while the deaths of infants in 1893 amounted to 5.07 per 1,000 of the total population—the annual average for the preceding ten years being 5.91.

CHARACTER OF POPULATION.

In attempting to account for this lowering death-rate, the sanitary critics of Chicago—not necessarily entirely unfriendly—have urged that the population is a "selected" one, made up in large proportion of the more enterprising and vigorous elements of older communities; of a virile type and of an age when the death rate is naturally at a minimum. They assert that not over one-third of the present inhabitants are autochthonous, or born on the site, and that fully one-half have come to the city since 1880, or within about a dozen years; they claim that the proportion of children is rapidly increasing, as is to be expected from the character and age of the adult population; and that, with this increase of a population born on the soil, the death rate must increase.

Their argument is summed up in a recent report of the State Board of Health on "Zymotic Diseases in Chicago," in which it is said:

"If the conditions were every way favorable—a healthful site, needful public works and proper sanitary care—the death rate should be phenomenally low, much lower than it is and very much lower in comparison with older cities. The large ratio of deaths from preventable diseases and especially the death rate among children, who may be assumed as native to the situation, are not reassuring."

Much that is thus said about the character of the population is, unquestionably, true. It is, in a certain sense, largely a "selected" one—of a virile type, enterprising and vigorous. It is true that the proportion of children is increasing; as compared with the total increase of population there is a yearly excess of about two per cent. in the increase of children under six years of age.

But it is, also, true that, notwithstanding their rapid increase, the death-rate of infants and children is decreasing in even a greater ratio than the decrease of the general death rate.

Thus, in 1885—for which the death rates by ages were fully and elaborately tabulated—the death rate for infants under one year of age was 211 per thousand; in 1893 it was 178 per thousand—a reduction of 15.6 per cent. In 1885 the general death rate was 18.7 per thousand of total population; in 1893 it was 16.9 per thousand—a reduction of 9.6 per cent., as compared with the above reduction in infant death rates.

It should be noted, also, that the rate for 1893 is computed on the same proportion of infants as obtained in 1885, whereas the different school censuses show, as before stated, a two per cent. excess in the annual increase of children under six years of age, and this increase involves, of course, a corresponding increase in the proportion of infants under one year of age; so that the improvement in this respect is understated in the foregoing figures.

The contention that the death rate of Chicago, and its consequent reputation for healthfulness, will be injuriously affected by this increase of the native-born population is not borne out by the facts.

Chicago has had since 1880 over 15 per cent. more infants and children under five years of age, in proportion to total population, than the average of the large cities of the country, and the death rate of this group of ages in Chicago, during the period, has been nearly 23 per cent. lower than the average of other large cities, and the rate is still steadily decreasing.

Chicago's "selected population of a virile type" is transmitting these characteristics to its descendants; and, with a now "healthful site, needful public works and proper sanitary care," the death rate is, indeed, becoming "phenomenally low."

There is another factor in the increasing healthfulness of Chicago which should be mentioned in this connection, towit, the growth of the home-owning population and the consequent improvement in the conditions of living. One of the beneficial results of this is seen in the reduction of the number of families living in one dwelling. In this respect Chicago is fast approaching the record of Philadelphia, and already far excels that of New York.

According to the Census Bureau; Philadelphia in 1890 had 187,052 dwellings and 205,135 families; Chicago had 127,871 dwellings and 220,320 families; while New York had only 81,828 dwellings for 312,766 families. In Philadelphia there was one dwelling to every 1.09 families and 5.6 persons; in Chicago one to every 1.7 families and 8.6 persons; in New York one to every 3.8 families and 18.5 persons.

There is, relatively, very little over-crowding in Chicago, and this is confined to a few "slum" districts where the population averages 15.51 persons to each dwelling; similar districts in New York have an average of 36.78 persons to each dwelling.

A CITY OF SANITARY ACHIEVEMENT.

Chicago is a city of sanitary achievement—driven thereto by the naturally unfavorable conditions of the site and the consequent fearful loss of human life in its early years.

The site of the city was, originally, a low, wet, almost level plain—the old bed of a bay of Lake Michigan in prehistoric time; its surface of loose, wind-blown sands or friable, peaty soil, lying on a bed of blue clay, but little above high lake level, and much of it frequently flooded by land water; its only drainage, that afforded by a bayou and its branches, without current, except that caused by rains or melting snows.

Its natural sanitary advantages consisted solely in an inexhaustible supply of pure water and an unobstructed ventilation by winds from every point of the compass, purified by sweeping over vast prairies and the waters of a great inland sea.

Its early death rate, as already shown, was excessive; epidemics were of frequent occurrence and long continuance, and their causes were to some extent recognized. The great fatality of cholera in 1848-49 was traced directly to the use of polluted well-water, chiefly on the North Side; and this, among other occurrences of a similar nature, led to the inauguration, in 1851, of what has grown to be our present magnificent water-supply system-a sanitary undertaking which represents an investment of nearly \$22,000,000 up to the close of 1893, and which last year furnished the enormous aggregate of 86,300,000,000 gallons of potable water, or about 148 gallons per head per day. Even London, with all its age and wealth, and claiming "the best water supply of any city in the world," has a total water-works capacity of less than 100 gallons per head per day, and does not furnish even that amount.

Some improvement in the public health followed the introduction of the lake water in 1853, but cholera, dysentery and kindred diseases still continued to prevail; the death rate remained high, and the evil reputation of the city in this respect threatened its prosperity to such an extent that, at a public meeting called for the purpose in 1854, it was deemed necessary to formally declare—

"That there is nothing in the location of the city of Chicago which is necessarily unfavorable to health; but, on the contrary, a broad lake on one side and a wide prairie on the other, securing to us at all times a full circulation of air from all quarters of the compass, and subject in itself to no local causes of epidemic diseases, will insure to us one of the healthiest localities in the Union, unless, by our inexcusable neglect of the necessary precautions for the removal of the surplus water, and for the prevention of the accumulation of surplus filth and noxious matter in our midst, we thereby create artificial sources of disease."

It was then determined to raise the grade of the city eight feet above its average level in order to provide "for the removal of the surplus water" by an adequate drainage and sewerage system. The herculean task of lifting great buildings and filling in to the new grade was begun in 1855, and in 1856 were laid the first pipes of our present extensive sewer system, now embracing more than 6,000,000 lineal feet, or almost 1,145 miles of sewers, which have cost \$15,395,000.

It would be difficult to estimate the value of the sanitary gains resulting from this unparalleled achievement of raising a city bodily eight feet above its natural level, and thus making its sewerage and drainage possible; but a comparison of death rates, for a series of years, with the number of lineal feet of sewers per capita in the various wards of the city, demonstrates that the mortality from all causes, but especially that from the zymotic diseases, bears a direct and constant relation to the extent of the sewerage, other things being equal in respect of character and density of population —the best sewered wards have the lowest death rates.

One other notable sanitary achievement remains to be referred to, namely, the completion of the drainage system
by the audacious engineering feat of restoring the prehistoric outlet of Lake Michigan to the Gulf of Mexico.

Toward this end, and to secure the results of adequate drainage by gravity and thus to make permanent the cleansing of the river and its branches and the preservation of the water supply from pollution, the city had expended nearly \$3,500,000 in deepening the Illinois and Michigan canal. That work, completed in 1871, proving inadequate after a few years, Chicago is now investing another round sum of at least \$25,000,000 more in this crowning sanitary work, to be completed in 1896—an undertaking which is pronounced by the highest sanitary and engineering authorities both at home and abroad, to be the greatest public work of the age, and one fraught with the most stupendous possibilities for Chicago's future welfare and commercial supremacy.

By the close of the century, and within a period of less than fifty years, Chicago will have expended considerably more than \$100,000,000 in the solution of her problem of drainage and pure water, and the expenditure thus far has proved to be the best-paying investment the municipality has ever made. Its results have already more than realized the prediction of 1854—that Chicago should be "one of the healthiest localities in the Union."

Few, even of our oldest and most intelligent citizens, fully realize the magnitude of these sanitary achievements, the vast aggregate of their cost, and the influence they have had upon the health, growth and prosperity of the city; and it, therefore, seems proper to call attention to the facts in this report.

Whatever of credit has been accorded to its Department of Health, for the reduction of the death rate of Chicago and its redemption from the stigma of being one of the unhealthiest of cities, is due, in fact, to its citizens themselves. To the average civic intelligence and the average civic sentiment, represented in and expressed by successive municipal administrations, are due the liberal appropriations and the wise legislation which have made these sanitary achievements possible, and which have made Chicago the healthiest large city in the world.

No Commissioner of Health may claim more than that he has faithfully and to the best of his ability availed himself of the opportunities thus afforded him.

Respectfully submitted,

ARTHUR R. REYNOLDS, M. D., Commissioner of Health.

NOTE.—The Classification and Nomenclature of the "Causes of Death," in the Report of the Registrar of Vital Statistics (see Appendix), is that which has been in use by the Department for a number of years. This has since been revised, and in future reports the returns of the "Causes of Death" will be based upon the Nomenclature of Diseases of the International Committee appointed by the Royal College of Physicians (Lond.), and adopted by the United States Medical and Public Health Services.—A. R. R.

Appendix

REPORT OF THE GHIEF MEDICAL INSPECTOR: 1893.

By E. GARROTT, M. D., Chief Medical Inspector.

For many years we have been practically free from smallpox, the few sporadic and imported cases that we have met with annually being quickly isolated and the spread inhibited by careful precaution; so that when last June the disease was made manifest by the discovery of a case we proceeded to take the customary sanitary steps, confident in our ability to stamp out the contagion in a short time. But circumstances were peculiarly favorable in 1893 for the spread of contagious and infectious diseases. The Columbian Exposition had attracted enormous crowds to our city; indeed it is estimated that during the six months of the Fair something like thirty million people visited Jackson Park. At this time our hotels, boarding-houses and the residence districts were being taxed to their fullest extent, and very soon a new element in the crowding of the city became apparent-an element affecting particular districts and localities, and entirely different in its characteristics and effects from the one just described. On account of the general business depression felt all over the country, causing factories to shut down, throwing large numbers of men out of employment, and owing to the prominence into which Chicago was brought by the World's Fair, immense numbers of unemployed men poured into the city and caused great over-crowding of the lodging-house districts, where, for obvious reasons the sanitary surroundings were not of Here it was, in June, that small-pox appeared, one the best. case being found on the 12th of that month, this being the first case occurring in the city since the previous February.

A peculiarity of this outbreak was that the disease made its appearance almost simultaneously in three different sections of the city, in localities fully six miles apart, and examination revealed the fact that there were three separate sources of infection. Previous to the recognition of the pest in one of the districts above referred to, we found that there had occurred several mild cases in children who had been so slightly affected as not to require medical attention; no isolation, therefore, in these cases had been carried out, and the children running around with their playmates became powerful factors in disseminating the infection. Indeed, it is surprising under these conditions that more people were not stricken down by the disease.

An epidemic was at that time averted only by the Commissioner's timely appreciation of the situation and the earnest warfare waged against the invading foe. The contagion was, however, repeatedly re-introduced during the succeeding five months, so that we had in July six cases, in August nine cases, in September three cases, in October nine cases. These were all handled as promptly and efficiently as were the initial cases in June, and from none of them was there any spread. The enormous multitudes attracted by the closing days of the Exposition, during which over 2,000,000 people were housed within the city limits, defied our best efforts; introductions of the contagion multiplied and in November there were thirty-five cases, and in December sixty-six cases were reported.

Following is a summary of the vaccinations performed by the corps of Medical Inspectors; these vaccinations having been done in the City Hall, in various factories and business houses in the city, in public and private schools, and, in fact, wherever practicable:

During the month of June, 900 persons; July, 3,460; August, 5,320; September, 7,370; October, 3,000; November, 14,670; and December, 62,050 were vaccinated; making a total of 96,770, which, including those done in the first part of the year previous to June (14,050), makes a grand total of 110,820.

Some idea of the specific value of vaccination in lessening the mortality of small-pox may be gathered from the following statistics: During the year 1893, one-hundred and forty cases of small-pox were treated at the City Quarantine Hospital; of these 117 recovered and 23 died. Of the 117 who recovered, 42 showed some evidence of vaccination and in these cases the disease was uniformly of a mild type; while in the 75 showing no evidence of the operation, there were many cases of great severity; indeed, all of these showed a tendency to a severe form. Among the 23 cases which died, not a single one had ever been vaccinated successfully. These facts are certainly most valuable proofs of the value of vaccination in inducing immunity against variola, and lessening its mortality.

Thanks are due the members of the medical profession of our city, for their prompt report of the occurrence of contagious diseases, thereby enabling us to take the necessary sanitary steps to stamp out the contagion and inhibit its spread. I take pleasure in reporting that prejudice against placarding houses wherein contagion exists, as well as opposition to vaccination, are fast declining and are rapidly becoming things of the past. A good indication also is that some of our parochial schools have adopted the public school requirement, viz., that all pupils before admission must present a certificate of successful vaccination, from some reputable physician. It is to be hoped that in the not very distant future this evidence of protection from small-pox will be exacted from every school-child, not only in this city but throughout the land.

Appended is a table of small-pox in the last thirteen years—1881 to 1893, inclusive.

REPORT OF DEPARTMENT OF HEALTH

Percentages Deaths Per 100.	39.37	35.77	22.03	14.28	33.33	8.33	20.00	•	25.00	0	0	25.00	16.42	36.69
.вяtлв.	1180	1292	13	2	80	-	53	0	-	0	0	2	23	2524
.slstoT	2997	3611	59	14	24	12	10	0	4	0	0	80	140	6879
December .	801	11	0	0	Q	0	0	0	0	0	0	4	66	947
Точетрег.	512	99	0	0	H	0	0	0	1	0	0	1	35	616
October.	414	91	0	0	ŝ	0	0	0	1	0	0	0	6	518
September.	252	10	0	0	1	0	0	0	0	0	0	0	က	266
.tsu&uA	163	28	0	0	62	0	0	0	0	0	0	0	6	202
.Luly.	156	66	0	0	0	0	1	0	0	0	0	0	9	262
.9aul	149	150	5	0	0	0	2	0	1	0	0	-	H	314
. ХвМ	138	259	9	4	က	0	1	0	0	0	0	cs	0	413
April.	133	352	14	\$	အ	3		0	0	0	0	0	Q	513
Магср.	66	638	11	\$2	က	-	0	0	0	0	0	0	0	754
February.	86	603	ရာ	0	50	ŝ	0	0	0	0	0	0	ရာ	918
January.	82	1038	20	9	1	2	0	0	1	0	0	0	က	1156
YEAR.	1881	1882	1883	1884	1885		1887	1888				892		

TABULAR MONTHLY REPORT OF SMALL-POX CASES, WITH ANNUAL MORTALITY AND PERCENTAGE OF DEATHS FROM THE YEAR 1881 TO THE YEAR 1893, INCLUSIVE.

VITAL STATISTICS OF GHIGAGO: 1893.

By CHAS. CALDWELL, M. D., Registrar.

I. DEATHS FROM ALL CAUSES, REGISTERED IN THE CITY OF CHICAGO

During the Year Ended December 31, 1893.

MORTALITY BY MONTHS.

CAUSE OF DEATH.	January.	February.	March.	April.	Мау.	June.	July.	August.	September.	October.	November.	December.	Total.
Class 1—Zymotic Dis- eases. Order 1—													
Miasmatic.													
Small-pox Cholera Infantum "Morbus	12 12	1 3 1	20 3	18 3	13 1	1 56 7	665 18	$ \begin{array}{r} 1 \\ 507 \\ 16 \end{array} $	1 252 4	4 61 1	2 13	13 3	23 1,623 55
Croup Diarrhœa Dysentery	77 8 2	37 4 2	33 11	42 3 1	38 8 2	23 7 1	16 42 15	34 18 15	35 24 16	59 13 9	55 6 1	43 1 3	492 145 67
Diphtheria Entero-Colitis	113 5	95 6	110 22	67 22	76 21 19	71 20	58 92	55 97	.57 59	88 32	84 6	101 9 7	975 389 01
Fever, Cerebro-Spinal Scarlet	10 15 47	25 35	54 47	13 54 42	15 55 25	31 18	30 22	35 9	27 17	21 21	17 24	24 22	388 329
" Malarial Measles	41 5 36	30 4 34	41 4 30	58 13 33	56 8 43	60 5 16	50 5 12	76 5 4	80	81 11 8	43 8 8	45 7 5	83 234
Pyæmia Septicæmia Whooping Cough	6 12 12	6 20 5	7 9 16	10 15 19	3 13 18	6 16 22	3 7 18	3 11 38	7 9 30	6 7 13	2 12 10	1 7 9	60 138 210
Mumps Thrush Malignant Pustule	2		``i	 		 	2 1	2	i	1 1 1		1 1 	6 7 1
Anthrax Carbuncle	 1	· · · ·			· · · ·		···· 1		2	···. 2	1 	· · · · · · · ·	1 6
Total	403	319	416	412	392	366	1066	931	643	444	301	300	5,993
Order 2- Enthetic or Inoculated.													-
Hydrophobia Syphilis—Congenital " —Tertiary	···· 2 1	 3 1	 1	1 1 1	1 2 1	2	1 3 2	1 1	$\left \begin{array}{c}1\\1\\1\end{array}\right $	···· 4	 	· · · 3 3	5 20 13
Total	3	4	1	3	4	.2	6	2	3	4		6	38
Order 3— Dietetic.													
Alcoholism-Chronic	4	2	5	6	3	9	5	7	1	2	7 9	3	54
-Acute Inanition Purpura Opium Habit	12 37 4	30 1	56 1	13 62 3	41 3	87	90 1 1	71	75 2	53 1	55 	44 1	651 18 1
Total	57	40	72	84	60	54	104	86	86	66	65	50	824

REPORT OF DEPARTMENT OF HEALTH

September. November. December. February January. October. August. CAUSE OF DEATH. March. April. Total. June. July. May. Class 2-Constitutional. Order 1-Diathectic. 587 33 2 5 7 4 1 1 3 40 Anæmia 4 5 ... 28 6 60 5 4 5 4 4 Cancer 6 9 4 77 8 5 5 6 12 2 8 5 Liver 7 4 176 .. 9 20 25 17 10 10 Stomach 15 10 15 11 13 21 .. 2 Mouth 1 1 . . . • • .. Breast 3 2 2 6 5 3 5 4 2 4 41 1 4 .. 43 Abdomen 1 2 i 1 • • " Jaw..... 1 1 7 .. 2 Pvlorus 1 ... 1 1 1 1 9 .. 2 2 1 . . . Throat 2 1 1 . . . 7 " 8 94 Uterus 8 7 7 8 7 8 11 8 5 10 " 1 2 1 ... 4 Neck 2 i " 2 10 Pancreas 1 1 1 1 ... 1 " 2 Omentum 5 11 1 " 3 Spleen 2 1 3 Lip 1 2 " 17 3 . . . 5 2 Bowels..... 2 1 1 2 1 1 28 Rectum 2 3 1 1 2 2 6 1 3 6 ···i " 2 2 1 1 2 2 14 1 1 Face 1 1 1 1 1 6 Œsophagus 1 Cheek..... " 2 1 1 1 1 1 2 2 2 2 1 Kidney 1 Pelvis............ .. 3 1 1 1 Telvis 1 1 Ovary 1 1 Tongue 1 1 Thigh 1 1 44 2 46 1 10 3 1 1 2 ... 1 1 " 1 1. ī...... . . . " 1 1 ... 1 " Axilla..... 1 Duodenum 1 Skin Mesentery Colon Thyroid Gland .. 1 " 1 3 1 " 1 ... 1... 1 2 2 1 3 Lead Poisoning 1 Dropsy..... 10 15 Gangrene 3 1 134 16 13 12 10 5 12 9 9 14 9 2 5 1 3 1 1 17 Leucocythemia..... 3 2 1 10 1 1 1 1 Marasmus, Infantile 20 28 34 22 31 14 33 59 42 35 27 33 378 Senile 2 8 8 8 1 1 2 6 3 43 4 8 9 8 9 6 11 8 10 12 10 10 112

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MORTALITY BY MONTHS-Continued.

42

Rheumatism

CAUSE OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Order 2—				-									
Tubercular.											1.3		
Hydrocephalus	2	4	3	5	6	4	13	7	9	6		4	63
Hæmoptysis	2				4	9	5	5	4	3	10	5	47
Caries of the Vertebræ						1		2	1				4
Hip-Joint Disease	2	3	1	3	2	1		1	2	!			15
Phthisis Pulmonalis	198	198	213	203	253	193	186	166	179	147	169	210	2,315
Rachitis	1	2	2	1	3		1	4		2			16
Scrofula					3	2	2				1	1	9
Tabes Mesenterica	3	6	5	1	1	3	1	2	4	1			27
Tubercular Larvngitis	1	1	2	Ī		2	2	2			1	3	15
" Meningitis	11	16	19	10	27	20	17	9	11	3	10	5	158
" Enteritis	1	2	1		2	3	1	4	8	9	3	3	37
Pott's Disease			1			1		-			1	1	4
Tuberculosis Peritonium					1						1.5		- ī
Tubercular Kidney					-	1			1				3
" Peritonitis						2			ī	3	1		7
Tabes Dorsalis							1	••••		1			2
Tubercular Prostate		••••					-		1	-			ĩ
" Spine									î	•••			î
" Nenhritis					•••				-			•••	î
Knee-Joint Disease	•••					•••			•••	i		•••	i
Caries of the Tersus										-			1
Spondylitia	•••									••••		••••	
opondy11118				· ·									1
Total	221	232	247	224	302	242	229	202	222	177	197	233	2,728

MORTALITY BY MONTHS-Continued.

CAUSE OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Class 3-Local.		_	_										
Order 1—													
Nervous.													00
Abscess, Brain	1	1	1	3	1	4	2			4		3	20
Tumor, "	1	5	1	2	1	2	• • •	· · ·	2			2	16
Apoplexy, Cerebral	40	31	41	46	48	34	40	36	41	38	36	41	472
Cerebritis	5	10	12	14	14	9	12	6	δ	6	7	2	102
Congestion, Brain	15	18	18	19	16	24	19	8	12	11	7	11	178
Convulsions, Infantile	132	102	122	161	126	89	145	105	87	81	72	104	1,326
Dementia	2	1	2				4	1			2		12
Epilepsy	2	3	1	7	8	2	4	5	2	7		1	42
Exhaustion	2	1	2	2	2	2	4	2	1	1	6	1	26
Hemiplegia	4	4	4	5	4	3	6	2		2	2	6	42
Meningitis, Cerebral	64	47	105	120	87	52	77	71	54	37	38	52	804
" Spinal	5	4	15	17	11	12	11	8	7	2	2	9	103
Myelitis	3	1	2	1	2	4		1			4	1	19
Neuralgia	5	1											6
Paralysis	26	23	23	27	22	12	15	15	15	16	16	11	221
Softening of the Brain		3	2	2	4	3	1	3	- 3	4	2	4	31
Tetanus	1	1		3	1		3	3	4	4	1		21
Trismus Nascentium	2			2	2	5	5	6	4	3		1	30
" Traumatic					1	2	1			1		1	6
Chorea		1	1	1		1	1						5
Encephalitis		3	1		3							1	- 9
Mania		1		3	3	1	1		3		1		13
Paraplegia		1		1		1	1		3		1		8
Locomotor Ataxia		1	2		3			3	1	5		3	18
Cerebral Thrombus		1			1								1
Nervous Exhaustion					1								1
Cerebral Concussion						1			1				2
Laryngismus Stridulus						1	4	1		2	2	3	13
Sclerosis, Spinal						1			1		1	3	6
Brain Compression							1						1
Multiple Neuritis							1		2	2	2		7
Melancholia								1			1		2
Sclerencephalia				1				1		1			2
Neurasthenia					1			1					1
Sunstroke				1			21		1				22
Concussion, Brain			1								1		
Hysteria		1									1		1
Multiple Sclerosis												1	1
			-	-	-		-			-	-	-	0.54
Total	310	263	855	436	361	265	379	279	249	227	204	262	3,590
	1	1	1	ı	1	1	1	1	I	1	1	1	l

MORTALITY BY MONTHS-Continued.

OF THE CITY OF CHICAGO.

MORTALITY BY MONTHS-Continued.

Order 2— Circulatory. Angina Pectoris	43	0					-	A	Se	Oct	NOI	Dec	Tota
Aneurism Embolism Endocarditis Heart, Organic Disease '' Valvular Disease '' Fatty Pericarditis Phelbitis Neuralgia, Heart Atheroma Sclerosis, Coronary '' Arteries Myocarditis Paralysis of Heart Thrombus Epistaxis Atrophy, Heart Arteries, Calcareous Thrombosis Angina Sclerosis Endocarditis, Malignant . Total	$ \begin{array}{c} 1 \\ 8 \\ 32 \\ 40 \\ 9 \\ 3 \\ 2 \\ 1 \\ \cdots \\ 103 \end{array} $	0 1 5 8 24 429 9 1 8 <td>3 3 1 1 24 25 11 1 6 1 </td> <td>3 2 2 18 37 45 8 36 1 1 </td> <td>5 4 4 9 9 29 32 6 2 2 1 1 1 9 95 95 95 95 95 95 95 95 95 95 95 95 9</td> <td>$\begin{array}{c} 3 \\ 3 \\ 4 \\ 266 \\ 36 \\ 36 \\ 36 \\ 31 \\ \vdots \\ \vdots \\ 22 \\ 6 \\ \vdots \\ \vdots \\ 22 \\ 6 \\ \vdots \\ \vdots \\ 22 \\ 6 \\ 31 \\ 1 \\ 22 \\ 6 \\ 31 \\ 1 \\ 22 \\ 6 \\ 32 \\ 31 \\ 31 \\ 31 \\ 31 \\$</td> <td>3 2 1 10 288 4 3 3 4 1 4 4 1 89</td> <td>$\begin{array}{c} 4 \\ \cdot & 2^{7} \\ 2^{4} \\ 3^{1} \\ 5^{3} \\ 2^{2} \\ \cdot \\ 1 \\ \cdot \\ \cdot \\ 1^{2} \\ 1^{2} \\ \cdot \\$</td> <td>3215000000000000000000000000000000000000</td> <td>$\begin{array}{c} 4 \\ 1 \\ \vdots \\ 6 \\ 3 \\ 0 \\ 3 \\ 3 \\ 5 \\ 3 \\ 3 \\ \vdots \\ 1 \\ \vdots \\ 7 \\ \vdots \\ 1 \\ \vdots \\ 7 \\ \vdots \\ 1 \\ \vdots \\ 9 \\ 4 \end{array}$</td> <td>$\begin{array}{c} 3\\2\\1\\9\\2\\2\\3\\4\\4\\4\\1\\$</td> <td>$\begin{array}{c}$</td> <td>$\begin{array}{c} 43\\ 22\\ 24\\ 108\\ 336\\ 409\\ 81\\ 33\\ 53\\ 9\\ 5\\ 2\\ 1\\ 4\\ 4\\ 33\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 3\\ 2\\ 2\end{array}$</td>	3 3 1 1 24 25 11 1 6 1 	3 2 2 18 37 45 8 36 1 1 	5 4 4 9 9 29 32 6 2 2 1 1 1 9 95 95 95 95 95 95 95 95 95 95 95 95 9	$ \begin{array}{c} 3 \\ 3 \\ 4 \\ 266 \\ 36 \\ 36 \\ 36 \\ 31 \\ \vdots \\ \vdots \\ 22 \\ 6 \\ \vdots \\ \vdots \\ 22 \\ 6 \\ \vdots \\ \vdots \\ 22 \\ 6 \\ 31 \\ 1 \\ 22 \\ 6 \\ 31 \\ 1 \\ 22 \\ 6 \\ 32 \\ 31 \\ 31 \\ 31 \\ 31 \\$	3 2 1 10 288 4 3 3 4 1 4 4 1 89	$\begin{array}{c} 4 \\ \cdot & 2^{7} \\ 2^{4} \\ 3^{1} \\ 5^{3} \\ 2^{2} \\ \cdot \\ 1 \\ \cdot \\ \cdot \\ 1^{2} \\ 1^{2} \\ \cdot \\ $	3215000000000000000000000000000000000000	$\begin{array}{c} 4 \\ 1 \\ \vdots \\ 6 \\ 3 \\ 0 \\ 3 \\ 3 \\ 5 \\ 3 \\ 3 \\ \vdots \\ 1 \\ \vdots \\ 7 \\ \vdots \\ 1 \\ \vdots \\ 7 \\ \vdots \\ 1 \\ \vdots \\ 9 \\ 4 \end{array}$	$ \begin{array}{c} 3\\2\\1\\9\\2\\2\\3\\4\\4\\4\\1\\$	$ \begin{array}{c} $	$\begin{array}{c} 43\\ 22\\ 24\\ 108\\ 336\\ 409\\ 81\\ 33\\ 53\\ 9\\ 5\\ 2\\ 1\\ 4\\ 4\\ 33\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 3\\ 2\\ 2\end{array}$
Order 3— Respiratory. Asthma Edema, Lungs Laryngitis Bronchitis ''Capillary Congestion, Lungs Empyema Hydrothorsx Influenza (La Grippe) Tonsilitis Edema, Glottis Pleuritis Pneumonia Emphysema Coryza Pharyngitis Ulcerated Sore Throat Embolism, Pulmonary Rhinitis	9 4 9 114 72 16 1 1 9 1 2 5 825 5 568	778 11079 184 51 55254 1 504	14 7 6 105 54 11 3 6 3 2 10 308 3 532	$ \begin{array}{c} 13\\6\\4\\100\\77\\13\\6\\\\2\\4\\365\\\\1\\1\\\\609\end{array} $	3 15 6 73 58 17 5 1 13 265 1 	5 3 1 67 23 67 7 3 1 21 41 3 262	····2 ····366 199 4 4 4 ···· 8 2 1 6 79 ···· ··· 156	4 6 3 3 8 16 3 2 2 67 141	534 34239 13 261 2 147	8 5 5 43 16 11 3 1 1 3 118 2 217	$ \begin{array}{c} 11\\ 3\\ 70\\ 33\\ 11\\ 5\\6\\ 3\\5\\ 224\\ 4\\\\ 1\\\\ 379 \end{array} $	8 7 4 86 49 4 3 30 2 2 2 2 50 1 1 1 449	87 68 53 876 519 123 43 3 88 21 16 49 2,457 17 11 1 1 1 1 1

REPORT OF DEPARTMENT OF HEALTH

MORTALITY BY MONTHS-Continued.

CAUSE OF DEATH.	January.	February	March.	April.	May.	June.	July.	August.	September,	October.	November.	December.	Total.
Order 4—	1								-			_	
Digestive.	1		e 										
Stricture Esophagus		.,	1				1			1		1	5
Hypertrophy – Spieen	1			••••				•••				••••	0
Enteronoubrovia		•••		1				1		1	• • •	I	16
Cirrhosis-Liver	15	11	1	4	· · · ·	111	1.10	12	· · ·	· · ·		· · · i	114
Abscess_Liver	10	1	0	0	5	11	10	10	2	0	0	1	95
Typhlitis	1 2	-	3		7	1 7	1		15	11	ŝ	Ā	57
Gastritis	22	12	20	25	23	19	26	28	24	20	18	23	269
Hæmatemesis	2	1~	3	~0	1	10	2	~0	2	~0	2	2	14
Henatitis	Ĩ	7	11	10	8	4	8	5	a a	2	4	3	75
Hernia	4	4	4	6	1	1	10	4	6	7	5	3	55
Intussusception	3	1	1	2	3	1	6	3	1		3	1	25
Jaundice	3	4	3	3	8	7	4	6	2	3	2	3	48
Peritonitis	25	31	39	34	51	37	36	45	52	33	25	46	454
Splenitis						1			1				2
Stomatitis	3	1	2	3	2	1	3	2	1				18
Cholelithiasis	1								1				2
Ulceration—Stomach	5	3	5	2	3	1	1	1	2	2		2	27
" Bowels	• • •	1		1	1	2	•••	10		1	1		17
Appendicitis		3		4	· · •	••	16	11					34
Hemorrhage-Liver		• • •		•••	• • •		1				•••		1
Fistula in Ano			•••	1	• • •	• • •				• • •	1		2
Congration Liver	•••	• • •	• • •	1		••••	• • •		•••	• • •	•••		1
Bunture_Liver	•••	•••	• • •		1	1	• • •	• • •	1	• • •	1		4
Amyloid Liver	• • •	•••	• • •	• • •	1	•••		• • •		• • •		•••	1
Colonitis	•••	•••	••••	••••	1	• • •		•••		•••			ĩ
Enteritis	26	34	46	43	28	34	87	77	83	52	23	31	564
Gastro-Enteritis	30	18	66	55	40	37	166	159	116	61	25	17	790
Hemorrhage-Bowels		2			1				1		1		5
Gangrene "					1							1	2
Obstruction "					7	6	10		6	7	2	3	41
Dyspepsia						1							1
Enlarged Liver							3						2
Bilious Colic							2			1		1	4
Gall Stones	•••						1	•••	•••	•••	•••;	•••	1
Atrophy-Liver	•••	• • •	• • •		•••				1	2	1	2	7
Paralysis—Bowels	• • •	• • •	• • •	• • •	•••	• • •	• • •	20	•••	• • •		••:1	2
Tumor Liver	•••	•••	• • •	• • •	• • •	• • •	•••	~		•••	• • •	1	3
Bilious Coloulus	• • •	• • •		•••	•••	• • •	•••		1		••••		2 9
Lymphedenitis	•••	•••		•••		• • •	• • •	•••	1	•••	2		0
Congestion-Stomach	• • •	••••	•••			•••		•••	1	•••			9
Stricture-Stomach		••••		••••	••••		••••		-	· · ·	T		1
Congestion-Bowels										1	•••		1
Obstruction-Bile Duct.										i		2	8
Cholæmia										2	1		8
Abscess-Stomach												1	1
Tumor-Bowels												1	ī
							-	-	-		-	-	
Total	154	137	228	203	203	173	394	372	336	220	129	164	2,713

CAUSE OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Order 5— Urinary. Bright's Disease Graves' " Addison's " Renal Calculus Tumor—Bladder Diabetes Nephritis. Uræmia Cystitis Tumor—Kidney Hæmaturia Pyelitis. Pyuria Albumenuria. Pyonephrosis Fatty Kidney Hydronephrosis Ulcer—Bladder. Amyloid Kidney	19 1 37 9 5 80	23 4 26 18 2 	25 1 7 420 10 8 1 90	17 31 13 2 66	25 42 13 4 1 1 1 1 1 91	$ \begin{array}{c} 13 \\ & 2 \\ 1 \\ & 8 \\ 24 \\ 13 \\ 3 \\ & \ddots \\ 2 \\ & \ddots \\ 1 \\ & \ddots \\ & & & \\ & & & & $	23 1 9 1 1 1 77	18 7 36 6 3 1 71	21 30 13 1 1 1 1 73	23 11 44 10 8 96	23 2 33 16 3 7 7 87	$\begin{array}{c} 277 \\ 1 \\ \cdots \\ 140 \\ 122 \\ 4 \\ \cdots \\ 1 \\ \cdots \\ 2 \\ \hline 88 \\ \end{array}$	257 2 4 1 67 419 137 39 1 2 4 1 8 8 3 1 1 1 2 954
Order 6— Generative. Metritis Ovarian Tumor "Disease Pelvic Cellulitis Uterine Tumor Pelvic Abscess "Peritonitis Ovarian Operation Uterine Tumor Disease Uterine Tumor Pelvic Tumor Pelvic Tumor Delvic Tumor Disease Total	1	2 3 5	3 2 1 6	2 1 4	···· ···· ···· ···· ···· ···· ···· ···· ····		1 1 2 5	2 2 1 5	1 1 1 1 4	1 6	 1 2 1 1 1 7	1 2 2 2 2 2 1 8	15 16 8 3 12 2 1 7 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 2 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1

MORTALITY BY MONTHS-Continued.

MORTALITY	BY	MONTHS—Continued.	
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Cause of Death.	January.	February.	Maroh.	April.	May.	June.	July.	August.	September.	Octuber.	November.	December.	Total.
Order 8 Locomotary, Integumen- tary.					-								
Abscess	7	8	10	11	3							1	40
Abdominal Tumor		1	•••	• • •								3	4
	2	2			1	•••							5
Foreme	z	1	• • •	2	1	•••							0
Lupomy	•••			3		1	•••		2	• • •	3	••••	0
Cystic Tumor	•••	•••	•••	•••	1	•••		•••	•••	• • •			1
Abscess—Head	•••	• • •		• • •	1	••••	•••	•••	••	• • •			1
" Middle Ear			•••	•••	•••	1			•••	•••			9
" Groin	•••			•••	1	- 1		•••	•••	• • •	• • •		1
Retro-Pharyngeal					••••	1	••••			•••	• • •		1
Perineal				••••		1				••••	• • •		i
Cellulitis						i				••••			î
Abscess-Psoas						. 1	2	2	•••	· 1			5
" Cervical							ĩ	ĩ		-	•••		2
Impetigo							1	-					ĩ
Cellulitis-Thigh								1					ī
Encephaloma]						1					1
Lupus								1					1
Abscess—Temporal Bone								1					1
" Retropharyng'l.							!	1	2				3
Ophthalmic Goitre									1	1			3
Angeioma-Ear									1				1
Ecthyma									1				1
Abscess-Ovary							.			1			1
Tumor-Trachea										1			1
Rectum					••• •					1			1
Elephantiasis										1			1
Abscess-Mastroid	• • •	•••			1				•••		2		3
Submaxillary			•••	•••	••• •						1	•••	1
		•••					•••				•••	3	3
Pharyngeal	•••			••							•••	1	1
	•••	•••		•••		•••				• • •	•••	1	1
Demphique	•••	•• •		•••	•••			•••		•••		1	1
Hometome Neels	•• •	•• •					•••			•••	•••	1	1
næmatoma—neck		· · · ·		•••		•• :	•••	•••	•••	•••	•••	1	1
Total	11	12	10	14	10	7	4	8	7	6	6	12	107

OF THE CITY OF CHICAGO.

September. November. December. February. January. October. August. CAUSE OF DEATH. March. April. Total. June. May. July. Class 4-Developmental. Class = Order 1— Children. 2 ... 8 7 Atelectasis 3 3 3 1 3 24 233 18 14 1 Congenital Debility..... 14 9 6 16 23 16 13 147 1 3 2 Congenital Deformity.... 5 5 1 4 ···i 1 228 . . 1 29 42 1 5 5 5 3 Cyanosis 4 42 Dentition 6 11 5 5 9 9 2 6 1 9 74 Icterus Neonatorum..... 2 2 1 3 1 1 1 1 12 ...3 3 Tedious Birth..... 3 1 2 1 1 1 15 Spina Bifida 2 3 1 2 3 1 3 1 3 20 12 . . . 1 ... Umbilical Hemorrhage... 1 ... 2 1 1 1 9 . . . 1 1 • • 1 1 Neonatorum Ophthalmia. 1 1 Total 42 29 26 36 24 21 26 31 26 29 29 49 368 Order 2-Women. $\begin{array}{c}1\\3&4\end{array}$ 3 Miscarriage 1 3 2 1 1 10 . . . 6 2 2 1 Childbirth..... 6 5 1 1 37 5 2 ... Hemorrhage--PostPart'm 6 2 ... 1 13 ... Vomiting of Pregnancy... Puerperal Peritonitis..... 10 Puerperal Septicæmia..... 3 1 . . . 1 ... 1 1 4 $\begin{bmatrix} \mathbf{1} & \mathbf{12} & \mathbf{5} \\ \mathbf{4} & \mathbf{4} & \mathbf{10} \\ \mathbf{1} & \mathbf{4} & \mathbf{4} \\ \mathbf{2} \end{bmatrix}$. . . 10 6 21 12 20 5 6 15 4 14 128 7 8 ... 4 4 4 5 53 2 .2 Puerperal Convulsions....... 1 1 4 4 2 2 3 5 1 Puerperal Mania 2 1 <td Puerperal Convulsions.... 1 3 2 5 1 1 26 . . . 5 3 . . . 2 . . . 6 1 . . . 5 1 1. . . 2 1 . . . 1 . . . 7 . . . 1 . . . 1 . . . 1 . . . 1 . . . 1 1 Cæsarian Section..... 27 27 35 27 28 25 35 21 22 26 13 21 307 Total..... Order 3-Old Age. Debility, Senile..... 52 36 44 48 59 36 46 28 34 41 42 40 506 Gangrene, Senile.... 1 1 4 2 3 12 1 25 48 46 35 43 36 44 60 37 45 44 518 52 Total..... Order 4-Nutrition. 1 1 4 6 3 1 2 22 4 1 Atrophy ï ĩ 27 Asthenia 4 1 7 6 4 1 1 2 9 3 2 1 2 8 5 13 4 49 Total.....

MORTALITY BY MONTHS-Continued.

CAUSE OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Order 1— Accident.													
Burns	7	9	2	8	8	6	16	10	11	8	10	5	100
Caught in Belt		1		1				•				1	1
Crushed by Piano				1								1	ī
Drowning		1	1	8	21	41	39	25	9	12	3	4	164
Explosion	1			1	1	3				1	1	1	9
Exposure	2	2	1	1	1	1	2	1	1	6	1	1	20
Fracture Skull	1	1	4	4	2	5	4	1	3	2	2	4	33
Jumped from Window								1				1	2
Scald	2	3	5	3	1		3				2	1	20
Shock from R. R. Accid't	25	22	30	22	37	43	41	23	43	32	39	30	387
Shock from St. Car Ac'd't	1	2	5	1	11	15	13	4	6	13	4		75
Shock from Elevator	4	1	4	5	2	2	1	1		1	1	3	25
Shock from Sur. Operat'n	9	13	7	2	5	7	2	5	5	16	6	9	86
Wound, Fall	15	17	12	7	19	24	13	15	17	14	19	8	180
Gunshot	5	1	2	1	3	3	2	1		3	4	4	29
Poisoned-Opium	1	•••	1					1				2	5
Laudanum	1	1			2			•••	1				5
Chloroform			•••		1			1	•••		•••		2
Morphine	4	3	3	2	1		;	1	•••	1	1	•••	16
"" Chlorol	•••	1	• • •	• • •	• • •	;	1			1			3
" Arsonia	•••	1	•••		•••	1		•••	1			1	4
" Nicotine	••••		•••	~									2
" Nercotic	••••	•••	•	••••	•••	•••		•••				•••	0
" Benzine	••••	•••	•••			•••	••••		1	···;	•••		1
" Paregoric			•••	•••				••••		-	••••		1
" Horse Medicine	•••	•••	••••	•••	•••				••••		1		1
" Fusel Oil								••••	••••		i		1
Struck by Telegraph Pole	1										. 1		i
Run Over by Wagon	1	1	1	11	10	11	5	6		5	5	1	57
Crushed	5	2	10	5	7	4	1	1	2	2	1		40
Fracture Thigh	1		2										3
Frozen		1											1
Fracture Pelvis		1											1
Poisoned		4	1				2						7
Asphyxiated	4	6	3	6	22	6	4	14	5	13	5	3	91
Wound, Lacerated		1	1	1	2	1	2	1	1	1			11
Kicked by Horse			1			1	1	1	2	1			7
Struck by Boom			2										2
Struck by Brick			1										1
Choked	•••			1									1
Swallowing Rubber Nip'le	•••			1		•••		•••					1
Electricity	•••	• • •		1		•••	•••	•••	1				2
Fracture, Neck	•••			1		1	•••	•••		1			3
Struck by Emery Wheel .	•••	•••			1	•••	•••	• • • •		•••			1
Rupture, Vessel		•••	•••	• • •	1	•••	•••				•••		1
Struck by Derrick	•••		•••	•••	I	•••	•••	•••	1		•••	•••	2
				10.00									

MORTALITY BY MONTHS-Continued.

OF THE CITY OF CHICAGO.

Cause of Death.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Class 5-Violence.		_				_	_						
Order 1—													
Accident—Continued.				5.6									
Panny Dolt		• • •	• • •	•••	1	•••				•••	•••		1
Abscess from Blow	• • •	• • •	•••	•••	•••	1			•••		• • •		1
Caught in Machinerv					••••	2							2
Strangulated						1							1
Foreign Body in Throat							1						1
Hanging						•••	1			•••			1
Tramped on		• • •	•••	•••	• • •	• • •	•••	1	• • •			•••	1
Struck by Cake of Ice	• •	• • •	••••			••••		1	· · i		• •		1
Fracture, Spine											1		i
Bean Blower											1		1
Thrown from Buggy											1		1
Total	90	94	99	95	160	180	154	115	111	134	110	80	1,429
Order 2— Homicide.													
Murder	5	2		1	5	6	5			1			25
Manslaughter	2		4	7	3		9	14	12	13	5	10	79
Total	7	2	4	8	8	6	14	14	12	14	5	10	104
Order 3—							i						
Suicide.									0.0				
Jumped from Window				1	1		1	· · · ·					3
Shooting	10	5	8	5	11	9	12	21	8	6	9	13	117
Hanging	D	4	4	0	1	11	0	4	2	1		0	6U 17
Cutting Throat	1	. 3	4	4	6	1 4		1 1	1	1 1	1	2	27
Poisoned. Morphine	4		1	1	4	4	5	Î	2	i	4	3	29
" Arsenic	1				1		3				1	2	7
" Chloroform	1			1	1						1		4
" Carbolic Acid	2		2		3	4	1	···;			2	1	15
" Paris Green			1					1	1	2		2	7
" Laudarium				1	1 9			1.19	1		1.0		à
" Rough on Rats.				1	3	3	2	2	-		-	1	11
" Opium	(:::				1		1	1	1			1	4
" Potash			1			1		1			1		1
" Fly Paper		1					1						1
" Prussic Acid	1	1					1						1
Codeine											1		1
" Nargotia	1			1	1	1		1					10
" Phosphorus	-	1 *	1		1		~					1	10
Jumped before Train	2		1					1		1			Â
Strangulated	1 1												1
Asphyxiated		1	1	1			1	8	4	ł	11		12
Knife Wound		1											1
Total	29	16	22	3	34	89	35	38	32	2 27	7 24	32	858

MORTALITY BY MONTHS-Continued.

REPORT OF DEPARTMENT OF HEALTH

II.	NUMBER	OF	DEATHS	IN	HOSPITALS,	PUBLIC	INSTITUTIONS,
			ETC.,	BY	MONTHS: 18	93.	

	inuary.	ebruary.	arch.	pril.	ay.	ine.	ıly.	ugust.	ptember.	ctober.	ovember.	ecember.	ptal.
	Js	H	M	A	M	F	F	A	Se	Ŏ	N	Ă	H_
Alexian Bros. Hospital Chicago Emergency Hospital Chicago Small-Pox Hospital	17		18 1 1	28 2	11 3	11 4	12	11 1 1	11 	11	12	2 13 1 10	172 19 20
Cook County Hospital	82	83	8 80	126	89	62	78	70	65	83	76	70	964
Foundlings' Home	4	1	4	3	3	1	3	3	1		1 8	1	27
German Hospital.	8	2	6	5	1	1		3			2	2 2	30
Habromann Harrital	•••				•••	•••		•••	•••				
Home for Incurablus	1		2	•••	1	1	1	1	2	3	1	8	16
Home for A ged		12	5	2	• • •		•••	5	3	3	4		21
Linnman Hospital	8			1		9	4	0	3	9	3	2	42
Marine II S Hospital	· · · ·	1	1	20	••••		•••	•••	••••				4
Maurice Porter's Mem Hospital	o			~	4	~	1	э	ð	2	1	~	23
Mercy Hospital	12	1.1	14	20	11		11		ġ		10	11	190
Michael Reese Hospital	7	7	4	20	5	Å	2	6	9	6	8	14	140
Presbyterian Hospital	ġ	Ġ	14	14	6	ā	ã	14	11	10	6	11	110
St. Elizabeth's Hospital.	23	10	14	18	11	6	10	7	1	10	10	12	136
St. Joseph's Hospital	2	2	7	8	5	1	1	2	4	5	3	10	42
St. Luke's Hospital	11	11	6	12	6	ī	3	7	9	3	12	g	90
St. Vincent's Infant Asylum.	26	14	22	31	22	18	26	20	21	8	131	15	254
Swedish Home of Mercy.	1	1	1	1	1	1	1	2	1	4	2	10	16
Wesley Hospital	1	Î	ī	2	2	3	2	-	1	6	3	·	29
Women and Children's Hospital	5	4	3	2	ĩ	2	5			2	2	2	28
Women's Hospital of Chicago			1	2	2	1	1	2	1	ĩ	2	ĩ	14
Other Hospitals		1	6	9	1	6	9	8	8	4	7	5	64
Other Asylums	7	8	3	3	1	2	21	2	4		4	4	59
Hotels and Public Places	9	11	4	8	8	9	11	8	9	17	12	11	117
Found in River		1		7	2]				10
Found in Lake			1	2	2								5
Park Lakes													
House of Correction													
Little Sisters of the Poor.													
Washingtonian Home	1				1								2
Lincoln Park Sanitarium.	1	1				1	1]					4
Home for Friendless			3										, 3
Deaconesses' Institute				••		•••							
World's Fair Hospital					•••	•••		•••					
Detention Heanital						•••		•••					
Provident Heavital		1	1	1	5			•••		••			8
Englewood Home	1				•••		1	•••	•••	•••			2
County Isil	•••	1	•••					••• •		•••			1
Bentist Hognitel	1	•••		•••		•••	•••	•••	•••	•••		•••	
Chicago Charity Hospital	1	••••		•••		•••		•••	•••				1
Chicago Hommonathic Hospital	1	1		•••	э.	•••	•••	1.	•••	2	z	1	11
Patrol Wagon	•••	2				•••		•••	•••	•••	••••		1
Augustana Hospital		~			•••			· • • • •	•••		•••		ž
Bennett Hospital			1.	•••				1		0	•••	1	0
National Temperance Hospital		••••	-		· ; ·			•••	-		••	T	3
Police Station		••••		••	1.		2	••••	•••	0	•••	•••	0
Old People's Home							ĩ	· • • •		•••	••		2
									-		· · ·	~	0
Total	37	200	23013	1112	8081	62	819'1	1871	79	205	218	200	2,556

52

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111. SUMMARY OF DEATHS FROM CLASSIFIED CAUSES, BY MONTHS: 1893.

CAUSE OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Class 1—Zymotic Diseases. Order 1—Miasmatic "2—Inoculated "3—Dietetic	403 3 57	319 4 40	416 1 72	412 3 84	392 4 60	366 2 54	1066 6 104	931 2 86	643 3 86	444 4 66	301 65	300 6 50	5993 38 824
Total	463	363	489	499	456	422	1176	1019	732	514	366	356	6855
Class 2—Constitutional. Order 1—Diathetic "2—Tubercular Total	106 221 327	113 232 345	124 247 371	121 224 345	101 302 403	87 242 329	106 229 335	143 202 345	124 222 346	109 177 286	109 197 306	109 233 342	1352 2728 4080
Class 3—Local. Order 1—Nervous "2—Circulatory "3—Respiratory "4—Digestive "5—Urinary "6—Generative "7—Locomotory Integumentary.	310 103 568 154 80 2 11	263 106 504 137 68 5 12	355 91 532 228 90 6 10	436 121 609 203 66 4 14	361 95 461 203 91 5 10	265 96 262 173 67 4 7	379 89 156 394 77 5 4	279 84 141 372 71 5 8	249 89 147 336 73 4 7	227 94 217 220 96 6 6	204 89 379 129 87 7 6	262 120 449 164 88 8 12	3590 1177 4425 2713 954 61 107
Total	1228	1095	1312	1453	1226	874	1104	960	905	866	901	1103	13027
Class 4—Developmental. Order 1—Children "2—Women "3—Old Age "4—Nutrition	42 27 52 8	29 27 36 5	26 35 44 13	36 27 48 9	24 28 60 4	21 25 37 2	26 35 46 3	31 21 28 2	26 22 35 1	29 26 45 2	29 13 44	49 21 43 	368 307 518 49
Total	129	97	118	120	116	85	110	82	84	102	86	113	1242
Class 5— <i>Violence</i> . Order 1—Accident "2—Homicide "3—Suicide	90 7 29	94 2 16	99 4 22	95 8 25	160 8 34	180 6 39	154 14 35	115 14 38	111 12 32	134 14 27	110 5 24	80 10 32	1422 104 353
Total	126	112	125	128	202	225	203	167	155	175	139	122	1879
Grand Total	2273	2012	2415	2545	2403	1935	2928	2573	2222	1943	1798	2036	27083

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total
Nativities. Chicago. United States—Elsewhere Germany. Ireland. Canada. England. Norway. Sweden Poland. Bohemia. Other Foreign Countries. Atlantic Ocean Unknown Total.	962 475 303 150 97 41 34 57 32 53 95 34 2273	850 501 205 133 83 49 23 45 19 31 88 35 2012	1028 628 235 164 39 42 28 58 28 42 90 1 32 2415	998 657 296 199 43 33 30 58 23 37 115 1 55 2545	963 561 301 154 44 48 29 62 37 41 108 1 54 2403	746 484 237 139 29 44 23 43 21 22 95 3 49 1935	$ \begin{array}{c} 1672 \\ 515 \\ 259 \\ 147 \\ 28 \\ 35 \\ 33 \\ 61 \\ 29 \\ 25 \\ 77 \\ \dots \\ 47 \\ 2928 \\ \end{array} $	1482 430 247 125 32 31 25 56 28 18 55 1 33 2573	$ \begin{array}{r} 1205 \\ 366 \\ 222 \\ 133 \\ 26 \\ 34 \\ 24 \\ 59 \\ 28 \\ 33 \\ 64 \\ 1 \\ 27 \\ \hline 2222 \end{array} $	829 405 236 136 39 29 57 29 29 81 37	657 429 260 155 38 38 19 43 19 37 78 25 1798	821 425 266 165 36 36 34 67 28 37 88 37 88 33 2036	12213 5876 3067 1800 421 470 341 666 321 405 1034 8 461 27083
Ages. Under 5 years From 1 to 2 years 2 to 3 " 3 to 4 " 4 to 5 " 5 to 10 " 2 0 to 30 " 2 0 to 30 " 4 0 to 50 " 4 0 to 50 " 5 0 to 60 " 5 0 to 60 " 6 0 to 70 " 7 0 to 80 " 9 0 to 100 " 100 and upwards Unknown Total	1004 566 188 121 74 55 108 98 209 176 158 146 116 56 4 2273	887 553 164 94 57 39 79 78 205 215 170 124 182 79 39 39 4 2012	1109 704 194 97 71 43 99 111 257 229 173 142 147 106 41 1 1 2415	10566 675 1777 92 74 38 140 1311 2555 259 185 182 167 1066 600 4 2545	9655 567 182 101 71 44 115 140 280 280 240 165 178 148 123 39 97 1 2 2403	766 500 125 56 46 39 84 124 201 193 184 145 113 88 34 201 1935	17755 13600 274 62 45 34 72 2117 201 223 164 126 127 78 36 6 6 2928	1508 1077 292 66 50 23 67 103 190 163 169 137 117 81 32 6 2573	1135 784 225 53 37 36 65 86 65 214 205 151 140 119 76 26 5 2222	7711 5011 1211 622 411 46 900 1066 2022 2088 1499 1500 1344 977 300 05 511 	6300 3900 800 64 577 399 800 966 1944 1655 1844 1533 1099 49 949 1798	757 468 127 74 45 43 .97 79 223 216 164 187 158 104 47 2036	12363 8125 2149 942 668 479 1096 1269 2620 2525 2034 1822 1641 1163 489 52 2 7 7 27083
Sex. Males Females Total Social Relations. Married Widows Single Total Color	$ \begin{array}{r} 1228 \\ 1045 \\ 2273 \\ 547 \\ 138 \\ 88 \\ 1500 \\ 2273 \\ \hline $	1103 909 2012 579 97 58 1278 2012	1206 1119 2415 595 147 88 1585 2415	1405 1140 2545 688 162 91 1604 2545	$ \begin{array}{r} 1336\\1067\\-2403\\646\\157\\72\\1528\\-2403\end{array} $	1135 800 1935 556 99 58 1222 1935	1473 1455 2928 537 93 68 2230 2928	1347 1226 2573 536 123 61 1853 2573	$ \begin{array}{r} 1207 \\ 1015 \\ \hline 2222 \\ 611 \\ 107 \\ 68 \\ 1436 \\ \hline 2222 \\ \hline $	1091 852 1943 566 104 69 1204 1943	962 836 1798 535 161 67 1035 1798	1045 991 2036 606 154 89 1187 2036	14628 12455 27083 7002 1542 877 17662 27083
White	2230 43 2273	1973 39 2012	2374 41 2415	2476 69 2545	2357 46 2403	1900 35 1935	2876 52 2928	2520 53 2573	2189 33 2222	1919 24 1943	1767 31 1798	1998 38 2036	26579 504 27083

IV. SUMMARY OF DEATHS BY NATIVITY, AGE, SEX, SOCIAL Relations and Color, by Months: 1893.

	TOTAL DEATHS IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward	First	34	23	22	36	26	22	28	25	15	12	18	17	278
••	Second	30	45	40	56	40	32	35	40	44	22	35	30	449
	Third	36	33	39	58	44	28	41	53	42	34	23	35	466
66	Fourth	48	41	45	52	33	28	35	26	27	31	29	38	433
66	Fifth	80	57	92	90	62	62	84	77	63	59	57	41	824
**	Sixth	92	78	88	81	96	73	149	139	106	76	63	81	1122
	Seventh	53	48	55	57	61	50	73	83	56	45	36	35	652
**	Eighth	60	52	54	43	65	43	78	69	52	40	34	49	639
	Ninth	67	70	55	76	68	43	92	85	84	58	43	74	815
	Tenth	100	90	92	105	99	68	148	135	103	57	57	82	1136
	Eleventh	42	37	54	55	38	30	50	44	37	36	31	33	487
	Twelith	104	82	107	104	92	72	73	64	68	55	58	90	969
	Thirteenth	75	60	68	76	67	58	59	59	34	54	43	51	704
	Fourteenth	14	63	82	08	84	03	121	81	82	00	55	00	905
	Filteenth	70	00	81	99	84		118	93	100	00	12	00	1174
	Sixteenth	95	10	90	98	74	80	159	148	108	71	80	80	1174
	Seventeenth.	91	3/	00	95	20	20	00	34	31	29	18	91	954
	Ninoteenth	31	30	30	30	30	29	105	107	20	19	29	70	002
	Twontieth	19	94	40	. 25	40	19	100	201	25	09	92	38	387
	Twenty first	50	41	49	17	60	20	19	50	20	49	24	59	536
**	Twenty-mst.	35	48	40	53	60	31	46	46	48	53	90	34	541
	Twenty-third	58	56	59	57	57	37	82	66	61	48	41	60	682
**	Twenty-fourth	21	25	42	46	33	25	21	22	26	27	28	35	351
**	Twenty-fifth	33	21	46	52	42	37	39	33	36	34	21	34	428
	Twenty-sixth	58	51	59	55	73	36	73	74	58	53	56	63	709
	Twenty-seventh	25	19	18	13	11	10	31	37	21	20	27	20	252
	Twenty-eighth	24	22	24	28	16	15	27	15	12	14	14	26	237
	Twenty-ninth	62	46	66	72	38	52	86	76	70	63	44	41	716
**	Thirtieth	119	120	117	153	94	83	174	136	127	89	94	100	1406
**	Thirty-first	61	54	62	56	62	38	57	55	48	49	50	35	627
	Thirty-second	43	39	54	56	60	28	43	33	39	39	50	50	534
	Thirty-third	76	55	66	72	77	60	86	84	63	45	33	44	761
- **	Thirty-fourth	63	50	60	58	56	43	68	75	61	52	47	66	699
Publi	c Institutions	176	172	240	250	223	220	220	190	179	202	213	183	2447
By V	iolence	126	112	125	128	214	232	224	170	162	185	161	132	1971
	Total	2273	2012	2415	2545	2403	1935	2928	2573	2222	1943	1798	2036	27083

V. MORTALITY BY WARDS AND MONTHS: 1893.

VI.	MORTALITY	OF	CHILDREN,	BY	WARDS	AND	MONTHS:	1893.

DEATH UNDER FIVE YEARS OF AGE IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First. ** Second. ** Third. ** Fourth. ** Fifth. ** Sixth. ** Seventh. ** Seventh. ** Seventh. ** Ninth. ** Tenth. ** Tenth. ** Tenth. ** Tenth. ** Thirteenth. ** Fourteenth. ** Fourteenth. ** Fifteenth. ** Seventeenth. ** Seventeenth. ** Seventeenth. ** Seventeenth. ** Nineteenth. ** Twenty-first. ** Twenty-first. ** Twenty-sixth. ** Twenty-sixth. ** Twenty-sighth. ** Twenty-sighth. ** Twenty-sighth. ** Twenty-sighth. ** Twenty-sighth. ** Twenty-sighth. ** Twenty-sighth. ** Twenty-sighth. ** Thirty-second. ** Thirty-fourth. ** Thirty-fourth.	$\begin{array}{c} 111\\ 133\\ 50\\ 533\\ 41\\ 56\\ 16\\ 355\\ 333\\ 40\\ 59\\ 20\\ 111\\ 41\\ 12\\ 22\\ 14\\ 41\\ 12\\ 22\\ 14\\ 43\\ 31\\ 11\\ 12\\ 23\\ 88\\ 111\\ 12\\ 23\\ 88\\ 111\\ 12\\ 23\\ 88\\ 111\\ 12\\ 28\\ 28\\ 28\\ 111\\ 12\\ 28\\ 28\\ 111\\ 12\\ 28\\ 28\\ 28\\ 111\\ 12\\ 28\\ 28\\ 28\\ 111\\ 12\\ 28\\ 28\\ 28\\ 28\\ 28\\ 28\\ 28\\ 28\\ 28\\ 2$	$\begin{array}{c} 133\\ 8\\ 8\\ 14\\ 328\\ 288\\ 366\\ 555\\ 100\\ 323\\ 366\\ 44\\ 255\\ 102\\ 333\\ 366\\ 44\\ 255\\ 14\\ 43\\ 42\\ 55\\ 102\\ 10\\ 11\\ 12\\ 666\\ 24\\ 41\\ 322\\ 325\\ 35\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10$	$\begin{array}{c} 9\\ 9\\ 140\\ 188\\ 400\\ 229\\ 300\\ 222\\ 422\\ 422\\ 422\\ 422\\ 311\\ 477\\ 511\\ 322\\ 718\\ 512\\ 177\\ 322\\ 718\\ 512\\ 101\\ 377\\ 101\\ 372\\ 101\\ 172\\ 464\\ 466\\ 466\\ 466\\ 477\\ 477\\ 477\\ 477$	$\begin{array}{c} 12\\ 222\\ 17\\ 17\\ 466\\ 24\\ 211\\ 300\\ 555\\ 122\\ 400\\ 322\\ 555\\ 124\\ 400\\ 322\\ 27\\ 133\\ 302\\ 22\\ 166\\ 291\\ 923\\ 24\\ 433\\ 4\\ 334\\ 4\\ 3\\ 334\\ 4\\ 334$	$\begin{array}{c} 13\\ 12\\ 24\\ 53\\ 37\\ 38\\ 6\\ 38\\ 38\\ 53\\ 11\\ 29\\ 44\\ 48\\ 18\\ 12\\ 26\\ 44\\ 15\\ 33\\ 26\\ 8\\ 11\\ 13\\ 39\\ 3\\ 7\\ 14\\ 42\\ 29\\ 17\\ 50\\ 30\\ 6\\ 4\end{array}$	$\begin{array}{c} 6 \\ 6 \\ 5 \\ 8 \\ 32 \\ 1 \\ 34 \\ 22 \\ 19 \\ 44 \\ 10 \\ 22 \\ 23 \\ 6 \\ 36 \\ 47 \\ 10 \\ 13 \\ 38 \\ 5 \\ 11 \\ 13 \\ 18 \\ 10 \\ 15 \\ 2 \\ 2 \\ 9 \\ 22 \\ 36 \\ 2 \\ 9 \\ 22 \\ 2 \\ 2 \\ 9 \\ 22 \\ 2 \\ 2 \\$	$\begin{array}{c} 100\\ 16\\ 14\\ 13\\ 65\\ 600\\ 69\\ 119\\ 280\\ 40\\ 31\\ 96\\ 87\\ 129\\ 44\\ 36\\ 199\\ 299\\ 16\\ 53\\ 26\\ 211\\ 123\\ 26\\ 211\\ 6\\ 123\\ 35\\ 27\\ 70\\ 43\\ 29\\ 29\\ 29\\ 16\\ 123\\ 35\\ 27\\ 70\\ 43\\ 29\\ 29\\ 29\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20$	$\begin{array}{c} 155\\ 177\\ 1023\\ 599\\ 533\\ 589\\ 606\\ 666\\ 1122\\ 206\\ 311\\ 122\\ 266\\ 311\\ 122\\ 266\\ 311\\ 122\\ 266\\ 311\\ 122\\ 155\\ 122\\ 77\\ 8\\ 999\\ 37\\ 71\\ 37\\ 67\\ 501\\ 51\\ 122\\ 122\\ 122\\ 155\\ 122\\ 122\\ 122$	$\begin{array}{c} 5\\5\\14\\15\\15\\38\\66\\33\\3\\52\\20\\19\\60\\9\\221\\16\\8\\22\\3\\3\\7\\14\\8\\12\\7\\7\\9\\28\\10\\4\\2\\3\\3\\4\\4\\3\\3\\4\\4\\2\\3\\3\\4\\2\\3\\3\\4\\2\\3\\3\\3\\3$	$\begin{array}{c} 4 \\ 7 \\ 7 \\ 9 \\ 266 \\ 330 \\ 184 \\ 355 \\ 161 \\ 211 \\ 388 \\ 421 \\ 176 \\ 636 \\ 636 \\ 161 \\ 144 \\ 240 \\ 811 \\ 117 \\ 54 \\ 446 \\ 288 \\ 111 \\ 18 \\ 219 \\ 219 \\ 18 \\ 219 \\ 219 \\ 18 \\ 219 \\ 210 \\$	3059222339417223347855912270159430122744251718659 1270159430122744251718659 1270159430122744251718659	7118 1221444161 21734299241 2883834313933187712886938771315505 1544228383 117712886938771315505 154422863 115505	$\begin{array}{c} 108\\ 158\\ 135\\ 153\\ 454\\ 66\\ 392\\ 370\\ 464\\ 4718\\ 1811\\ 304\\ 529\\ 586\\ 775\\ 250\\ 157\\ 506\\ 200\\ 222\\ 254\\ 125\\ 132\\ 348\\ 120\\ 175\\ 132\\ 383\\ 802\\ 826\\ 1883\\ 802\\ 802\\ 802\\ 802\\ 802\\ 802\\ 802\\ 802$
Total Premature Still Births	1004 80 129	887 76 160	1109 89 197	1056 75 154	965 87 123	766 98 142	1775 83 144	1508 74 131	1135 76 131	771 89 149	630 73 153	757 76 162	12363 986 1775
T otal	209	236	286	229	210	240	227	205	207	238	226	238	2751

VII.	DEATHS	FROM	SPECIFIED	DISEASES,	BY	MONTHS:	1893.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Small-Pox. Measles Scarlet Fever Diphtheria Croup Whooping Cough Typhoid Fever Cerebro Spinal Fever Malarial Fever Diarrhoeal Diseases. Other Zymotic Diseases.	36 47 113 77 12 41 15 5 25 18	1 34 35 95 37 5 30 25 4 15 26	30 47 110 33 16 41 54 4 53 16	33 42 67 42 19 58 54 13 44 25	43 25 76 38 18 56 55 8 44 16	1 16 18 71 23 22 60 31 5 84 22	12 22 58 16 18 55 30 5 814 10	1 9 55 34 38 76 35 637 14	1 57 57 35 30 86 27 85 351 16	4 8 21 88 59 13 81 21 11 115 13	2 8 24 84 55 10 43 17 8 26 14	13 5 22 101 43 9 43 24 7 16 8	23 234 329 975 492 210 670 388 83 2224 198
Total Zymotic Diseases	389	307	404	397	379	353	1040	908	633	434	291	291	5826
Phthisis Pulmonalis Acute Lung Diseases	198 532	198 466	213 488	203 559	253 416	193 239	186 144	166 126	179 129	147 191	169 343	210 391	2315 4024

VIII.	DEATHS	FROM	ZYMOTIC	DISEASES,	BY	WARDS	AND
			MONTHS :	1893.			

	· · · · · · · · · · · · · · · · · · ·													
	WARDS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November:	December.	Total.
War "" " " " " " " " " " " " " " " " " "	d First. Second . Third . Fourth . Fifth . Sixth. Seventh. Eighth . Ninth . Tenth . Sevententh . Fourteenth . Fourteenth . Sixteenth . Seventeenth . Eighteenth . Nineteenth . Twenty-first . Twenty-first . Twenty-second . Twenty-sixth . Twenty-sixth . Twenty-sixth . Twenty-sixth . Twenty-sixth . Twenty-sixth . Twenty-sixth . Twenty-sighth . Twenty-iffth . Twenty-second . Thirtieth . Thirty-first . Thirty-forst . Thirty-fourth		2 2 6 6 122 144 77 13 14 11 121 3 144 7 12 12 13 14 9 8 22 8 7 17 12 12 12 12 12 12 14 12 12 12 14 12 12 12 12 12 12 12 12 12 12	$\begin{array}{c} 2\\ 8\\ 4\\ 8\\ 8\\ 18\\ 266\\ 14\\ 133\\ 288\\ 156\\ 7\\ 7\\ 11\\ 10\\ 11\\ 12\\ 11\\ 11\\ 16\\ 17\\ 7\\ 11\\ 15\\ 22\\ 17\\ 12\\ 19\\ 15\\ 1\end{array}$	3 8 8 7 7 13 15 18 18 144 100 166 8 20 202 29 9 27 7 6 20 20 22 29 9 27 7 6 20 20 20 20 20 20 20 20 20 16 16 16 16 16 16 16 16 16 16 16 16 16	$\begin{array}{c} 4\\ 10\\ 111\\ 3\\ 3\\ 122\\ 8\\ 8\\ 11\\ 13\\ 3\\ 8\\ 12\\ 13\\ 3\\ 18\\ 5\\ 100\\ 16\\ 8\\ 12\\ 7\\ 15\\ 4\\ 8\\ 8\\ 2\\ 1\\ 15\\ 17\\ 12\\ 14\\ 8\\ 18\\ 2\\ 1\\ 17\\ 12\\ 13\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3$	$\begin{array}{c} 3 \\ 3 \\ 5 \\ 8 \\ 100 \\ 233 \\ 133 \\ 100 \\ 6 \\ 255 \\ 44 \\ 16 \\ 122 \\ 211 \\ 144 \\ 77 \\ 111 \\ 555 \\ 88 \\ 86 \\ 99 \\ 13 \\ 155 \\ 311 \\ 153 \\ 712 \\ 21 \\ \hline \end{array}$	$\begin{array}{c} 5\\ 6\\ 111\\ 5\\ 5\\ 300\\ 755\\ 311\\ 400\\ 444\\ 199\\ 288\\ 189\\ 288\\ 100\\ 199\\ 28\\ 41\\ 11\\ 133\\ 422\\ 17\\ 26\\ 255\\ 37\\ \end{array}$	$\begin{array}{c} 8 \\ 100 \\ 9 \\ 311 \\ 766 \\ 777 \\ 408 \\ 888 \\ 161 \\ 120 \\ 775 \\ 408 \\ 888 \\ 234 \\ 477 \\ 188 \\ 71 \\ 741 \\ 259 \\ 929 \\ 418 \\ 888 $	$\begin{array}{c} 2\\ 14\\ 111\\ 7\\ 24\\ 33\\ 38\\ 14\\ 10\\ 28\\ 28\\ 37\\ 16\\ 9\\ 6\\ 8\\ 9\\ 7\\ 6\\ 9\\ 8\\ 3\\ 31\\ 44\\ 18\\ 7\\ 22\\ 23\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 4\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 4\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 4\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 4\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 4\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 4\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 4\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 22\\ 23\\ 3\\ 4\\ 4\\ 18\\ 7\\ 7\\ 18\\ 18\\ 7\\ 18\\ 18\\ 7\\ 18\\ 18\\ 18\\ 7\\ 18\\ 18\\ 18\\ 18\\ 18\\ 18\\ 18\\ 18\\ 18\\ 18$	$\begin{array}{c} 3\\ 4\\ 4\\ 7\\ 8\\ 21\\ 30\\ 14\\ 130\\ 16\\ 11\\ 12\\ 8\\ 8\\ 10\\ 15\\ 3\\ 3\\ 10\\ 15\\ 3\\ 3\\ 10\\ 15\\ 3\\ 3\\ 10\\ 15\\ 3\\ 3\\ 10\\ 15\\ 3\\ 3\\ 10\\ 15\\ 3\\ 3\\ 10\\ 16\\ 12\\ 14\\ 15\\ 3\\ 3\\ 0\\ 16\\ 12\\ 2\\ 3\\ 3\\ 0\\ 16\\ 12\\ 14\\ 15\\ 3\\ 3\\ 0\\ 14\\ 15\\ 3\\ 3\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$	$\begin{array}{c} 1 \\ 3 \\ 3 \\ 6 \\ 6 \\ 11 \\ 15 \\ 77 \\ 100 \\ 100 \\ 57 \\ 77 \\ 6 \\ 8 \\ 14 \\ 18 \\ 2 \\ 2 \\ 5 \\ 5 \\ 10 \\ 18 \\ 13 \\ 78 \\ 11 \\ 18 \\ 13 \\ 78 \\ 11 \\ 24 \\ \end{array}$	$\begin{array}{r} 4\\ 3\\ 2\\ 8\\ 8\\ 8\\ 8\\ 155\\ 6\\ 6\\ 3\\ 3\\ 14\\ 2\\ 6\\ 6\\ 7\\ 13\\ 155\\ 1\\ 1\\ 3\\ 8\\ 9\\ 5\\ 3\\ 5\\ 8\\ 15\\ 5\\ 8\\ 1\\ 7\\ 3\\ 3\\ 5\\ 14\\ 3\\ 11\\ 8\\ 11\\ 8\\ 11\\ 3\\ 3\\ 11\\ 8\\ 11\\ 3\\ 11\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10$	$\begin{array}{r} 43\\ 84\\ 86\\ 94\\ 210\\ 365\\ 189\\ 182\\ 219\\ 325\\ 105\\ 182\\ 105\\ 267\\ 288\\ 380\\ 110\\ 74\\ 224\\ 105\\ 966\\ 110\\ 74\\ 224\\ 105\\ 966\\ 105\\ 966\\ 105\\ 966\\ 105\\ 966\\ 105\\ 105\\ 966\\ 105\\ 105\\ 966\\ 105\\ 105\\ 105\\ 966\\ 105\\ 105\\ 105\\ 105\\ 105\\ 105\\ 105\\ 105$
Tot	al	451	371	528	510	392	366	1066	931	643	444	301	300	6303

	Wards	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December.	Total.
Ward 	First							$1 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 1 \\ 2 \\ 5 \\ 5 \\ 4 \\ 1 \\ 4 \\ 3 \\ 2 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 2 \\ 2 \\ 1 \\ 1$	341 277211193341 22222 12222 12222 12222		27228516143511 14122 52 3842443	2 .264236222 .22566	2 2 2 2 2 3 1 7 7 1 2 6666 521 7 3 4 12 2 2 1 1 5 2 5 5 12	4 18 16 20 44 41 18 21 35 40 237 24 59 61 46 9 522 27 13 28 9 37 20 21 33 63 85 27 37 20 13 20 21 21 22 21 35 22 21 35 22 21 35 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 37 24 50 22 27 33 36 38 50 22 27 37 20 20 21 33 36 38 50 22 27 37 20 20 21 33 36 38 50 22 27 37 20 20 20 20 20 20 20 20 20 20
	10tal	110	90	110	01	10	11	08	00	51	00	04	101	910

IX. DEATHS FROM DIPHTHERIA, BY WARDS AND MONTHS : 1893.

Χ.	DEATHS	FROM	PHTHISIS	PULMONALIS,	BY	WARDS	AND
			Monte	ts : 1893.			

	WARDS.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December.	Total.
Ward	First Second Third Fourth Fourth Sixth Sixth Seventh Eighth Ninth Tenth Eleventh Tweifth Thirteenth Fifteenth Sixteenth Fifteenth Sixteenth Sixteenth Sixteenth Fifteenth Twenty-fourth Twenty-first Twenty-first Twenty-first Twenty-first Twenty-first Twenty-first Twenty-seventh Twenty-seventh Twenty-seventh Twenty-seventh Twenty-seventh Twenty-seventh Thirty-first Thirty-first Thirty-fourth Thirty-fourth Thirty-fourth Thirty-fourth Thirty-fourth Institutions, etc	45538566275128986667925543152131142649 198	765677697788253 8151555225210231520 198	43457771555651289978449337485552221501463530 213	44949863771268646992141144888252 54643728 203	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c} 3 \\ 8 \\ 6 \\ 1 \\ 7 \\ 9 \\ 1 \\ 5 \\ 5 \\ 10 \\ 4 \\ 7 \\ 7 \\ 6 \\ 10 \\ 13 \\ 2 \\ 4 \\ 1 \\ 5 \\ 4 \\ 4 \\ 2 \\ 6 \\ 2 \\ 2 \\ 1 \\ 6 \\ 8 \\ 4 \\ 4 \\ 3 \\ 5 \\ 2 \\ 8 \\ 1 \\ 9 \\ 1 \\ 5 \\ 1 \\ 6 \\ 2 \\ 2 \\ 1 \\ 6 \\ 8 \\ 4 \\ 4 \\ 3 \\ 5 \\ 2 \\ 8 \\ 1 \\ 1 \\ 5 \\ 1 \\ 1 \\ 1 \\ 5 \\ 1 \\ 1 \\ 1$	53473553243856751464828265115753120 186	36523575105476644512772233715994168841 220 166		$\begin{array}{c} \begin{array}{c} \begin{array}{c} 1 \\ 4 \\ \end{array} \\ \begin{array}{c} 6 \\ 5 \\ 3 \\ 6 \\ 1 \\ 6 \\ 1 \\ 4 \\ 8 \\ 5 \\ 7 \\ 5 \\ 1 \\ 4 \\ 6 \\ 2 \\ 5 \\ 7 \\ 4 \\ 4 \\ 4 \\ 7 \\ 4 \\ 4 \\ 2 \\ 2 \\ 3 \\ 2 \\ 0 \\ \end{array} \right)$	3443685244132787374623331 27557425 169	$\begin{array}{c} 5\\ 5\\ 3\\ 3\\ 6\\ 5\\ 5\\ 6\\ 7\\ 6\\ 7\\ 1\\ 1\\ 8\\ 1\\ 1\\ 8\\ 1\\ 1\\ 7\\ 7\\ 1\\ 7\\ 3\\ 8\\ 4\\ 10\\ 2\\ 6\\ 3\\ 2\\ 1\\ 5\\ 7\\ 3\\ 4\\ 2\\ 6\\ 2\\ 3\\ 2\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\$	47 56 61 47 47 57 57 50 60 82 55 88 19 90 83 41 77 82 4 61 83 2 45 5 46 5 46 5 46 5 46 5 46 5 46 5 5 5 9 60 82 5 5 88 5 7 89 9 83 1 57 82 4 57 82 57 57 57 82 57 57 57 57 57 57 57 57 57 57 57 57 57
		1	1	1	1			ŀ	1	1		100		2,010

	WARDS.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December.	Total.
Ward	First Second Fourth Fourth Sixth Seventh Seventh Eighth Ninth Tenth Eleventh Tweifth Fourteenth Fourteenth Sixteenth Sixteenth Sixteenth Sixteenth Sixteenth Twenty-first Twenty-first Twenty-fourth Twenty-fourth Twenty-fourth Twenty-second Twenty-second Twenty-rist Twenty-second Twenty-second Thirty-first Thirty-first Thirty-fourth Thirty-fourth Thirty-fourth Thirty-fourth Thirty-fourth	$\begin{array}{c} 8\\ 3\\ 3\\ 3\\ 3\\ 17\\ 15\\ 7\\ 2\\ 7\\ 18\\ 6\\ 13\\ 10\\ 14\\ 12\\ 11\\ 3\\ 8\\ 14\\ 1\\ 4\\ 3\\ 7\\ 4\\ 5\\ 8\\ 2\\ 3\\ 14\\ 18\\ 12\\ 9\\ 11\\ 13\\ 27\\ \end{array}$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c} 7\\ 5\\ 8\\ 9\\ 22\\ 14\\ 7\\ 11\\ 5\\ 10\\ 6\\ 6\\ 8\\ 8\\ 7\\ 5\\ 5\\ 6\\ 9\\ 6\\ 5\\ 4\\ 8\\ 7\\ 7\\ 7\\ 2\\ 3\\ 12\\ 9\\ 7\\ 8\\ 8\\ 6\\ 41 \end{array}$	$\begin{array}{c} 11 \\ 8 \\ 8 \\ 4 \\ 13 \\ 13 \\ 8 \\ 6 \\ 15 \\ 15 \\ 8 \\ 6 \\ 11 \\ 19 \\ 9 \\ 3 \\ 16 \\ 4 \\ 4 \\ 8 \\ 9 \\ 6 \\ 7 \\ 6 \\ \\ 6 \\ 6 \\ \\ 6 \\ 6 \\ \\ 6 \\ 6$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	342 295945263587285 4 13441145 4637		$\begin{array}{c} \vdots \\ 1 \\ 1 \\ 3 \\ 9 \\ \vdots \\ 1 \\ 1 \\ 2 \\ 3 \\ 1 \\ 1 \\ 7 \\ 2 \\ \vdots \\ 3 \\ 2 \\ 1 \\ 1 \\ 1 \\ 3 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2 \\ 2 \\ 9 \\ \end{array}$	$ \begin{array}{c} 1 \\ 2 \\ 1 \\ \\ 3 \\ 2 \\ 3 \\ 4 \\ \\ 2 \\ 2 \\ 3 \\ \\ 2 \\ 1 \\ 1 \\ 3 \\ 10 \\ \\ 3 \\ 4 \\ 4 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 3 \\ 10 \\ \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$	$\begin{array}{c} 1 \\ 1 \\ 4 \\ 1 \\ \vdots \\ 5 \\ 8 \\ 2 \\ 3 \\ 5 \\ 1 \\ \vdots \\ 2 \\ 1 \\ 2 \\ 3 \\ 2 \\ 1 \\ 2 \\ 3 \\ 2 \\ 1 \\ 2 \\ 3 \\ 2 \\ 1 \\ 4 \\ 5 \\ 2 \\ 4 \\ 3 \\ 2 \\ 1 \\ 9 \\ 1 \\ 1 \\ 1 \\ 2 \\ 3 \\ 2 \\ 1 \\ 3 \\ 2 \\ 1 \\ 2 \\ 3 \\ 2 \\ 1 \\ 1 \\ 3 \\ 2 \\ 1 \\ 1 \\ 3 \\ 2 \\ 1 \\ 1 \\ 3 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$	$\begin{array}{c} 3\\ 8\\ 7\\ 2\\ 3\\ 8\\ 11\\ 4\\ 4\\ 4\\ 4\\ 5\\ 7\\ 11\\ 6\\ 7\\ 1\\ 8\\ 1\\ 5\\ 9\\ 5\\ 2\\ 3\\ 4\\ 3\\ 1\\ 7\\ 3\\ 1\\ 6\\ 13\\ 5\\ 9\\ 3\\ 5\\ 38\end{array}$	$\begin{array}{c} 1 \\ 5 \\ 5 \\ 13 \\ 11 \\ 5 \\ 3 \\ 3 \\ 6 \\ 4 \\ 3 \\ 8 \\ 2 \\ 6 \\ 7 \\ 20 \\ 4 \\ 7 \\ 6 \\ 8 \\ 2 \\ 8 \\ 2 \\ 6 \\ 7 \\ 20 \\ 4 \\ 7 \\ 6 \\ 8 \\ 2 \\ 8 \\ 2 \\ 6 \\ 7 \\ 20 \\ 4 \\ 7 \\ 6 \\ 8 \\ 2 \\ 8 \\ 2 \\ 8 \\ 2 \\ 6 \\ 7 \\ 20 \\ 4 \\ 7 \\ 6 \\ 8 \\ 2 \\ 8 \\ 2 \\ 6 \\ 7 \\ 20 \\ 4 \\ 7 \\ 6 \\ 8 \\ 2 \\ 8 \\ 2 \\ 6 \\ 7 \\ 20 \\ 4 \\ 7 \\ 6 \\ 8 \\ 2 \\ 8 \\ 2 \\ 6 \\ 7 \\ 20 \\ 4 \\ 7 \\ 6 \\ 8 \\ 2 \\ 8 \\ 2 \\ 6 \\ 7 \\ 20 \\ 4 \\ 7 \\ 6 \\ 8 \\ 2 \\ 8 \\ 2 \\ 8 \\ 2 \\ 6 \\ 7 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$	$\begin{array}{c} 44\\ 52\\ 47\\ 30\\ 89\\ 131\\ 54\\ 66\\ 76\\ 96\\ 49\\ 107\\ 62\\ 72\\ 104\\ 81\\ 40\\ 40\\ 98\\ 36\\ 39\\ 39\\ 32\\ 53\\ 39\\ 34\\ 62\\ 15\\ 29\\ 79\\ 133\\ 62\\ 55\\ 9\\ 71\\ 76\\ 300\\ \end{array}$
	Total	325	254	308	365	265	141	79	67	61	118	224	250	2,457

XI. DEATHS FROM PNEUMONIA, BY WARDS AND MONTHS: 1893.

XII.	DEATHS	FROM	SCARLET	FEVER,	BY	WARDS	AND
		1	MONTHS :	1893.			

WARDS.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December.	Total.
Ward First	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} & & & \\$	$\begin{array}{c} \vdots \\ 1 \\ 2 \\ 2 \\ 3 \\ 1 \\ 2 \\ 2 \\ 4 \\ 1 \\ 2 \\ 2 \\ 6 \\ 1 \\ 1 \\ 2 \\ 3 \\ 2 \\ 5 \\ 2 \\ 2 \\ 5 \\ 2 \\ 2 \\ 5 \\ 2 \\ 2$	$\begin{array}{c} & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & &$	$\begin{array}{c} & & & \\ & & & & \\ & & & \\ & & & & \\ & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ &$	2 2 2 1 3 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1			$ \begin{array}{c} \hline & & \\ & $	$ \begin{array}{c} 1 \\ 1 \\ $	$ \begin{array}{c} $	$\begin{array}{c} & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & &$	$\begin{array}{c} 3 \\ 8 \\ 3 \\ 2 \\ 12 \\ 17 \\ 9 \\ 8 \\ 9 \\ 13 \\ 5 \\ 19 \\ 14 \\ 24 \\ 10 \\ 11 \\ 5 \\ .12 \\ 13 \\ 9 \\ 5 \\ 11 \\ 5 \\ 10 \\ 15 \\ 2 \\ 4 \\ 9 \\ 21 \\ 9 \\ 2 \\ 329 \\ \end{array}$

XIII.	DEATHS	FROM	TYPHOID	FEVER,	BY	WARDS	AND
		1	MONTHS:	1893.			

-														
		January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December.	Total.
ward 	First. Second	$ \begin{array}{c} 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 5 \\ 1 \\ 1 \\ 3 \\ 1 \\ 3 \\ 2 \\ 1 \\ \dots \\ 1 \\ \dots \\ 1 \\ \dots \\ n \\ n$	1 1 1 3 1 2 2 2 1 4 2 3 	21 14 22 11 11 11 11 11 11 11 11 11 11 11 11	1 2 1 2 2 1 2 2 1 2 2 1 2 6 2 2 3 1 2 6 2 2 3 1 2 4 1 2 2	1 1 1 5 1 1 4 4 4 3 1 1 1 1 1 4	$\begin{array}{c} & & & \\ & & & & \\ & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & &$	1 1 1 1 1 1 1 1 2 1 3 1 1 1 2 1 1 1 2 1 1 1 1		12 842 45 21 121 8312		1 1 2 3 1 1 1 1 1 2 	2 1 1 1 3 2 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1	5 12 8 13 15 40 15 14 19 32 21 24 22 6 6 12 24 22 21 24 22 6 6 12 70
" " " " " " " "	Twenty-third Twenty-fourth Twenty-sixth Twenty-sixth Twenty-sixth Twenty-seventh Twenty-eighth Thirtieth Thirty-first Thirty-first Thirty-second Thirty-fourth c Institutions, etc	2 1 2 1 1 8	1 1 1 1 4	2 2 2 2 9	1 1 1 2 4 2 1 1 9	2 5 1 4 2 2 4 10	1 1 4 6 2 1 1 1	3 2 3 3 1 2 3 16	2 4 2 1 3 1 1 8 1 4	4 2 3 1 3 2 3 1 1 5 3 1 2 1	2 1 3 1 2 1 2 2 3 19	22 2 1 5 22 1 38	1 2 1 1 1 1 3 13	19 7 13 21 7 2 17 28 14 18 20 20 142
	Total	41	30	41	58	56	60	55	76	86	81	43	43	670

XIV.	DEATHS FR	COM THE	MORE I	MPORTANT	DISEASES,	AND PER-
	CENTAGES	OF DEAT	HS FROM	ALL CAUS	ES: 1892-18	93.

CAUSE OF DEATH.	18	93.	18	92.
Acute Lung Diseases	4.024	14.86	3,904	14.89
Phthisis Pulmonalis	2,315	8.55	2,177	8.30
Convulsions	1.326	4.90	1.560	5.95
Gastro-Enteritis	790	2.92	621	2.36
Meningitis	907	3.35	766	2.53
Heart Diseases	1.177	4.35	856	3.26
Old Age	518	1.91	429	1.63
Cancerous Diseases	657	2.43	546	2.08
Puerperal Diseases	. 307	1.13	199	.76
Apoplexy	472	1.74	421	1.22
Bright's Disease	. 257	.95	249	.95
Death by Violence	. 1,879	6.93	1,573	5.99
ZYMOTIC.	ł			
Croup	492	1.82	534	2.03
Diarrhœal Diseases	2.224	8.21	1.867	7.12
Diphtheria.	975	3.60	1.014	3.86
Measles	234	.86	185	.70
Scarlet Fever	329	1.21	382	1.45
Typhoid Fever	670	2.47	1.489	5.67
Small-Pox	23	.08	2	

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AND FROM TYPHOID FEVER, BY WARDS: 1892-1893.

		1893.			1892.		1893	ς.	185	2.	189	3.	18	2.
WARD.	-1	T.T.T.E						ZYMO	rics.		Ĥ	VPHOIL	FEVEI	
	Fopula-	Deaths	Ratio.	Fopula-	Deaths	Ratio.	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio
First	54.184	278	5.13	48.757	333	6.83	43	0.79	44	0.92	5	0.09	9	0.12
Second	38,841	449	11.56	34.951	405	11.58	84	2.16	88	2.61	12	0.31	15	0.42
Third	38,827	466	12.00	34,938	460	13.16	86	2.21	18	2.48	80	0.21	32	0.91
Fourth	38,631	433	11.21	34.762	431	12.30	94	2.43	83	2.38	13	0.34	17	0.48
Fifth	50.305	824	16.38	45.267	908	20.05	210	4.17	295	6.49	15	0.30	64	1.41
Sixth	58.349	1.122	19.23	52.505	1.107	21.08	365	6.26	347	6 60	40	0.69	53	1.00
Seventh	54.747	652	11.92	49.264	669	14.18	189	3.45	197	3.97	2	0.27	42	0.85
Eichth	44.346	629	14.41	39.905	690	17.27	182	4.10	166	4.16	14	0.32	25	0.62
Ninth	50.044	815	16.28	45.032	923	80.08	219	4.38	242	5.26	61	0.38	49	1.06
Tenth	62.763	1.136	18.10	56.477	1.018	18.02	325	5.28	271	4.79	32	0.51	51	0.00
Eleventh	47.325	487	10.29	42.585	533	12.51	105	2.22	118	2.97	14	0.30	31	0.72
Twelfth	67.554	696	14.34	60,788	858	14.11	184	2.72	211	3.47	19	0.28	51	0.83
Thirteenth	47.312	704	14.88	42.572	680	15.97	150	3.17	172	4.04	8	0.49	39	0.91
Fourteenth	54.758	905	16.53	49.810	850	17.23	267	4.88	226	4.58	21	0.38	54	1.09
Fifteenth	63,103	1.017	15.96	56,783	936	16.48	288	4.56	271	4.77	24	0.38	19	1.07
Sixteenth	71,501	1,174	16.42	64,340	1,252	19.46	360	5.03	297	4.61	22	0.31	65	1.01
Seventeenth	34,948	431	12.33	31,446	565	17.96	110	3.15	146	4.64	9	0.17	30	0.95
Eighteenth	44,573	354	7.94	40,109	404	10.01	14	1.66	83	2.04	9	0.13	18	0.44
Nineteenth	60,181	923	15.34	54,172	928	17.13	234	3.72	228	4.17	12	0.20	29	0.54
Twentieth	33,668	387	11 49	30,296	466	15.02	122	3.62	115	3.79	6	0.27	34	I.12
Twenty-first	42,966	536	12.48	38,663	521	18 71	105	2.44	124	3.20	Π	0.26	33	0.85
Twenty-second	44,125	541	12.26	39,706	570	14.35	96	2.18	132	3.32	2	0.16	37	0.93
Twenty-third	50.975	682	13.38	45,870	190	17.22	181	3.55	236	5.12	19	0.37	52	1.13
Twenty-fourth	44.979	351	7.80	40,474	368	60.0	63	1.40	69	1.70	2	0.15	19	0.46
Twenty-fifth	33,709	428	12.70	30,333	400	13.18	109	3.23	105	3.46	13	0.39	24	0.78
Twenty-sixth	40,898	601	17.33	36,802	680	18.47	215	5.26	167	4.53	21	0 51	34	0.92
Twenty-seventh	16,338	252	14.81	14,702	196	13.83	88	5.26	99	3.80	-	0.43	6	0.61
Twenty-eighth	14,052	237	16.87	12,645	238	18.82	01	4.98	16	6.01	2	0.14	æ ;	0.63
Twenty-ninth	42,459	116	16.86	33,207	829	16.43	200	4.82	191	97.4	17	0.40	12	0.55
Thirtieth	69,177	1,406	20.33	62,249	1,265	18.12	428	6.19	282	5.51	8	0.40	48	0.69
Thirty-first	38,388	627	16.33	34,543	443	12.82	190	4.97	128	3.70	H	0.36	16	0.46
Thirty-second	42,657	534	12.52	38,385	456	18.11	121	5. S	116	3.03	2	0.30	29 29	0.46
Thirty-third	42,445	191	16.71	38,194	199	88.LT	204	4.81	214	5.60	2	0.47	42	0.63
Thirty-fourth.	50,998	669	13.70	45,480	100	13.ZU	112	4.14	411	3.75	22	0.39	92	0.54
Public Institutions		144.2			C12'2		991	21.12	453		142	58.03	305	
V1016DC8		TIR'T			1,010			:		:				:
Total	1.600.000	27.083	16.93	1.438.010	26.219	18.23	6.303	3.94	6.275	2.39	670	0.42	1.489	5.45
		mantial												

OF THE CITY OF CHICAGO.

REPORT OF DEPARTMENT OF HEALTH

CAUSE OF DEATH.	1891.	1892.	1893.
Zymotic Diseases.			
Miasmatic	7,012 37	6,275 57 704	5,993 38 894
Tatal	8 000	7 196	6 955
nonstitutional Disageore	0,000	1,120	0,000
Constitutional Diseases.	1.015	1 050	1.050
Diathetic Tubercular	1,315 2,421	1,270 2,456	1,352 2,728
Total	3,736	3,726	4,080
Local Diseases.			
Nervous Circulatory Respiratory Digestive Urinary Generative Locomotory Osseous Locomotory Integumentary Total	3,843 994 5,163 2,536 720 40 14 91 13,401	$\begin{array}{c} 3,717\\ 1,122\\ 4,303\\ 2,514\\ 785\\ 60\\ 9\\ 122\\ \hline 12,632\\ \end{array}$	3,590 1,177 4,425 2,713 954 61 107 13,027
Developmental.			
Children Women Old Age Nutrition Total	364 273 463 58 1,158	373 281 429 79 1,162	368 307 518 49 1,242
Violence.			
Accidents Homicides Suicides	1,160 53 246	1,248 81 244	1,422 104 353
Total	1,459	1,573	1,879
Grand total	27,754	26,219	27,083

XVI. DEATHS FROM CLASSIFIED CAUSES, BY YEARS: 1891-1893, INCLUSIVE.

CAUSE OF DEATH.	1891.	1892.	1893.
Cholera Infantum	1,122	1,211	1,623
Croup	400	534	492
Diarrhœa	375	223	145
Dysentery	100	54	67
Diphtheria	958	1.014	975
Entero Colitis		326	389
Cerebro-Spinal Fever	301	223	388
Malarial Fever.	143	139	83
Scarlet ''	499	382	329
Typhoid "	1.977	1.489	670
Measles	265	185	234
Pertussis	194	164	210
Phthisis Pulmonalis	2.120	2.177	2.315
Convulsions	1.627	1.560	1.326
Meningitis, Cerebral	898	766	804
Bronchitis	1.028	850	876
" Canillary	467	453	519
Congestion of Lungs	130	157	123
Pneumonia	2,898	2.397	2.457
Influenza and La Grinne	336	103	88
Enteritis	706	613	564
Gastritis	288	341	269
Gastro-Enteritis	763	621	790
Peritonitis	302	412	454
Bright's Disease	229	249	257
Nephritis	314	320	419
Total	18,785	17,963	16,866

XVII. DEATHS FROM SPECIFIED DISEASES, BY YEARS: 1891-1893, INCLUSIVE.

	WINTER QUARTER.			YEAR.								
CAUSE OF DEATH.		February.	March.	1893	1892	1891	1890	1889	1888	1887	1886	
Small-Pox Measles Scarlet Fever. Diphtheria Croup Whooping Cough. Fever, Typhoid. "Cerebro-Spinal. "Malarial. Diarrhœal Diseases. Other Zymotic Diseases Phthisis Pulmonalis Acute Lung Diseases.	36 47 113 77 12 41 15 5 25 18 198 532	1 34 35 95 37 5 30 25 4 15 26 198 466	30 47 110 33 16 41 54 58 16 213 488	1 100 129 218 147 33 112 94 13 93 60 609 1486	22 152 288 138 41 574 80 26 113 92 584 1684	102 160 258 110 64 199 67 32 141 90 563 1927	5 74 314 115 55 292 33 31 151 57 593 1802	96 51 295 85 20 66 25 17 29 47 358 6 94	9 41 229 185 60 50 26 16 38 72 380 873	145 66 260 125 14 91 11 23 79 54 386 712	2 13 70 185 86 27 81 32 21 48 61 290 259	
Children under five years of age	1004	887	1109	3000	3794 2 966	3713 3332	3522 2953	1783	1979 1810	1966	1470	

XVIII.	COMPARATIVE	MORTALITY	FROM SPI	ECIFIED	DISEASES	AND
	OF CHILD	REN, BY QU.	ARTERS :	1886-1893	3.	

COMPARATIVE MORTALITY OF SPRING QUARTER.

	SPRING QUARTER.			YEAR.								
CAUSE OF DEATH.		May.	June.	1893	1892	1891	1890	1889	1888	1887	1886	
Small-Pox. Measles Scarlet Fever. Diphtheria Croup. Whooping Cough. Fever, Typhoid "Cerebro-Spinal. "Malarial Diarrhœal Diseases. Other Zymotic Diseases. Phthisis Pulmonalis. Acute Lung Diseases. Total	33 42 67 42 19 58 54 13 44 25 203 559	43 25 76 38 18 56 55 8 44 16 253 416	1 16 18 71 23 22 60 31 5 84 22 193 239	1 92 85 214 103 59 174 140 26 172 63 649 1214	2 37 99 183 81 36 181 54 31 262 76 570 897 2509	$\begin{array}{c} 102\\ 108\\ 145\\ 87\\ 57\\ 711\\ 121\\ 47\\ 350\\ 68\\ 592\\ 1416\\ 3804 \end{array}$	17 42 183 74 31 234 44 33 177 57 478 878 2248	2 777 555 2466 65 199 466 300 138 888 400 344 496	40 50 179 98 49 54 68 29 129 36 395 527	2 149 39 196 83 14 71 19 15 233 46 832 516	28 64 214 58 28 119 34 162 42 364 513	
Children under five years of age	229	210	240	679	2676	3542	1990	1489	1638	1726	155	
	SU QU	MME ARTI	AMER YEAR.									
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CAUSE OF DEATH.	July.	August.	September	1893	1892	1891	1890	1889	1888	1887	1886	
Small-Pox Measles Scarlet Fever Diphtheria. Croup Whooping Cough. Fever, Typhoid "Cerebro-Spinal "Malarial	12 22 58 16 18 55 30 5	1 4 55 34 38 76 35 5	1 57 35 30 86 27 8	2 21 48 170 85 86 217 92 18	41 53 138 92 58 528 58 61	41 81 187 71 43 580 57 32	12 30 156 64 71 296 39 32	25 39 208 56 35 170 29 25	52 41 158 64 54 142 30 34	38 57 205 56 47 123 22 23	51 40 190 60 44 147 25 34	
Diarrhœal Diseases Other Zymotic Diseases Phthisis Pulmonalis Acute Lung Diseases	814 10 186 144	637 14 166 126	351 16 179 129	1802 40 531 399	1347 53 498 491	1286 40 469 351	1284 31 470 302	1350 38 378 269	1018 26 322 232	1036 32 328 222	841 36 246 228	
Total Children under five years of age	227	 205	207	 639	3418 3763	3238 3468	2787 3174	2617 3076	2173 2714	2189 2556	1955 2256	

COMPARATIVE MORTALITY OF SUMMER QUARTER.

COMPARATIVE MORTALITY OF AUTUMN QUARTER.

	QU	AUTUMN YEAR. QUARTER.									
CAUSE OF DRATH.		November.	December.	1893	1892	1891	1890	1889	1888	1887	1886
Small-Pox Measles Scarlet Fever Diphtheria Croup Whooping Cough Fever, Typhoid "Cerebro-Spinal "Malarial Diarrhœal Diseases Other Zymotic Diseases Phthisis Pulmonalis Acute Lung Diseases	4 8 21 88 59 13 81 21 11 115 13 147 .191	2 8 24 84 55 10 43 17 8 26 14 169 343	23 5 22 101 43 9 43 24 7 16 8 210 391	29 21 67 273 157 32 167 62 26 157 35 526 925	85 78 405 223 29 206 81 21 145 555 832	20 150 368 132 30 507 56 32 218 62 496 878	38 47 228 127 44 186 25 105 53 431 709	6 40 382 177 22 171 26 50 151 37 409 616	50 52 292 20 129 14 17 71 32 329 543	9 28 341 139 29 96 29 24 71 24 306 402	84 46 355 155 13 147 12 88 42 281 388
Total			••••	••••	2635	2944	2019	2087	1641	1498	1594

XIX. DEATHS FROM THE PRINCIPAL ZYMOTIC DISEASES: 1886-1893 INCLUSIVE.

CAUSE OF DEATH.	1893	1892	1891	1890	1889	1888	1887	18 86
Cholera Infantum	1,623	1,211	1,122	1,058	1,052	874 47	907 44	750 28
Croup	492	534	400	380	383	439	403	859
Diphtheria	975	1,014	958	881	1,126	858	1,002	944
Diarrhœa	145	223	375	245	167	148	162	130
Dysentery and Entero Colitis	456	380	445	356	331	293	306	234
Ervsipelas	91	94	99	75	58	86	69	58
Cerebro-Spinal Fever	388	223	301	142	110	138	81	103
Scarlet Fever	329	382	499	193	185	184	190	220
Typhoid Fever	670	1.489	1.997	1.008	453	375	381	483
Measles.	234	185	265	67	204	151	341	126
Small-Pox	23	2			2		2	2
Total	5,481	5,790	6,514	4,468	3,135	3,593	3,888	3,437
			2	1		•		

XX. DEATHS AND DEATH RATES FROM ALL CAUSES, FROM ZYMOTIC DISEASES, AND OF CHILDREN AND

INFANTS: 1882-1893, INCLUSIVE.

Per cent. of total mor- tality of children under 1 year of age.	88.55 89.55 80.55 80.55
Deaths per 1,000 of popu- lation of children under 1 year of age.	76665759667556755 25806675567555675556755567555555555555555
Deaths of chil- dren under lyear of age.	8,73,735 6,8308 6,8308 6,8308 718 718 718 718 718 718 718 718 718 71
Per cent. of mor- tality of children under 5 years of age.	45.94 45.94 45.91 45.91 45.91 45.91 45.92 45.93 45.93 45.93 45.93 55.93 45.93 55.935
Deaths per 1,000 of popu- lation of children under 5 years of age.	$\begin{array}{c} 7.72\\ 7.72\\ 8.29\\ 8.41\\ 9.08\\ 9.08\\ 9.06\\ 9.06\\ 9.06\\ 10.58\\ 10.58\\ 10.13\\ 11.90\end{array}$
Deaths under 5 years of age.	12,363 11,662 11,662 9,564 8,264 6,763 6,763 6,763 6,187 6,187 6,666 6,187 6,666 6,187
Per cent. of total mor- tality of Zymotic Diseases	22.12 25.28 25.28 25.28 25.28 25.28 25.28 25.28 25.28 25.28 25.28 25.23 25.25
Deaths per 1,000 of popu- lation of Zymotic Diseases	2.5.4.4.4.5.5.4.4.5.5.4.4.5.5.4.4.4.5.5.4.4.4.5.5.4.4.4.5
Deaths from Zymotic Diseases	6,0,000 4,0,000 4,0000 4,0000 4,0000 4,0000 4,0000 4,0000 4,0000 4,0000 4,0000 4,0000 4,0000 4,0000 4,0000 4,00000 4,00000000
Number of Deaths.	27,083 26,219 27,754 21,869 15,772 15,409 15,409 12,474 12,474 12,474 12,474 12,474 13,899 12,474 12,474 13,234
Population.	$\begin{array}{c} 1,600,000\\ 1,428,000\\ 1,250,000\\ 1,200,000\\ 830,000\\ 760,000\\ 760,000\\ 665,000\\ 665,000\\ 665,000\\ 665,000\\ 666,000\\ 660,00$
YEARS.	1593 1891 1891 1889 1885 1885 1885 1885 1885

OF THE CITY OF CHICAGO.

71

YEARS.	Population.	Number of Deaths.	Number of Deaths in 1,000 of Population.
1903	1 600 000	97 093	16.09
1909	1 438 010	26 210	18 23
1901	1 250 000	97 754	22 20
1900	1 200,000	21 860	18 22
1889	935 000	16 946	17 56
1888	830,000	15,772	19.00
1887	760,000	15.409	20.27
1886	704,000	13,699	19.43
1885	665.000	12.474	18.76
1884	630,000	12,471	19.80
1883	580,000	11.555	19.92
1882	560.639	13.234	23.60
1881	540,000	13,874	25.60
1880	503,298	10,462	20.79
1879	475,000	8,614	18.01
1878	450,000	7,422	16.50*
1877	439,776	8,026	18.24
1876	420,000	8,573	20.41
1875	407,060	7,899	19.4L
1874	395,400	8,075	20.29
1873	380,000	9,557	25.16
1873	367,396	10,156	27.67
1871	334,270	6,976	20.87
1870	298,000	7,823	24.52
1869	280,000	6,488	23.10
1808	252,054	5,984	23.70
1807	225,000	4,048	21.10
1000	200,418	0,981	32.20
1984	161 999	3,003	22.00
1982	150,000	2 495	95 80
1889	197 080	2 835	20.00
1881	120,000	2 270	18 00
1860	109 260	2 284	20 70
1859	98,000	2 008	21 30
1858	84,000	2,225	26.80
1857	93.000	2.414	25.60
1856	84.000	2.086	24.80
1855	80.023	2,181	27.20
1854	65.872	4.217	64.00
1853	59,130	1, 825	22.40
1852	38,734	1,809	46.70
1851	34,000	927	36.60
1850	29,963	1,467	48.90
1849	23,047	1,701	73.80
1848	20,023	638	31.80
1847	16,857	572	33.90
1846	14,169	394	27.80
1845	12,088	344	28.40
1844	10,170	330	88.00
1843	1,080	141	18.60

XXI. POPULATION, DEATHS AND DEATH RATES, BY YEARS: 1843-1893, INCLUSIVE.

*This rate is based on the estimated population-450,000. The City census of 1878 fixed the population at 436,731, and the correct death rate for the year is, therefore, 16.99 per 1,000.

XXII.	METEOROLOGICAL DATA FOR THE YEARS 1891, 1892, 1893.
	MEAN TEMPERATURE IN DEGREES FAHRENHEIT.

YEARS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1891	30	29	31	47	53	66	67	69	69	53	34	35
1892	20	30	31	44	52	64	72	71	64	54	35	23
1893	12	28	33	44	52	68	74	71	64	53	36	25

MONTHLY PRECIPITATION IN INCHES.

YEARS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1891	1.99	1.95	2.13	3.14	2.09	2.42	2.47	4.52	0.32	0.36	3.83	1.32
1892	1.99	1.57	2.21	2.17	6.77	10.58	2.23	1.85	1.34	1.54	2.68	1.63
1893	2.08	2.44	1.69	4.16	1.93	3.59	3.08	0.18	1.98	1.75	2.45	2.14

REPORT OF INSPECTION OF MILK: 1893.

By E. B. STUART, Superintendent.

The Bureau of Milk Inspection, created by ordinance of October 21, 1892, was transferred to the Department of Health, in September, 1893. After the Bureau was organized and a list of dealers, etc., obtained, some 500 samples were collected to determine the average quality of milk delivered and where it would be necessary to direct most attention. It was found that of the 500 samples first taken, 75 per cent. were below the standard requirement of the ordinance, while only 8 per cent. of a similar lot of samples taken from the trains upon arrival were below the standard, showing conclusively that the work of adulteration was chiefly done by the city dealers.

Total nu	mber sam	ples milk	collected during 1893	10,772
"	" exa	mined by a	analysis 10,759	
Samples	lost or de	estroyed		
•			· · · · · · · · · · · · · · · · · · ·	10,772
Number	of sample	s found of	standard quality	4,873
"	"	"	below standard quality	4,053
"	"	of skimm	ned milk	657
""	46	examine	d biologically	396
"	""	received	from shippers	1,176
Daily con	nsumption	n of milk i	n Chicago—gallons	125,000
Number	of license	d milk dea	alers	1,521
"	milk w	agons in r	etail trade	2,901
"	shops s	selling mil	k	00-2,300
Total nu	mber of p	rosecution	s for violation of the milk ordinance,	67
Number	of prosect	utions for s	selling impure milk	55
"	- "	"'	feeding swill	12
				67

The chemical analyses are of two kinds, one the routine examination, and the other special analysis for prosecution or for adulteration. The routine analysis is made by the Babcock method. It has been found entirely satisfactory, and should certainly be praised for its quickness and accuracy. This test is used to determine in a general way the character of milk, and to locate offenders. When it is found that a number of samples are below the standard, a special sample is taken; this is analyzed in a special manner. The solids in the sample are taken by evaporation, the ash by ignition, and the butter fat by the Soxhlet's method of extraction. Adulteration has not been found of great prevalence. Among the first samples taken, a number that were adulterated were found, the adulterating substance being a mixture of bi-carbonate of soda and salt. In one instance the ash was found to be 15 per cent. of the total solids. Starch was found three times during the year, and was determined both chemically and microscopically. In one instance the adulteration was so gross that a large amount of unboiled starch settled from the sample.

The biological examination has not been in the routine of the laboratory work. This was due heretofore to the lack of facilities for carrying out such investigations. The examinations that were made were mainly upon request, or for some special circumstance requiring it. In all 396 samples were examined in this way. An idea of the number of bacteria in the milk supply may be had from the following average of results:

61	samples,	shipper's	milk,	. 409.200 per	· cubic	centimeter.
132		wagon		921.700		"
17	"	store	• 6	2,143.600	••	"
26		**	••	1,852.500	"	"

The results indicate that the milk supply of the city is not fresh, and when the facts in relation to transportation are known, the reason is obvious. The interval between the time of milking and delivery to the consumer is between 24 and 36 hours. As a rule, night and morning milk are mixed by the farmer and sent to the city, where it arrives between 10 and 11 o'clock that morning. The dealer receives it and places it in his cooling vats until the next morning, when it is delivered. It is not surprising that it sours during the first day received by the consumer.

In regard to the presence of the tubercle bacilli in the milk some investigation was made. In all, 243 samples were examined for tuberculosis, and in all the result was negative. All of these samples were from the mixed supply except four, and these were from individual cows. It is true that occasionally an object similar to a tubercle bacillus would appear stained, but they were never in sufficient numbers to render the diagnosis positive, or to condemn the sample. The manner in which the milk of the cows in a dairy is mixed and transported, the manner of taking a small sample from a large can, and again a portion of this for an examination, renders it very unlikely to obtain enough bacteria to make the diagnosis. The microscopical examination of milk for tuberculosis can only be of value in connection with veterinary inspection, by which the suspected animal is first singled out, and then examined more critically. This, as far as the Department goes, is an impossibility, as almost all of the milch cows supplying the city are outside its limits, and many are in adjoining States. Among cattle within the city no cases of tuberculosis were found.

The sanitary inspection of milch cows has been mainly directed to cattle within the city limits. During the early part of the year a thorough inspection of all places where cows could be found was made. Many were found in a decidedly unsanitary condition, and the feeding of refuse swill from distilleries and vinegar factories was general. The inspection of swill-fed cattle showed that the method employed in using this food endangered the good health of the animals. At first they thrive, but soon become thin, and the milk supply is lessened in amount. The ingestion of so much hot liquid food causes diarrhœa, rendering the stables, the animals and all surrounding objects filthy and unclean. In these places the cows are milked, the animal having frequently just arisen from the unstrawed floor; and the milk is frequently strained and kept in the same place. Still this milk frequently sells as the best product of the private cow. There yet remains much to be done in the regulation of the milk supply.

TENEMENT, FACTORY AND SMOKE INSPECTION: 1893.

By ANDREW YOUNG, Chief Inspector.

The wholesome spread of sanitary knowledge through boards of health and the press, brings to communities the cold and naked truth that they are as communities responsible for much of the sickness and death in and about them. The evils arising from neglect of proper sanitary measures are as old as the history of cities. As the population multiplies the effect of such neglect is found in high death rates or marked by epidemics. Each case of sickness in a community is a menace to those in health. That the imperfections of your neighbor's premises should remain a menace to the health of you and your family is no longer conceded, for legislators have awakened to the fact that health means wealth to a city, and is as beneficial for the city as for the individual, it being important for all that each be made to live cleanly.

The question of plumbing and draining is one in which the whole public is concerned, and which should be decided and carried out by public authority and the work held under strict supervision of competent inspectors. The rules and regulations governing plumbing and drainage of buildings, put in force in 1889, have proven beneficial to the city as well as to the citizen building a home, as every new building must be reported by the plumber for inspection and passed upon by this Department. It can readily be seen the value of the work carried on in this line. The records of the Department prove that of the buildings where plumbing and drainage were done under the rules adopted in 1889, not one case of sewer air or gas has been established in connection with such building, nor one case where the system has proven faulty.

To protect the public against the use of poor or defective material, liable as it is to be placed out of sight or where it might be concealed from the eye of the inspectors of the Department, the following order was issued and is now in force:

DEPARTMENT OF HEALTH.

CHICAGO, July 21, 1893.

TO ARCHITECTS, PLUMBERS, CONTRACTORS, And all others whom it may concern:

On and after November 1, 1893, Section 12 of the ordinance relating to plumbing and drainage will be enforced in the following manner:

When the soil, waste, vent, revent and all other pipes (within building) connected or to be connected with sewer, are placed in position, they are to be tested by water in the presence of an inspector of this Department, and upon completion of building a second test by peppermint shall be applied before work will be accepted by this office.

Certificates of tests and inspection will be issued by this Department. Architects and other interested parties are advised to demand said certificates before acceptance of said plumbing and drainage work.

Respectfully,

ARTHUR R. REYNOLDS, ANDREW YOUNG, Chief Inspector.

This order has found favor among the architects and the master plumbers, and has been specially commended by the journeymen organization of this city.

The value of intelligent, careful inspection of buildings in process of erection cannot be estimated in relation to the health of their future occupants, and as the old Chicago passes away the effects will and are being seen in our reduced death rates. The doctrine that filth plays an important part in the cause of disease lies at the foundation of very much of the sanitary administration of cities and towns throughout all civilized countries. The popular impression, however, and undoubtedly the belief among a very large part of the medical profession, as well as among many of the officials who have charge of the sanitary administration, is that filth in the ordinary sense of the word is in itself the active cause of disease, and that little else is essential to the production of certain infectious diseases than to deposit a certain amount of filth, or to allow such filth to accumulate within the premises occupied by a given population in order to generate a pestilence.

For the purpose of clear and lucid evidence on this important subject, I had a bright young physician of the Department, whose medical education had been supplemented with a knowledge of plumbing and drainage, and the requirements of a sanitary dwelling, take from the records the daily reports of diphtheria, scarlet and typhoid fever, make careful inspection of the premises and surroundings, with the following results:

SANITARY CONDITION OF PREMISES.

Seven Cases Typhoid Fever.

I. No ventilation on soil or waste pipe. 4400 State street. One case.

II. Waste pipes leak; waste and soil pipes not ventilated; garbage in basement; premises filthy. 327 Western avenue. Two cases.

III. Water service inadequate; waste and soil pipes not ventilated; plumbing fixtures not separately trapped. 3218 Wallace street. One case.

IV. Leak in soil pipe; waste and soil pipes not ventilated. 5114 Wabash avenue. One case.

V. Waste and soil pipes not ventilated. 2414 Wabash avenue. One case.

VI. Water under house, yard filthy; plumbing fixtures not separately trapped or ventilated; vaults dirty; catchbasin full. 261 Twenty-first street. One case.

SANITARY CONDITION OF PREMISES.

Eighteen Cases Scarlet Fever.

I. Closets very full; yard very filthy; no revent on waste pipe. 338 Thirty-second street. Two cases.

11. No ventilation on soil or waste pipes; plumbing fixtures not separately trapped; closets very full; catchbasins very foul. 3723 La Salle street. One case.

III. Privy vaults very full; waste and soil pipes not ventilated. 4083 Dearborn street. One case.

IV. Waste pipes from sink and wash tubs not ventilated. 5045 Michigan avenue. One case.

V. No cause. 4122 Berkeley avenue. One case.

VI. Leak in waste pipe; waste and soil pipes not ventilated or separately trapped. 4930 Wabash avenue. Two cases.

VII. Traps clogged up; wash-tubs filthy; no ventilation on soil or waste pipes; leak in waste pipe. 2708 Wabash avenue. One case.

VIII. Closets very full; plumbing fixtures not ventilated or separately trapped. 2966 Armour avenue. One case.

IX. Water closet and catch-basin very full; plumbing fixtures not separately trapped; ventilation on soil or waste pipe, none; space under house not ventilated, and filthy. 5641 Wentworth avenue. Two cases.

X. Space under house not ventilated, and dirty; no ventilation on soil or waste pipes. 2929 Portland avenue One case.

XI. Bath-room filthy; no ventilation on soil or waste pipes; traps clogged up. 2415 Archer avenue. One case.

XII. Closets full; catch-basin full; premises filthy; no ventilation on waste pipe. 358 Twenty-fourth street. Two cases.

XIII. Catch-basin very filthy; no ventilation on waste pipes. 3459 Wentworth avenue. Two cases.

XIV. No ventilation on soil or waste pipe; house in filthy condition. 454 Thirty-sixth street. One case.

SANITARY CONDITION OF PREMISES.

Eighteen Cases Diphtheria.

I. No ventilation on soil or waste pipe. 5653 Princeton avenue. One case.

II. Closets very full; alley foul; no ventilation on soil or waste pipes; yard dirty. 2223 Wentworth avenue. One case.

III. No ventilation on soil or waste pipe; yard filthy. 2218 Dearborn street. One case.

IV. No cause. 4420 Evans avenue. One case.

V. Space under house very dirty; closets very full; no ventilation on waste pipe; plumbing not separately trapped. 3535 Wallace street. Two cases.

VI. No ventilation on waste pipes. 4211 Langley avenue. One case.

VII. Catch-basin full; closet very full; yard filthy; space under house very dirty and not ventilated; no ventilation on waste pipes. 5641 Wentworth avenue. One case.

VIII. Vaults filthy; soil and waste pipes not ventilated. 5411 Atlantic street. Two cases.

IX. Vaults very full; catch-basins filthy; no ventilation on waste pipe. 5348 Shields avenue. One case.

X. No ventilation on waste pipe; closets very full; catchbasin dirty; space under house filthy and not ventilated. 5642 Princeton avenue. Two cases.

XI. Closet broken and full; catch-basin broken and running over; yard very filthy; roof leaks; house very foul; no ventilation on plumbing and no traps. 271 Twenty-first street. Two cases.

XII. Space under house dirty and not ventilated; no ventilation on soil or waste pipe; closet filthy; catch-basin same. 299 Twenty-first street. Two cases.

XIII. No ventilation on soil or waste pipe. 371 Twentyfourth street. One case.

The above mentioned cases are taken from the reports as presented by the inspector. The entire reports for the past year relating to these diseases would show the same preponderance as regards the unsanitary conditions where cases have occurred. In nearly every case where the conditions were found defective they were promptly remedied and our suggestions acted upon. We have found that sickness in a family is a potent lever in the way of sanitary improvement, often in the entire neighborhood.

Following is a statement of the work for the year:

New buildings examined	5,847
Houses examined on complaint	17,177
Work places examined	17,649
Number employed	306,432
Notices served	13,708
Abatements	10,788
Defective plumbing	2,511
Defective drainage	1,104
Offensive catch-basins	1,085
New sewers constructed	857
Traps applied	1,029
Plumbing work ventilated	578
Leaky roofs repaired	154
Privies cleaned	4,350
Privy vaults abolished	302
New water closets constructed	220
Yards and premises cleaned	1,754
Miscellaneous	978
Plans examined, approved and filed	7,050

The above figures give but a faint idea of the labor involved in bringing each case to a successful issue. Owners on whom notices must be served are often non-residents. Agents, if any, are often limited as to their action by owners who insist upon having minute information as to all the facts in regard to the notice served. This necessarily results in delay, requiring full explanation to each particular complaint. In connection with this work not less than fifteen thousand letters were mailed during the year.

WORK OF THE FEMALE INSPECTORS.

The wisdom and necessity of the appointment of female tenement and factory inspectors becomes more and more apparent as time goes on. From it great advantage has accrued to the toiling masses of the Chicago working women. Not only has the sanitary condition of the surroundings where women and children work and live been greatly improved, but suffering and distress, which have come under the observation of the female inspectors and which would have to be passed unheeded by the male inspectors, have been ameliorated.

There are probably not less than 75,000 working women in this city, not including those engaged in domestic service. They are the women who may be seen any morning from 7 to 8 o'clock entering the stores, factories and workshops, where they labor on an average from 9 to 12 hours a day. Ten years ago their number did not exceed 15,000, but modern conditions have tended in an ever-increasing degree to draw women into the struggle for bread.

Necessity has made them competitors in this strife. whose rewards are often so pitiful that charity has been called upon to make their position even tolerable. Not only have they been overworked and underpaid, but they have often been obliged to labor in unsanitary conditions which threatened the health of the community as well as the lives of the immediate victims. So urgent was the need for improvement in this respect that the trades unions and various organizations in aid of women and children petitioned for the appointment of female inspectors, who, armed with the authority of city police, should investigate all places where women and children were employed. They were to have power to order necessary changes when sanitary laws were This petition was granted by the found disregarded. Council, and five women were appointed by the Mayor in 1889 to do this work. Although they are given full police authority, they accomplish their work rather by persistence and tact than coercion.

Formerly these investigations were made entirely by men, but they were comparatively useless among the female employes. The girls are more outspoken with persons of their own sex, feeling them to be more sympathetic, and therefore these women become cognizant of many abuses of which their predecessors were ignorant. They have secured the placing of a sufficient number of sanitary closet accommodations "for females only," in stores, factories and workshops, and have had many unsanitary closets and vaults abolished. Not only have they had sufficient seats provided for the girls employed in stores to enable them to sit when not engaged in waiting on customers, but they have so discussed the matter with those in authority that girls are no longer frowned upon as was formerly the case when they occupied the seats provided. Women inspectors can better meet and investigate the complaints in all these instances than They are equally intelligent on these subjects; they men. have studied them and appreciate keenly the necessary sanitary surroundings for the best development of childhood, and their work is productive of great benefit to the factory girls of Chicago, and anything which makes them more contented benefits their employer as well.

INSPECTION OF LODGING HOUSES.

A thorough inspection of the lodging-house districts was inaugurated previous to the advent of cold weather, two officers being detailed for that duty. In the Italian quarters many cases of overcrowding were found. These abuses and violations of the ordinances were corrected in many cases willingly, while others who opposed the orders of the Department were arrested and fined. The results of such inspection were immediately noticed, and on future visits we found a noticeable improvement in the premises and surroundings. A move in the right direction would be to license every place used for a lodging house, such license to be issued only after examination of the premises and approved by this Department, and when issued to be hung in a public place in such lodging house, stating number of lodgers allowed under such license; failure to keep premises in a sanitary condition to be considered sufficient cause for revocation of the same. Such action would bring about a permanent improvement in the charactor of such places and is worthy of consideration.

Inspection has been made of 54 lodging houses, with a capacity of 6,875 lodgers. As an illustration of the work, the following reports, as presented by the inspectors, are submitted:

August 12th, 11:00 p.m.—525 State street. Thirty-one bunks in cellar, all in small wooden partitioned, 4x7 rooms; damp, wet floor; bad odors; defective pan closet; low ceiling.

August 12th, 11:30 p. m.—515 State street. Fifty double-deckers in cellar, 7x3. Bare ceiling; damp, wet floor; no ventilation except from front door. Defective water closet; bare stone walls on side.

August 11th, 11:45 p. m.—Called at No. 399 Canal street; found 15 beds in cellar, no plaster on ceiling or walls; dim, dirty lamp emitting sickening odors was the only light in cellar. Floor all rotted, sink used for urinal purposes; floor and wood work impregnated with urine. Room measured 6 feet 9 inches from floor to the bare joists. This is one of the filthiest of the whole lot. This cellar is run by a man who keeps a saloon upstairs.

August 12th, 10:30 p. m.—1531 State street, lodging house. Found 61 cots and bunks in cellar; defective water closet, no ventilation, bad odors all through cellar. It measured 6x6. Dirty walls and ceiling. Served notice to vacate and abolish use of cellar for lodging purposes. At the southwest corner of Ewing and Jefferson streets found Italian club in session, about 20 or more members in session in three small rooms. Found six persons sleeping on floor, others on cots. Walls dirty; bad odor.

At 337 Desplaines street, found about 20 men sleeping on their fruit carts, surrounded on all sides by bunches of bananas, pears, large bags of peanuts, and an immense stock of street car goods in this place. They have staging built above the store floor, forming another floor, where there are more beds, fruits, cots and bunks. Those are occupied by the men who peddle fruit at night and sleep during the day. Many of those night men here we do not know, as they were absent. The upper room is reached by a ladder from the rear of store. The boards forming the floor are actually warped and bent from the weight of fruit, nuts, etc. Found defective water closet; bad odors all through.

At 105 Ewing street, found club in cellar. Place full of beds, cots, etc. No ventilation. Sink in cellar; no trap; waste pipe dropped into open sewer. The odor so prominent in this place the artist sketched it.

INSPECTION OF THE RIVER.

An inspection of the South Fork of the South Branch was undertaken to secure the abatement of nuisances arising from the packing and slaughter houses. In order to obtain a knowledge of the sewerage of the Stock Yards district, it was necessary to detail an officer of this Department to make a survey of the Fork, as there are no plats of the sewers of this district on record. This officer, assisted by an officer of the sewer department, went over the ground carefully, making plats of the sewer system of the various firms in that locality. A general clean-up followed the inspection and the defects found were at once attended to.

Plats showing the sewer system of the following firms are on file in this office: Chicago Packing & Provision Company; Swift & Co.; Allerton Packing Co.; Hess Bros.; Underwood & Co.; Michener Bros. & Co.; W. H. Silberhorn; North American Packing & Provision Co.; Jones & Stiles; Libby, McNeil & Libby; John Cudahy & Co.; Guthman, Lappell & Co.; International Packing Co.; J. C. Hately; Nelson Morris; Lipton's; Armour & Co.; Fowler Bros.; Noonan & Hoff.

The sewers of these places are constructed so as to flow into a series of intercepting basins, where men are stationed to skim from the surface all grease, etc., the residue flowing into the river. The same methods are in use at the gas works. The entire length of the river has been visited and a thorough knowledge obtained as to the sewers of all places on the river.

ENFORCEMENT OF THE SMOKE ORDINANCE.

The work of the Department in the enforcement of the smoke ordinance during the past year has been productive of the best results. In view of the fact that many lines of business would be stimulated by reason of the World's Columbian Exposition, and that many plants would be taxed to their utmost capacity during the continuance of the Fair, after careful consideration of the subject, a policy of correction was decided upon, and proved to be the best under the circumstances.

Violators of the ordinance were promptly notified by letter, close watch being maintained for violation at all times, with the result of keeping the city comparatively free from smoke. The enforcement of the ordinance for the past few years has brought about a change of feeling on the part of those operating and owning steam plants. Contracts for the erection of new plants are now so drawn that in the operation of the plants the city ordinances shall be observed before their acceptance by architect or owner.

Three thousand six hundred and forty-seven violations of the smoke ordinance have been abated, some by devices to aid combustion, some by the use of hard coal, and quite a number by the use of natural gas. Two thousand seven hundred and four railroad engines entering the city have smoke-consuming devices. The total cost to the city to bring about this large number of abatements was less than \$4,000.

In considering the subject of smoke abatement it is but just to take into consideration the immense amount of coal consumed in this city. The year 1893, up to November 20th, the total of soft coal used amounted to 4,247,174 tons. From Pennsylvania, 394,444 tons; from Ohio, 659,901 tons; from W. Virginia and Kentucky, 164,271 tons; from Illinois, 1,822,380 tons, and from Indiana, 1,586,171 tons, thus showing the two last named States to have furnished 3,408,551 tons of the total for 1892.

Following is a summary of the locomotive engines equipped with smoke-preventing devices on the different railroads entering Chicago:

Lake Shore and Michigan Southern Railway Company— 79 engines equipped with smoke preventers, 42 of which run into the city of Chicago. The Barnes Smoke Consumer and the Hutchinson are the devices used.

Atchison, Topeka and Santa Fe Railroad Company— Total number of engines equipped with smoke preventers, 54; of this number 44 are in switching service in Chicago and in road service running into the city.

Pennsylvania Lines west of Pittsburgh—On the Chicago division of this road, 89 engines are equipped with smoke consumers. The apparatus in use is called the Fort Wayne device.

Chicago and Erie Railroad Company-Has a total of 55 engines equipped with the Hutchinson device.

New York, Chicago and St. Louis Railroad Company— Has 31 engines equipped with smoke-consuming devices; number running in Chicago, 15. The Barnes device is used on this road.

Chicago and Eastern Illinois Railroad—Has 90 engines equipped with smoke preventers; 43 of these are running in Chicago. The devices used on this road are the Hutchinson, Michigan Central and Barnes—also a device of their own manufacture.

Baltimore and Ohio Railroad—Has all its engines running into the city equipped with smoke consumers of the Hutchinson pattern. Number so equipped, 42.

Chicago, Rock Island and Pacific Railway—Has at the present time 100 engines equipped with the Hutchinson "smoke burner" and Barnes device; 418 engines are equipped with the Barnes device only; five engines running between Blue Island and Chicago are equipped with smoke burners and Barnes device; engines equipped with Barnes device only and running between the same points, seven. Engines equipped with the Hutchinson "smoke burner" in 1893, 36; number of engines equipped with Barnes' device only, 65. All engines running into Chicago are equipped with smokeburning devices of either Barnes', Hutchinson's or Nutting's patents.

Chicago and Alton Railroad Company—Has now 65 locomotives equipped with smoke preventers, as follows: 46 with Western smoke preventers, 13 with the Barnes, six with the Nutting. All of these engines are running into the city of Chicago.

Chicago, Milwaukee and St. Paul Railway—Has 77 engines equipped with the "Walker smoke consumer," 48 with the Chicago, Milwaukee and St. Paul "consumer" and two with the Barnes device, making a total of 127 engines; running in Chicago, 110.

Michigan Central Railroad Company—Has 69 engines equipped with smoke preventers. Total number of engines equipped running in the city, 48—31 being passenger and freight engines, and 17 switching and transfer engines. All engines running into the city of Chicago or working in Chicago are equipped with smoke consumers.

Chicago and Western Indiana Railroad and Belt Railroad Company of Chicago—Have 32 engines equipped with smoke-consuming devices. Use the Hutchinson, Dickson, Barnes, Western and Farr smoke burners.

Chicago and Northern Pacific Railroad Company and Chicago and Calumet Terminal Railway Company—Have 24 locomotives running into the city, all equipped with the Barnes smoke consumer.

Louisville, New Albany and Chicago Railway—Has 22 engines equipped with the Barnes device. They have also a device of their own invention in use on their road.

Chicago, Burlington and Quincy Railroad—Has at present 155 locomotives fitted with smoke preventers, all of which number run into the city of Chicago, at one time or another. The devices include the Walker, Western, Hutchinson and Kunzer, all of which are of the steam-jet pattern. All engines which pass through the shops at Chicago for repairs, are fitted with smoke preventers at the same time.

Grand Trunk Lines—Have 23 locomotives running into Chicago, all of which are equipped with smoke preventers, as follows: Eight Hutchinson burners; eight Western; one Walker; five C. & G. T. standard.

Chicago and North-Western Railway Company-Has 300 engines equipped with smoke burners; 198 now running into and out of Chicago. Practically the entire equipment of motive power owned by this company and running into and out of the city of Chicago is equipped with smoke burners.

Wabash Railroad Company—Has 295 engines equipped with smoke preventers; running into Chicago, 59. These engines are equipped with the Barnes smoke-suppressing device.

Illinois Central Railroad Company—Has 169 engines equipped with smoke preventers; without smoke preventers, 25. Of those equipped 130 have the Nutting device; 25 Michigan device; Hutchinson device, nine; Western, three; Walker, one; Barnes, one.

Pennsylvania Lines, west of Pittsburgh—Have 100 engines equipped with preventers. About 15 or 20 engines were equipped during the year 1893. On the P., Ft. W. & C. Ry., Western Division, which is the division running into Chicago, 58 engines have been equipped with smoke-preventing devices, 11 engines being so equipped during the year 1893.

The Department is often appealed to for information as to the merits of smoke preventers in use throughout the city. For this reason there is here furnished a description of some of the devices in use on many prominent buildings thus affording the seeker after information on this subject an opportunity for investigation as to their respective merits.

The results by the common boiler setting are everywhere recognized as the standard for comparison for all boiler settings. To maintain this standard or even increase it should be the aim of every smoke-burning device. It should be done, if possible, in such a manner as not to materially increase the expense to maintain repairs or the danger of the device doing damage to the boiler.

The Black Diamond Smokeless Furnace was designed to carry out these points by furnishing in an effective manner the two elements, heat and air, necessary for combustion. As the temperature of the boiler never reaches 400 degrees F. while the ignition or lighting point of coal is over 700 degrees F. and the degree of good combustion much higher, the boiler is an impediment to combustion. To maintain such a temperature in the furnace as will make good combustion possible and at the same time allow the heat to come quickly and directly to the boiler, the Black Diamond places on the bridge wall an inverted arch, leaving a space of three or four inches between it and the boiler. The arch is perforated with three or four holes or smaller arches, the size and area of which are proportioned to the area of the tubes of the boiler. The arch is set back from the end of the grate from 12 to 24 inches, to make a sort of combustion chamber for the air and gases while mingling before reaching it. which is at a red heat. Nothing can pass from the furnace without passing through this highly heated surface. The arch thus placed is strong and durable. The air supply is obtained first by cutting away the panel of the fire door and attaching a balance door which can be closed when not needed. The copper plate or liner of the door is perforated with holes four or five times in number to the ordinary liner, so that all air shall come into the furnace in small streams, large volume of air at once being in danger of lowering the furnace heat. As air goes up the chimney the easiest way, it is not considered best to depend too much on this natural supply, there being danger of cutting the capacity of the boiler by taking away too much air that should go through the grates, thus limiting the quantity of coal that could be burned. Syphons are therefore put in to force in a portion of the air needed. An automatic regulating device gradually shuts off the air over the fire, experience having shown that the demand for air to burn the smoke gradually lessens and that usually in about three minutes all smoke ceases. All air then passes through the grates, where it is most needed to make steam.

The Jones Under-feed Mechanical Stoker consists of a mechanical device for introducing fresh coal into the ordinary boiler furnace, from underneath the burning fuel instead of supplying it to the top or surface of the fire as is done in ordinary practice. It is simple in construction, having a fuel chamber or retort in the furnace below the line of the fire, forming a supporting bottom, sloping upward and backward from the supply opening and, with flaring sides, forming a magazine for the fresh or green fuel. In connection with this is a ram operated by a steam cylinder and valve (all outside of the furnace) by means of which the fuel is forced into and through the retort. The retort is provided with tuyeres on either side on top through which the air is introduced by means of a blower. Up either side of the tuyeres ordinary grates are placed. To operate the device the retort is first filled with coal level with the tuyeres; fire is then started on the side grates as usual until steam is raised; ash pit doors are then closed, and the hopper outside is filled with coal. By means of the steam ram the coal is then forced up into the retort. Air is admitted through the tuyeres and passes over the green fuel into the retort, but under and through the burning fuel, no combustion taking place below the point at which air is introduced. The result is that the heat from the burning fuel or coke liberates the gas from the fresh fuel in the retort, which naturally rises, and coming in contact with the air is mixed with it and passes up through the incandescent body, the result being a bright, clear flame, free from smoke. By this method the coal is first thoroughly coked before it reaches the fire proper, thus utilizing all the combustible matter in the fuel. The stoker is adapted to the use of all kinds of bituminous and semibituminous coal, and is particularly adapted to the use of fine coal and screenings. The device is very durable, there being no mechanical movements of any kind subject to the action of the fire.

The McGraw Smoke Burner consists of one 4-inch pipe running across the front of the boiler above fire doors with both ends of 4-inch pipe open. Attached to same are eight 14-inch pipes, about 7-inch centers, running through boiler front to face of brick work. Outside of 4-inch pipe is a 4-inch pipe running full length of 4-inch pipe. Attached to 4-inch pipe are eight 4-inch jets running through 4-inch pipe into 14-inch pipe one inch, which form a vacuum through 4inch pipe and inject air through 14-inch pipes into furnace by means of compressed air or steam, thereby causing, it is claimed, perfect combustion and consuming 85 per cent. of the smoke, and is perfectly noiseless.

The Murphy Automatic Stoker and Smokeless Furnace is a mechanical steam boiler furnace which, it is claimed, burns low grades of fuel with great economy, high duty and without smoke. This furnace is so arranged that the coal, after being deposited in the magazines, located in the side walls of the fire box and extending the full length of the grate surface, is fed upon the grates, the grates shaken and the ash and other refuse ground from the furnace into the ash pit mechanically. In detail this furnace is constructed as follows: About three feet above the floor, built in both the fire-box walls and bolted to the furnace front are heavy castiron plates, called the "coking plates;" upon these plates rest boxes (stoker boxes), extending the length of the coking plates and about three inches high. These, by means of shafts (the stoker shafts), the same length as the boxes and having sections of spur gears cast upon them, which have contact with racks cast upon the under side of the "stoker boxes,"

give to the boxes a motion of translation forward toward the fire and then back. On top of the boxes are long triangular bars, termed the "reaper bars," which are used for the purpose of distributing the coal in the magazines and are operated with a motion at right angles to that given the boxes, by hand levers from the front. Above these are the magazines or receptacles for the coal, which are constructed of cast-iron pieces. the tops being two feet above the coking plates and the receptacles being about one foot wide; the front pieces, called the "arch plates," having the small passages for the admission of the air, for the combustion of the volatile portion of the fuel, act as the skewbacks for the fire-brick arch where it extends over the furnace. About half-way up in the magazines and on the opposite sides to the arch plates are sheet-iron plates slanting down to the reaper bars; these direct the coal, which descends by gravity in the magazines to the front of the stoker boxes, from whence it is pushed out upon the grates, which, to one looking from the front, have a V-shaped position and are about 1-inch on the face and six inches deep. The branches of the V extend from the "coking plates" down at an angle of 45 degrees to the "grate bearer," which is the apex of the V, and consists of a heavy cast-iron box running the whole length of the grate surface and supports each alternate grate which is stationary. The movable grates are operated by "rocker bars," which are cast-iron bars and pass through the grates at right angles to them. Through the center of the grate bearer is a cast-iron shaft with spur teeth which has a motion of rotation and grinds the ash and refuse into the pit, the bottom of which is two feet below the "grate bearer." The whole boiler front comes with these furnaces and has the usual flue-cap doors, ash-pit doors, fire doors (used only in extreme cases for easy access to the fires), and doors for the magazines. On the side of the front of each battery is located a small steam engine, which furnishes the power to operate a long bar running across the front, which in turn by an ingenious system of levers and links transmits the proper motion to the stoker shaft and this to the stoker boxes for feeding the coal to the grates, to the rocker bars for shaking the grates, and to the clinker bar for removing the ash and refuse.

The McKenzie Hydrogen Gas Retort Furnace consists of an iron pipe three inches in diameter, containing five to six nozzles projecting from the front of the pipe toward the bridge wall. This pipe is covered by sections of tile made of the best fire-brick material. This is to protect the pipe from the destructive action of the excessive heat in the firebox and to prevent too rapid cooling when the furnace doors are opened for firing. The bridge wall is composed of firebrick tile, laid in loosely, which can easily be removed in case any of them break. Air is admitted to the fire-box by flues composed of fire-brick tile, running from rear wall of boiler through hot-air chamber forward to air chamber in bridge wall, and in this way the air that stimulates combustion in fire-box is warmed before it comes in contact with the fire.

In the Hawley Down-Draft Furnace there are two separate grates, one above the other. The upper one is formed of a series of tubes opening at their ends into steel drums or headers, which in turn are connected with the boiler, through which the boiler water continually and rapidly circulates. It is this upper grate only which is fired, and the down draft of air being passed from the upper fire doors, the gaseous matter from the green coal consumed on the upper water tube grates is passed right through this mass of fuel. Whatever gases escape unconsumed are then burnt by the flame from the lower grate. The lower grate, formed of common bars, is entirely fed by the half-consumed fuel falling from the upper grate, and as the flame from this source ascends, it meets the downward burning fire from the upper grate, and the joint draught-current passes through the flues in the usual way. The water tubes and connections give much additional heating surface.

Three hundred plants throughout the city have adopted gas as a fuel, and it is believed that capital will in the near future take up the question of smoke abatement by the use of gas, manufacturing the same at the coal fields, piping it into the city at even a less price than is now paid for coal. There is a solution of this much discussed question in the above mentioned direction.

These 300 abatements by gas make a total of 3,947 for the year.

STATISTICS OF THE TENEMENT AND FACTORY POPULA-TION OF GHIGAGO: 1893.

By JOSEPH GRUENHUT, Statistician.

The Municipal Code (Section 1352) provides that the Commissioner of Health shall annually report to the City Council full and detailed statistics of the work of the tenement and factory inspectors, giving the numbers of males and females employed in factories and other places; the numbers of boys and girls employed under fifteen years of age; violations of city ordinances regarding tenements and factories; improvements effected in places of employment, and similar information bearing upon the status and welfare of wageworkers.

National economy is the manifestation of industrial exertions of the people for the support of the whole community, the individual workers being compensated by the owners of business undertakings in current money, which is expended in procuring the means of living or may be saved up for use as circulating capital for established or for new enterprises. There is a continuous tendency to increase the proportion of workers for gainful occupations as compared with the total population, because the minute subdivision and extensive combination of industrial labor, aided by machinery and natural forces, offers opportunities for effective utilization of the labor of females and young persons, as well as of men whose lack of physical strength and endurance would incapacitate them from hard and exhausting manual labor. The specialization of industries for commodities and services increases the return obtained by a given amount of labor, and with increased density of the industrial population the common plane of living rises all along the working lines.

Proprietors and laborers may be classified as (1) employers, (2) self-employed breadwinners, (3) wage-workers.

Artists, chemists, physicians, lawyers, clergymen, jurists, authors, teachers, artisans, mechanics and retail dealers, working directly in personal service for the public, are comprised in the self-employed breadwinners' class, and with the increase of wealth and its general distribution the so-called middle classes rise in their individual wealth, and show a larger membership relative to the whole population. Some of the intellectual professions are more or less overcrowded in certain localities. , Retail distribution and custom work for the neighborhood are performed by single owners or by partners with or without hired employes in store or shop, no sort of machinery being applicable to displace the personal services of sellers to customers. As the population scatters in extending its habitations over the land the neighborhood trade gets established in local business streets, and a retail center for the whole city and its surrounding territory also draws a large amount of trade, delivering its goods to all parts of the city.

Department stores with an endless variety of articles and easy payment stores for all sorts of household goods are established on an immense scale in the retail center, affording employment to young persons in such great numbers as could not otherwise be provided. Among such a large influx of people into Chicago there are always great numbers of poor children who need employment for self-support and for temporary additions to the income of the family. This provision of work for the needy children is no abuse of industrial freedom; but a city ordinance limits the working hours of children under 15 years of age to eight hours a day, while the State law forbids the employment of children under 14 years of age in any workshop in the State and limits the workday for females in factories and workshops to eight hours, but this State law does not apply to the females and children employed in stores or other places of distribution of goods and services. These department stores employ during the holiday trade about 15,000 persons, a large proportion being under 16 years of age. In the wholesale trade and in manufacturing a very small proportion of children are employed and regular apprenticeship is not much in vogue, so that manual training schools will be generally needed for the rising generation.

Female employments in commercial and manufacturing industries are extending in variety, numerous armies of female wage-workers being placed at processes of light machine-work or delicate handiwork. In the life of the family women and children are dependent on the adult male breadwinners, while in business mutual service for profit and use reigns, and each and all depend upon their own individual efforts for their means of living. If the number of families may be estimated at 300,000 in Chicago, this would amount to 400,000 adult females at household work and about 50,000 female domestics. Flats, apartment houses and many hotels are filled with families who get along without domestic servants, and therefore a large proportion of adult females are transferred to business pursuits.

The manufacturers of clothing, cloaks, furnishing goods, shirts, neckwear, gloves, caps, shoes, paper boxes and bags, books and pamphlets, candy, pies, crackers, preserves and other food, keepers of hotels and restaurants, the great laundries and department stores, employ an ever-increasing proportion of female wage-workers. Numerous opportunities for gainful female industries are afforded by the accelerated concentration of great accumulations of capital, invested in large establishments with improved machinery and most effective motive power and great masses of stock, while most of the small workshops can employ none but skilled male artisans.

On the whole, females are not employed at work which would fully tax their strength and endurance. They do not compete in the heavy and exhausting work of men. There is also no overcrowding where females are employed in large numbers. The tailor shops for ready-made clothing are in fair sanitary condition, and the workers are beginning to appreciate the needs of sanitary precautions. Female selfdependence increases the proportion of breadwinners to the unemployed and dependent persons, so that an average family in Chicago contains more persons who earn a living than a family in a small city, there being an endless variety of employments in an industrial center like Chicago.

There is not much child-labor in Chicago, less than 2,000 cash boys, cash girls and juvenile factory helpers under 15 years of age being employed in the city. We have no generation of native-born children forced to work on account of the poverty or enduring lack of adequate employment of any particular working classes. We must solve the problem of the rearrangement of our apprentice system so as to improve our growing generation in the skill for earning a living; because it is beyond the power of individual self-help to accomplish what the taxing and legislative functions of the State can most effectively achieve. Manual training schools and other industrial institutions are needed for the economic improvement of the working people, so as to increase the personal capital as embodied in the skill of the whole mass.

THE UNEMPLOYED.

The school census of the city of Chicago, taken in May, 1892, enumerates 760,143 males and 677,867 females, being a surplus of 82,276 males, which thereafter increased considerably on account of the many undertakings for the World's Fair and other new enterprises.

There were in Chicago from and after the month of May, 1893, about 100,000 more males than females, crowding especially near the World's Fair, and into the manufacturing districts, filling some of the numerous new buildings erected to shelter the expected influx of newcomers.

During the six months of the World's Exposition the Hyde Park neighborhood was crowded with visitors, who filled the numerous hotels and lodging houses; but after the Fair was over a large majority of these buildings were torn down or changed into dwelling and apartment houses. The business depression, commencing in the middle of May, caused a considerable exodus of people who had flocked to Chicago with expectations of getting employment at high wages. The mobility of labor and transferability of capital manifested great triumphs in the supply of immediate demands in Chicago. But certain lines were soon overcrowded and consequently became unprofitable, so that large numbers were thrown out of work. At the suggestion of the Commissioner of Health a census of the unemployed was taken by the Police Department during the third week of September, with the following result:

Precinct.	Now Employed.	Ordinary Force.	Unem- ployed.	Number of Firms
1	22,279	28,190	6,911	324
2	9,678	10,370	· 701	125
3	3,327	4,590	1,363	91
4	2,341	1,573	232	7
5	55	147	92	3
6	785	1,548	763	33
7	1,364	5,440	4,076	50
8	1,395	1,737	372	23
10 to 20	26,945	46,294	19,349	138
21	5,714	7,840	2,126	110
22	3,876	8,824	4,148	119
23	3,072	10,446	7,374	98
24	851	1,597	746	14
25	100	100		4
27	6,480	13,810	7,330	247
28	1,591	1,918	327	44
29	367	890	532	15
30	1,682	2,004	322	4
32	4,494	8,376	3,882	128
33	3,052	6,316	3,264	142
34	932	1,571	639	50
35	874	1,745	871	114
36	156	284	128	14
38	5,453	11,462	6,009	161
39	2,031	2,520	489	46
40	738	1,400	662	22
41	2,232	5,145	3,913	31
42	217	' 334	117	17
43	345	558	213	7
46	6	8	2	1
	111,502	186,455	74,953	2,171

These figures are manifestly too low. The employes of only 2,171 firms are accounted for, and of these over 40 per cent. were unemployed. But Chicago had over 30,000 firms engaged in the retail trade and over 20,000 firms in the large industries of transportation, manufacturing, building, wholesale trade, finance and real estate. The number of unemployed in the fall of 1893 probably exceeded 100,000[°] wage-workers, of both sexes and various ages.

THE EMPLOYERS.

The industries of our resident population may be estimated as follows: Employed in retail distribution and in custom work, 110,000; in retail department and instalment stores, 15,000; in manufacturing, 150,000; in building, wholesale trade, transportation, finance, insurance and real estate, 170,000; in learned professions, public employments, and religious, educational and benevolent institutions, 35,000-total 490,000, to which should be added 3,000 dressmakers, 7,000 peddlers, musicians and others in services not included in the above-mentioned classifications. This shows half a million breadwinners in a resident population of 1,600,000, averaging one person at some gainful work to every 2.2 other persons not earning any money in the above enumerated occupations. The number of breadwinners, not self-active in business but drawing their incomes from rents, interest, dividends, royalties and other sources is very large, as capital outruns population in a business center like Chicago.

The large industries of manufacturing, wholesale trade, transportation, building, banking and financial and commercial undertakings, increased on the whole in number of firms and in the grand total of working people during the first quarter of the year 1893.

The leading lines of these industries may be conveniently grouped as follows :

Newspapers and publications, 550; publishers, 625; printers, 430; binderies and blank books, 75; lithographers, 60; engravers, 95; art materials and works, 25; total, 1,860.

Paper and card-board, 61; envelopes, 9; paper and rags, 38; wall paper and window shades, 116; paper bags, 3; paper boxes, 26; total, 253.

Drugs, 12; patent medicines, 122; tobacco and cigars, 166; total, 300.

Transportation: Vessels, 400; railroads, 100; street railways, 17; express companies, 10; telegraph and telephone, 25; grain elevators, 50; storage and warehouses, 55; ship yards and docks, 7; cab lines, 4; livery stables, 350; teaming, 200; total, 1,218.

Fuel and light: Coal and wood, 1,000; gas, 24; calcium lights, 4; electric light works and materials, 150; total, 1,178.

Building trades: Carpenters and builders, 1,000; sewer builders, 80; paints and painters, 650; architects, 385; brick, lime, cement, drain pipes, 130; terra cotta, 6; sand, 24; paving, 50; roofing, 80; stone and marble, 170; glass, 60; plumbing and gas fitting, 500; total, 3,095.

Leather and rubber: Tanneries, 17; leather and findings, 32; leather and plush goods, 21; harness, 15; boots and shoes, 89; belting, 14; rubber goods, 58; hides, wool, tallow, 59; glue and fertilizers, 25; axle grease, 8; total, 338.

Textiles, etc.: Clothing, 850; gents' furnishing goods, 150; tailors' trimmings, 35; dye houses, 25; cloaks and suits, 45; corsets, 24; hosiery and knitting, 30; millinery, 18; furriers, 54; costumers, 23; gloves, 33; umbrellas, 7; fringes, 13; laces and embroideries, 16; bedding and mattresses, 44; awnings and sails, 26; cordage and twines, 8; bags, 6; trusses, 10; ship chandlers, 5; dry goods and notions, 164; woolens and linen, 69; sewing silk and spool cotton, 22; carpet cleaners, 53; carpet weavers, 20; feathers and dusters, 14; brushes, 33; hair goods, 12; total, 1,809.

Food and drink: Commission, 800; groceries, 36; flour, 36; salt, 13; fruits, 88; seeds, 10; bakeries, 100; candy and gum, 44; meat, 41; packing and slaughtering, 50; butterine, 8; fish and oysters, 40; brewers, 53; malt and hops, 24; bottlers, 110; wines and liquors, 183; distillers and rectifiers, 32; ice, 48; vinegar, 12; coffee, tea and spices, 35; baking powder, 18; extracts, 29; yeast, 10; sugar, 10; syrup, 15; starch, 8; pickles and preserves, 40; mustard, 9; soap, 15; candles, 4; total, 1, 922.

Wood work: Lumber, 320; planing mills, doors and boxes, 145; cigar boxes, 3; willow and woodenware, 20; boats, 4; coopers, 53; coffins, 3; turning and carving, 40; furniture, 216; moulding, 56; lasts, 2; canes, 3; corks, 10; brooms and broom corn, 48; bellows, 2; upholsterers' supplies, 31; bridge and car builders, 40; carriages and wagons, 256; hoisting machines, 11; pumps, 11; trunks, 8; total, 1,313.

Chemicals and mineral products: Chemical works, 85; gunpowder, 14; crockery and glassware, 25; glass bottles, 225; smoking pipes, 9; dentists' supplies, 14; plaster works and statuary, 38; ink and mucilage, 7; stove polish, 8; lead pencils, 3; disinfectants, 9; total, 237.

Metals and metallic goods: Pig iron, 23; iron, 41; nails and tags, 11; horse nails, 5; hardware, 71; foundries, 66; iron works, 100; iron and steel rails, 12; wire and wire works, 44; models and patterns, 32; tin cans, 6; cornices, 82; copper, tin and sheet iron works, 84; brass, 60; lead, 7; types, 6; plating, 24; railroad supplies, 200; junk, 50; bicycles and sporting goods, 50; scales, 20; safes, 20; stoves and furnaces, 92; boilers and supplies, 60; steam heating apparatus, 57; lightning rods, 7; files and saws, 20; machinery and tools, 275; fire apparatus and escapes, 17; sewing machines, 22; musical instruments, 66; needles, 5; total, 1,755.

Manufacturers' agents, 300; hotels and grand restaurants, 700; banks and bankers, 160; insurance, 300; mercantile and collecting agencies, 100; detective agencies, 20; theatres, museums and panoramas, 40; abstracts of title, 10; total, 1,630.

Various manufacturing enterprises overlap each other, for instance—a publishing house may include printing, binding, publishing, engraving, etc.; car and bridge works include a dozen distinct trades, so that the above list of large
industries may include perhaps 500 firms who are counted more than once.

Chicago is like a great reservoir of products and merchandise for general distribution, the number of branch offices of outside firms increasing continually, while new enterprises are started in a great variety of small and great industries. The towering office buildings contain mapy thousands of branch offices of all sorts of manufacturing, trading and commercial firms concentrated in favorable locations within easy reach from the great hotels in the business center.

During the year 1893 there was a great increase in the number of business enterprises in Chicago, especially in the southern part of the city. The retail trade comprised the following leading lines:

Groceries, 3,620; delicacies, 120; coffee, tea and spices, 100; confectionery and fruits, 1,300; bakeries, 790; flour and feed, 360; meat and provisions, 2,000; milk, 1,150; saloons, 7,500; restaurants, 950; boarding houses, 850; cigars and tobacco, 1,500; shooting galleries, 20; bird stores, 17; florists, 212: barber shops, 1,500; laundries, 750; undertakers, 213; blacksmiths and horse shoers, 560; harness and saddlery, 195; books, news and stationery, 130; musical instruments, 100; crockery and glassware, 120; furniture, 285; upholsterers, 90; trunks and satchels, 40; boots and shoes, 1,420; clothing, 290; gents' furnishing goods, 164; merchant tailors, 350; dyers, 75; druggists, 800; hair goods, 110; millinery, 350; trusses and limbs, 23; pictures and frames, 100; photographers, 225; pawnbrokers, 56; gun and locksmiths, 75; hardware, 390; jewelry and watches, 425; opticians, 40; dentists, 650; massage, 22; manicure, 28.

Employers form partnerships and corporations and consolidate under a unification of management, thereby eliminating unprofitable competition and controlling numerous armies of wage-workers and large amounts of invested capital by a single executive manager. Such concentration is advantageous for the employment of an increasing population, as it facilitates the subdivision and combination of labor, multiplying its productive efficiency, and thereby reducing the cost of the unit of production. This advantage insures the progressive enlargement of certain industrial enterprises according to the development of business ability individually and collectively. Captains of industry have continually improved the appliances and arrangements for human activity, and thereby benefited the whole community.

The business instinct is of very unequal range and compass among different populations; some nationalities are rather deficient in their capacity for business organizations, and there is a marked disparity in enterprising energy among the individual members of the same family. This talent cannot be communicated by teaching; it is a natural endowment like other inborn talents for special pursuits.

In a most modern industrial emporium like Chicago very many highly gifted business men establish their undertakings, and building activity has been extraordinary for several years for manufacturing and commercial purposes. Chicago contains a great many business concerns which are still carried on by those who started them originally on a small scale and under difficulties.

The capitalist employer among us is an economizer of labor, supplementing human strength, endurance and skill by effective tools and tireless automatic power, so that the toiling masses gain considerable leisure to enjoy life and to participate in the opportunities of progressive civilization. An ever-increasing proportion of the whole working population now takes more or less vacation from task workiduring the year, because they are not driven to ceaseless toil in consequence of low wages and high prices. And never in the history of civilization have the common people acquired so much purchasing power for the wages of one day's work or service as is now afforded on the whole in Chicago.

This rise in the standard of living results from the successful efforts of able business managers and from trade-union restrictions on reductions of wages during dull seasons. The greater productivity of our soil and mines and the greater efficiency of American labor cause our higher wages, with a lower cost of the unit of production; and a sound credit system supplements the metallic currency of the nation.

THE FOREIGN-BORN POPULATION.

The foreign-born population in Chicago in 1890 numbered, according to the Federal census, 450,666 inhabitants, distributed according to country of birth as follows:

Canada and Newfoundland, 24,297; Mexico, 64; Central America, 17; South America, 78; Cuba and West Indies, 167; Ireland, 70,028; England, 28,337; Scotland, 9,217; Great Britain (not specified), 17; Wales, 1,613; Germany, 161,039; Austria, 6,043; Holland, 5,420; Belgium, 801; Luxemburg, 102; Switzerland, 2,262; Norway, 21,835; Sweden, 43,032: Denmark, 7,087; Russia, 7,683; Hungary, 1,818; Bohemia, 25,105; Poland, 24,086; France, 2,502; Italy, 5,685; Spain, 120; Portugal, 76; Greece, 263; Europe (not specified), 628; Asia (not specified), 117; China, 584; Japan, 7; India, 70; Africa, 33; Atlantic Islands, 19; Australia, 208; Pacific Islands, 33; Sandwich Islands, 13; Turkey, 25; other countries, 31; born at sea, 161.

Since the last Federal census the foreign-born population in Chicago has increased to 500,000 in a total of 1,600,000 inhabitants. The numerical relation of the sexes among the immigrant floating population is about three adult males to two adult females, and this explains the steady extension of boarding and lodging houses and furnished rooms, hotels and restaurants in Chicago, especially in the manufacturing and commercial centers.

TABULAR STATEMENT OF INDUSTRIES AND EMPLOYES.

The appended table shows the total number of firms or employers in the specified industries and the approximate numbers usually employed in each branch:

FOOD AND DRINK.	FIRMS.	EMPLOYES
Bakeries	80	1,250
Confectioneries	44	2,300
Butterine	8	310
Flour	36	450
Glucose	1	600
Syrup	15	150
Vinegar	12	250
Yeast	- 10	85
Flavoring extracts, etc	29	450
Fruits and nuts	88	410
Pickles and preserves	40	450
Fish and oysters	40	350
Packing and slaughtering	51	25,000
Meat	41	350
Soap and candles	22	1,210
Seeds	10	510
Florists and nurseries	200	650
Salt	13	80
Ice	48	850
Coffee, tea and spices	35	650
Groceries	36	2,500
Commission	800	4,500
Malt and hops	24	450
Brewers	52	2,550
Bottlers	110	550
Wines and liquors	77	450
Distillers and rectifiers	32	250
Hotels and grand restaurants	500	7.100
Baking powders	18	450
Starch	8	50
Total	2.480	55.205

108

OF THE CITY OF CHICAGO.

BUILDING TRADES. FIRMS. EMPLOYES.

Builders, carpenters and contractors	950	20,500
Brick, lime, cement and drain pipe	125	5,500
Glass, window, mirror and decorated	60	750
Paints, painters, oils, etc	650	3,500
Plumbers and gas-fitters	500	2,150
Marble and stone	150	1,250
Paving (see also contractors)	35	1,500
Sand	25	410
Roofing	80	650
Terra Cotta	6	550
Architects	385	1,050
Total	2,966	37.810

BRASS, COPPER AND TINWARE, ETC.

Brass goods, copper and tin work	144	3,800
Lead	7	200
Gold and silver leaf	4	80
Jewelry and watches	100	1,350
Musical instruments	66	3,500
Type and type founders	6	700
Watch cases	16	50
Plating	24	650
Smelting and refining	12	200
	379	10,530

IRON AND STEEL.

Bicycles	50	2,200
Boilers and supplies	60	950
Cornices	82	550
Files and saws	20	250
Fire apparatus, escapes	17	325
Foundries	66	3,100
Hardware and cutlery	71	4,200
Horse nails	5	350
Heating apparatus	57	950
Lightning rods	7	150
Machinery and tools	275	5,500
Scales	20	320
Safes	20	150
Tinware	25	1,525

REPORT OF DEPARTMENT OF HEALTH

IRON AND STEEL.—Continued.	FIRMS.	EMPLOYES.
Wire goods and wire	44	510
Iron and steel rails	12	4,500
Iron works	100	4,800
Stoves and furnaces	92	2,500
Patterns and models	32	250
Sewing machines	22	450
Junk	108	250
R. R. supplies	200	410
Total	1,385	34,190

WOODEN MATERIALS AND WORKS.

Lumber yards and dealers	320	7,000
Planing mills, box factories and sash	145	6,500
Willow and woodenware	20	750
Billiard tables and saloon fixtures	8	650
Bridge and car builders	40	6,200
Brooms and broom corn	48	250
Burial cases and coffins	8	550
Carriages and wagons	256	1,600
Cigar boxes	6	200
Coopers	.53	1,210
Corks, bungs and faucets	10	150
Elevators and hoisting machines	11	1,200
Furniture and fixtures	220	12,500
Pictures, frames and moldings	56	1,500
Pumps	11	350
Toys and fancy goods	20	210
Trunks	8	300
Turning and carving	40	250
Bellows	2	30
Lasts	2	90
Upholsterers' supplies	31	125
Boats	4	25
Total	1,319	41,640

OF THE CITY OF CHICAGO.

TEXTILES. FIRMS. EMPLOYES.

Awnings, sails, tents	26	250
Ship chandlers	5	150
Bags	16	350
Brushes	33	250
Bedding and mattresses	44	525
Clothing, manufacturing and wholesale	850	10,500
Gents' furnishing goods	150	2,500
Cloaks and suits	45	3,500
Cords and tassels	13	950
Corsets and bustles	24	250
Hosiery and knitting	30	600
Laces and Embroidery	16	160
Feathers and dusters	14	275
Sewing silk and spool cotton	22	130
Dry goods and notions	164	5,200
Woolens and linens	69	350
Hair goods	12	210
Millinery and straw goods	18	1,550
Costumes, uniforms, flags	23	250
Gloves	33	450
Artificial limbs and trusses	10	125
Carpet cleaners	53	375
Carpet weavers	20	110
Dyers	25	125
Umbrellas	7	75
Cordage	8	200
Total	1,730	29,410

PRINTING AND PAPER.

Bill Posters	9	95
Rags and paper stock	40	550
Wall paper and window shades	116	500
Paper boxes	26	1,550
Book binders and blank books	76	1,250
Books, news and stationery	18	550
Printers and publishers	945	12,500
Engravers	94	510
Lithographers, see printers.		
Artists' materials and works	25	250
Paper and cardboard	61	950
Total	1,410	18,705

REPORT OF DEPARTMENT OF HEALTH

LEATHER AND GOODS.	FIRMS.	EMPLOYES.
Leather and leather goods	32	350
Leather and findings	32	250
Tanners and curriers	17	2,500
Hides, wool and tallow	59	450
Harness, collars, etc	15	350
Glue and fertilizers	25	750
Axle grease	8	75
Boots and shoes	89	3,650
Belting	14	275
Rubber goods	58	400
Total	330	9,050
FUEL AND LIGHT.		
Coal and wood dealers	1,000	3,925
Gas companies	7	2.000
Calcium lights	4	25
Electric lights and works and materials	150	2,950
Total	1,161	8,900
MINERALS AND CHEMICAL	5.	
Chemists and works	85	350
Gunpowder	13	90
China, crockery and glassware	25	450
Inks and mucilage	7	150
Ornamental plaster works	38	150
Dentists' supplies	14	70
Smoking pipes	9	20
Glass bottles	25	200
Stove polish	8	25
Total	224	1,505
TRANSPORTATION.		
Vessels	400	5,500
Railroads (steam)	80	30,000
Railroads (street)	17	7,000
Express companies	10	1,325
Telegraph and telephone companies	25	3,500
Elevators, grain	50	500
Warehouses and storage	55	250
Livery stables	350	2,250
Docks and ship yards	7	450
Licensed vehicles		11,000
Total	994	61,775

OF THE CITY-OF CHICAGO.

MEDICINES AND TOPACCO	TTDWG	THE OWNER
MEDICINES AND TOBACCO.	FIRMS,	EMPLOYES.
Drugs, wholesale and manufacturing	12	650
Tobacco, manufacturing and wholesale	52	850
Cigars, manufacturing and wholesale.,	700	3,000
Patent medicines	122	450
Total	886	4,950

MISCELLANEOUS.

Banks and bankers	160	1,550
Insurance	300	1,650
Real estate and office buildings	2,350	7,450
Commercial and collecting agencies	40	450
Detective agencies	20	325
Abstracts of title	8	610
Theaters, panoramas, amusements	40	825
Total	2,918	12,860

REGORD OF MEAT GONDEMNED, SGAVENGER PERMITS ISSUED, AND FINANGIAL STATEMENT.

By J. F. MCCARTY, Secretary of the Department.

Months.	Veal, Pounds.	Sheep, Pounds.	Beef, Pounds.	Hogs, Pounds.	Poultry and Game, Pounds.	Total, Pounds.
January	3.040	820	2.015	280	600	6.755
February	1.280	415	1.800	610	415	4.520
March	1,210	500	1.240	1.300	910	5,160
April	19,315	315	2.835	260	860	23,585
Mav	9,243	220	290	630	1,150	11.533
June	2,240	5.618	1.660	1.000	1.121	11.639
Julv	13,100	5.090	1.940	936	1.200	22.266
August	2,639	513	339	75	300	3.866
September	2.000	858/	570	243	207	3,875
October	4.015	359	.2.095	60	328	6.857
November	4.075	18.014	1.060	90	50	23,289
December	985	646	3,081	1,859	85	6,656
Total	63,142	16,368	11,925	7,343	7,226	130,001

MEAT CONDEMNED AT SOUTH WATER STREET, FULTON MARKET AND DEPOTS.

Montus.	Lumpy Jaw Cattle, Pounds.	Cattle Bruised and Emaciated, Pounds.	Calves Con- demned, Pounds.	Hogs Bruised and Cholera, Pounds.	Sheep Bruised and Emaciated, Pounds.	Total.	
January	130,403	24,103	1,905	18,998	2,400	177.809	
February	118,900	18.978	4.427	24.394	1.975	168,674	
March	93,146	65.475	3.578	35,780	3.098	201.077	
April	92,874	40,781	3,450	37.489	2,980	177.574	
May	79,104	33,898	2,980	21.107	2.147	139,236	
June	53,700	.54.879	4,450	39.879	3.895	156.803	
July	60,500	44.731	3,594	30,978	4.533	144,336	
August	25,790	53,401	3,878	36.870	4.580	124.519	
September.	88,301	61,580	4,000	34.079	4,890	192.850	
October	77,980	28,470	3,200	18.900	3,200	131.750	
November.	82,401	36,970	1,780	24.700	2,500	148.351	
December .	133,034	61,478	1,203	27,070	5,400	228,185	
Total	1,036,133	524,744	38,445	350,244	41,598	1,991,164	

MEAT CONDEMNED AT UNION STOCK YARDS.

RECORD OF PERMITS ISSUED TO NIGHT SCAVENGERS TO CLEAN VAULTS.

Number of cubic yards removed during the year 1893 :

MONTHS.	Number of Vaults.	Cubic Yards Removed.
January	395	793
February	426	* 876
March	546	1.150
April	735	1.480
May	695	1.324
June	1.119	2,458
July	1.586	3,157
August	1.788	8.571
September	3,302	6.894
October	1.256	2,460
November	807	1.482
December	360	721
Total	18,015	26,366

Totals.	 \$ 3206.95 \$ 3206.95 \$ 784.40 \$ 784.40 \$ 7873.73 \$ 7873.73 \$ 588.78 \$ 588	\$120,596.87
Carter Harrison Bath.	\$ 15.00 4,208.10 2,830.90	\$11,263.25
Miscellan- eous Expenses.	 \$ 166.88 77.51 58.87 117.48 117.48 117.48 124.60 202.42 202.43 317.06 66.32 388.20 161.70 161.70 	\$1,809.93
Vaccine Virus.	 \$ 220.50 315.00 56.97 56.97 92.25 27.00 44.53 154.80 154.80 154.80 158.00 158.00 158.00 233.55 255.00 	\$5,249.40
Disinfect- ants, Drugs and Chemical Work.	 53.98 40.49 40.49 36.12 51.59 	\$ 729.23
Printing and Stationery.	 \$ 142.75 \$ 142.75 \$ 110.80 87.50 87.50 844.05 8642.55 806.30 108.35 65.30 105.50 20.00 134.90 	\$1,803.10
Small-Pox Hospital Supplies.	 \$ 335.98 \$ 335.98 \$ 347.58 247.58 247.58 136.47 136.47 136.30 138.44 138.44 138.44 138.44 138.44 138.44 103.44 <li< td=""><td>\$4,918.71</td></li<>	\$4,918.71
Salaries of Small-Pox Hospital Employes.	 230.00 255.00 255.00 230.00 230.00 230.00 235.50 235.50 235.50 235.50 235.50 235.50 235.50 235.51 235.50 235.50	\$3,847,41
Salaries of Officers and Medical Inspectors.	 7,146.86 7,146.31 7,146.31 7,144.31 7,893.09 7,831.81 7,531.81 8,079.82 8,079.82 8,151.66 8,151.66 8,151.66 8,151.66 7,434.78 7,518.11 	\$90,975.85
Montes.	January. February March. April May June Juny September November November	Total Disbursements

DEPARTMENT OF HEALTH-DIVISION OF ACCOUNTS.

116

REPORT OF DEPARTMENT OF HEALTH

Employes of the Department.

ARTHUR R. REYNOLDS, M. D., --Commissioner of Health.J. F. MCCARTY,---Secretary.CHAS. CALDWELL, M. D.,--Registrar Vital Statistics.J. J. DILLON,---Clerk Vital Statistics.C. E. STIMMING,---Department Clerk.MISS M. NOONAN,---Stenographer.

Abedical Inspectors.

E. GARROTT, M. D. Chief.M. L. GOODKIND, M. D.A. M. BRIANZA, M. D.E. S. RAMSAY, M. D.C. F. CHAPMAN, M. D.H. SPALDING, M. D.J. P. LETTS, M. D.F. M. TRUDE, M. D.

Meat and Stock Pards Inspectors.

J. J. NAUGHTON. PETER FLAHERTY. WM. O'LEAKE. GEORGE MCKEOWN. T. J. O'HEARN. THOS. F. MCGIVERN. GEORGE J. MCDONALD. AUGUST KLAAS. M. J. KENNEDY. J. TRENCH.

Burial Inspectors.

JAMES LAWLESS, M. D.E. N. ELLIOTT, M. D.W. H. BOHART, M. D.M. O. HECKARD, M. D.

Tenement and Factory Inspectors.

Chief Tenement,	Factory and Smoke Inspector.			
	Statistician.			
	Clerk.			
	Clerk Record of Plumbing.			
	- Clerk Record of Plans.			
	HENRY SPIES.			
	I. GOLDEN.			
	R. G. DUNLOP.			
	JOHN MURRAY.			
	J. W. TOTTEN.			
	J. E. HAWLEY.			
	E. A. FLYNN.			
	F. STYX.			
	T. ATKINSON.			
	T. J. CONNOR.			
	J. D. GLEASON.			
	W. F. MCCARTHY.			
	P. PINTER.			
	GEO. GILTZOW.			
	J. S. KELLY.			
	E. T. GRANNIN.			
	J. F. JORDAN.			
	Chief Tenement,			

Female Tenement and Factory Inspectors.

Mrs. C. Doolittle. Mrs. I. Sullivan. Mrs. M. Glennon. Mrs. E. Taylor. Mrs. M. McCormick.

Milk Division.

PROF. E. B. STUART, -		-		-		-	Suj	p t. .	Milk Bureau.
CASS L. KENNICOTT, -	-		-		-		-	-	Chemist.
DR. ADOLPH GEHRMANN,		-		-		-	-		Microscopist.
E. L. TYNDALE, -	-		-		-		-	-	Clerk.

Inspectors.

H. J. AUER. HENRY ROEDER. JACOB BERKSON. NIC. COOK.

Fumigators.

DR. MALCOLM GUNN. DR. L. T. POTTER. CHRIS. REILLY. P. J. HARTMAN. ED. KELLY. T. F. GRADY. J. DALY. M. PENDERGAST. C. ANDERSON. GEO. ZEIGLER. W. F. KELLY. T. FLOOD.





