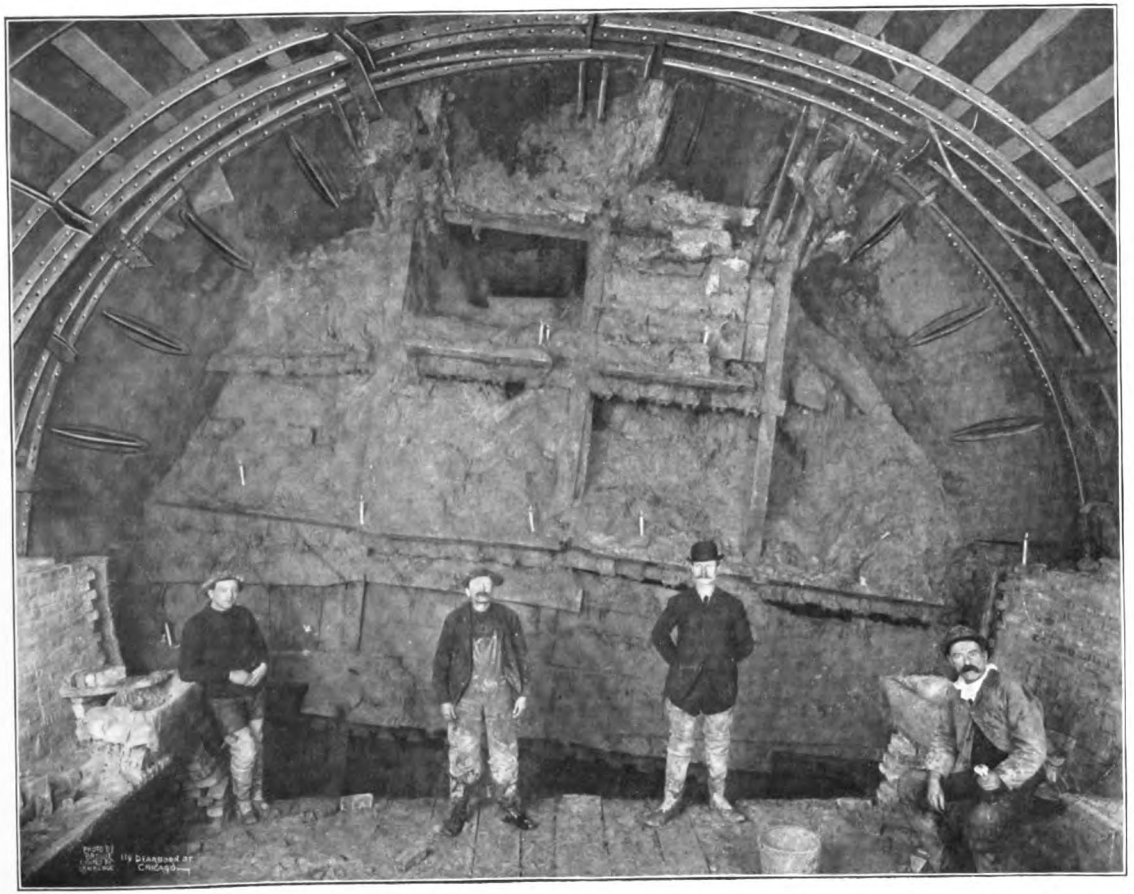
Annual report

Chicago (Ill.). Dept. of Public Works



INTERCEPTING SEWERS, THIRTY-NINTH STREET CONDUIT—MEETING OF AGNEW SHIELD WITH STAR CONSTRUCTION SHIELD AT VINCENNES AVENUE.

MAYOR'S ANNUAL MESSAGE

AND THE

Twenty-Seventh Annual Report

OF THE

DEPARTMENT OF

PUBLIC WORKS

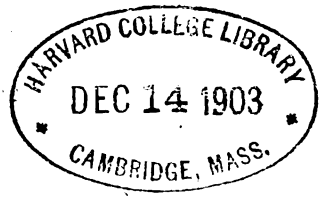
TO THE

City Council of the City of Chicago

FOR THE

Fiscal Year Ending December 31

1902



MESSAGE OF
MAYOR HARRISON

Message of Mayor Harrison.

MAYOR'S OFFICE, CHICAGO, May 25, 1903.

To the Honorable, the City Council:

GENTLEMEN—In the coming year many important problems will come before your Honorable Body demanding careful study and investigation in order that a satisfactory solution of them may be reached. None of these problems will equal the traction question in its importance to the present generation, as well as in its far reaching effects upon generations to come. Upon this Council will devolve in all likelihood the duty of finally settling this question, to settle it on terms of fairness and equity to the street railway interests seeking grants and privileges, with justice to the citizens at large who give to these grants and privileges their value. To this Council, if it keep pace with public sentiment and advanced economic thought, will come the opportunity of establishing a new era in the manner of a municipality's dealings with grants of public franchises.

SELFISH INTERESTS AGAINST DELAY.

For the past six years the traction question has been knocking at the doors of this body demanding investigation and settlement. It has come before you in many and devious forms. Five years ago it was presented in a guise which if consented to would have been a lasting disgrace to the morals, as well as a calamity to the financial welfare of our City. In these years selfish interests with an intemperance born of greed have made violent protest against delay; in the caution dictated by the common prudence with which public officials have approached a settlement of the question, the timid have found cause for apprehension

and alarm; the thoughtless have been swayed back and forth by the interested clamor of the one and the unreasoning fears of the other. Nevertheless it has seemed well to those upon whom have devolved the responsibilities and obligations of working out a satisfactory settlement to make haste slowly, to feel their way carefully along unbeaten lines, to take no step until sure of their ground, to err possibly on the side of prudence and extraordinary precaution rather than by undue haste to be guilty of irretrievable mistakes, only to recognize the errors when it was too late to correct them.

DELAY JUSTIFIES BEYOND CAVIL.

The Fabian policy of delay has been adopted, and while this policy has subjected those responsible for it to much unintelligent criticism and uncalled for abuse, the course of events has justified it beyond all cavil. As a result of the tactics resorted to, the City today for the first time since the renewal of franchises has been under discussion is in a position to deal with the traction companies on fairly even terms. The passage by the present general assembly of the Mueller bill, granting to municipalities the right to own, control and operate street car lines, makes it possible to include in a grant of franchise a municipal ownership clause which will mean what it says, which will be something more than an empty phrase, fine sounding but without substance. The so-called Public Opinion act, though open to much criticism because of its lack of binding force, as well as of its unfair and unreasonable demand for a petition of 25 per cent of the registered voters as an initiative, nevertheless opens the way to a new method of disposing of franchise questions, making it possible to submit proposed ordinances to the people, to consult their wishes in reference to the grants, to enable them to be heard in a matter of so much moment even to the humblest citizen.

ILLINOIS PIONEER IN MUNICIPAL REFORM.

The enactment of these laws marks a distinct advance in municipal government. By them a new method of dealing with franchises has

been established. Neither law would have found its way to the statute books had the tactics of handling the traction question been other than those employed. Illinois today, because of these tactics, is the pioneer state in municipal reform, the pioneer state to enact a law making it possible for municipalities to own street car lines; this state has blazed the way in the new movement. It devolves upon your Honorable Body so to guide your actions that Chicago, which has led the movement for the enactment of a public ownership law, leading still farther, may become the first American city to own and operate its transportation facilities.

MUELLER LAW AND PUBLIC OPINION LAW CLEAR THE WAY.

The Mueller law and the Public Opinion law make it possible for this Council, without further hesitancy or delay, to enter upon the preliminary work leading up to an extension of the existing franchises of the traction companies, which are to expire in the coming July. The people again and again have expressed themselves as to the terms upon which the extensions should be granted. I take it that, as servants of the public employed by it to serve its interests and to safeguard its property rights, we should regard it our duty in approaching a settlement of this much mooted question, so vitally affecting the welfare of all our citizens of today and of the future, to hew as closely to the lines demanded by the people as may lie in our power to hew.

PEOPLE DEMAND EARLY MUNICIPAL OWNERSHIP.

The people above all are interested in the securing of satisfactory transportation facilities thoroughly in keeping with the progress of the times and in the taking of the preparatory steps towards an early ownership of the traction utilities. There is little need for arguing these points. The people have spoken on them again and again, and to faithful public officials the people's voice should be a command. I fail to agree with those who claim to find the sole moving cause of the general desire for public ownership in the execrable service the people of this City have been subjected to for the past six years. In all likeli-

hood general attention to the theory and desirability of public ownership was first directed by the outraged sentiment of the public, aroused by the intolerable service rendered by the local traction companies. It had its origin perhaps in the failure of the traction companies properly to recognize and appreciate the responsibilities and obligations assumed by them together with the franchises from which with such slight regard for the public rights such tremendous financial benefits have been obtained. Today the desire for and belief in public ownership has gone farther than a mere wish for decent and comfortable facilities. The great mass of our citizens have been educated to the idea that in public ownership lies the sole, fair, just and reasonable method of handling all those utilities, for the operation of which the practically exclusive use of public property is required. Public ownership is desired as something more than a mere means to an end, the obtaining of satisfactory service. It is based on the belief that the profits accruing from the use of the property of the public properly belong to the public, that the granting to individuals of the right to enrich themselves at the expense of the many by the exclusive use of the public's property is as unfair in practice, as false in theory and as demoralizing in its results as was the habit of despots of the olden days who farmed out the levying and the gathering of the taxes as individual perquisites to profligate favorites.

REFERENDUM ESSENTIAL PRELIMINARY TO SETTLEMENT.

Even less open to doubt and argument is the proposition that the people expect and demand a voice in any settlement of the traction question proposed to be made. The citizens, to whose votes and support our presence here is due, feel an interest so absorbing and so acute in the disposition to be made of their valuable property rights in the streets they cannot be blamed for demanding with practical unanimity and with an insistence which may not safely be denied that no franchise grant shall be made which must not be submitted to popular vote for indorsement or rejection, if a sufficient number of voters petition for such submission.

Again and again the advocates of an immediate extension of the street railroad franchises have insisted upon the anxiety of the general public for an immediate settlement of the question, to enable them to ride in comfort and ease in cars fitted out and operated in accordance with the most approved modern methods. If the public demand for a settlement be as insistent as the advocates of a settlement claim it to be, there can certainly be no objection on the part of the traction interests to giving the people a chance to be heard.

"THE STREETS BELONG TO THE PEOPLE."

Aside from any question of the inclination of the traction interests, however, the public has too much at stake in the disposition to be made of the streets for any question to be raised by the most captious of the public's unquestioned rights to be consulted in a manner in which every citizen has a vital and personal interest. "The streets belong to the people" is a phrase which may sound trite and overused to some; it is a truth, however, which can neither be gainsaid nor contradicted. The streets not only belong to the people, but the interest in the disposition to be made of them has become so aroused in the public mind, it is not apt to sit idly by and see franchise rights to their use given away without demanding a chance to be heard and exacting an opportunity to pass judgment upon any franchise ordinance your Honorable Body may propose to pass.

CITIZENS STOCKHOLDERS IN MUNICIPALITY.

Were the directors of one of the street railway companies to grant to a rival company a right to use a part of its lines to the exclusion of itself or in common with itself, the right would have no binding force until it had been submitted to the stockholders at a general stockholders' meeting and had received the assent of a majority of the stockholders of the company. Chicago is a great corporation in which every citizen holds a share of stock. This Council is the board of directors of the corporation. It should not have the right to grant away the property rights of the citizens without providing an opportunity of submitting

the grant to a stockholders' meeting, which is a general or special election; the grant, moreover, should have no binding force until the stockholders, the citizens, have been given an opportunity to petition for its submission to a general vote or have given the project their approval and endorsement by their failure so to petition. The rule which applies to privately managed corporations in all fairness and in all justice should be made to apply to the great business corporation, the City of Chicago.

These demands are fundamental and may not be denied without administering a deliberate slap in the face of the vast majority of Chicago's citizens.

NO DOUBT OF ADVISABILITY OF MUNICIPAL CONTROL.

In a paper read by me before the Woman's Club, October 25, 1898, I said: "As to the question of municipal control of natural monopolies there is no longer doubt of its advisability, except with those whom self interest impels to take the contrary view. The question has become so thoroughly settled as to be almost a public axiom, that no grant of a public franchise should be made in which the municipality is not a partner or does not receive full and adequate compensation. This rests on the theory that the streets and alleys of a municipality are part and parcel of its assets and shall not be given or bartered away without adequate return. This much being granted, it follows as a natural sequence that if a municipality can dispose of its rights for a stipulated rent or for other compensation, it may with equal justice control and operate the franchise for its own pecuniary profit. The question is not so much of right as of practicability and expediency.

QUESTION NOT SO MUCH OF RIGHT AS OF EXPEDIENCY.

"The municipalities in this state are prohibited from owning and operating public franchises. To do this, new empowering legislation would be required on the part of the legislature. Before steps should be taken to obtain this it would be well to decide on the methods to be employed, whether the City should itself operate the traction plant,

the lighting plant and other matters of a like kind, or whether it should possess the title and rent the operating power for a fixed sum or for a portion of the gross receipts. Another question comes in of the protection of vested rights and of the methods to be employed to become legally and honestly possessed of those vested rights.

"These are questions for future consideration. It is enough to say that the principle of municipal ownership and control is neither chimerical nor, what is often used in a disparaging sense, socialistic; that a municipality can operate a traction system with a fair and just civil service as well and profitably as it today operates the water office, or as the general government operates the postal service; and that pending a final and satisfactory solution of the question as to the best method of exercising municipal control, all corporations or individuals seeking grants of profitable public franchises must be compelled to make the municipality a fair and equal partner in the venture that the citizens may receive their due from the accruing profits."

PUBLIC OWNERSHIP BASED ON COMMON SENSE.

These were my personal views in 1898, before the question of public ownership had been seriously discussed by a considerable number of our citizens. My experience in official life, as well as the investigations I have since made, have only served to strengthen the impressions then formed that the idea of public ownership is neither a fad nor a dream, that it is based on the soundest of common sense, the most stable of business reasons, that it will not only help to lessen the burden of taxation weighing upon our citizens, reduce the rates they must pay for the necessaries of life now furnished by private companies at as high a cost as they dare exact, but go far toward removing corruption in public affairs by removing the cause and incentive for the debauchery of public officials.

WAIVER OF 99-YEAR ACT CLAIMS ESSENTIAL CONDITION.

An express and unequivocal waiver of all rights claimed under the so-called 99-year act constitutes a third fundamental demand upon

which the people insist as a condition precedent in an extension ordinance. Upon this the sentiment of the public is even more united than upon the demand for the referendum, than it has been upon the demand for municipal ownership enabling legislation as a prerequisite to a consideration of the traction question. Here and there we may find disinterested citizens who from honest convictions are opposed to municipal ownership. Here and there we may find citizens who from ignorance, willful or voluntary as it may be, fail to recognize the purifying power of invoking the people's aid in the settlement of vast questions, who would rather leave the settlement in the hands of a mere handful of officials, and subject them by the very nature of things to all the wiles, the cajoleries and the temptations in which the public service corporation agent is a past master. Here and there we may find citizens, who from mere timorousness, lack of enterprise, fear of breaking away from the beaten paths, look upon public ownership and the referendum as socialistic fads and theories, useless and ineffectual as dreams, if indeed not positively dangerous to the body politic.

PRAISE FOR PIONEERS.

In the days before 1776 there were those who clung to the mother government with a tenacity born of the possibilities of individual gain, who in their blind arrogance and failure to read the promises held forth by the future could see nothing but ruin and disaster in a breaking of the bonds which held the colonies in vassalage to Great Britain; there were those in whom timidity prompted a fear of an awful reckoning in even the bare suggestion of advantages to be gained by throwing off the yoke of England's sovereign. The world would have made but slight advances, civilization would still be in hopeless and helpless infancy had the selfishness, the ignorance, the fears of the prototypes of our present anti-referendum, anti-public ownership citizens been heeded in all the various stages of world progress. It is the dreamer with his scoffed-at fancies and fads, the pioneer who has dared put these fanciful imaginings into practice who have made the world what it is. Chicago today is under a deep debt of gratitude to the delver in Utopian

fields who worked out the ideas which today hold so much of promise in the settlement of the much vexed traction question, to the pioneers in the movement for public ownership and the referendum, who, in spite of opposition, criticism and abuse, have stood steadfastly for the enforcement of the ideas which they have believed to be right.

The number of disinterested citizens who fail to demand an absolute and unequivocal waiver of all the rights the companies may claim under the infamous and notorious legislation known as the 99-year act is so small as to be practically unworthy of notice and attention. The demand for a waiver of these privileges is based upon the belief first that, the act in itself being illegal and of no effect, the people, when asked to confer valuable rights upon the companies which seek to be beneficiaries of it, should not be put to the trouble and expense of litigating it.

STREET RAILWAY COMPANIES SEEKING PRIVILEGES OF GREAT VALUE.

The street railroad companies are seeking privileges of great value from the public; the public is willing to grant these privileges on certain terms and conditions; in return the public demands first of all an express waiver of the 99-year act in order that in the future when the local traction question may come up in whatsoever form the claim of rights under this act may not be advanced to block the people in the demands they may at that time feel disposed to make. Chicago's citizens recall how twenty years ago the question of the legality or illegality of this act was laid over for future consideration and adjudication. In the years which have since passed no step has been taken to settle the dispute. A question which might have been investigated and settled twenty years ago is here today to becloud the issues, to aid in thwarting the will of the people. We shall be blind to our public duties as well as slow to take advantage of the lessons of experience, if in any settlement that may be made today we fail finally and effectually to clear up the situation and leave those who may come after us free and unhampered to consult the people's will and having learned that will to obey the people's commands.

LOCAL TRANSPORTATION COMMITTEE MAKES GOOD STAND.

The Local Transportation Committee of the City Council of 1902-1903 in its deliberations on the franchise extension question with the representatives of the principal street railroad companies stood out firmly and determinedly for a strict compliance with the popular demand for a waiver of the alleged rights under the 99-year act, and because of this firm and unwavering demand the deliberations came to a sudden end. The expression of the popular will in this respect is clearer and more emphatic today, if such a thing be possible, even than when the subject was then under discussion. Any action in thwarting the popular will or ignoring the popular demand in this regard would subject the guilty official to certain and deserved popular condemnation.

GOVERNOR OGLESBY'S VETO RECALLED.

The unwillingness of the public to permit this 99-year act longer to vex and trouble it is based upon the further reason that the methods employed to pass it through the General Assembly and finally over the veto of the then Governor of Illinois, Hon. Richard J. Oglesby, were notoriously venal and corrupt. The press of the day openly charged the use of corruption funds in its passage. The act was asserted to have been "conceived in sin and brought forth in iniquity" and because of its inherent viciousness and the shamelessness of the methods employed in its passage the bill was denounced in unmeasured terms from one end of the state to the other.

The memory of the people in questions of this kind is long and tenacious; their desire for revenge, retribution and justice may be slow, but they are none the less certain. Thirty-eight years may have passed since the 99-year bill was enacted into law; the people have neither forgotten the methods employed in its passage nor have they become reconciled to the infamous burden it placed upon them.

NO COMPROMISE WITH INIQUITIES OF 1865.

Today when the traction companies come before the people as petitioners for continued privileges the public finds ready to its hands a

means of wiping out the infamies of the past, and with a practically united voice it demands as an absolute prerequisite to an extension of franchise grants a final surrender of whatever rights the companies may have obtained under and by virtue of a vicious piece of legislation. It will devolve upon your Honorable Body to assure compliance with the public demand. To recognize the 99-year act in any form, to consider it a matter of serious barter and compromise would in the last analysis make this Council and its members co-partners in the traction heritage of the iniquities of the Legislature of 1865.

ENABLING LEGISLATION PREREQUISITE OF FRANCHISE EXTENSIONS.

No honest believer in the theory of public ownership of public utilities has ever hesitated in making absolute the requirement of enabling legislation as a prerequisite of franchise extension. To have contented ourselves with a provision in an extension ordinance, authorizing the City to take over at a certain time the ownership of the traction properties without first having secured from the Legislature the authority to own, control and operate street railroad lines would have been merely to content ourselves with the chaff and the husks and to surrender the precious grain. The citizen who sees in ultimate public ownership of public utilities the correct solution of the disposition to be made of public franchises has viewed with mingled suspicion and alarm the various attempts to delay or forestall the securing of enabling legislation. To his mind the solution has inevitably presented itself, if it be so difficult to secure the necessary enabling legislation, while the street railroad companies are petitioners for public favor, what would be the chances of obtaining such legislation if the companies were in possession of a franchise from the City giving them the unquestioned privilege to make use of the street for a term of years?

EASIER TO STOP LEGISLATION THAN TO SECURE IT.

As is generally conceded, it is easier to stop legislation than to secure it. If the companies once again had become possessed of an extension of ordinance with a bare proviso that the City might take

over the ownership of the lines upon complying with certain conditions, not only might the proviso have failed because of illegality, but the possibility of securing enabling legislation would at once have become so remote as effectually to dampen the public ardor and leave the companies in an undisturbed possession of their privileges until the term prescribed was about to expire; then the public would again have been brought face to face with present conditions, again demand would have been made by interested individuals, hiding themselves under the cloak of public spirit, that the wretched service, the inferior accommodations and the unreasonableness of demanding large expenditures of money on an uncertainty required in justice another extension of grant, even in default of the passage of enabling legislation.

PRESS AND PUBLIC THANKED FOR ENABLING ACT.

As long as the companies were permitted to play this kind of a game at the expense of the people at large, just so long would it have been an absolute impossibility to take effective steps towards preparing for public ownership, just so long the proviso in an ordinance that the City might acquire the properties on given terms and at a given time, would possess all the appearance and qualities of the little game worked by the sophisticated on the innocent and guileless under the name of the shell game, just so long would the public have fed on husks, while the traction magnates would have been permitted to grow fat on the rich grain properly belonging to the people.

Thanks to the determined attitude of both press and public, and thanks to the majorities in the upper and lower houses of the General Assembly, the enabling act demanded by Chicago has been passed, even though ungraciously the Governor has given it his approval, and Chicago today is in a position to cope with a settlement of this great question of extension of ordinances, to safeguard the rights of the present citizens, to lay well the foundation for a public acquirement of the street railway lines, an ownership which will prove a boon of estimable value to the future generations of citizens.

POPULAR VIEWS IN TRACTION CHANGES IN SIX YEARS.

The views of the people in reference to the traction question have undergone a great change in the past six years. In these years the subject has been calmly and dispassionately considered by every thinking citizen. Six years ago the average man would have been satisfied in all probability with a settlement, under which decent, comfortable and hygienic accommodations would have been given and by means of which a fair compensation and a reasonable reduction of fares would have been obtained. The waiver of the 99-year act, the reference of extension ordinances to popular vote and the enactment of municipal ownership enabling legislation, prior to the extension of the franchises, are three demands which I have personally injected into the discussion and which have been so thoroughly debated and considered that more than eighty per cent of the voters declared in favor thereof when the questions of municipal ownership and the referendum were submitted to a popular vote. I can hardly think it conceivable your Honorable Body would deliberately fly in the face of public opinion so unmistakably expressed by ignoring these fundamentals in any extension of the franchises you may see fit to pass.

CONTRACT WITH THE PEOPLE MUST BE OBSERVED.

Personally I take it I have entered into a contract with the people to secure these conditions. The platform upon which I was nominated expressly and explicitly stated these terms as absolutely essential to the consideration of extensions; in my public addresses to the voters I reiterated these terms and pledged myself unequivocally and emphatically to stand out against any extension ordinance which failed to protect the public along these lines. In so doing a contract was made and now exists between the voters and myself, and as far as I am concerned I shall live up to the very letter of it.

In a message I submitted to the City Council January 6, 1902, as well as in earlier communications to your Honorable Body, I have outlined the other requirements which I have thought necessary to be included in an extension ordinance. To these conditions I have not

heard of a disinterested objection being raised. Interested criticism we may well afford to treat lightly if not positively to ignore. It should not be out of place to repeat previously made conditions here in order that the street railroad companies may be fully informed of the conditions held as essential by the executive. They are as follows:

SUMMARY OF ESSENTIAL CONDITIONS.

An improvement of accommodations which will do away with the present uncomfortable, unwholesome and indecent over-crowding of cars. Adequate compensation for the privileges granted either in the form of a percentage of the gross receipts paid into the City treasury as a trust fund to be expended solely upon the public streets, a reduction of fares or a combination of both forms. Provision for public ownership of the lines at the earliest feasible date. The simultaneous expiration of all franchises on or before twenty years after the date of grant and the express prohibition of the transfer of a franchise to a foreign corporation. The use of the underground trolley within a certain district bounded by North avenue, Twenty-second street and Western avenue, the realignment of terminals that transportation may be rapid and street congestion as far as possible avoided. The use of modern grooved rails in all paved streets and the paving of the rights of way by the traction companies with asphalt or dressed granite blocks. An universal system of transfers and full publicity of accounts. The establishment of a system of arbitration for the settlement of disputes arising between the traction companies and their employes. A single car service instead of the present train service.

PEOPLE ARE STILL AWAKE.

I have discussed these various points so often and at such length in previous messages to the City Council, it is not necessary at this time to do more than mention them. This brief mention should be given, however, in order that the traction companies may not fall into the error of supposing the people are likely to go to sleep on their rights and yield any of the points previously declared as essential to a correct

settlement, for the purpose of hastening the settlement of the problem. The people, unless I misjudge popular sentiments, are more interested in a correct settlement of the traction question than in a hurriedly prepared compromise settlement. For years they have been subjected to the most outrageous service known to an American city; they have suffered from accommodations which have violated every conceivable rule of health, of comfort and of decency.

HUDDLED LIKE CATTLE IN UNCLEAN CARS.

Morning and night they have been huddled like cattle in illy ventilated, unclean and uncomfortable cars; their wives and daughters have been subjected to conditions so demoralizing and so indecent as to be absolutely revolting. They have seen aldermen and legislators debauched by these same traction interests, while employes have been prosecuted and found guilty of successful attempts to tamper with juries and befoul the very fountain heads of justice. Is it to be wondered at if the people, losing all patience with these corporations and the managers, have made up their minds to endure the ills from which today they are suffering in order that when a settlement is finally arrived at it may be on terms which will protect the future and secure them the present conditions they demand as necessary?

CAUSES OF CHICAGO'S POVERTY DISCUSSED.

In previous messages to the City Council I have discussed at length Chicago's poverty and the causes leading up to it. The multiplicity of taxing bodies as well as the favoritism shown all bodies except those directly controlled by the City government by the County Clerk in the scaling down process, made necessary by the five per cent limitation of the Juul law, result year after year in the City government; the schools and the public library getting the small end of the loaf. I use the word "favoritism" advisedly, for a careful examination and analysis of the work performed by the County Clerk in the past five years give abundant evidence of a deliberate design to reduce the City's proportion of the tax levy to the lowest possible figure and to hamper

the City financially as far as the law will permit. As an example of this well planned scheme it is only necessary to refer to the work of the County Clerk in the past year, when in spite of an increase in the assessed valuation of the City over that of the preceding year of $27,914,691 by reducing the City's percentage from 1.61 to 1.582 the City's revenue from the taxes was increased only $89,700 instead of $362,679.88 as the application of the old rate would have given.

CHARTER REVISION CONSTITUTIONAL AMENDMENT.

It is a matter for sincere congratulation that the constitutional amendment, suggested and recommended to the Legislature by the Charter Revision Committee appointed under the auspices of the Civic Federation, even in a garbled form has been passed by the Legislature; though it debars a consolidation of the City government with the county and the Sanitary District its adoption will result at least in opening up a rift of daylight. With the adoption of this amendment, at the end of a few years Chicago's financial difficulties should offer some promise of relief and the City should be enabled to enter upon the advance steps towards improved civic conditions in keeping and in harmony with its size, its financial stability and strength.

STREET PAVEMENT QUESTION ANALYZED.

In the recent election campaign much undeserved criticism was leveled against the administration by the unfair as well as by the ignorant because of the pavements of the City streets and their condition. In common justice the public should recognize the serious difficulties attending an attempt by an administration to pave streets against the wishes and inclinations of property owners. Unless streets are ordered improved upon a majority petition of property owners the passage of improvement ordinances can only be had with the consent of the City Council, and the cases of aldermen declining to pass such ordinances in the face of protests by property owners are numerous enough to require no citing of specific instances in proof. And even when the aldermen of a ward back up the administration in ordering an improvement in

spite of an adverse protest the course of such an ordinance through the courts, when confirmation is sought, is full of obstacles and beset with many difficulties.

In my first administration the most serious obstacle the administration was obliged to contend with was the demand of property owners for the antiquated, useless and really expensive cedar block pavement. Delegation after delegation of citizens besieged the Mayor's office protesting vehemently against the laying of any other pavement than the cedar block pavement and in the face of arguments showing the practical valuelessness of such paving irate citizens insinuated collusion between the administration and the asphalt trust, so-called, as a reason for its unwillingness to permit an improvement with a material on which every dollar was practically so much money thrown irretrievably away.

When by dint of hard work and argument, in and out of season, the public became convinced that cedar block pavement would not serve either as an economical or an effective pavement for this city of damp soil and heavy traffic, the property owner still in search of a paving material, which because of cheap first cost appealed to his thrift despite its lack of wearing qualities, became insistent in his demands for brick pavements even on streets where the traffic was the heaviest. As a result there are today many cases where brick pavements have been laid on thoroughfares unadapted to their use, with the natural consequence that the traffic of this city of narrow tires and heavy loads has already crushed the paving material to dust.

BEST PAVEMENT, IN SPITE OF COST, IS MOST ECONOMICAL.

Property owners should be educated to the knowledge and conviction that in the long run the best of paving material, in spite of its first cost, is the cheapest and most economical, and the members of your Honorable Body and the daily press can render valuable aid to the municipality and the citizens in helping to diffuse this knowledge. Cedar block pavements should not be tolerated in any quarter, for with traffic the material wears away, while without traffic it rots away; in

either case the money expended upon it is merely so much money thrown to the dogs. Brick pavements serve well on streets of light traffic, though even here the noisiness of the material is a valid objection to its use. Asphalt wears well on streets of moderate traffic, is clean and hygienic. Without the use of the grooved rail it cannot be made to give good wear on street car streets. Creosoted block paving, judging from the moderate experiments made with it locally, notably in Michigan avenue in front of the Auditorium and on one side of the Rush street bridge, shows splendid wearing qualities, is cleaner than asphalt because the dirt crusts rather than forms into dust, is far preferable from the standpoint of noisiness and because less dusty is unquestionably less open to hygienic criticism. For heavy traffic as well as for the paving of street railroads' rights of way the only satisfactory paving material is dressed granite block.

HOUSE OF CORRECTION CREOSOTING PLANT SUGGESTED.

If the public could but once be educated to the use of creosoted block pavement, the heavy first cost of this material could be substantially decreased by establishing at the House of Correction a creosoting plant from which paving contractors could purchase their material at a greatly reduced price over the present market figures, while a new industry, profitable to the City and not conflicting with local labor interests, would be established in the City workhouse.

In discussing the special assessment work of the City I am desirous of calling particular attention to the charge recently made of the great superiority of the work performed under private contract over publicly let work. Particular attention has been called to the work in State street from Randolph to Madison streets, and in Washington street from State street to Wabash avenue. This work was performed by one of the leading contractors of the City, and was laid to serve as an object lesson in perfect workmanship. Within the past few months it has been necessary to cut out great patches of work at the southeast corner of State and Washington streets and to relay the asphalt. This repairing came under my own personal observation. Unless the repairs

have already been made, the asphalt next to the rails in Washington street from State street to Wabash avenue must also be relaid.

CITY WORK COMPARES FAVORABLY WITH PRIVATE CONTRACT WORK.

The work in Michigan avenue from Madison street south has also been private contract work, although the administration has been charged with the blame for the tardiness of the improvement. The asphalt paving in Adams street from Wabash avenue to Michigan avenue is a further illustration of the havoc wrought by this City's heavy loads with the best laid paving material. I cite these examples of private contract work not in criticism of the contractors but as evidence that when all is said and done City work compares favorably with the most carefully laid and most scrupulously exacting private contract work.

A few years ago a local paper started a crusade in behalf of making the vacant lots and the waste places of the City fair to the sight. The crusade led to very beneficial results. Dirt, rubbish and unsightly stuff was removed from many a vacant lot; grass, in instances, was planted where brick, boards, heaps of rubbish and tin cans had been scattered, and a distinct improvement was made in the City's outward appearance.

CRUSADE FOR CLEANLINESS SUGGESTED.

A kindred crusade today in favor of street improvements could not but be attended with results which would promise much for a cleaner and more attractive Chicago. Especially is such a crusade necessary in the downtown district where the property owners certainly can with no show of reason or justice plead poverty as an excuse for failure to tidy up and make presentable the portion of the City which falls under the critical eye of every visitor. While the downtown streets remain paved with the old-fashioned granite block pavement with the wide groove between the blocks to gather and to hold the filth, it will be impossible to keep the City clean with double the money now available for street cleaning purposes. The streets devoted to heavy traffic in the wholesale districts should be paved with dressed

granite block, the lighter traffic streets in the retail districts either with asphalt or with creosoted block.

CONSENT OF PROPERTY OWNERS NEEDED.

There is a reasonable doubt whether the City can order this repaving without the consent of the interested property owners, because in the necessary court proceedings the claim would immediately be set up that the streets are satisfactorily paved as they stand and the City would have this objection to overcome. If some of our wealthy men, who are so prone to criticise Chicago and declare it a City impossible to live in with comfort and who spend the lion's share of their time beyond our limits, would only evidence a little of the old-time Chicago spirit and give of their millions, all earned and gathered together by the strength and greatness of the City, to its beautifying and upbuilding, they could render Chicago a distinct benefit, where today they are working it a distinct harm.

CONTRACTORS' COMBINATIONS.

Property owners, it is charged, are averse to the making of public improvements because of the working combinations existing between the crushed stone men, the sand men, the various material men and the paving contractors. It would be idle to deny the existence of these combinations, for they undoubtedly exist. Their existence with equal certainty has advanced the cost of street paving very materially. It might be argued these are the days of combinations, and the cost of all the necessities of life has been materially increased by other and kindred combinations. The administration must meet conditions as they confront it. The administration is not responsible for the existence of these combinations; they exist in spite of it. Contracts are invariably let to the lowest bidder. If a new competitor enters the field and underbids the combination, the firm gets the contract. Unfortunately the usual custom is before the next letting to take the new firm into the combination. This has happened over and over again in the past six years. Invitations have been extended to outside firms to enter the

Chicago market without success. The combination extends beyond Chicago, if current report be correct, and the entire national field is divided up between the various parties to it, with the result that the Cincinnati, or the St. Louis, or the Milwaukee, or the Indianapolis parties to the combination keep out of the Chicago field, on condition that the Chicago end leave them free to reap the financial harvest in their respective fields.

MUNICIPAL DEPARTMENT OF CONSTRUCTION ADVOCATED.

If improvements are to be made we must put up with existing conditions. The ultimate solution will be had and had only when the City becomes financially able to ask an amendment to its charter by means of which it may be permitted to establish its own department of construction under which all municipal work may be performed by the direct labor plan, the City employing its own corps of employes, owning its own plants and performing all City work of every character under the direct labor system and under the direct supervision of the various departments.

This system has been worked to good advantage in the garbage removal work. In the old days the City awarded the care of the various wards to contractors, usually favored individuals, who were authorized to employ a certain number of teams and a certain number of men to care for the territory assigned to them. Under a complaisant administration a neat profit was usually obtained by working a smaller number of men and teams than were actually authorized and drawing the full pay for the authorized quota. Five years ago this administration changed to the direct labor system, so that today the City employs the teams and the men individually.

GARBAGE WORK COMMENDED.

The work is performed under the supervision of the ward superintendent and usually under the watchful eyes of the aldermen of the ward. Only the actual number of men and teams employed receive pay, and the requirement that the laborers and the team owners must

live in the ward in which they are employed, and, if possible, in the districts in which their work is performed, results in a vast improvement over former methods. The weekly reports of men and teams employed and of work accomplished made by the street bureau to the members of your Honorable Body afford an additional guaranty that the meager funds the City is justified in appropriating for street cleaning and garbage removal work are being honestly and efficiently expended.

ADVANTAGES OF DAY LABOR.

The various and many advantages to the community obtained by employing the day labor system in the performance of great municipal works and undertakings have been evidenced again and again in the past six years. As already cited, vast improvement has been made in the City's methods of cleaning the streets and handling the removal of garbage. By the employment of the direct labor system the service has been greatly improved. A systematic regular service has been installed and a corresponding reduction in price has been obtained. It is not only in the work of removing the garbage that the advantages of the direct labor system have been seen. Under this system, through its Department of Public Works, the City completed the so-called Weir & McKechney contract for the construction of the land tunnel connecting the Northwest pumping works at Springfield avenue and Bloomingdale road with the FitzSimons & Connell section of tunnel at Grand avenue and Green street. Because of the interference by the City with their peculiar methods the contractors definitely suspended operations on this work November 11, 1898; the construction was finally completed by the City under the direct labor plan April 23, 1900. The total length of this section was 22,184 feet; the size of the tunnel was 8 feet inside diameter.

ILLUSTRATIONS SHOWING BENEFITS OF DAY LABOR.

The contract provided that the contractors should receive $15.90 per lineal foot for tunnel in rock and $16.65 per lineal foot for tunnel

in earth; they were also to receive $2.00 per cubic yard for all rock found in conjunction with earth; in other words, where the tunnel went through material composed of part earth and part rock. The contractors, upon the forfeiture of their contract, sued the City for $1,000,000 and were awarded the sum of $555,560.20. The City constructed 419 feet of tunnel through rock at a total cost of $33.87 per lineal foot, and 1,541 feet through earth excavation at $25.19 per lineal foot.

With reference to Section 3, Northwest land tunnel, the figures show that the cost of the work as performed by the City largely exceeded the contract price. As a matter of fact, the prices bid by Weir, McKechney & Co. per lineal foot were entirely too low and the work could not possibly have been done at those prices; this was shown by the force accounts kept by the City while the contractors were at work. In the cost per lineal foot on the portion of the tunnel constructed by the City are included a great many items covering work which had to be done on account of the abandonment of the tunnel by the contractors. The actual cost to the City of that part of the work constructed by the contractors averaged $58.70 per lineal foot. This excessive cost was due, first to the peculiar methods employed by the contractors which compelled the City eventually to take possession of this section and complete it. Besides the courts allowed practically every claim made by the contractors; this increased the cost to the amount above given. There is no question that had the City done the work by direct labor from the inception the cost to the City per lineal foot as shown would have been reduced at least thirty per cent.

The City also carried to completion with direct labor the Ross & Ross tunnel when the work was abandoned by the contractors. This tunnel extends from the lake shore and Sixty-eighth street pumping station to the Sixty-eighth street crib in Lake Michigan. The contract was let September 1, 1896, and the contractors suspended operations definitely December 24, 1897. The City resumed construction January 18, 1898, and completed the work May 21, 1898. The total

length of tunnel constructed was 102 feet of 5-foot diameter tunnel and 7,316 feet of 7-foot diameter tunnel. The first serious obstacle encountered by the contractors in the construction of this tunnel was at a point about 730 feet east of the lake shaft, when bad ground containing water, sand and gas was encountered in the upper quarter of the tunnel; shortly after the lake broke in and in twenty minutes two drifts and the shaft were filled with water. Work was then suspended on the tunnel proper, and with the aid of a diver a hole in the bottom of the lake directly over the tunnel was located. Into this cavity 1,500 cubic yards of clay was dumped, and a detour to the north 150 feet from the original line was made, whence the tunnel started in a direction parallel to the original line. After proceeding 958 feet bad ground was again encountered, and the compressed air escaping allowed the lake again to break in; owing to the bulkheads the flooding of the tunnel and shafts was prevented.

BIG ENTERPRISES COMPLETED BY DIRECT EMPLOYMENT.

Another detour to the north was made and work continued without any special trouble until the time of suspension of construction by the contractors. The City under the direct labor system completed the work without difficulty, though the same character of ground was encountered by its engineers.

The Chicago avenue tunnel extension, constructed by day labor, extends from Oak street and Lake Michigan to connections at Chicago avenue pumping station. The work was begun in July, 1898, and practically finished the same year, but one of the connections was purposely delayed. The size, lengths and costs are as follows: One hundred and twenty-seven feet of 5-foot tunnel at $12.81 per lineal foot, 518 feet of 6-foot tunnel at $14.68 per lineal foot, 860 feet of 7-foot tunnel at $15.61 per lineal foot.

On the Kedzie avenue water pipe tunnel, constructed by day labor, under the Drainage Canal of the Sanitary District of Chicago and under the Illinois and Michigan Canal, work was commenced November 25, 1898, and construction completed about April 1, 1899. The total length of this tunnel is 1,544 feet. The material through which the tunnel was constructed made in most part very difficult tunneling,

consisting of hard boulder clay with pockets of quicksand and water. This tunnel was horseshoe shape, 7 feet by 8 feet 2 inches, and the cost was $16.91 per lineal foot.

In all these undertakings serious physical obstacles were met and successfully contended with; especially was this true in the case of the Ross & Ross tunnel, on which work was abandoned by the contractors because of the apparent impossibility of carrying it through pockets of quicksand. The City took up the work at the point of abandonment, bringing it to a successful completion in spite of the physical dangers which threatened, and saving in addition a material sum over the price demanded by the contractor.

WORK ON INTERCEPTING SEWER.

Moreover, the City is today engaged in the construction of the lateral intercepting sewer running south from Thirty-ninth street. At the time the work was first proposed, competitive bids were asked for its construction. Not only is the cost at which the City is performing the work less than the lowest contract price offered, but when completed the City will be the owner of the entire plant used in the construction. The possession of this plant will materially lessen the cost of future work of this character. The cost of the plant used in the construction of Section G at the present time is $22,000; that in Section H, $26,000; making a total of $48,000. This sum will be charged to the construction of Sections G and H, and be an asset of the City of Chicago on completion of the work.

A comparison between the cost to the City of construction under the day labor system and the lowest contractor's bid on the work is instructive:

SECTION G.

DIAMETER.	LENGTH.	Cost, Including Engineering and Inspection.	Lowest Bid, Plus Engineering and Inspection.
16 feet	4,375	$42.00	$43.25
15¼ "	5,144	42.00	43.25
14¼ "	3,347	42.52	43.25
	SECTION H.		
13¼ feet	3,158	$29.35	$34.54

The City derives advantages from the direct labor system, however, other than the mere cheapening of the cost of construction. It is an exception when a contractor engaged in an underground work of this character fails to present a bill for extras, either during the construction or upon the completion of the work. No city probably has suffered more from the exactions of contractors in this respect than has Chicago in the decade prior to 1898; indeed, the unreasonable and thoroughly inequitable demands of the contractors formed the cause which first led the administration six years ago to take up the construction of City work under the direct labor system. Under this system there is nothing to be gained by the substitution of a poor grade of material for the grade demanded by the character of the work, and when the work is completed there is no hungry contractor knocking at the doors of the City treasury with demands for extras, based either upon a technicality or upon an intentional juggling of the specifications in order that just such a claim might be made.

DESIRABILITY OF DEPARTMENT OF CONSTRUCTION PROVED.

The advantages of the direct labor system are so many and so apparent, while the corresponding disadvantages of the contract system are so glaring and so expensive to the community that I look forward with confidence to an early date when well ordered municipalities will undertake all municipal work of every character and description under the direction and supervision of a regularly established department of construction.

The day labor system locally may receive a temporary setback because of the failure of the General Assembly to pass the bill amending the special assessment law recommended by your Honorable Body and urged for passage by your Committee on State Legislation. The unwarranted interference with this legislation by persons of influence with legislators but without any information on the subject stopped the bill when it was well on its way towards passage. Should the Supreme Court sustain the decisions of the lower courts in the Hanreddy case, the failure of the Legislature to amend the special assessment law as

suggested may subject the City to great annoyance and inconvenience as well as to great financial loss, all as a result of uninformed meddling by officious persons.

INCREASED INTEREST IN PUBLIC AFFAIRS.

In the past few years a new order of municipal administration has been established in this City. The causes leading up to the present improved methods have been many. The increased interest taken in the conduct of public affairs by the citizens at large, resulting in the tremendous improvement which has been brought about in the personnel of your Honorable Body, has perhaps had more to do with it than any other single agency. For the past four years Chicago has had a City Council which has been not only of a far higher standard than that of any other City Council in the country, but which would compare favorably with any American legislative body. The active cooperation of a council of this character in the management of public affairs has materially aided the administration in the establishment of the many reforms of the past six years.

CIVIL SERVICE LAUDED.

The installation of the Civil Service system and the improved character of the City employes obtained by its agency have also done their share towards elevating the standard of public service.

The improved personnel of your Honorable Body in large measure is due to the unselfish, disinterested, intelligent and tireless efforts of an association whose present and past members certainly deserve great gratitude from the citizens of Chicago. From my official experiences and information I appreciate perhaps more keenly than the average citizen the services which have resulted in the high character and standing of the present City Council. I would be the last person to fail in acknowledging the value of these services and the benefits to Chicago which have directly and indirectly grown out of them. It seems to me, however, the active service of such an organization ceases for the time being with the election of the members of a Council. The

organization exists for the purpose of electing honest, intelligent and energetic men to this body. It does not exist, it should not exist for the purpose of deciding upon the character of legislation to be passed by the Aldermen in whose election it has interested itself.

UNDUE INFLUENCING OF VOTES DEPRECATED.

For the past two years Aldermen and representatives of the press assigned to City Hall work have called my attention to alleged attempts on the part of representatives of this association to influence votes on various matters of legislation. The influence, it is true, has always been for the right; on but one ground has it been subject to criticism, namely, the risk and danger of establishing a precedent for similar interference at some future day by kindred organizations or the successors of the present organization, not inspired by the high motives and aims of those who have controlled its actions up to date. This one ground, however, should be sufficient to prevent recurrence. No system of irresponsible government should be established and tolerated which even at the most remote date might become a potent agency in working the very wrongs this association has been formed to end and prevent.

At last, locally, a condition of political thought has been reached where it is practically agreed by all classes of citizens that a municipal government is merely a vast business undertaking and that in the management of municipal affairs the same rules and ideas must be enforced which prevail in the conduct of an ordinary private business venture.

PUBLIC PROPERTY "LEGITIMATE SPOILS."

For too many years the property of the public was looked upon as legitimate spoils for the first individual who by good luck or because of a wit keener than that possessed by his fellows seized upon and reaped from it an individual profit at the expense of the citizens at large. In the old days the private use of public property was dealt out either as political spoils, as favor to an individual or for the profit of the Alderman in whose ward the public property proposed to be given away was located.

In the early days of my first administration I insisted upon the rigid recognition of the principle that no property should be disposed of without adequate compensation to the City treasury. An unwavering and unyielding enforcement of this principle has brought about a material increase in the City's revenues. While the compensation paid to the treasury for an individual switch track in a public street or alley, for a bay window or store front projecting beyond the building line, for a tunnel or conduit under the surface of a public highway may be inconsiderable in itself, in the aggregate the total of these various compensations has already produced a handsome revenue to the City. The system, if properly insisted upon and carefully looked after in the future, will add a tremendous increase to the City's annual income.

In connection with this subject is it not time to install a systematic method of arriving at the amount of compensation to be demanded? At the present time the compensation exacted depends largely upon the whim or severity of judgment of the Committee on Streets and Alleys for the particular section in which the privilege is asked. At one time, some years ago, the proposition was made to your Honorable Body, calling for the establishing of a committee on compensation to whose final judgment questions of the amount of compensation for privileges should be left for adjudication.

SYSTEM OF COMPUTING COMPENSATION SUGGESTED.

Because of the cumbersomeness of the work made necessary by the establishing of such a committee the idea was dropped. It was figured that, if after one of your committees had considered the advisability of granting the privilege and had made its report, the entire matter again should be submitted to a committee on compensation, too much time would be required for the consideration of a matter which might properly be handled by the individual committee to which it was first referred.

Today the City's methods are open to serious objection and just criticism; there is no uniformity of judgment controlling the actions of the Committees on Streets and Alleys for the three divisions of the

City, and as a result unjustifiable discrepancy exists in the amount of compensation exacted for similar privileges. I would suggest, as an easy method of obtaining uniformity of action and at the same time of avoiding a cumbersome process and unnecessary delay, that two members of each of your Committees on Streets and Alleys be assigned to serve jointly as a special sub-committee on compensation and that all questions of the amount of compensation to be paid for a given privilege be assigned to this committee, whose action shall be final as far as the committees in question are concerned. By the employment of such a system as this a uniform rule could soon be established for a system of compensations for the various grants made by the City; this scale would control in all parts of the City and there would be no longer a discrepancy in the compensation demanded in the three divisions.

TRACK ELEVATION FACTS AND FIGURES.

In another part of this message will be found facts and figures relating to the work accomplished by the Track Elevation Department in the last year. Ordinances are being gradually passed under which, when the work has been finally completed, grade crossings will be practically abolished within the City limits. The work accomplished by this department, the many miles of tracks which have been elevated, the hundreds of grade crossings which have been removed, the millions of dollars expended by the railroad companies will stand for years as a monument to the enterprise of the great railroads which center here, as well as to the advanced state of public sentiment which made necessary the expenditure of these vast sums of money. It would pay the critic of the management of Chicago's affairs to compare carefully the work accomplished in track elevation in Chicago and the expenses incurred thereunder by the City with the track elevation work in other communities.

ELECTRIC LINES MAKE STREET INTERSECTIONS DANGEROUS.

The demand for track elevation originated in the frequent deaths at grade crossings. While public sentiment has been demanding the

removal of these grade crossings in order that the life and limb of the citizens might be protected, the same public sentiment has made demand for rapid surface transportation on the various electric lines of the City, which makes each street intersection almost as dangerous a grade crossing as were the old grade crossings on the steam railroads on which public life has been protected by the elevation of the tracks. The question inevitably suggests itself whether due regard for the protection of the public should not require a diminution of the speed at which electric cars are operated in the congested portions of the City.

Five years ago the fender ordinance, introduced by ex-Alderman W. C. Nelson, was passed by your Honorable Body and was rigidly enforced by the City administration. The enforcement of this ordinance materially improved conditions and has resulted in the saving of many lives. Nevertheless, even with all the safety devices which can be applied to the modern electric car, if these cars are to plunge through the streets in the congested districts at the tremendous rate of speed now frequently employed, the vast sums of money employed on track elevation and the rousing of public sentiment to the fever pitch which made these expenditures necessary, seem almost a mockery.

CRAZE OF THE DAY FOR RAPID TRANSPORTATION.

The craze of the day, it is true, is for rapid transportation. Is it not time for serious consideration whether in this race of rapid transportation we are not rapidly reaching a condition in which public life and limb will be in more serious jeopardy than prior to the time when a single steam railroad track had been elevated in Chicago?

For the past year a special committee of your Committee on Local Transportation has had under consideration the construction of a subway system. In connection with this subject, the necessity either for positive City ownership or for the most rigid City control cannot be too strongly impressed upon the minds of the members of your Honorable Body. A subway system, while desirable in affording a safe means for rapid transportation, as well as necessary at an early date to aid in relieving the congestion of the downtown district, appeals to the prop-

erty owner with equal force as a means of saving the pavements of the City by preventing the constant tearing up of the surface of the streets. It also appeals to the student of public affairs in that it provides a means for the future installation of public utilities made necessary by the demands of modern business and commercial life.

SUBWAYS, LOW LEVEL SEWERS AND HIGH PRESSURE WATER SYSTEM.

Not only should the street railways be placed in the projected subways, and not only should all the present underground work in our City streets be properly cared for in them, but provision must also be made for a high-pressure water system, as well as for a system of low-level sewers which will properly drain the business district. In many of our downtown streets the sewers of today, which must care for the transient population of the downtown district, increased a thousand-fold by the growth of the City's population, as well as by the erection of the countless so-called sky-scrapers, were originally constructed when a five-story building was looked upon almost as an architectural wonder. The majority were constructed about forty-three years ago. The east and west sewers are 2 feet in diameter at Wabash avenue, and three feet in diameter where they empty into the river. The north and south sewers are 12 inches in diameter and empty into the east and west sewers at intervals of one or two blocks. These sewers are from 10 to 12 feet below the surface of the street. They should be at least of twice their present size and from 2 to 4 feet farther below the street surface than they are today. With such a sewer system installed it would be feasible to flush the streets in the downtown district.

PNEUMATIC TUBE SYSTEM.

There is today a demand for a pneumatic tube system to be used in connection with the Federal postal system. If the demand is not already here, it soon will be for a commercial pneumatic tube system by which small parcels may be distributed all over the City, resulting not only in relieving street congestion, but also in a more rapid delivery of parcels both in the business and in the residence districts. While

we may believe today that modern enterprise has reached its limit and that the present uses to which the underground portions of the City's streets are put will suffice for the distant future, it is not unreasonable to expect as great changes as have taken place in the past generation to continue through the generations to come. In other words, a municipal subway system should and would enable future generations to care for all the public utilities which future scientific research and ingenuity may originate. Whether these utilities shall be operated by the municipality itself or whether the privilege of operating them shall be awarded to private companies, the establishing of a subway system which will make their installation possible, their continued use not a constant and growing annoyance and expense and their operation profitable to the municipality, becomes an absolute necessity.

PUBLIC SCHOOLS OUT OF POLITICS.

Chicago is to be congratulated upon the fact that through the methods employed in the last six years its public schools have been taken absolutely out of politics. Improved business methods have been introduced into the management of the physical property of the school system and by the use of these business methods almost all of the old scandals have been eliminated. The passage of the law by a recent Legislature giving the schools the power to condemn property needed for building sites has resulted in the elimination of the old-time scandals connected with these purchases and has also enabled the Board to make a great saving in the cost of the sites. The installation of a merit system in the promotion of teachers, as well as in the appointments as teachers of cadets of the Normal School, the increased power given to the Superintendent in the management of strictly educational affairs and the discouraging of outside influence in all matters of this character, have resulted in a corresponding improvement in the management of the schools and will inevitably result in an ultimate raising of the standard of efficiency of the teachers. The public schools system having once been taken out of politics, it should be not only the earnest desire, but the absolute determination, of every right-minded

citizen to take all the needed precautions that political influence shall forever be debarred from control in the affairs of this great educational agency.

CHICAGO AS A LABOR STORM CENTER.

Great railroad and manufacturing center as it is, the central distributing point for the agricultural districts of the Mississippi Valley, the head of shipping and the chief port of the great lakes, Chicago suffers from more than its share of lockouts, strikes and the train of evils attendant upon industrial revolution. The right of capital to combine, whether it be for just or unjust ends, has not yet been finally denied by the law. So long as capital by the acquiescence of the law of the land is given the right to combine for its own purposes, there can certainly be no valid question raised of the right of labor to combine for self protection and self advancement. As capital has the undisputed right to close down its industries when they are being operated at a loss, thus depriving labor of its opportunity to earn a living, labor cannot justly be criticised for exercising its right to lay down its tools and quit work if it is not being paid a wage which nets a fair profit to the family. Nor is labor open to valid criticism if its representatives seek by argument, appeal to reason, or other legitimate efforts of persuasion to prevent fellow wage earners from taking the places it has vacated. This is its right, its sole legal weapon ready to its grasp with which to combat indifference, unfairness, injustice, inhumanity, callousness—whatever mental and moral quality it may be which impels employers to monopolize the profits, to appropriate to their exclusive benefit all the richness of the harvest of good times, to leave labor the same wage, whether the years be lean or fat.

UNDER BAN OF HUMANITY.

Capital lies under the ban of humanity when it refuses to make labor a partner in the days of fullness and rich harvesting, yet increases the weight of the yoke bearing upon its shoulder when profits are scant and returns are meager. "Thou shalt not muzzle the ox that treadeth out the corn" is a mandate which appeals forcefully to all; with how

much greater emphasis should it appeal to the higher nature of mankind when it applies to the laborer, the mechanic, the artisan, who by the sweat of his brow earns livelihood for self and family, who in the seven years of plenty must lay up in the family storehouse the means for tiding over the seven years of famine which of necessity and with certainty will follow. Whatever the justice or injustice of it may be, there is no gainsaying that labor too frequently becomes a participant, a co-reaper of a bountiful harvest only when by exercising its right of laying down its tools and striking it forces recognition.

STRIKE IS INDUSTRIAL WAR.

A strike is industrial war. War hardens the conscience, crushes the finer sensibilities, benumbs the better emotions, induces a temporary anesthesia of the higher qualities of human nature. In an industrial war, as in real war, men do things, men are swayed by impulses and motives which they would repudiate and disown in normal circumstances. When a strike is on, the radical element comes to the front. As the struggle lengthens the number of radicals in both camps increases. With this increase the struggle grows more and more embittered, the combatants less and less open to reason.

It is the radicals in the opposing camps who inaugurate and institute unlawful methods. There are those on the side of capital, few indeed though fortunately they may be, who at the very outset clamor for the officer with his club, the militiaman with his rifle, the regular with his machine-like obedience to orders, be the orders what they may; the radical capitalist asks nothing, is satisfied with nothing but broken heads and flowing blood. In the hosts of labor are those, few in number, thank God, who believe in the law of force, can see nothing beyond it, recognize no other agency worth invoking. Peaceful picketing, resort to argument and persuasion are too mild mannered, too milk-and-watery for their disposition; they are devotees of the law of violence and to their way of thinking the duty of the police is to turn its back at critical moments and remain blind to the application of the arguments of the fist and the bludgeon.

RADICALS ON BOTH SIDES RESPONSIBLE.

Even though the vast majority of the employers are men of humane instincts, open to reason and conviction, even though the vast majority of the wage earners deprecate violence, abhor violation of the law, ask only fairness, justice and the exercise of the privileges given them by the law, a great strike must almost of necessity be an ugly thing. The work of a handful of radicals is aided and abetted by the army of hoodlums, the vicious, the rough, the semi-criminals and the confirmed violators of the law found in every great city; a word leads to a blow, a blow to a pistol shot or knife cut, and these lead to general disorder and riot; society is upheaved by violence and viciousness, until the force of an aroused and outraged public sentiment, backed up by the sober common sense of the reasonable employer and the level-headed labor man, bring peace and quiet.

This is a fair statement of the beginning, the progress, the end of every great strike. The same common sense, equity and spirit of conciliation, applied after rioting and disorders have disgraced a community and deteriorated public manners and morals, if applied at the very beginning would prevent violations of the law and save a lowering of the moral tone of a community which must necessarily follow in the wake of such conditions.

POLICE COMMENDED FOR FORBEARANCE.

By the very nature of things the police in times of labor difficulties are between two fires. On the one side is heard the voice of the radical whom nothing will satisfy but a succession of police charges with swinging of clubs and breaking of heads; on the other side the equally intemperate radical clamors, if not for open aid, at least for acquiescence on the part of the police in his peculiar tactics. They forget that the duty of the police is the preservation of the peace, the enforcement of the law. It is not for him to decide, or even to speculate on, which side is right, which side wrong. Capital is not justified in asking the servant of the people, employed and paid for by the wage earners as well as by the employers, to win its battles for it. Labor is not justified

in expecting from the sworn officer of the law anything beyond absolute and exact neutrality. If capital would pay heed to the law of humanity, if labor would curb the impetuosity of its radical adherents, or, failing in curbing it, relegate them to the rear ranks, and finally, if the public would stifle its curiosity and leave the scene of action to the participants, the way of the policeman would be plain and easy to follow.

HOODLUMS, CURIOSITY-SEEKERS AND IDLERS CAUSE.

His difficulties are great enough from the very nature of a strike. When the idler and the curiosity seeker crowd in upon those actively engaged in an industrial dispute, they merely serve as a cloak and protection for the vicious elements to whom a strike is a vast entertainment produced for their exclusive benefit, as well as a means for illicit plunder and profit. For the lawbreaker a strike is merely a means for wreaking his vengeance on the law which holds him in check, which he therefore hates as well as fears. In such circumstances the policeman's task becomes one of the utmost difficulty, his ingenuity is taxed at times to the limit, his patience becomes exhausted; then the press gives lurid descriptions of the brutality of the blue-coated guardians of the peace.

The policeman, let it be remembered, has orders to do his duty. He wants to do his duty. Let the public aid him in the work he is employed to perform. The public can render efficient aid by remaining away from the scene of trouble. If it refuses him this aid and if to reach a miscreant who has thrown a stone the officer must force his way through a crowd the bystanders should remember the officer has no time to offer excuse or to wait for the crowd to part. His duty is to make an arrest even though in so doing he is forced to handle the curious roughly.

STRIKES MANAGED WELL BY CHICAGO.

Chicago is to be congratulated upon the orderly manner in which recent strikes have been managed, upon the spirit of conciliation which in recent disputes has prompted employers and employed to submit

their cases to unbiased arbitration. Arbitration in the last analysis offers the sole justifiable method and means of settling labor disputes. Employers and employed, whichever it may be to show a willingness to leave all disputed questions to fair arbitration, will inevitably receive public commendation and enjoy public favor.

VICE OF A GREAT COMMUNITY.

The vice of a great community presents probably the most troublesome problem with which an administration has to deal. It is an easy question to handle in the home study of the clergyman, or in the sanctum of the newspaper editor. To the police authorities it is a stubborn condition, an actuality which can neither be dodged nor ignored.

The chief vices of a community are gambling and the social evil; these we have always with us. Gambling in some form or other appeals to the average man. Chance has an attractiveness which secures new victims with each new day. Speculation, whether on the stock exchange, on the board of trade, at the private card table, or in some law-prohibited form, has charms against which we may preach sermons, write editorials, reason and protest; against which we may enact laws and seek to enforce them. As far as stamping out gambling is concerned, with no human agency can we make the laws effective. Laws against the various forms of gambling are on the statute books and enforcement of them is given by the police authorities with all the power at their command. As a result there is not an open pool room in Chicago today; there is not an open gambling house within the City limits. During the past five years, for the first time in the history of the City, open gambling, whether at faro, roulette, hazard, craps or stud poker, has not only been prohibited, but the prohibition has been enforced.

GAMBLING QUESTION CONSIDERED.

Handbooks are made about the City in spite of the closest surveillance of the Police Department; an occasional game of craps or stud poker bobs up sporadically in saloons. No preparation is required for the starting of a game and the evidence that a game has been in prog-

ress is easily removed. This form of gambling is held under such restraint, however, by the revocation of a saloon license whenever good evidence of the operation of a game can be obtained, that public gambling may be asserted with confidence to be a thing of the past in Chicago.

The social evil is a form of vice which taxes the utmost ability of an administration to hold in restraint and yet not scatter to the four quarters of heaven, where it will work ineradicable harm. Personally I hold to the belief the proper method of handling the social evil is to assign certain districts in which its existence will be tolerated, and adopt ruthless methods against fallen women found outside its limits. Then the homes could be protected, vice could be kept from the proximity of the young and the virtuous, decent neighborhoods would not be subjected to the pollution and contagion caused by the proximity of female outcasts.

OSTRICH IDEA RIDICULOUS.

There are those, however, who raise their hands in horror at the bare suggestion of what they term official recognition of vice. To withhold the recognition seems to them in some measure to blot out the very existence of it. In much the same manner the ostrich by hiding its head in the sand thinks to blind the intruder to its presence. From the first days of recorded history the social evil has existed. Whatever our horror of it may be, whatever our abhorrence for the degraded passions which make its existence possible, it exists, it has always existed and, the greater is the pity, it always will exist. It cannot be stamped out by statutory enactment, it cannot be crushed out by the enforcement of all possible laws. As far as government is concerned it may only be tolerated in the least harmful and least offensive form.

CONSIDERATION FOR HOMES AND FAMILIES.

A well-ordered community protects the homes and families from all contagion. If the social evil were confined to districts set aside for its use, the young and innocent would be subjected to fewer temptations, none would be brought face to face with this form of vice ex-

cept those seeking it. Two years ago public clamor caused the closing of certain saloons in the downtown district frequented by fallen women. At the time I felt the movement to be a mistake; I feared the closing would not mean the eradication of vice, but merely the scattering of it from a district, where it only came to the notice of those who were looking for it, to districts where its presence would be an offense and a menace. The result has been what I expected. Since then the police have been called upon again and again to suppress so-called levee districts, notably in West Madison street, in Milwaukee avenue, in Wabash avenue, while there have been sporadic outbreaks in all parts of the City.

CLOSING OF THE WINE-ROOMS.

Two years ago, at my suggestion, the wine-room ordinance was passed by your Honorable Body. The police have enforced it vigorously. Within the past two years the police, acting under my directions and orders, have cleaned South Clark street, closing up the vicious saloons with which it was infested and giving the residents of Englewood and the neighboring sections relief from the conditions of which so much just complaint was made. Dearborn street, from the Polk street depot north, has been freed from its former denizens. Vicious saloons have been driven from South State street, from Van Buren street to Harrison street, and the cleaning process in this street must soon be carried farther south, in order that State street from Polk street north may be made presentable to strangers and suburban residents using the Polk street depot.

SPREAD OF LEVEE DISTRICT.

The spread of the levee district into decent neighborhoods must not and will not be permitted. It may not be possible to stamp out vice nor to reform mankind. The fallen woman and her vicious associates, however, must be kept from the main thoroughfares and from the residence districts. The attempt to establish a levee district in Wabash avenue north of Twenty-second street has already been foiled. The occasion is fitting to serve notice once for all that while vice cannot be

absolutely suppressed, it shall be held in restraint; the vicious must treat the public to the respect of a decent distance; the home districts must not be invaded; the thoroughfares of travel must be kept clean at all hazards.

COMPEL RAILROADS TO REPAIR VIADUCTS.

Until six years ago repairs on the viaducts spanning the railroad tracks of this City were either made by the City itself or not made at all. In the early days of my first administration the legal department formulated an opinion that as it was the duty of the railroad companies to maintain street crossings in good condition, and that as a viaduct was merely an elevated street crossing the duty of maintaining viaducts and keeping them in proper repair rightly devolved upon the interested railroad companies. Acting upon this opinion immediate steps were taken to compel the various railroad companies entering the City to place all viaducts crossing their tracks in good condition and forever maintain them in such condition. As a result the viaducts, the condition of which had been permitted to run down until many were impassable and all were rapidly falling into decay, have been repaired and put in good condition by the railroad companies, or where too far gone have been rebuilt by these companies; agreements have been reached with practically all of the railroad companies by which the obligation on their part to keep the viaducts in repair and maintain them in good condition is recognized and admitted.

The principal work done on the various viaducts from 1897 to 1902, both inclusive, follows:

In 1897 the following work was done:

The North Ashland avenue viaduct was entirely refloored and repaved at the expense of the various railroad companies passing beneath it at a cost of $1,605.54.

Blue Island avenue viaduct was also refloored and repaved at a cost of $2,758.94, as was also Halsted and Sixteenth street viaduct at a cost of $1,328.93. As in the previous case the cost was paid by the railroad companies passing under the structures.

In addition the following viaducts were painted at the expense of the railroad companies interested: Ogden avenue viaduct, Clark street viaduct, and Dearborn street viaduct.

In 1898 the Twelfth street viaduct east of the river, East Eighteenth street viaduct, part of the Sangamon street viaduct, and a portion of the Halsted street and Chicago avenue viaduct were repaved and painted by the railroad companies interested.

In 1899 the following work was done:

On the Wells street viaduct work was commenced April 6th and completed September 30th. The cost of this work was borne by the Northwestern Elevated Railroad Company and the Chicago & North-Western Railway Company.

Centre avenue viaduct was entirely replanked, repaved and painted by the Chicago & North-Western Railway Company, the Chicago, Burlington & Quincy Railroad Company, and the Chicago Terminal Transfer Railway Company. Cost of painting, $1,625; cost of repairs, $6,375; total, $8,000.

Milwaukee avenue viaduct. This viaduct was replanked, repaved and painted by the Cleveland, Cincinnati, Chicago & St. Louis Railway Company; the Chicago & North-Western Railway Company, and the Chicago, Milwaukee & St. Paul Railway Company, at a cost for painting of $2,360; cost of other repairs, $8,215; total cost, $10,575.

Harrison street viaduct was painted and repaired by the Pittsburg, Fort Wayne & Chicago Railroad Company and the Chicago, Burlington & Quincy Railroad Company. Cost of painting, $675; cost of repairs, $25; total cost, $700.

Desplaines street viaduct was painted and repaired by the Chicago & North-Western Railway Company and the Pittsburg, Cincinnati, Chicago & St. Louis Railway Company. Cost of painting, $25; cost of repairs, $500; total cost, $525.

North Halsted street viaduct was painted and repaired by the Chicago & North-Western Railway Company and the Pittsburg, Cin-

cinnati, Chicago & St. Louis Railway Company. Cost of painting, $2,825; repairs, $1,840; total cost, $4,665.

Sangamon street viaduct was painted and repaired by the Chicago & North-Western Railway Company and the Pittsburg, Cincinnati, Chicago & St. Louis Railway Company. Cost of painting, $515; cost of repairs, $85; total cost, $600.

Ashland avenue viaduct was painted and repaired by the Chicago & North-Western Railway Company and the Pittsburg, Cincinnati, Chicago & St. Louis Railway Company. Cost of painting $1,100; cost of repairs, $325; total cost, $1,455.

Western avenue viaduct was painted and repaired by the Chicago & North-Western Railway Company and the Pittsburg, Cincinnati, Chicago & St. Louis Railway Company. Cost of painting, $535; cost of repairs, $815; total cost, $1,350.

Indiana street viaduct was painted by the Chicago & North-Western Railway Company at a cost of $200.

Erie street viaduct was painted by the Chicago & North-Western Railway Company at a cost of $200.

Chicago avenue viaduct was painted by the Chicago & North-Western Railway Company at a cost of $600.

Blue Island avenue and Throop street viaduct was painted and repaired by the Chicago & North-Western Railway Company. Cost of painting, $295; cost of repairs, $80; total cost, $375.

Clark street viaduct was painted by the Chicago & North-Western Railway Company. Cost of painting, $350; cost of repairs, $50; total cost, $400.

Dearborn street viaduct was painted by the Chicago & North-Western Railway Company at a cost of $1,050.

North State street viaduct was painted by the Chicago & North-Western Railway Company. Cost of painting, $565; cost of repairs, $115; total cost, $680.

Polk street viaduct was painted and repaired by the Chicago, Burlington & Quincy Railroad Company and the Pittsburg, Fort Wayne

& Chicago Railway Company. Cost of painting, $750; cost of repairs, $25; total cost, $775.

Taylor street viaduct was painted and repaired by the Chicago, Burlington & Quincy Railroad Company and the Pittsburg, Fort Wayne & Chicago Railway Company. Cost of painting, $200; cost of repairs, $20; total cost, $220.

Twelfth street viaduct was painted and repaired by the Chicago, Burlington & Quincy Railroad Company and the Pittsburg, Fort Wayne & Chicago Railway Company. Cost of painting, $550; cost of repairs, $50; total cost, $600.

Eighteenth street viaduct was painted and repaired by the Pittsburg, Fort Wayne & Chicago Railway Company. Cost of painting, $300; cost of repairs, $75; total cost, $375.

Thirty-fifth street viaduct was repaired by the Pittsburg, Fort Wayne & Chicago Railway Company at a cost of $80.

Van Buren street viaduct was repaired by the Pittsburg, Fort Wayne & Chicago Railway Company at a cost of $50.

Jackson street viaduct was repaired by the Pittsburg, Fort Wayne & Chicago Railway Company to the amount of $15. The repairs made by the division of bridge repairs at a cost of $4,500 were paid by the Pennsylvania lines. Total cost, $4,515.

Adams street viaduct was repaired by the Pittsburg, Fort Wayne & Chicago Railway Company at a cost of $75.

Madison street viaduct was repaired by the Pittsburg, Fort Wayne & Chicago Railway Company at a cost of $90.

Randolph street viaduct was painted and repaired by the Pittsburg, Fort Wayne & Chicago Railway Company. Cost of painting, $75; cost of repairs, $25; total cost, $100.

Lake street viaduct was repaired by the Pittsburg, Fort Wayne & Chicago Railway Company at a cost of $30.

Washington street viaduct was painted and repaired by the Pittsburg, Fort Wayne & Chicago Railway Company. Cost of painting, $275; cost of repairs, $25; total cost, $300.

The following work was done in 1900:

The Chicago, Burlington & Quincy Railroad Company and the Chicago & North-Western Railway Company commenced the erection of the new viaduct at Canal and Sixteenth streets on July 30th and the larger portion of the work was completed during the year. The cost of $49,714.16 was borne by the railroad companies.

Twelfth street viaduct over the Pittsburg, Fort Wayne & Chicago Railway was completely repaved and the sidewalks entirely removed. The cost was borne by the railroad companies.

South Halsted street viaduct over the tracks of the Union Stock Yard & Transit Company received new sidewalks and chord cover, the cost being charged to the railroad companies.

On Ogden avenue viaduct the sidewalks and chord cover over the tracks of the Chicago & North-Western Railway were renewed at the expense of the railroad company.

The following viaducts were repaired by the respective railroad companies whose tracks pass under same, as shown below:

Lake street viaduct over Pittsburg, Cincinnati, Chicago & St. Louis Railway was painted.

Madison street viaduct over Pittsburg, Cincinnati, Chicago & St. Louis Railway was repaved and painted.

Adams street viaduct over Pittsburg, Fort Wayne & Chicago Railway was repaired and painted.

Van Buren street viaduct over Pittsburg, Fort Wayne & Chicago Railway was repaired and painted.

Harrison street viaduct over Pittsburg, Fort Wayne & Chicago Railway; Chicago, Burlington & Quincy Railroad, and Chicago & Alton Railroad was repaired.

Twelfth street viaduct over Chicago, Burlington & Quincy Railroad was repaved, new sidewalks placed on same and the floor system painted.

South Halsted street viaduct over Chicago, Burlington & Quincy Railroad and Chicago & North-Western Railway was replanked.

South Halsted street viaduct over Union Stock Yard & Transit Company Railroad was painted.

Throop street viaduct over Chicago, Burlington & Quincy Railroad was replanked.

Ogden avenue viaduct over Pittsburg, Cincinnati, Chicago & St. Louis Railway and Chicago Terminal Transfer Railroad received new sidewalks and chord covers.

Indiana street viaduct over Chicago & North-Western Railway was replanked.

Erie street viaduct over Chicago & North-Western Railway was replanked.

Chicago avenue viaduct over Chicago & North-Western Railway was replanked.

Desplaines street viaduct over Chicago, Milwaukee & St. Paul Railway and Pittsburg, Cincinnati, Chicago & St. Louis Railway was repaved and painted.

Work done during 1901:

The new Randolph street viaduct was completed and opened to traffic July 30. The entire cost of this work was borne by the Pennsylvania Company.

The following work was done by the City repair force and the cost charged to the different railroad companies:

Ogden avenue viaduct. The part of the viaduct spanning the tracks of the Chicago & North-Western Railway had its sidewalks and chord covers renewed.

North Western avenue railway viaduct. Both roadways over the tracks of the Chicago, Milwaukee & St. Paul Railway Company and the Chicago & North-Western Railway Company were entirely renewed. Some of the iron joists in the floor system were replaced by wooden ones.

On the Chicago avenue and Halsted street viaducts (over the Chicago & North-Western Railway tracks) new sidewalks were laid by the City force and new iron handrail built by contract.

On the Grand avenue viaduct (over the tracks of the Chicago & North-Western Railway) new sidewalks were laid.

On Milwaukee avenue viaduct (over the tracks of the Chicago & North-Western Railway) a portion of the iron railing was renewed.

On the Desplaines street viaduct (over the Chicago & North-Western Railway tracks) the sub-planking and paving of the roadways were renewed and part of the iron handrail repaired.

The principal work done on the various viaducts inside of the City limits during the year of 1902 was as follows:

The Chicago, Rock Island & Pacific Railway Company and the Lake Shore & Michigan Southern Railway Company built a viaduct connecting the south approach to Taylor street viaduct with the Fifth avenue approach to Twelfth street viaduct. This is a substantial steel structure with roadway paved with brick on concrete foundation, resting on buckled steel plates, and a cement sidewalk.

West Taylor street viaduct from the river to the east end of the truss span has received extensive repairs, the entire decking, paving and wheel-guards being renewed and about 80 per cent of the sidewalks. In addition all the iron work received one coat of black carbon paint. This work was done by the City repair force at a cost of $17,117.39, of which $5,090.05 was charged to the Chicago Union Transit Company and the balance divided equally between the Chicago, Burlington & Quincy Railway Company; Chicago Terminal Transfer Railroad Company, and the Pennsylvania Company.

On the truss span the Chicago, Burlington & Quincy Railway Company and the Pennsylvania Company renewed the decking and wheel-guards.

On the Ogden avenue viaduct the City force put in new sub-planking, wheel-guard and paving and about 50 per cent of the chord cover over the right of way of the Chicago & North-Western Railway Company. The total cost of this work was $2,488.33, of which $1,748.26 was charged to the Chicago & North-Western Railway Company and $740.07 to the Chicago Union Transit Company. The decking, pav-

ing and wheel-guard were also renewed on this viaduct over the tracks of the Chicago Terminal Transfer Company, Pennsylvania Company and the Chicago Junction Railway Company, this work being done by the respective railroad companies.

On the Blue Island avenue viaduct the City renewed the decking, paving, wheel-guard and sidewalks over the tracks of the Chicago & North-Western Railway Company, the cost of this work being $1,036.34, which was charged to the railroad company. Similar repairs were also made by the Chicago Terminal Transfer Railroad Company and the Chicago, Burlington & Quincy Railroad Company over their tracks, and in addition the Chicago, Burlington & Quincy Railroad Company put in some timber bents to support the structure.

On the Twelfth street viaduct new concrete curb wall was built in Clark street south of Twelfth street, with cement sidewalk and iron railing on the east side and wooden railing and sidewalk on the west side, and the approach was paved with granite. Some repairs were also made on the approach north of Twelfth street. The decking on the plate girder span next to the bridge was renewed and paved with cedar blocks, and the pavement on the remaining part of the viaduct east to Clark street was patched up. The decking and paving on the Fifth avenue approach to Twelfth street viaduct were also renewed, with the exception of the granite pavement on the filled portion. All of this work was done by the Chicago, Rock Island & Pacific Railway Company and the Lake Shore & Michigan Southern Railway Company.

On the Jackson street viaduct the Pennsylvania Company renewed the decking, paving and chord cover.

On the Van Buren street viaduct new sub-planking, paving and wheel-guard were put in by the Pennsylvania Company.

On the Polk street viaduct the Pennsylvania Company and the Chicago, Burlington & Quincy Railroad Company repaired the part of this viaduct which spans their tracks.

The Howe truss span on North Ashland avenue over Kinzie street

was reinforced by strengthening the lower chords of the trusses and the erection of three timber bents. This work was done by the City between December 4th and December 15th. Cost, $276.20. The Chicago & North-Western Railway Company; Chicago, Milwaukee & St. Paul Railway Company, and Pittsburg, Cincinnati, Chicago & St. Louis Railway Company are liable for this expense.

The roadway in the alley leading up to the east side of the north approach to Sangamon street viaduct, about 117 feet north of Kinzie street, was rebuilt. The work was done by the City, as per ordinance passed November 10, 1902, between December 4th and December 15th at a cost of $306.51. The Chicago & North-Western Railway Company; Chicago, Milwaukee & St. Paul Railway Company, and the Pittsburg, Cincinnati, Chicago & St. Louis Railway Company are liable for this expense.

The amount paid by the various railroad companies for repairs made by the City of Chicago to the different viaducts from 1897 to 1902, both inclusive, as far as can be ascertained from the records available in this office, are as follows:

1897	$ 5,693.41
1898	2,628.85
1899	8,258.11
1900	16,823.59
1901	11,102.81
1902	21,124.77
Total	$65,631.54

In addition to the above the railroad companies had repairs made to City viaducts to the amount of $38,565 itemized in this report under work done in 1899.

The cost of the new viaduct at Canal and Sixteenth streets, built in 1900, was $49,714.61.

Making a total amount expended by the railroad companies as follows:

Repairs done by City force	$ 65,631.54
Repairs done by railroad companies direct	38,565.00
New work	49,714.16
	$153,910.70

The cost of the new viaducts built and paid for by the railroad companies at Wells street, Randolph street and the connection between Taylor street viaduct and the Fifth avenue approach to Twelfth street viaduct cannot be ascertained.

CORPORATION COUNSEL'S OFFICE.

During the year 1902 the work of the Corporation Counsel's office was notably successful. A large volume of business was transacted, excelled possibly by no law office or legal department of any corporation or business enterprise in the City of Chicago. Time and space will not allow the proper presentation of the vast amount of important matters which have been handled by this department of the City government.

The Law Department succeeded, by its forceful presentation on behalf of the City, in securing from the courts of this State and the United States decisions affecting the relations between quasi-public corporations operating in the City under franchises and the people of Chicago.

Probably the most important victory of the year was the decision of the Supreme Court of Illinois in the well-known "transfer cases," by which the Chicago Union Traction Company is now required to comply with the ordinance of the City and give transfers over its connecting and intercepting lines, including the North Chicago, West Chicago and Consolidated Traction Companies' lines, and a continuous ride over any and all of them for one fare of five cents.

The ordinance requiring street railway companies to clean their rights of way was sustained by the Supreme Court, the court holding that the City had the power to enforce such an ordinance.

The United States Circuit Court, in the case of Peoples Gas Light & Coke Company vs. City of Chicago, sustained the validity of the ordinance limiting the price of gas to seventy-five cents, from which decision the company has appealed.

In controversies over the street and river encroachments the City has won notable victories in the State and United States Supreme

Courts and the department has secured decisions so favorable that an end has been put to such encroachments under color of legal right.

The Circuit Court of Sangamon county defeated the City in the mandamus proceedings brought to compel the State Board of Equalization properly to assess railroad property in the City of Chicago. By the present method many millions of dollars worth of property is improperly assessed (if assessed at all), as railroad right of way, and thus a large revenue is lost to the City. These properties ought to be made to bear their share of the burden of taxation in Chicago. The City has appealed to the Supreme Court and its briefs have been filed presenting the contentions of the City. In the event of a successful termination of this litigation the taxing bodies of this City and county will receive a vast amount which has heretofore been lost.

Litigation of great importance to Chicago is pending at the present time, and if the department continues in its assiduous attention to its duties and maintains the same anxiety to protect and enforce the interests of the people, the result will be a still more marked advance in the application of newer principles of law to municipal governments and their relations with public service corporations, and greater benefit to the general public.

THE COMPTROLLER'S OFFICE.

The annual statement of the financial condition of the City of Chicago for the year ended December 31, 1902, shows:

The total assets of the City	$93,884,209.99
The total liabilities	20,259,365.56
Assets in excess of liabilities	$73,624,844.43

During the year 1902 the debt of the City has been reduced as follows:

Unpaid bills of 1901	$ 991,863.40
Water certificates	799,000.00
Water bonds	347,000.00
Total	$2,137,863.40

In addition to which every claim for current and fixed charges to the Comptroller's office, with proper certification, has been promptly paid, and there remains of the revenue for the year 1902 unexpended $68,124.50.

The revenue for corporate purposes for 1902:

Taxes	$ 5,770,876.97
Miscellaneous	5,284,514.81
Total	$11,055,391.78

The expenses for 1902:

Operating	$9,129,735.68	
Maintenance	387,889.39	
Construction	649,797.09	
Fixed charges	819,845.12	$10,987,267.28
Balance		$ 68,124.50

The assessed valuation was increased $27,914,691, which at the tax rate for 1901 should have produced an increase in taxes of $362,-679.88; but while the rate of nearly every other taxing body in Cook County was increased, the rate of the City, under the operation of the Juul law, was decreased so as to reduce the amount actually gained to only $89,700.

In preparing and adopting the annual appropriation bill for the year 1902, notwithstanding a universal sentiment in favor of certain improvements, as well as of increasing the salaries of the police and firemen, the Finance Committee of the City Council was unable to secure revenue sufficient to justify an appropriation for the improvements demanded, or for the maintenance of the Police Department or Fire Department as then organized. The policemen and firemen were required to take "leaves of absence" without pay; this was tantamount to a reduction of annual compensation and resulted in demoralizing both Police and Fire Departments. During the year it became apparent there would be an increase of revenue from miscellaneous sources, and emergency appropriations were made to pay the police and firemen for their services during the entire year.

Over two months ago, after having struggled with an inherited situation in connection with special assessments which it is utterly impossible to describe, or for any one who has not been brought into personal contact with the accounts to understand, Haskins & Sells, certified public accountants, were employed to make a complete examination and to rewrite and adjust the special assessment accounts.

This work has progressed steadily ever since, and the City is now in a position, for the first time in a generation, to know the amount which was collected and expended on account of each improvement made under a special assessment during the past thirty years.

The default which has occurred in the payment of special assessment bonds is almost entirely due to legal proceedings instituted by property owners to delay the payments of their assessments. A plan to remedy these defaults has been formulated, and made effective, whereby the bonds may be redeemed by the transfer from the special assessment fund of such accounts as are available, while the balance is paid by the City out of a fund especially appropriated for that purpose.

Department of Public Works.

WATER SUPPLY.

The new system now consists of eight large pumping stations and two small ones, five intake cribs and about 38 miles of tunnels. The number of pumping engines available is 36, having a total capacity of about 530 million gallons per day of 24 hours. The total amount of water pumped during the current year was 130,892,283,020 gallons, an increase of 5,594,167,824 gallons over the pumpage of 1901. The total amount of fuel consumed was 92,259 tons, as against 92,758 tons in 1901, or a saving of 499 tons.

A new boiler plant at Chicago avenue pumping station, involving a cost of $125,000, which has been under construction for several years, was completed early in the season, with the result of saving $15,000 for the year on the cost of fuel, with a corresponding decrease in the cost of labor for operation.

WATER PIPE EXTENSION.

160,799 lineal feet of water pipe, varying in size from 6 inches to 16 inches in diameter, were laid; 384 hydrants and 312 valves were placed. At the close of 1902 there are in all a total of 1,918 miles of water mains, 19,645 hydrants and 15,437 valves.

BRIDGES AND VIADUCTS.

The new bascule bridge over the North branch at Clybourn place was completed and opened to traffic on May 25. The new bascule bridges which have been in course of construction at East Division street and at Ninety-fifth street and the Calumet river are completed and in use. The old bridge at West Division street was moved to Blackhawk street. Contracts have been let for the construction of new bridges at West Division street and North Western avenue.

The result of the construction of bridges on the City's plans has not only secured bridges excellent in all respects, but has also had the effect of spurring the concern who formerly had a monopoly on bascule bridges to adopt several improvements suggested by the City design, and in general has resulted in giving the City better and stronger bridges, irrespective of the design on which they are constructed.

HARBORS.

Sixty-seven permits for dock work along the Chicago and Calumet rivers were issued, involving the construction of 4,809 feet of new docks, the rebuilding of 7,600 feet and the repairing of 1,530 feet. Twenty-seven permits were issued for dredging in the river, covering approximately 119,000 cubic yards. The Sanitary District continued dredging the river, removing about 370,000 yards. The United States Government removed from the outer harbor and Calumet river 2,040,710 yards.

BUREAU OF WATER.

The work performed during the year 1902 has been productive of very satisfactory results.

INSPECTION DIVISION.

House-to-house inspections in six of the thickly populated wards have resulted in an addition of $91,000 to the annual assessment.

ASSESSOR'S DIVISION.

In the Assessor's Division contracts were made for laying pipes in seventy-six streets, as compared with fifty-nine for the previous year, and estimates were made for laying services in one hundred and four streets, as compared with one hundred and seventy for the previous year. Nine thousand five hundred and fifteen taps were inserted during the year.

METER DIVISION.

Two thousand seven hundred and sixty meters were repaired, being about thirty per cent of the total number in service. Collections in this division exceeded the collections of the previous year $133,400.20.

SHUT-OFF DIVISION.

Work in the Shut-off Division shows steady improvement, the number of delinquents decreasing with each succeeding year.

COLLECTION DIVISION.

The work of transferring and classifying the accounts of the bureau in keeping with the redistribution of the City by wards, was accomplished during the year. In several districts the discount period was extended, and as a consequence the collections for the year are not quite as heavy as for the previous year.

GARBAGE.

During the year there were removed 1,349,474 cubic yards of garbage, or 272,935 loads, at a total cost of $546,550.69; 1,417 garbage complaints were received during the year, as compared with 2,086 during 1901.

STREET AND ALLEY CLEANING.

During the year there were cleaned 18,155 miles of streets and alleys, necessitating the removal of 161,400 loads of street dirt; 1,-

873,365 lineal feet of weeds were cut; 229,113 inlets to catch basins were opened and cleaned. There were also removed 21,268 loads of snow. The total cost of cleaning streets and alleys, cutting weeds and opening inlets was $270,225.15. Cost of removal of snow, $20,637.65.

The following dead animals were removed by the City contractor during the year at no expense to the City: 3,850 horses, 87 cows, 11,170 dogs, 2,190 cats, 102 goats, 87 colts, 76 calves and 27 sheep.

REPAIRING IMPROVED STREETS AND ALLEYS.

During the year the following work was done in the repair of streets and alleys:

Twenty-nine thousand four hundred and ninety-five square yards of new cedar blocks were laid, 31,528 square yards of old cedar blocks were relaid, 8,652 square yards of granite blocks were relaid, 2,700 square yards of asphalt laid, 2,212 square yards of macadam laid, 1,243.3 square yards brick laid.

In connection with which the following material was used: 1,389.3 cubic yards of gravel, 2,628 cubic yards of crushed stone, 43,643 cubic yards of cinders and spawls, 17½ barrels of tar, 46,477 lineal feet of new lumber, 10,202 lineal feet of old lumber, at a total expense of $57,243.16.

REPAIRING UNIMPROVED STREETS AND ALLEYS.

The reports show that 978,386 lineal feet of ditches were opened and cleaned, 1,328,196 lineal feet of streets were graded by hand and machine, 424 new aprons constructed or repaired, 3,038 new crossings and 1,180 new culverts built; 52 box drains were laid.

In connection with this work the following material was used: 288,658 lineal feet of new lumber, 121,453 lineal feet of old lumber, 101½ kegs of nails, 53,059 cubic yards of cinders and slag, at a total cost of $41,038.72.

SIDEWALK REPAIRS.

During the year the following work was done: 1,542 new and repaired intersections, 24,571 general repairs on which was used the

following material: 662,969 lineal feet of new lumber, 1,379,058 lineal feet of old lumber, 745 kegs of nails, 708 loads of cinders, at a total cost of $37,694.83.

BUREAU OF STREETS.

CLEANING AND REPAIRING.

Mileage of sewers cleaned	350.2
Catch basins cleaned	12,054
House drains put in	8,482
Sewage pumped, in million gallons	10,207
Grades established	2,474
Complaints attended to	8,842

INTERCEPTING SEWERS.

On Section C, the main conduit in Thirty-ninth street, and Section L, extension of same, the construction work is completed, as the shields met near Vincennes avenue on the 11th of December, 1902. The length of this work constructed in 1902 was 4,944 feet. This completes the whole of the Thirty-ninth street conduit, having a length of 12,123 feet of 20-foot conduit.

The breakwater surrounding the intake and pumping station at Thirty-ninth street, produced, east of the Illinois Central breakwater, is completed, and the construction of the foundations and water channels of the pumping station is well under way. The engine and pumps are in process of construction.

The intercepting sewer which discharges to this pumping station from the south is completed from Thirty-ninth street to Sixtieth street, and work is being continued from Sixtieth street south to Seventy-third street by two gangs, one gang having begun at Sixty-seventh street working south, while the other is continuing at Sixtieth street. It is expected that the City will finish this entire work during the present year. During the past year there was built 1,331 feet of 16-foot, 4,507 feet of 15¼-foot, 3,203 feet of 14¼-foot and 2,201 feet of 13½-foot sewer. There was also built 1,728 feet of 15-inch pipe sewer to replace the old main sewer in Jackson Park avenue. Work completed during the past year is as follows:

	Lineal feet.
Thirty-ninth street, 20-foot tunnel	4,944
Lake Front, 16-foot sewer	1,331
Lake Front, 15¼-foot sewer	4,507
Cornell avenue, 14¼-foot sewer	3,203
Jackson Park avenue, 13½-foot sewer	2,201
Jackson Park avenue, 1¼-foot sewer	1,728
Total	17,914

Or 3.4 miles.

Also 951 lineal feet of breakwater at Thirty-ninth street produced.

BUREAU OF MAPS.

During the year 1902 the work performed by the Bureau of Maps in comparison with preceding years shows a decided increase.

There were made and delivered to the Board of Local Improvements and other departments and officials of the municipal administration 1,154 plats, covering an area of 13,500.7 acres, and 1,329 plats, covering an area of 781.75 miles. Most of these, in fact 95 per cent, were for street and sidewalk improvements; 279 house moving petitions and 157 other petitions, such as street railway, electric light, etc., referred from various Council committees for verification, were checked up and reported on; 2,248 legal descriptions were issued at a fee of twenty-five cents each; 8,826 legal descriptions were issued to sewer builders and plumbers; 6,264 house numbers, making a total of 17,338 items requiring personal attention.

CITY ARCHITECT'S OFFICE.

PLANS PREPARED FOR BUILDING.

Bureau of Engineering—An addition to the Sixty-eighth street pumping station.

Department of Police—Police patrol barn at Forty-sixth and Halsted streets; police station to take the place of Harrison street station.

Fire Department—Two frame fire engine houses and seven brick fire engine houses.

Health Department—Public bath on Holt street near Blanche street.

Dog Pound—Dog pound to be erected at the Bridewell grounds.

Bridewell—New cell house.

Buildings Contracted for and Under Construction—Addition to Sixty-eighth street pumping station; seven engine houses for the Fire Department; public bath at Holt street, near Blanche street; dog pound at the Bridewell grounds; new cell house at the Bridewell; steel cells removed from John Worthy School to new building.

DEPARTMENT OF HEALTH.

The year 1902 was marked by an increase in the prevalence of disease all over the world. Chicago was no exception. Despite these facts, however, our City continues to have the lowest death rate of any city of its size. Especially has there been a gratifying decrease in the death rate among children under five years of age.

I am pleased to note the increased confidence which is being manifested in the Department of Health by the medical profession of the City, numbering as it does over 4,000 members, whose reliance in the work of the department is shown by the constantly increasing requests for examination of blood specimens in typhoid, pneumonia and for laboratory tests, aiding their diagnosis in other infectious and contagious diseases. The department has fully maintained its record of previous years in the work done in its various bureaus and divisions, all of which has contributed towards making Chicago, as one of our leading dailies expressed it, "a good city to be born in."

During the past year, too, more than during any other period of its history, the department's work has been cited and noted by eminent medical and scientific authorities throughout the world. Among these may be mentioned Osler, in his classical work on the Practice of Medicine, who so repeatedly cites the department's work and always in the most commendatory way. In addition might be mentioned the "Medical Recorder," the organ of the Chicago Medical Society, and the recognized authority of the medical profession of Chicago, which recently, in speaking of the department and its work, said: "Indeed, the record of the department of the City of Chicago throughout the entire sanitary world is most enviable."

BOARD OF LOCAL IMPROVEMENTS.

The Board of Local Improvements in 1902 laid seventy miles of streets, 102,611 feet of sewers, and 296 miles of sidewalks. It has had, in the same time, seven million dollars of assessments confirmed in the County Court for streets, alleys, sewers, water supply and service pipes, sidewalks and house drains.

It has held a very large number of public hearings for the paving of streets, and has now over 200 miles passed for future paving, of which seventy-five miles are now under contract. Weather and other conditions favorable, from 100 to 125 miles of streets should be paved this year.

Four immense sewer systems have been originated by the board. Two of these will drain the southern districts; one from Seventy-fifth to Eighty-seventh streets, and one from Eighty-seventh to 103d streets, and as far west as Halsted street. For the southwest side, the board is at work on two other large systems, one with an outfall on Western avenue, and another and a larger one on Kedzie avenue, to drain all of the territory lying south as far as Seventy-second street.

The result of the work of the Law Department of the Board of Local Improvements presents the following facts: Special assessment cases have been tried, involving five million dollars. Objections have been sustained in these cases in the sum of only $15,000. In the Supreme Court, the test case on new assessments in the "flat stone" cases was decided in favor of the City. This is a precedent which assures the City the sum of one million dollars of delinquent special assessments.

The alien and union labor, and the eight-hour cases have been won by the City, and this directly involves about one-quarter of a million dollars of delinquent assessments, besides which an adverse decision would have invalidated all the assessment proceedings for the last ten years. $200,000 of old stayed and forgotten assessment judgments have been discovered by a systematic and thorough search of the records and these have been put into collection for the City.

POLICE DEPARTMENT.

The people of Chicago have reason to congratulate themselves on the successful manner in which the Police Department has coped with crime. It is acknowledged on all hands that Chicago is a singularly good place for thugs and thieves to avoid and this notwithstanding that the size of the police force is utterly inadequate.

The numerical strength of the entire force at the end of the year was 3,164, of whom only 2,381 were patrolmen.

The total number of arrests for the year 1902 was 70,314, an increase of 872 as compared with the previous year. However, an increase of the number of arrests is not infallible evidence of greater efficiency. A more reliable indication of efficiency and energy in the service is the number of convictions in criminal cases, which shows a marked increase over preceding years.

Lost and stolen property valued at $436,786 was recovered and restored to owners during the year, being an increase of $55,000 over the preceding year.

The number of officers injured while in the discharge of duty during the year was 238.

It is to be hoped the public will not overlook the fact that all efforts and reforms undertaken by the Police Department during the past year have been continuous and not spasmodic. When it is taken into consideration that this department has been growing numerically less every year since 1893, while the City is increasing in territory and population, I am justified in claiming that the Chicago Police Department is accomplishing all that can reasonably be expected of it.

FIRE DEPARTMENT.

The Fire Department of Chicago continues to maintain the high standard for which it is justly celebrated and is still the guarantor of public safety it has been during the past quarter century. The department has been increased during the past year by the addition of two engine companies and one hose company. The fireboat "Geyser," now known as the "D. J. Swenie," was entirely overhauled and rebuilt

and is now practically a new boat. About a mile of pipe line system was installed in South Chicago, the same being operated by the fireboat stationed there. Contracts have been let for the erection of several new engine houses, the same to be completed during the present year. The department now embraces ninety-four engine companies, twenty-seven hook and ladder companies and four hose companies. There are now five fireboats in service.

CIVIL SERVICE COMMISSION.

The following is a short abstract of the work of the Civil Service Commission for the year 1902, to-wit:

Number of applications filed in the official service.....	1,082
Number of applications filed in labor service.....	2,926
Total for the year 1902.....	4,008

The number of examinations for the year was 72, of which number 47 were in the official service, 21 in skilled labor and 4 in unskilled labor service.

Nineteen of the examinations in the official service were promotional examinations, among which were Inspectors of Police, Captains Fire Department, Chief of Disinfectors, and Chief Clerk City Collector's office.

The commission has held 49 trials of officers and employes, upon written charges, hearing testimony on both sides and resulting in the discharge of 20 from the service, the discipline of 19 and the acquittal of 8.

The Police Trial Board, which is composed of two of the Commissioners and one Inspector of Police, and which sits weekly for trials, has, since January 1, 1902, discharged 114 policemen from the service, fined 127 and found 101 not guilty.

DEPARTMENT OF SUPPLIES.

The Business Agent's report shows a total expenditure of $657,911.07, through the Department of Supplies in 1902. This sum represents seventeen thousand nine hundred twelve (17,912) transactions

in the purchase of materials and supplies and in repair work for all departments, the average cost involved in these transactions being $36.72. In the warehouse maintained by the department is carried a miscellaneous stock of such supplies as are in constant use. Deliveries are made in small lots as required. The cost of the stock thus handled in 1902 was $17,987.57. The stationery division issued stock, including postage stamps, to the value of $41,448.55.

The Business Agent testifies to a marked improvement in the conditions under which the department transacted business during the past year resulting from the prompt payment of the City's bills.

The records show that purchases are made in all lines at very close figures as a result of free and active competition for City business. The work of the Department of Supplies is conducted along strict business lines, and the City gets full value for every dollar expended.

TRACK ELEVATION.

Ordinances have been passed during the year 1902 providing for the elevation of 191.9 miles of tracks and eliminating 134 grade crossings by the construction of subways, at an estimated cost of $10,175,000.

During the year 1902 there has not been much work on the actual elevation of tracks; plans have been submitted, however, and approved for work of elevation under some of the most important ordinances passed by the City Council of recent date, and a large amount of work will be completed during this year.

BUILDING DEPARTMENT.

The records of this department show the following interesting figures:

NUMBER OF BUILDINGS AND COST.

YEAR.	No. of Buildings.	Ft. Frontage.	Cost.
1898	4,067	133,603	$21,294,385
1899	3,794	112,239	20,853,570
1900	3,516	98,975	18,693,850
1901	6,053	171,001	34,962,075
1902	6,099	187,500	48,242,990

RECEIPTS AND EXPENDITURES.

Year.	Receipts.	Expenditures.	Bal. to General Fund.
1898	$53,768.80	$52,035.46	$ 1,718.34
1899	56,084.50	54,649.36	1,435.14
1900	47,823.40	53,134.52	.....
1901	66,317.85	54,788.71	11,529.14
1902	74,343.50	48,277.58	26,065.92

CITY COLLECTOR'S OFFICE.

A brief resume of the work of the City Collector's Department for the fiscal year ending December 31, 1902, shows an increase in the collection of licenses of $145,579.67 over the receipts of the previous year; this is the best evidence of the persistent and earnest work of the department. The centralization of all collections, including those formerly made by other departments, has given the office additional burdens; the inauguration of the new accounting and bookkeeping system, with its many distinguishing features, has served to test the merits of the clerical force and the efforts displayed have earned the highest approbation.

In saloon licenses the last period, ending December 31, 1902, showed 7,030 saloon-keepers in business.

The total amount of money collected from licenses for the year ending December 31, 1902, was $3,966,329.06; from miscellaneous sources, $1,516,023.36, making a total of $5,482,352.42. Special assessment collections amounted to $530,797.65; this, added to $5,482,352.42, gives a grand total of $6,013,150.07 for the year ending December 31, 1902. Dog taxes brought in $104,508 and street car licenses $112,113.57.

BOILER INSPECTION.

Number of boilers inspected	7,661
Number of tanks inspected	425
Number of jacket kettles inspected	59
Number of dryers inspected	39
Number of retorts inspected	46
Number of boilers inspected in public schools	413
Number of boilers inspected, property of the City of Chicago	141
Total	8,784
Number of boilers, repairs ordered	588
Number of boilers condemned	109
Number of boilers, repairs ordered in public schools	75
Number of boilers condemned in public schools	6
Number of boilers, repairs ordered, property City of Chicago	16
Number of boilers condemned, property City of Chicago	2
Total	796
*Explosions	1

SMALL PARKS AND PLAYGROUNDS.

The Special Park Commission, appointed by me, presented reports, maps and other data to the West Chicago Park Commission, dealing with conditions and needs on the West side, particularly in the River wards. Nine sites for small parks and playgrounds in the populous districts were recommended. The Park Board made a start in the establishment of these much-needed breathing spaces and recreation grounds by selecting three of the sites recommended, practically following the report of the Special Commission. These sites comprise an eight-acre tract bounded by Chicago avenue, Cornell, Noble and Chase streets; a four-acre tract bounded by Halsted, Forquer and Ewing streets and the Dante School grounds; and a three-acre block bounded by Fourteenth place, Barber, Union and Jefferson streets. The work of purchasing the land and buildings, either by private contract or by condemnation proceedings, is now in progress. These three sites will satisfy less than half the urgent needs of the West side, but the reasons given by the Park Board for not selecting more at present is that they first desire to ascertain what these sites will cost, and also that they do not believe a million dollar bond issue can be redeemed from the special tax of one mill.

*Location: Swift & Co., Union Stock Yards. Cause: carelessness on part of water tender.

After being assured by legal opinions that the City Clerk and County Treasurer were vested with power to authorize the $500,000 bond issue, the Commissioners of Lincoln Park decided to proceed under the small parks acts so far as the Town of North Chicago was concerned. However, in order to test the sentiment of the people on the small park question, the Lincoln Park Commissioners voluntarily submitted the proposed bond issue to a vote at the election last November. The proposition carried by a large majority. The Special Commission submitted a report on sites, needs and conditions to the Commissioners of Lincoln Park for their action. At a recent meeting the Commissioners selected all the four sites recommended, and they are now proceeding to obtain expert valuation of the properties. The sites upon which small parks and playgrounds will be established comprise a 1½-acre tract on the south side of Oak street, between Gault court and Milton avenue; a tract between three and four acres within the boundaries of Larrabee, Vedder and Rees streets and the Schiller school property; the House of Good Shepherd block of 1 7-10 acres, bounded by Elm, Hill, Sedgwick and Orleans streets; and a three-acre tract fronting on Burling and Orchard streets north of the Newberry School property. All these sites are in the congested area of the West end, remote from Lincoln Park.

Although a referendum was not required by the act, the South Park Commissioners decided to submit the $1,000,000 bond issue proposition to a vote at the November election. The people declared by a large majority in favor of issuing the bonds. Before the election, the Special Commission submitted a report on sites, needs and conditions in the South Park district to the Commissioners of that division. Ten sites for small parks and playgrounds were recommended. After the referendum the South Park Commissioners set up the claim that the provision for a maintenance tax was "indefinite, ambiguous and uncertain," and refused to do anything until the Legislature amended the act. This objection was met by expert legal opinions obtained by the Special Commission. However, as the General Assembly was in ses-

sion, the Special Commission decided to join with the South Park Board in securing the passage of an amendatory bill. The maintenance tax was fixed at one-half mill and the Special Commission insisted that the proceeds be used exclusively for small park purposes. A further provision was inserted that any surplus from the one-half mill tax should be used for the purchase and improvement of additional small parks. The Special Commission assisted in the passage of this bill. The Park Board will now proceed without further delay to act on the report of the Special Commission.

During the year two new playgrounds were established on the North side free of expense to the City for the use of land. The use of one site was given by Mr. George E. Adams, the location being on Seminary avenue, south of Center street. Mr. Clarence Buckingham, in the public spirit which I appealed to in my annual message for 1901, provided the other playground completely equipped along the right of way of the Northwestern Elevated Railroad Company at Alaska and Larrabee streets. The gift of a shower bath house at the Webster playground, Thirty-third street and Wentworth avenue, by Mr. J. Ogden Armour; the donation of medals for young athletes by the Merchants' Club; the contribution of $200 by the City Homes Association, and numerous other gifts of money and material by charitable citizens are all gratifying evidences of the lively public interest which is being taken in this small park and playground movement.

The Holden playground on Bonfield street and the Moseley playground at Twenty-fourth street and Wabash avenue were enlarged, and a first-class cinder running track was laid at the Webster playground. The latter improvement has proved a great boon to aspiring young athletes on the South side. On the Wentworth avenue grounds the idea of municipal supervision of athletics is being worked out. The first municipal track and field meet was held in the fall, medals and other prizes being awarded to winners, both boys and girls. At the same time the needs of the little children were not overlooked. Outdoor kindergarten plans were carried out during the school vacation

months by the employment of assistant directors, all women. Successful festivals were held at each playground to show the result of this branch of the work. General summer opening exercises were held at the Webster grounds, the participants coming from all the other grounds. The special commission now has eight playgrounds under its supervision.

Respectfully yours,

CARTER H. HARRISON,
Mayor.

CITY EXECUTIVE OFFICERS.

CARTER H. HARRISON,
MAYOR.

JOHN F. SMULSKI,
CITY ATTORNEY.

ERNST HUMMEL,
CITY TREASURER.

FRED C. BENDER,
CITY CLERK.

THE CITY COUNCIL.

1903-4.

1ST WARD.
John J. Coughlin.
Michael Kenna.

2D WARD.
Thos. J. Dixon.
Chas. Alling.

3D WARD.
William S. Jackson.
Milton J. Foreman.

4TH WARD.
Henry Stuckart.
James M. Dalley.

5TH WARD.
Robert K. Sloan.
Thos. Rooney.

6TH WARD.
William Mavor.
Linn H. Young.

7TH WARD.
Bernard W. Snow.
F. I. Bennett.

8TH WARD.
John H. Jones.
P. H. Moynihan.

9TH WARD.
Henry L. Fick.
Michael J. Preib.

10TH WARD.
Edward J. Novak.
Jacob Sindelar.

11TH WARD.
Charles J. Moertel.
Edward F. Cullerton.

12TH WARD.
V. E. Cerveny.
Michael Zimmer.

13TH WARD.
Luther P. Friestedt.
John E. Scully.

14TH WARD.
Wm. T. Maypole.
Daniel V. Harkin.

15TH WARD.
Albert W. Beilfuss.
Bernard Anderson.

16TH WARD.
Stanley H. Kunz.
Vincent J. Jozwiakowski.

17TH WARD.
William E. Dever.
Lewis D. Sitts.

18TH WARD.
Michael C. Conlon.
John J. Brennan.

19TH WARD.
John Powers.
William J. Moran.

20TH WARD.
Nicholas R. Finn.
J. C. Patterson.

21ST WARD.
John Minwegen.
Honore Palmer.

22D WARD.
Michael D. Dougherty.
John H. Sullivan.

23D WARD.
Ernst F. Herrmann.
Charles Werno.

24TH WARD.
George K. Schmidt.
William H. Ehemann.

25TH WARD.
Alfred D. Williston.
Winfield P. Dunn.

26TH WARD.
William C. Kuester.
Freeman K. Blake.

27TH WARD.
Hubert W. Butler.
Silas F. Leachman.

28TH WARD.
Walter J. Raymer.
Adolph Larson.

29TH WARD.
Thomas Carey.
Peter A. Wendling.

30TH WARD.
John J. Bradley.
John Burns.

31ST WARD.
Patrick J. O'Connell.
Wm. M. Butterworth.

32D WARD.
Joseph Badenoch.
Henry F. Eidmann.

33D WARD.
Ernest Bihl.
William Johnson.

34TH WARD.
Jonathan Ruxton.
Charles Woodward.

35TH WARD.
Thomas M. Hunter.
Frank L. Race.

INTERCEPTING SEWERS — SITE OF THIRTY-NINTH STREET PUMPING STATION — INCLOSING PIERS AND BREAKWATER IN LAKE MICHIGAN.

Department of Public Works

CITY OF CHICAGO.

F. W. BLOCKI,

Commissioner.

W. F. BRENNAN,

Deputy Commissioner.

HEADS OF BUREAUS.

City Engineer,	JOHN ERICSON
Superintendent Bureau of Sewers,	WM. E. QUINN
Superintendent Bureau of Water,	H. O. NOURSE
Superintendent Bureau of Streets,	M. J. DOHERTY
Superintendent Bureau of Maps and Plats,	CHAS. J. BUHMANN
Superintendent Bureau of Street and Alley Cleaning,	F. W. SOLON
Department Bookkeeper,	HUGO RASPER

PAST COMMISSIONERS OF PUBLIC WORKS.

WATER BOARD.

1851–54—John B. Turner, Prest., Horatio G. Loomis, Alson S. Sherman.
1854–56—James H. Woodworth, Prest., John C. Haines, George W. Dole.
1856–58—George W. Dole, Prest., Orrington Lunt, John C. Haines.
1858–60—George W. Dole, Prest., Orrington Lunt, Noah Sturtevant.
1860–61—Orrington Lunt, Prest., Edward Hamilton, Benjamin Carpenter.

SEWERAGE BOARD.

1855–59—Wm. B. Ogden, Prest., James D. Webster, Sylvester Lind.
1859–61—James D. Webster, Prest., Sylvester Lind, Philip Conley.

Water and Sewerage Boards merged May 6, 1861, into

BOARD OF PUBLIC WORKS.

1861–63—Benjamin Carpenter, Prest., John G. Gindele, Frederick Letz.
1863–65—Francis C. Sherman, Mayor, *ex-officio* member of the Board.
1863–67—John G. Gindele, Prest., Frederick Letz, Orrin J. Rose.
1867–69—Aug. H. Burley, Prest., Wm. H. Carter, John McArthur.
1869–71—John McArthur, Prest., Wm. H. Carter, Redmond Prindiville.
1865–69—Wm. Gooding and Roswell B. Mason, members of the Board in matters pertaining to the cleansing of the river.
1869–71—Wm. Gooding and Edward B. Talcott, members of the Board in matters pertaining to the cleansing of the river.
1871–73—Wm. H. Carter, Prest., Jas. K. Thompson, Redmond Prindiville.
1873–76—Redmond Prindiville, Prest., Louis Wahl, Jas. K. Thompson.

Board of Public Works abolished September 18, 1876, and on the same date there was established by the City Council

THE DEPARTMENT OF PUBLIC WORKS.

1876–78—Monroe Heath, Mayor, Acting Commissioner.
January 7 to May 18, 1879—E. S. Chesbrough.
May 19, 1879, to October 18, 1881—Charles S. Waller.
October 19, 1881, to February 4, 1882—Carter H. Harrison, Mayor, Acting Commissioner.
February 4, 1882, to January 31, 1886—DeWitt C. Cregier.
February 1, 1886, to June 28, 1886—Carter H. Harrison, Mayor, Acting Commissioner.
June 28, 1886, to April 11, 1887—W. H. Purdy.
April 12, 1887, to April 15, 1889—George B. Swift.
April 16, 1889, to April 27, 1891—W. H. Purdy.
April 28, 1891, to December 24, 1892—J. Frank Aldrich.
December 24, 1892, to April 25, 1893—E. Louis Kuhns, Acting Commissioner.
April 25, 1893, to November 21, 1894—Hiram J. Jones.
November 21, 1894, to November 28, 1894—John A. Moody, Acting Commissioner.
November 28, 1894, to April 8, 1895—John McCarthy.
April 8, 1895, to July 20, 1896—William D. Kent.
July 20, 1896, to April 15, 1898—Joseph Downey.
April 15, 1897, to May 21, 1901—L. E. McGann.

REPORT OF THE

Commissioner of Public Works

CITY OF CHICAGO

1902

COMMISSIONER'S REPORT.

OFFICE OF THE COMMISSIONER OF PUBLIC WORKS,
CITY HALL.

To the Honorable, the Mayor and the City Council of the City of Chicago.

GENTLEMEN:—In accordance with the requirement of the City ordinances, I submit herewith the Twenty-seventh Annual Report of the Department of Public Works for the year ending December 31, 1902.

This report also includes the reports of the superintendents of the various bureaus comprising the Department of Public Works, giving in detail the work performed under their supervision.

The total amount of water pumped during the year was 130,892,283,020 gallons, an increase of 5,576,565,435 gallons over the pumpage of 1901, at a cost for fuel of $72,364.50 less than the less quantity of water in 1901.

The completion of the three 25,000,000-gallon pumping engines to replace the old beam engines at the Chicago avenue pumping station, and the remodeling of the tunnel system to some extent by reason of this change, will make this station one of the most modern and economical.

The most important addition to the water pipe extension system this year was the laying of a 16-inch main in Ashland avenue and Oak street south from Seventy-fifth street to the Washington Heights pumping station, a distance of 3½ miles, which materially increased the quantity of lake water in this territory and the territory adjacent thereto.

During the year 160,799 lineal feet of water mains, varying in size from 6 inches to 16 inches in diameter, were laid; 3,430 lineal feet of water mains lowered; 384 hydrants were placed; 63 hydrants were taken out and replaced by hydrants of various sizes, and 312 valves placed. The total number of fire hydrants now in use is 19,645 and 15,437 valves and 1,918 miles of water mains.

PIPE LAID DURING 1902, INCLUDING HYDRANT BRANCHES.

DIVISION.	DIAMETER OF PIPE IN INCHES.					Total length of Pipe in feet.
	4-inch.	6-inch.	8-inch.	12-inch.	16-inch.	
North	.....	3,777	290	.....	.....	4,067
South	91	3,994	.....	.....	.....	4,085
West	454	21,180	2,956	.....	.....	24,590
Hyde Park	251	11,374	8,111	.....	.....	19,736
Lake View	36	7,611	6,538	.....	.....	14,185
Lake	324	11,256	3,850	1,090	10,788	27,308
Jefferson	108	18,974	14,341	.....	.....	33,423
Calumet	132	8,731	4,928	3,262	16,275	33,328
Norwood Park	.....	.....	.....	.....	.....	.....
Rogers Park	.....	49	8	.....	.....	57
Totals	1,396	86,946	41,022	4,352	27,063	160,779

TABLE SHOWING AMOUNT OF PIPE IN THE CITY OF CHICAGO AT THE CLOSE OF 1902.

DIAMETER OF PIPE IN INCHES.	1901	1902			
	Amount in use in feet.	Amount taken up or abandoned in feet.	Amount laid in feet.	Grand total in feet, in use at the close of 1902.	Grand Total in miles.
48	2,873	.....	.....	2,873	$0\frac{2873}{5280}$
36	197,641	.....	.....	197,641	$37\frac{2641}{5280}$
30	38,291	.....	.....	38,291	$7\frac{2291}{5280}$
28	160	.....	.....	160	$0\frac{160}{5280}$
24	346,755	.....	.....	346,755	$65\frac{2355}{5280}$
20	7,931	.....	.....	7,931	$1\frac{2651}{5280}$
18	1,000	.....	.....	1,000	$0\frac{1000}{5280}$
16	304,623	.....	27,063	331,686	$62\frac{4326}{5280}$
14	22,552	.....	.....	22,552	$4\frac{1432}{5280}$
12	583,358	.....	4,352	587,710	$111\frac{1630}{5280}$
10	26,860	.....	.....	26,860	$5\frac{1460}{5280}$
8	2,077,740	510	41,022	2,118,252	$401\frac{972}{5280}$
6	5,379,705	458	86,946	5,466,193	$1,035\frac{1933}{5280}$
4	980,902	8,242	1,396	974,056	$184\frac{2056}{5280}$
3	8,996	.....	.....	8,996	$1\frac{3716}{5280}$
Totals in feet	9,979,387	9,210	160,779	10,130,956	.....
Totals in miles	$1,890\frac{1787}{5280}$	$1\frac{3930}{5280}$	$30\frac{2378}{5280}$	$1,918\frac{3216}{5280}$	$1,918\frac{3216}{5280}$

The following table shows the cost of labor for repairing and maintaining the water pipe system during the past two years and the years 1895 and 1896:

Year.	Miles of Pipe in Use.	Hydrants in Use.	Valves in Use.	Cost of Labor.	Saving in 1901-02 over 1895 and 1896.
1895	1546.7	16,466	12,073	$456,531.03	
1896	1612.2	17,375	12,907		
1901	1872.1	19,324	15,147	367,213.20	
1902	1918.6	19,645	15,437		$89,317.83

New bascule bridges will be constructed during the year 1903 at West Division street and at North Western avenue.

Owing to the lack of money only such repairs as were absolutely necessary were made to bridges and viaducts. The cost of these repairs amounted to $140,959.38. Of this amount $21,600.69 was charged to various railroad companies for repairs to viaducts spanning their tracks.

During the year the total number of entrances and clearances for the City of Chicago decreased $3\frac{2}{10}$ per cent, as compared with the year 1901. But, notwithstanding this decrease, there was an increase in tonnage of 604,494 tons, or $4\frac{4}{10}$ per cent over the year 1901.

The decrease in the lake trade of the Chicago river and the increase of the trade in the Calumet district emphasizes the necessity for lowering the tunnels, removing the center-pier bridges and constructing in their stead bridges of the bascule type. The docks of the river should be thoroughly built and the river dredged to such a depth as to admit of the passage of vessels of the modern type.

TABLE SHOWING MOVEMENTS OF COMMERCE BY LAKE IN PERIODS FROM 1863 TO 1902, BOTH INCLUSIVE.

PERIOD.	YEARLY AVERAGE TONNAGE.			YEARLY AVERAGE NO. VESSELS.			YEARLY AVERAGE CARGO.		
	Tons.	Increase or Decrease.		No.	Increase or Decrease.		Tons.	Increase or Decrease.	
		Tons.	Per Cent.		No.	Per Cent.		Tons.	Per Cent.
1863 to 1872	5,316,187	.....	.....	23,080	.....	.....	234	.....	.....
1873 to 1882	7,459,507	+2,143,320	40.32	22,950	−130	0.56	319	+85	36.32
1883 to 1892	9,115,002	+1,655,495	22.19	21,951	−999	4.35	417	+98	30.72
1893 to 1902	13,052,730	+3,937,728	43.20	17,003	−4,948	22.54	774	+357	85.61

There are now in use in the City of Chicago 7,075 water meters. Assuming a population of 2,000,000, the City during the year 1901 pumped daily about 164.8 gallons of water per capita, and during the year 1902 about 176. gallons per capita, or an increase over that of the year 1901 of 11.2 gallons per capita daily. This indicates that there is great waste and leakage of water. This waste and leakage can only be remedied by the installation of water meters and the use of measuring devices on the water mains to discover leakage. Some of the City water mains have been in the ground doing service for over twenty years, and owing to the great expense of uncovering a main, unless there is a large break through which sufficient water flows to flood adjacent property or appear on the surface of the street the department knows nothing of the leak. There are undoubtedly thousands of small leaks in the City's mains or service pipes causing a waste of millions of gallons of water each year.

Water meters should be installed and kept in repair by the City of Chicago and become a part of and an asset of its water system. The installation of meters is not recommended to curtail the use of water by the consumers, but on the contrary would result in a material decrease in the cost of water to the consumer in a very short time when all water is measured. The meter would have the effect of causing the consumer to reduce the wasting of water to the minimum, would prevent the water from being allowed to run through the garden hose all night on the lawn, and water being allowed to run continuously through the hydrant all winter to prevent, freezing and during the summer in order to get water a few degrees cooler. This unnecessary waste of water above enumerated amounts to fully 25 per cent of all water pumped, or about 32,626,781,084 gallons, at a pumping cost of about $636,222.00 during the year 1902. By this it will readily be seen that in a few years the City would save the cost of the meters, the consumer have his water tax reduced, and the City thereafter make an annual saving of about $300,000.00 per year. With all water supplied by the City and measured by meter, the City should be divided into districts and measuring devices used on the mains, thus accurately locating in which district a leak is, when such leak could be readily repaired.

During the year there were removed 1,349,474 cubic yards of garbage, or 272,935 loads, at a cost of $546,550.69.

The City of Chicago at the present time disposes of its garbage by dumping it into clay-holes located at different places in the city, the ashes and dirt being used to fill low places in the streets and alleys when possible. As these dumping grounds are about exhausted, the proposition now confronts the City of establishing crematories or reduction plants for the disposition of the City's wastes. This is a matter that should not be too long delayed, as it affects the sanitary condition of the City and its citizens.

In order to give the public better service, more money should be available for the removal of the City's garbage, the cleaning of its streets and alleys, etc.; but such money as was at hand was used in the most economical manner.

There were cleaned 18,175 miles of streets and alleys, necessitating the removal of 161,400 loads of street dirt; 1,873,365 lineal feet of weeds cut, and 229,113 inlets to catch-basins opened and cleaned. This was done at a total cost of $270,225.15. There were also removed 21,268 loads of snow at a cost of $20,637.65.

There were also removed from the streets 17,589 dead animals without any expense to the City.

During the year $57,245.16 was expended on the repair of improved streets and alleys; $41,038.72 on unimproved streets and alleys and $37,694.83 on sidewalk repairs.

The following permits were issued to open improved streets during the year 1901:

People's Gas Light and Coke Company	14,040
Chicago Edison and Commonwealth Electric Company	610
Chicago Telephone Company	241
Ogden Gas Company	269
Various corporations	163
City departments	1,243
Plumbers and sewer builders	1,420
Manure vaults, improved alleys	30
Total	18,016

This emphasizes the necessity of constructing a subway in the downtown or business district, and tunnels or conduits or the use of the sidewalk space in the outlying districts, in which should be placed all pipes, wires, etc., so as to prevent the continual tearing up and destruction of the city's pavements. Until this is done it will be impossible to have and maintain a first-class pavement, for after a pavement is once disturbed for the purpose of making an opening, it cannot be restored or put back in as good a condition as previously.

There were 1,501 miles of sewers, including catch-basins, cleaned during the year at a cost of $99,372.58.

Sections G and H of the intercepting sewer south of Thirty-ninth street, which are being built by the City directly with day labor, have progressed very satisfactorily.

Section G, which is nearly complete from Thirty-ninth street to Fifty-sixth street, a distance of 12,764 feet, will have been built about $14,000 less than it would have cost at the lowest price bid, and about $38,000 less than the estimate made to your honorable body in 1899, notwithstand-

ing an advance in cost of material and labor of over 10 per cent. All men employed on this work are secured directly by the City through certification by the Civil Service Commission.

Notwithstanding the fact that the price of both labor and material advanced materially between the time that the estimates on the cost of the work and the first bids were taken and the time that work was begun by the City, and also the fact that the City can only contract for supplies for one year at a time, and each year the cost has advanced, the work has been carried on at a cost within the price of the lowest bid, and also within the estimates; and the probability of large claims for extras, a portion of which the City has always had to pay, sometimes amounting to many thousands of dollars, has been entirely eliminated on this work now being done by the City.

Owing to the great increase in the prices of material and supplies and the numerous advances in the wage scale in the various bureaus of the Department of Public Works, the cost of operation and maintenance for the ensuing year will be much greater than for the year 1902.

INTERCEPTING SEWERS CONSTRUCTED DURING THE YEAR 1902.

Sections.	STREET.	FROM	TO	Diameter, Feet.	Length, Feet.	CONTRACTORS.
C.	Thirty-ninth	East of Stewart avenue	Dearborn	20	2,103	John P. Agnew.
	Thirty-ninth	Vincennes avenue	Lake avenue	20	2,343	John P. Agnew.
G.	On Lake Shore	Forty-second place	Forty-fourth place	16	1,331	City of Chicago, by day labor.
	On Lake Shore	Forty-fourth place	North of Fifty-first	15¼	4,522	City of Chicago, by day labor.
	Cornell avenue	South of Fifty-first	Fifty-sixth	14¼	3,207	City of Chicago, by day labor.
H.	Jackson Park and Jackson Park ave	Fifty-sixth	South of Fifty-ninth	13½	2,365	City of Chicago, by day labor.
L.	Jackson Park avenue	Fifty-sixth	South of Fifty-ninth	1¼	1,248	City of Chicago, by day labor.
	Jackson Park avenue	Fifty-sixth	South of Fifty-ninth	1	480	City of Chicago, by day labor.
	Thirty-ninth produced	Lake avenue	Ill. Central breakwater	20	476	John P. Agnew.

TOTAL LENGTH OF INTERCEPTING CONDUITS BUILT TO DECEMBER 31, 1903.

Sections.	STREET	FROM	TO	Diameter Feet	BUILT, FEET		
					Previous Work	Work in 1902	TOTAL
A.	Fourteenth	Chicago river	State	5½	1,075	.....	1,075
	State	Fourteenth	Twelfth	5¼	1,280	.....	1,280
	Twelfth	State	Wabash avenue	4½	400	.....	400
	Twelfth	Wabash avenue	Illinois Central railroad	4	817	.....	817
B.	Twenty-first	Chicago river	State	8	3,287	.....	3,287
	21st and Prairie avenue	State	Twenty-second	5¼	2,227	.....	2,227
	State	Twenty-first	Twenty-second	6	518	.....	518
	Intersection	Prairie avenue and	Twenty-second	5¼	92	.....	92
	Intersection	State and	Twenty-second	3	50	.....	50
	Twenty-second	Prairie avenue	Illinois Central railroad	New Invert	861	.....	861
C.	Thirty-ninth	Halsted	Butler	18½x22	2,091	.....	2,091
	Thirty-ninth	Halsted	Butler	1¼	88	.....	88
	Thirty-ninth	Halsted	Butler	1	1,916	.....	1,916
	Thirty-ninth	Butler	Lake avenue	20	5,064	4,446	9,510
D.	Lawrence avenue	Chicago river	Beacon	16	780	.....	780
	Lawrence avenue	Beacon	Lake Michigan	16	3,906	.....	3,906
	Lawrence avenue	Beacon	Lake Michigan	1¼	4,022	.....	4,022
	Lawrence avenue	Beacon	Lake Michigan	1½	4,018	.....	4,018
E.	Sheridan road	Lawrence avenue	Argyle avenue	8	1,477	.....	1,477
	Sheridan road	Argyle avenue	Balmoral avenue	7¾	2,458	.....	2,458
	Sheridan road	Balmoral avenue	Ardmore avenue	7½	2,661	.....	2,661
	Sheridan road	Ardmore avenue	Granville avenue	7	2,640	.....	2,640
	Sheridan and Devon avenue	Granville avenue	Sheridan road	6¾	2,692	.....	2,692
	Sheridan road	Devon avenue	Pratt avenue	6	2,641	.....	2,641
	Sheridan road	Pratt avenue	Lunt avenue	5	1,872	.....	1,872
	Sheridan road	Lunt avenue	Touhy avenue	4¼	1,378	.....	1,378
	Sheridan road	Touhy avenue	Bryan avenue	4¾	1,803	.....	1,803

F.	Sheridan, Lakeside and Clarendon aves..	Lawrence avenue	Montrose avenue	6	3,925	.....	3,925
	Clarendon, Graceland and Pine Grove aves.	Montrose avenue	Lake Shore drive	5¼	2,792	.....	2,792
	Lake Shore drive	Pine Grove avenue	Addison	4¾	2,450	.....	2,450
	Lake Shore drive	Addison	Melrose avenue	4¼	2,900	.....	2,900
	Lake View avenue	Melrose avenue	Wellington avenue	3½	1,660	.....	1,660
	Lake View avenue	Wellington avenue	Surf	3	855	.....	855
G.	Along Lake Front	Thirty-ninth	Forty-fourth place	16	2,942	1,331	4,278
	Along Lake Front	Forty-fourth Place	Fifty-first and Cornell ave..	15¼	.....	4,522	4,522
	Cornell avenue	Fifty-first	Fifty-sixth	14¼	144	3,207	3,351
	Cornell avenue	Fifty-first	Fifty-sixth	1¼	1,280	.....	1,280
	Cornell avenue	Fifty-first	Fifty-sixth	1	5,138	.....	5,138
H.	Jackson Park and Jackson Park avenue.	Fifty-sixth	South of Fifty-ninth	13½	.....	2,365	2,365
	Jackson Park avenue	Fifth-sixth	South of Fifty-ninth	1¼	.....	1,248	1,248
	Jackson Park avenue	Fifty-sixth	South of Fifty-ninth	1	.....	480	480
J.	Farwell avenue	Sheridan road	Lake Michigan	1¼	760	.....	760
	North Shore avenue	Sheridan road	Lake Michigan	1¼	960	.....	960
L.	Thirty-ninth produced	Lake avenue	Illinois Central breakwater.	20	.....	476	476
	Total				76,870	18,075	94,945

The total mileage of streets in 1901 amounted to 4,163.11 miles, to which have been added during 1902 3.98 miles, making a total mileage of 4,167.09 miles of streets in the City of Chicago.

Since May 23, 1892, to December 31, 1902, ordinances have been passed by the City Council and accepted by the railroad companies for the elevation of their road beds and tracks as follows:

Miles of main tracks to be elevated	123.10
Miles of other tracks to be elevated	683.27
Subways to be constructed	493

At an estimated cost when completed of $40,913,250.

There has been constructed to December 31, 1902, on track elevation: 70.17 miles of main tracks elevated; other tracks elevated, 329.11 miles, and 310 subways constructed. This at a total estimated cost of $22,255,000.

Respectfully submitted,

F. W. BLOCKI,
Commissioner of Public Works.

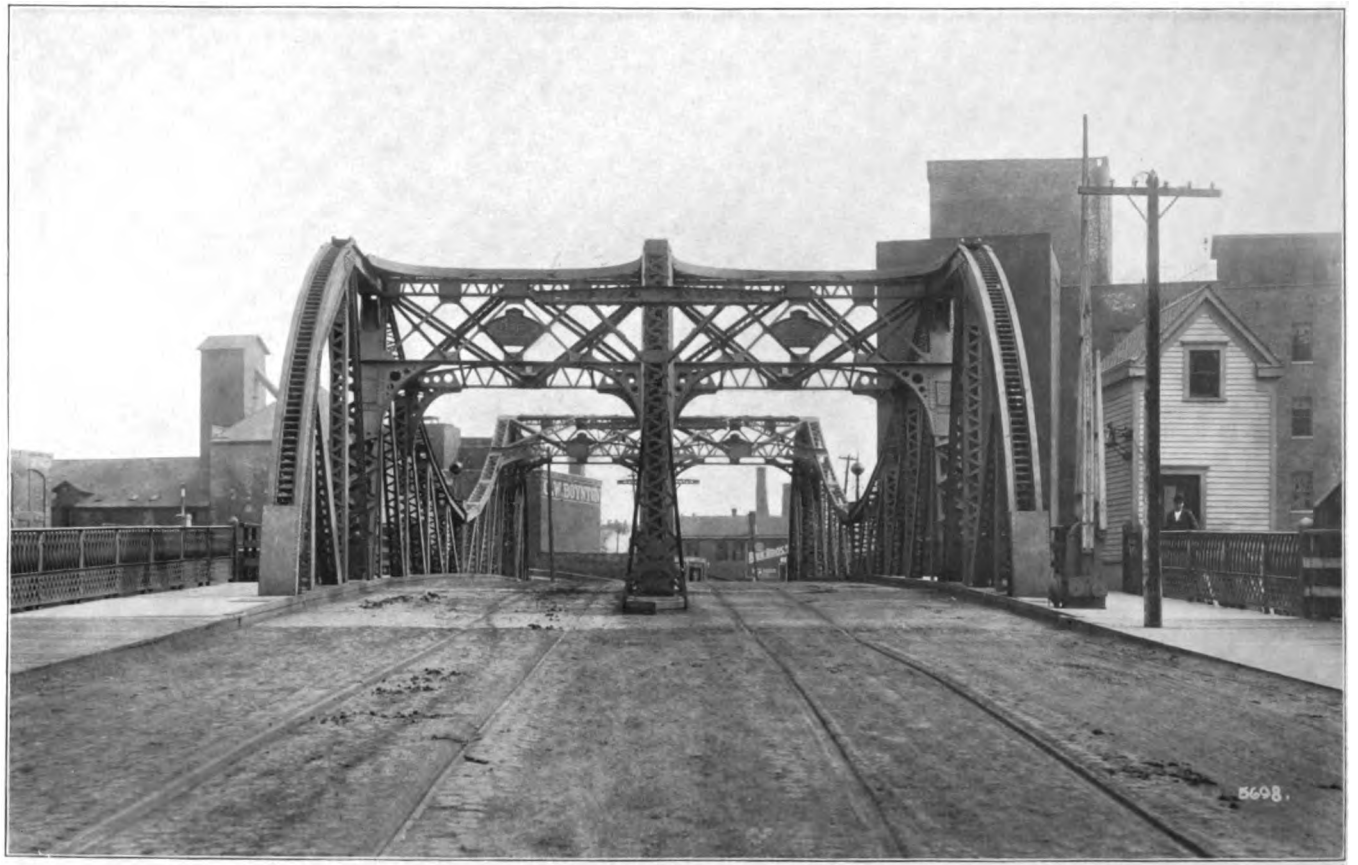
ANNUAL REPORT

Bureau of Engineering

CITY OF CHICAGO

1902

JOHN ERICSON
City Engineer



CLYBOURN PLACE BRIDGE—JUNE, 1902.

CITY ENGINEER'S REPORT.

January 1, 1903.

HON. FRED. W. BLOCKI,
Commissioner of Public Works.

DEAR SIR:—I beg to submit herewith the annual report of the Bureau of Engineering for the year ending December 31, 1902:

Owing to a change in the system of bookkeeping, as recommended and introduced by Haskins & Sells, I am unable in this report to present a financial statement. Such a statement will be found in the report of the Bookkeeper of the Department of Public Works. The work of the bureau has progressed satisfactorily in all divisions.

PUMPING STATIONS.

For the last few years through careful supervision it has been possible for the bureau to gradually reduce the operating expenses of our water works. The year 1902 has been no exception.

With an increased pumpage of 5,576,565,435 gallons over the pumpage in 1901, the consumption of coal in 1902 was reduced by 500 tons. It can therefore be seen that a steady improvement in the management of the water works has been made. Owing to the reduced price of coal, the cost of fuel for pumping the much larger quantity of water in 1902 was $72,364.50 less than the cost of fuel for pumping the less quantity in 1901.

With the completion of the new boiler plant at Chicago avenue, a great step towards modernizing this station was taken. The plant is a model one in every respect, and at the expert test which was made during the year it was shown that it satisfied the specifications in all points. A considerable saving is made in operating expenses owing to this construction.

During the year a contract was awarded to the Allis-Chalmers Company of this City for three 25,000,000-gallon Riedler vertical triple-expansion pumping engines to replace the old beam engines at this station. This necessitated the remodeling of the tunnel system to some extent, practically as outlined and shown in the City Engineer's annual report of 1899.

These improvements when completed will change this station to one of the most modern and economical.

Our expectations of an abundant and satisfactory supply of water after the completion of the many additions to the water works system in the last few years have hardly been verified. In the last six years the following important additions have been made: Lake View—one 14,000,000-gallon pump; Fourteenth street—one 30,000,000-gallon pump; Sixty-eighth street—one 14,000,000-gallon pump; Springfield avenue and Central Park avenue pumping stations—six 20,000,000-gallon pumps; Washington Heights—one 2,500,000-gallon pump. In addition there was an increase in the capacity of two pumps at Sixty-eighth street and some smaller additions at Norwood Park. This is equivalent to an increase in the pumping capacity during the last six years of about 180,000,000 gallons daily, and still there is a constantly growing demand for a larger supply of water. At the rate of the present increase in population and the consumption of water per capita, the department must continue to increase the capacity, unless the indisputable fact of a steadily growing and unnecessary waste and leakage is recognized and by systematic efforts eliminated. This subject has been discussed by me in special reports on several occasions during the last and former years, and means have been suggested whereby the City could reduce operating expenses and increase the efficiency of the water works system without having to expend large sums of money for additional equipment.

Although considerable work has been done to put the boiler plant at the Fourteenth street station in condition for service, new boilers for this station should be installed as soon as possible, since the present plant has about reached the limit of its usefulness.

As the six engines at the Sixty-eighth street station are practically in continuous operation, and, as the demand on this station, which supplies a very large territory, is rapidly increasing, it is recommended that a new pumping engine be installed, unless immediate steps are taken to restrict the unwarranted leakage and waste above referred to. It is further recommended that the valve area in the water ends of engines Nos. 1 and 5 be increased through the placing of larger valves and seats, thus increasing the capacity of these engines about 20 per cent.

For several years past it has been recommended that a new superstructure for Lake View crib be constructed. The present structure, which is only a temporary one, has been in service over ten years and cannot last much longer.

The extension of the tunnels from the Two-mile crib, supplying the Chicago avenue and the West side pumping stations, to the Carter H.

Harrison crib is again strongly recommended, being desirable both from a financial, as well as from a sanitary, point of view.

WATER PIPE EXTENSION.

The laying of a 16-inch main in Ashland avenue from Seventy-fifth street to the Washington Heights pumping station made it possible to increase the high pressure district adjacent to this station, and at the same time to furnish a sufficient supply to the increased district, which formerly suffered much at times on account of an inadequate supply.

In the construction of the new bridge at East Division street one end of the tunnel, through which the 24-inch water main from the Chicago avenue pumping station reached the West side, had to be removed, and it became necessary to shut off the supply of water through this main at the east side of the Ogden canal. As this main gives the most direct supply of water to Goose island and was one of the main arteries connecting the North and the West sides, it is most urgent that a new tunnel be constructed at this place for the accommodation of this necessary water main.

In 1896 I made a report to the then City Engineer recommending that additional valves on the water mains in the down-town district be placed. Since that time we have added a valve here and one there, as far as the funds available would permit, but no systematic work of this character has been done owing to lack of appropriations for this purpose. Attention is called to the discussion of this, as well as other matters pertaining to the Water Pipe Extension Division in the detail report under this heading.

BRIDGES.

The successful operation of the new Clybourn place bridge since its completion early in the year has demonstrated that bridges built on the designs prepared in this office compare very favorably with bascule bridges of other designs.

By constant watching and repairing we have been able to keep the old swing bridges in operation during the year, but this cannot continue indefinitely, and at least the following important bridges should be replaced by new bascule bridges as fast as plans can be made and contracts let: North avenue bridge, Twenty-second street bridge and Archer avenue bridge.

Lack of sufficient office space has been a cause of delay in turning out plans for new bridges promptly, and I recommend that proper office facilities be provided for this division.

HARBOR.

I have again to report a decrease in the total entrances and clearances for the City of Chicago of 3.2 per cent, as compared with the year 1901. This decrease has been marked for several years. There can be no question but that the limited depth of the Chicago river, due to the transportation tunnels, is the principal cause of this decrease. This is such a well-known fact that it hardly need be repeated. The solution of this problem is a question of finances rather than of engineering, and must of necessity remain unsolved until necessary funds are available.

The work in detail of the various divisions of this bureau, as well as other matters of interest, will be found under the following respective headings:

DIVISION OF WATER SUPPLY.

PUMPING STATIONS.

MR. J. H. SPENGLER, Assistant City Engineer in Charge.

FOURTEENTH STREET PUMPING STATION.

MR. HUGH MARTIN, Engineer in Charge.

During the year the following repairs were made on engines, boilers, and buildings:

All valves and springs were taken out of the main pump chambers of all engines and replaced. The water plungers were repacked. New brass key heads, steel pins and grease cups were put on the valve motion of the low pressure cylinders of engines 1, 2 and 3. On the same engines the governors received new brass bushings and steel pins. The old metallic packing of the piston-rods was replaced with fibrous packing and the rods trued up. All gauges and revolution counters were repaired and tested. New water relief valves and air chambers were put on the boiler feed and bathroom pumps. The bed plates of all engines were painted and varnished. New steel stud bolts were put on the stuffing boxes of all water plungers. Three new brass buckets with rods and rubber valves were placed in the condenser pumps of engines 1, 2 and 3. The air pumps of engines 2 and 3 were rebored. A new 6-inch throttle valve and a separator were placed on the main steam supply pipe leading to engine No. 1. On the injection pipe of the same engine a new 6-inch valve was placed. A separator was inserted on the main steam pipe leading to engine No. 2; all jacket pipes were renewed, the intermediate crank brasses were rebabbitted and the steam cylinders and receivers were

recovered with asbestos fireproof material. New steel pins were put in the low pressure valve motion of engine No. 4, and twenty-four new rubber valves were placed in the condenser pump attached to the same engine.

The nine tubular boilers received certain repairs as follows: On boilers 1 to 6 inclusive new trimmings were placed on the water columns and new low water indicators were furnished. Eighteen new 4-inch tubes were put in these boilers. Forty-two 1½-inch tubes with brass bushings were inserted in the Hawley furnaces. The following pipe was put on the steam header leading from the boilers to engines 1, 2 and 3: Twenty feet of 12-inch, 22 feet of 10-inch, 25 feet of 9-inch, and 18 feet of 6-inch, all with new flanges.

A new 4-inch steam pipe with reducing valve was installed, this pipe leading from the main header to the radiators in the engine-room. A 2-inch steam pipe leading to the bilge pumps in the basement was also placed.

Boilers 7, 8 and 9 received the following repairs: New back tube sheets and braces for heads and domes were placed. Four inches was cut off the back end of the boilers, the tubes were taken out, ends annealed and replaced. New bottom center sheets were put on boilers 7 and 8. The three boilers were moved 8 inches north from the south wall of the boiler-room and the 12-inch steam header remodeled. New feed water and blow-off pipes were inserted. New boiler fronts are being placed on the Hawley furnaces, together with thirty-five new 1½-inch tubes, and the resetting is in progress. These boilers will again be in service by the latter part of January.

Eight 4-inch tubes, twenty-five handhole plates and forty clamps were placed in the water tube boilers 10, 11 and 12. The entire breeching leading from these boilers to the chimney was covered with non-conducting material. In the Roney mechanical stokers there were placed one hundred and eighty new top grates, also fifty web and thirty-five basket grates.

All the gas piping under engines 1, 2 and 3, including fixtures and fittings, as well as that in the boiler-room, coal-room and office, was renewed.

Repairs to buildings and grounds included the following: Two new iron catch-basins were placed on the line of the blow pipes leading from the boilers to the sewer. New wash bowls, closets and hot water connections were put in the toilet-room of the engine-room. A new steam gauge, altitude gauge, and thermometers were placed on the steam and hot water pipes of the bath-room. A steam trap was connected with the return pipe leading from the radiators.

A new 20-ton wagon scale was installed in the alley near the southwest corner of the building, the scale beam being placed in the engine-room. The boiler-room roof was given one outside and two inside coats of paint.

Other repairs involved the painting of all gutters, down spouts, and the woodwork of windows.

Forty-five thousand and twenty-five baths were given during the year in the public bath operated at this station under the Bureau of Engineering.

SIXTY-EIGHTH STREET PUMPING STATION.

Mr. Thomas Reynolds, Engineer in Charge.

The main repairs made at this station during the year were as follows:

Engine No. 1.—A new 8-inch gate valve was placed on the header leading to this engine. The high and low pressure guides were trued up and four new gibs placed. The piston of the right high pressure cylinder was centered. A No. 4 Anderson steam trap was placed on the circulating pipe of the jackets.

Engine No. 2.—All the beam and cross head pins were trued up and eight sets of new brasses were furnished for the short rods. The high and low pressure guides were trued up and four new brass gibs placed. Straps were taken out and closed up, all gibs and keys refitted, and air pumps overhauled. A new steam trap was placed on the jacket pipes.

Engine No. 3.—The four guides and the beam and cross head piers were taken out, trued up and replaced. Four new brass gibs were furnished, all straps and gibs overhauled and refitted, and new keys and brasses placed on two of the short rods. A steam trap was also placed on the piping leading from the jackets.

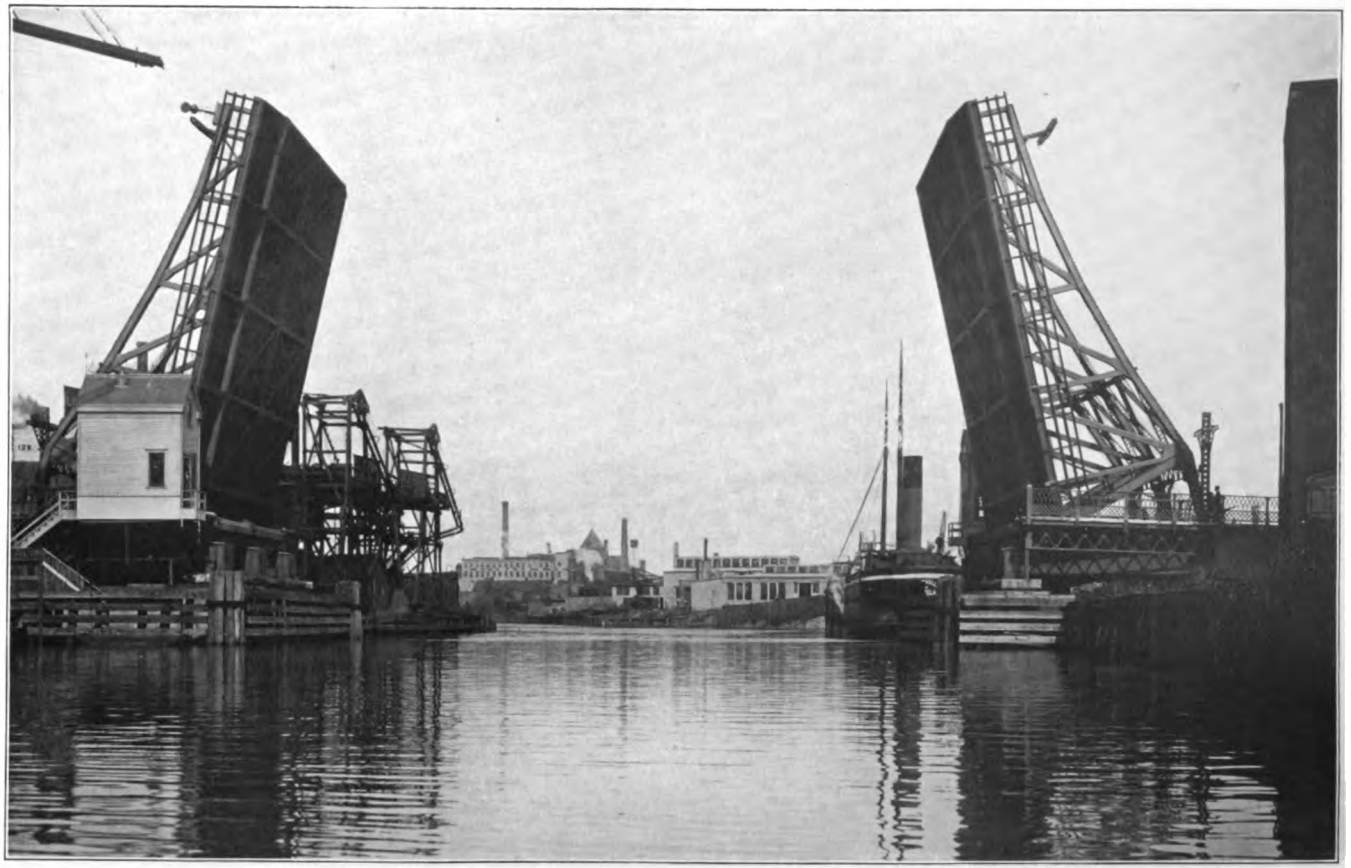
Engine No. 4.—All pins were overhauled. Both ends of all the rods on the main valve motion were rebushed. The valve stems, compensators and valves were repacked and the air pump repaired.

Engine No. 5.—This engine required no particular repairs, a few liners being put in and the piston rods packed.

Engine No. 6.—The water plungers were packed and one new trap connected to the jacket piping.

Engines Nos. 1, 2, 3, 4, 5 and 6 were cleaned, painted and varnished.

Boilers.—New cast iron skeletons were placed in the rear end of the settings of boilers 1 to 8, inclusive. Two flues were taken out of boiler No. 5 and twenty-five out of No. 6. These were cleaned, new ends welded on and replaced. All other flues, including all seams of these



CLYBOURN PLACE BRIDGE—JUNE, 1902.

boilers, were calked. Thirty-seven flues were taken out of each of boilers 9 and 10, new ends welded on and replaced. The long stay rods were shortened, and all seams calked. A bottom center sheet was placed in boiler No. 11 and a new front sheet on No. 12. All the flues of both boilers were removed, new ends welded on and replaced. Thirteen flues were taken out of No. 13 and ten out of No. 14. These flues were cleaned, new ends welded on and replaced.

Fifteen rivets were cut out of the seams of boiler No. 14 and replaced with others. Thirty-three flues were taken out of No. 15 and forty-seven out of No. 16. As in the other boilers, these were cleaned, rewelded and put back.

The sixteen boilers in this station are now in good condition for a number of years. They have been examined by the City Boiler Inspector and certified to as being in all respects in accordance with the requirements of the City ordinances.

A number of new rivets were put in the steel header over the Worthington boilers. All the gate and globe valves in the north half of the boiler-room were overhauled. A new nozzle was placed on the dome of boiler No. 9. In the south half of the boiler-room a 10-inch expansion joint was inserted in the main steam header, and one 10-inch, one 8-inch and two 3½-inch gate valves were placed.

BUILDINGS.—In the northwest corner of the engine-room the oak partitions of the offices were raised and roofed over. New storm sheds for three of the main entrances were built. Six combination skylights and ventilators were placed in the roof of the boiler-room. The slate roof, including the flashing, over the engine-room was repaired. The boiler-room roof, all the window frames and sashes and the roofs of the houses of the tunnel shafts were painted. Following the recommendation made in the Annual Report for 1901 a new machine and blacksmith shop, adjacent to the south end of the boiler-room, was completed and is now in use. This results in a considerable saving of fuel necessary to operate the tools which were formerly located in the old Town of Lake building, as well as a saving in the amount of steam necessary for heating purposes. The old building, being in a very dilapidated condition and of no further use, will be shortly removed.

TWENTY-SECOND STREET PUMPING STATION.

MR. MARTIN MAHONEY, Engineer in Charge.

As usual, the engines were kept practically in continuous operation, except for short periods occasionally, when it became necessary to make such repairs as were due to ordinary wear and tear.

Certain repairs were made to engines Nos. 50 and 51, as follows:

New brass sleeves were placed on all valve stems of both engines, also new brasses on top of connecting rods and on top of high pressure links.

The top head of the high pressure cylinder of engine No. 50 developed a small crack during the year. A new head was therefore ordered. This will be delivered and placed early in the coming year.

Four new 8-inch double beat valves were placed in the pumps of engines 50 and 51. New drum heads and tubes were placed in the Hawley furnace attached to boiler No. 1. New lower grates were placed in the Hawley furnaces of all boilers. A new oak plank roadway was placed along the west side of the coal-room. The old plank floor over the wet wells and engine pits in the basement were found to be so badly decayed that it became necessary to replace same. Accordingly, the old joists and flooring were removed, steel beams were placed and covered with a new wooden flooring. The slate roof, including flashing gutters and down spouts, was repaired.

Now that the full capacity of the engines at the Central Park and Springfield avenue stations can at all times be obtained, extensive repairs to the inlet suction pipes and valves of the pump chambers and necessary repairs to the valves and walls of the wet well will be made, this requiring the shutting down of the engines, successively, for a considerable period.

Engine No. 26 requires extensive repairs, having received no general overhauling for a number of years.

The public bathroom in connection with this station furnished baths to 28,380 people during the year.

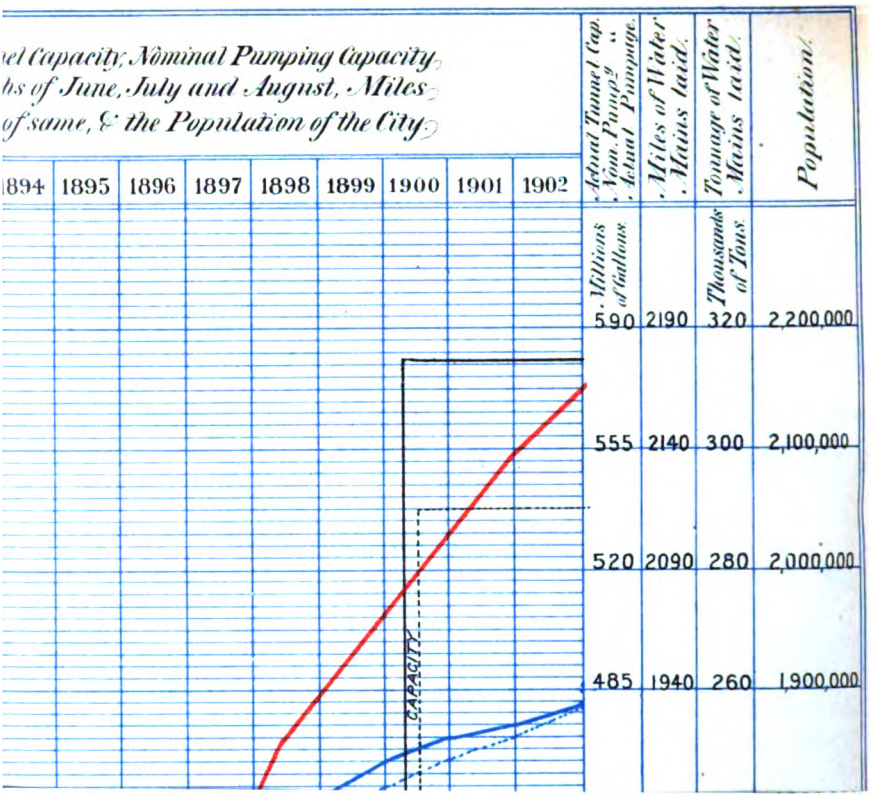
CHICAGO AVENUE PUMPING STATION.

Mr. W. J. Burns, Engineer in Charge.

Early in the year while the four beam engines in the main room were painted, each engine was given a general overhauling. All wearing parts were adjusted and repaired. New valves and springs were put in the pumps. All brasses, pins and bearings were trued up and renewed wherever necessary. The packing of the pumps was renewed.

A new 8-inch steel crank pin and two sets of crank pin brasses were placed on engine No. 67.

November 12, 1902, a contract was let for the replacing of the old crank shaft on engine No. 72 with a hollow forged, fluid compressed steel shaft. The existing shaft developed a crack some time previous, so that the engine was run only on one side. This change involves the removal of the fly-wheel eccentrics, cranks, etc. The work is now in progress and the engine is meanwhile receiving a general overhauling, involving the placing of new journal brasses, crank pin brasses, valves and pumps and



new packing in engine and pump. The engine will again be in operation and to its full capacity by February 1, 1903.

Only minor repairs were made to engines Nos. 53 and 57.

The four beam engines were cleaned, painted and varnished.

About the middle of December one of the forks of the main connecting rod on the east side of Holly engine No. 2 broke. Pending the repair of this rod, which will be completed in a few days, the engine is running one side, thus pumping half of its normal capacity.

Late in the year the fly-wheel of this engine became loose on its shaft. This necessitated the shutting down of the engine for about a week. New steel keys were placed.

Each Holly engine was supplied with an automatic cylinder oil pump.

A new 12-inch steam pipe connection was made between the six return tubular boilers and the Holly engines, so that steam is now supplied to these engines from the new boilers. A 12-inch pipe connection was also made from the main header of boilers 5 and 6 to the large steam loop by which steam is supplied to the beam engines in the main room. A 12-inch reducing valve was placed on this connection inside the boiler-room and also a duplicate valve on the 12-inch connection leading from the south end of the boiler-room to the engine-room. By means of these changes the new boilers are at present run at a pressure of 70 pounds, supplying steam to the old beam engines with a pressure of 30 pounds and at the same time furnishing steam to the Holly engines. As a consequence the Holly boiler-room is closed down, thus effecting a large saving in cost of fuel and labor necessary for repairs and operation.

The doors and windows in the water tower were cleaned and painted.

A new tar-and-gravel roof was placed over the Holly engine-room and also over the machine shop. The slate roof of the main engine-room was repaired. New wooden covers were placed on all valve and catch-basins in the vicinity of the station. The new boiler-room roof was given a coat of paint. All flashing, gutters, down spouts, etc., on engine and boiler-rooms were given two coats of paint. A new concrete walk was built at the north entrance to the main engine-room.

REMODELING CHICAGO AVENUE PUMPING STATION.

Following the recommendations made by the City Engineer for several years, showing the necessity of making improvements and changes in the machinery at this station, the City Council in its annual budget for 1899 appropriated $350,000 for this purpose. This contemplated the installaton of a new boiler plant to take the place of the old marine boilers which had been in use for many years and which had greatly deteriorated, requiring continual repairs and therefore involving large

annual expenditures. The plans as formulated also provided for the installation of three 25,000,000-gallon vertical triple expansion engines to take the place of the four beam engines in the main room and the erection of a traveling crane. The proposed installation of this new machinery called for the remodeling and simplification of the tunnel system adjacent to the station, including the construction of three new suction wells.

July 18, 1899, a contract was let for the boiler plant. The requirements in general called for six horizontal internally fired return tubular boilers, each with a capacity of 225 horse-power, each horse-power to represent 34½ pounds of water evaporated per hour from feed water at a temperature of 212 degrees into steam at atmospheric pressure and to be properly proportioned for a maximum pressure of 200 pounds per square inch. The boiler plant as contracted for and at this time completely installed and in operation includes necessary feed pumps, purifiers, heaters, feed water measuring tanks with proper steam piping, all in duplicate. The boilers are 10 feet 6 inches in diameter and 15 feet 3 inches long, each having two Morison corrugated furnace flues 48 inches in diameter. The efficiency guaranteed was the evaporation from and at 212 degrees of 12 pounds of water per pound of combustible, using Pocahontas coal. The stokers attached are of the Hawley type.

A complete coal-conveying machinery and storage plant was installed. This includes necessary conveying and coal crushing machines. The bunkers having a total capacity of 500 tons are in three sections, having down spouts leading to the Hawley furnaces. The purifiers are of the Baragwanath horizontal type. The feed pumps are two in number, each 12x7x12 inches, of the pressure pump pattern. Each has ample capacity to feed the three batteries. The installation of these boilers required an addition to the existing boiler-rooms, 36x47 feet, the reconstruction of the roofs to give proper head room for the coal-conveying machinery and certain other changes by which the new boilers are all housed in one room. The boilers are placed in three batteries of two each. The first battery was put into operation August 16, 1900, and the second on July 8, 1901.

The work done on this boiler plant was continued during 1902 as follows: The third battery (Nos. 5 and 6) was completely installed February 19th. The subway for the coal and ash conveyor was completed February 8th. The breeching connecting boilers 5 and 6 with the Holly boiler-room stack and the assembling of the coal storage bins were completed April 15th. The steam piping and fittings in connection with boilers 5 and 6 and steam connections with coal crusher and driver were

completed May 3d. Since this time the boiler plant has been in successful operation, although firing had to be done by hand until the spouts leading from the coal bunkers were in position. This latter work was practically completed by the close of the year, so that all coal is mechanically fed to the furnaces and the ashes are removed and deposited by the conveyor.

An expert test for efficiency and capacity was made August 8, 1902, showing that the plant was in all respects in accordance with the requirements of the specifications and the guarantees of the contractor.

The boiler-room walls were lathed and plastered with elastic pulp plaster and afterwards painted.

The City, by day labor, did the following work: All sewer connections were completed. The concrete floor was extended and finished. A new toilet-room was built for the use of the employes in the fire-room. New area walls and steps were built around two of the entrances. The iron cover over the coal receiving hopper was removed and oak plank substituted in order to reduce the noise caused by the coal teams. This change necessitated the regrading of the approaches and the building of new curbs and a concrete walk on the south side of these approaches.

October 13, 1902, a contract was let to the Allis-Chalmers Company of Chicago for the furnishing and erecting of three vertical triple-expansion engines, each having a capacity of 25,000,000 gallons per 24 hours. These pumps are to be provided with Riedler valves. The plungers are to be 24⅛ inches in diameter with a stroke of 48 inches. The steam cylinders will be 15, 29 and 48 inches in diameter with the same stroke as the water plungers. The engines are to be operated with superheated steam having a pressure of 175 pounds at the boilers against a maximum head of 125 feet and making 62 revolutions per minute.

July 21, 1902, a contract was let to the Whiting Foundry Equipment Company for the furnishing and erection of a 20-ton crane. Work on this is now in progress.

December 29, 1902, a contract was let to John J. O'Brien for the remodeling of the tunnel system adjacent to the station. This contract includes the construction of three circular brick shafts, each 12 feet inside diameter and each approximately 90 feet deep; about 180 feet of a circular brick tunnel 6 feet inside diameter; about 458 feet of a circular brick tunnel 5 feet diameter, and the furnishing and placing of a 6-foot gate valve.

Mr. W. D. Barber, Assistant Engineer, was in local charge of the work involved in remodeling the station.

LAKE VIEW PUMPING STATION.

MR. F. D. PAREER, Engineer in Charge.

The following represents the principal repairs made at this station during 1902:

ENGINE NO. 1.—The valves in the water ends were renewed. A new rod was placed in the high pressure follower. The covering of the steam cylinders was renewed and finished with steel lagging.

ENGINE NO. 2.—The surface condenser attached to this engine having required continual repairs since its installation, it was deemed advisable both as to economy in operation and repairs to replace same with a jet condenser. This work was done early in the year. New valves were placed in the water ends.

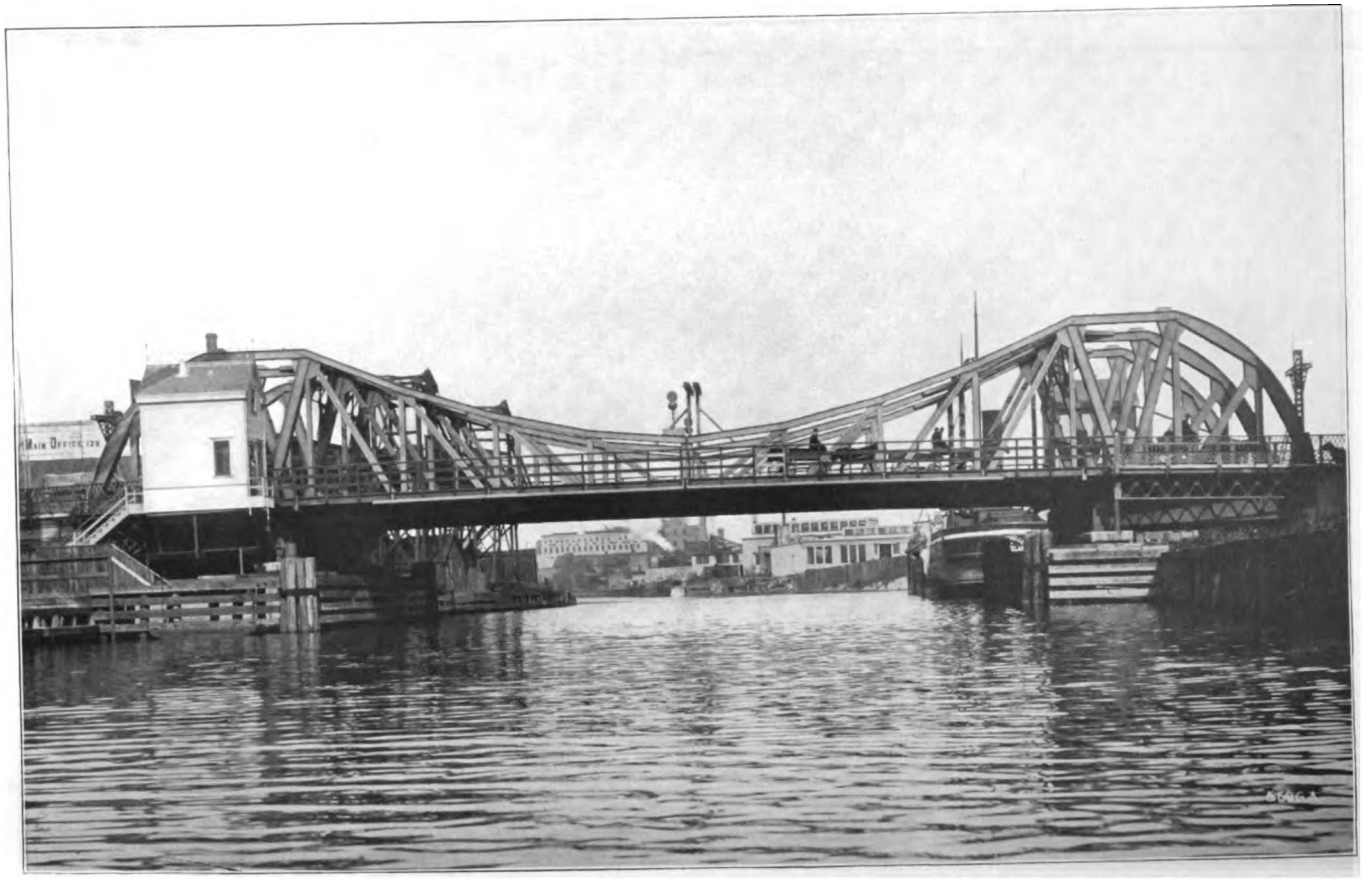
ENGINE NO. 3.—New valves with necessary stems were placed in the water ends.

ENGINE NO. 4.—The steam cylinders were newly covered with asbestos fireproof covering and finished with steel lagging. New brasses were put on the short rods of the high pressure cylinders. The valves in the water ends were replaced. The suction pipe adjacent to the water ends developed a crack early in the year. A new pipe was ordered and placed in position. Certain leaks in the joints between the high and low pressure steam cylinders were repaired.

ENGINES NOS. 1, 3 and 4 were entirely repainted.

BOILERS.—In accordance with a contract let July, 1901, the work of repairing boilers 1 to 7, inclusive, progressed as follows: Repairs to boilers 1 and 2 were completed by the close of 1901. During 1902 boilers 3 to 7, inclusive, received the following repairs: A new 12-foot bottom sheet was placed on each of the boilers 3, 4 and 7. All the tubes of No. 4 were taken out and replaced with a complete set of new ones. On boilers 3 and 5 new nozzles and mud drums were placed. A new 12-inch header with necessary connections was installed for the entire length of the boiler-room and finished with asbestos fireproof covering. The repairs made on boilers 3, 4, 5, 6 and 7 necessitated the resetting of same. The entire boiler plant is now in good condition and no extraordinary repairs will be needed for a number of years.

A partition was placed at the east end of the coal-room, thus providing a new locker-room. Three new lockers were erected in the east end of the engine-room for the benefit of the assistant engineers. A large locker was erected in the office of the chief engineer to provide for the proper storage of brass fittings, etc. A brick store-room was built at the west end of the boiler-room to provide proper storage facilities for tools, etc. The inside of the boiler-room roof received two coats of paint. The dynamo and all window frames and sashes were painted.



CLYBOURN PLACE BRIDGE—JUNE, 1902.

The most important repairs to be made during 1903 are as follows: Engine No. 1 requires new plungers and the rings should be rebored, in order to give more economical service.

The Hawley down-draft furnaces attached to the boilers, having been in service for a period of from five to twelve years, are in bad condition and should be replaced with those of more modern type or with some other kind of smoke-preventing furnace applicable to this type of boilers.

HARRISON STREET PUMPING STATION.

Mr. Thomas Kavanaugh, Engineer in Charge.

The two triple-expansion engines in this station have been operated, practically, continuously during the year. Only minor repairs to the two engines were made. The three steam cylinders of the west engine were covered with new non-conducting material and the lagging renewed. Two 6-inch angle valves were placed in connection with the main steam header so as to furnish a by-pass to the steam pipe leading to the engines. A new blow-off pipe was placed on boiler No. 1. The only repairs made to the boilers were the calking of a few seams and the rolling of a number of flues. All broken blocks of the cement walk adjacent to the station at the Harrison street entrance were removed and replaced. A new cement sidewalk was laid from Harrison street along the east side of the engine-room to the boiler-room. The sewer pipe leading from the east end of the boiler-room was relaid. The skylights and slate roof of the engine-room were repaired. The plank floor of the coal-room was renewed wherever necessary. A new wooden floor was laid over the wet well in the basement.

The boiler-room roof was given two coats of paint on the inside. All metal flashing, as well as gutters and down spouts, was cleaned and painted.

CENTRAL PARK AVENUE PUMPING STATION.

Mr. James Ashworth, Engineer in Charge.

The three engines in this station have been in operation since July, 1900. Early in the year the contractors for the engines placed corrugated steam loops in the back connections of all the boilers, by means of which the steam furnished the engines is superheated about 150 degrees above the temperature normal to the boiler pressure. Official tests of the engine were made during the year as follows:

Engine No. 3 was tested August 27th and 28th, engine No. 1 September 3d and 4th, and engine No. 2 September 8th and 9th. The results of these tests showed that the requirements of the specifications as to duty and capacity had been fully complied with.

A lathe, drill press and emery wheel operated by a 10 horse-power

vertical engine were put in the machine shop. The painting of engines 2 and 3 was completed by the contractors. The store-room on the south side of the engine-room was remodeled in order to accommodate the electric light engine which had heretofore been located in the northeast corner of the engine pit. This change makes the engine more accessible.

All joints of the masonry retaining walls of the engine pit were cleaned out and pointed up with Portland cement mortar. An oak cabinet and a booth for telephones were placed on the main gallery floor adjacent to the office. A steam header for the auxiliary machinery was placed over the boilers and a platform built in order to have convenient access to all valves on the boilers. A small brick store-room was built in the southwest corner of the coal-room.

Considerable trouble having been continually experienced through leakage and condensation, the entire roof over the engine-room was remodeled. The Ludovici tile was removed. One by six-inch matched flooring was fastened to the purlins. On this two-ply roofing felt was placed, to which furring strips were nailed and the tile replaced. This work was done late in the year and no further trouble from leakage or condensation has been given.

All steam and other pipes under the engine-room gallery were painted. Bird screens were placed over all movable windows and screen-hoods over the openings in the roof ventilators. New steel flanges were put on the feed water pipes where they connect with the boilers.

Certain work necessary to fully complete the station still remains to be done, as follows: Painting of brick engine piers, an upper floor over the wet well and connecting with the engine galleries, laying cement sidewalks, the placing of necessary fences, and the grading of the grounds east of the buildings as far as the limits of the City property at St. Louis avenue.

SPRINGFIELD AVENUE PUMPING STATION.

MR. DANIEL L. SULLIVAN, Engineer in Charge.

The three engines at this station have been in operation since February, 1901. The most important work in the way of repairs or improvements made at this station during the year is as follows: During March the electric light engine was moved from the engine-room pit and placed in the small room adjoining the southwest corner of the engine-room.

During December the contractors for the pumping machinery installed a "Dry Vacuum" pump in the engine pit. This was connected with the three engines and has proved a great improvement over the original "ejector" system heretofore used in obtaining a vacuum before the engines are started.

During July the bolted flanges connecting the feed pipes from the purifiers to the boilers were replaced with steel flanges riveted to the boilers, thus preventing any further leakage at these connections.

Late in the year a contract was let for the furnishing and placing of a steel plate floor over the top of the wet well, as well as a second floor over the well at the same elevation as the upper galleries of the engines. These two floors are connected with the galleries and stairways of the engines. This work was nearly completed at the close of the year.

A lathe, drill press and emery wheel were placed in the machine shop of the station. Screens were placed over all movable windows and over the hoods of the ventilators. The painting of all engines was completed by the contractors. An oak cabinet for small tools was furnished. A closet was built in the Chief Engineer's office, providing for small stores.

The joints of the retaining walls of the engine pit were cleaned out and pointed up with Portland cement mortar. The most important work to be done to make the station complete includes the painting of the brick engine piers, certain repairs to the roof to prevent leakage and condensation, and the grading of the grounds in the rear.

No final tests of the engines in this station have as yet been made.

WASHINGTON HEIGHTS PUMPING STATION.

Mr. John E. Thome, Engineer in Charge.

The water pumped from this station is taken from the City mains leading from the Sixty-eighth street pumping station. The supply heretofore had been obtained from a 6-inch main in 103d street. During extreme weather this main was unable to supply the required amount of water, and even with that obtained from the artesian well the pressure at times was inadequate. In order to obviate the danger of an insufficient supply and also to provide an adequate supply for some years to come, a 16-inch main was laid on Ashland avenue from the station northward connecting with the 24-inch main on Sixty-seventh street. This station can now be supplied with a maximum of 2,500,000 gallons of lake water per day, thus fully justifying the expense incurred through the laying of this main. In consequence of this increased supply, the territory to which water is furnished from this station has been enlarged through the addition of that area bounded by Centre avenue on the west, Stewart avenue on the east, Ninetieth street on the north, and south to the City limits at 107th street, with the result that there is now at all times an ample pressure in this district. Through these improvements the pumpage from this station has been increased from an average of 300,000 gallons to 800,000 gallons per day.

It is therefore recommended, in order to have proper reserve ma-

chinery, that a 2,000,000-gallon pump be installed in this station. This engine would take the place of the existing 500,000-gallon pump.

A 20-ton Fairbanks team scale was installed at the southeast corner of the building.

The principal repairs made to the plant were as follows: A new bottom sheet was put on the north boilers and the same reset. The engines, steam and other pipes, the roof of the water tank, the window frames and sashes, smokestacks and the interior of the engine-room closets and office were painted. The feed pipe system in connection with the boilers was entirely renewed. The sewer connections from the blow-offs were repaired. Engine No. 2 received a general overhauling.

NORWOOD PARK PUMPING STATION.

Mr. Nels Sampson, Engineer in Charge.

The supply from this station is obtained from artesian wells having a maximum capacity of 1,000,000 gallons per 24 hours. The supply has at all times been adequate. The water tank received two coats of paint both inside and outside. The two smokestacks, being badly rusted and in danger of collapse, were removed and one new stack erected. A new tar-and-gravel roof was placed over the west half of the station. The inside and outside of the building was painted.

In order to provide properly for such renewals and repairs that may at times be necessary to the deep well pump a movable head frame was built over the pump and a curb with block and tackle furnished.

WATER WORKS SHOPS.

Mr. James Garvey, Superintendent.

During the year all the old hydrant and valve patterns were thoroughly overhauled, coated with shellac and put in good repair. New patterns were made for single and double hydrants. Patterns were also made for special hydrants and valves for use in the high-pressure fire system that was installed at South Chicago and for that which is to be installed in the business district down town.

All lathes, planers and drill presses were overhauled and put in good condition. The belting and shafting was repaired and lined up. A new 18-inch lathe was put in. A 12-inch emery wheel with the necessary countershafting was added to the complement of the shop. Four new arc light lamps were added to the electric lighting system of the plant. The shop engine was given a general overhauling and put in thorough repair, and is now giving much better service than formerly.

The miscellaneous repair work for the various bureaus of the Department of Public Works was greatly in excess of that done in 1901, the

NINETY-FIFTH STREET BRIDGE—DECEMBER, 1902.

pumping stations and bridges getting the greater proportion of such work, the South Halsted street bridge especially requiring a large amount of repairs. The repairing of old hydrants is becoming quite an important feature of the work of the shop, 350 hydrants of all kinds having been repaired, against 300 repaired in 1901.

The Meter department of the shop shows a material increase of meters tested and repaired, 863 meters having been handled in 1902 against 800 in 1901. Those tested and repaired the past year were generally of the larger sizes.

The following table shows in detail the number of hydrants and valves manufactured in 1902 together with the shipments during the year:

HYDRANTS.	Single Hydrants.	2½-inch Double Hydrants.	3¼-inch Double Hydrants.	4-inch Double Hydrants.
On hand January 1, 1902.....	9	10	1	2
Manufactured in 1902.....	129	375	24	12
Total.....	138	385	25	14
Shipped during 1902.....	132	364	22	13
On hand January 1, 1903.....	6	21	3	1

VALVES.	4-inch.	6-inch.	8-inch.	12-inch.	16-inch.	24-inch.
On hand January 1, 1902.....	11	5	2	2	1	1
Manufactured in 1902	76	245	92	19	10	2
Total.....	87	250	94	21	11	3
Shipped during 1902	75	226	83	12	11	2
On hand January 1, 1903.....	12	24	11	9	0	1

WATER TUNNELS IN USE.

No changes were made in the various water tunnel systems. The mileage remains the same as reported in the annual report for 1901, as follows:

5 feet diameter, length.....	18 835 feet
6 feet diameter, length.....	44,170 feet
7 feet diameter, length.....	61,396 feet
8 feet diameter, length.....	51,695 feet
10 feet diameter, length.....	22,699 feet
Total	198,795 feet, or 37.7 miles.

TABLE "A"—MONTHLY PUMPAGE IN GALLONS, 1902.

MONTH.	14th Street Pumping Station.	68th Street Pumping Station.	22d Street Pumping Station.	Chicago Avenue Pumping Station.	Springfield Avenue Pumping Station.	Central Park Avenue Pumping Station.	Harrison Street Pumping Station.	Lake View Pumping Station.	The City as a Whole.
January.....	2,317,014,397	1,833,655,620	1,392,949,000	1,415,889,380	1,404,638,170	1,328,415,020	769,283,872	968,932,219	11,430,777,678
February.....	2,025,210,405	1,758,502,350	1,620,256,200	1,447,995,760	1,244,596,810	1,359,872,090	749,155,015	839,409,266	11,044,997,836
March.....	1,872,880,807	1,794,470,000	1,721,338,600	1,395,051,355	1,222,082,040	1,307,758,580	991,788,476	891,227,669	11,096,542,627
April.....	2,227,011,709	1,643,937,060	1,204,237,800	1,343,626,010	1,065,658,650	1,217,341,810	961,937,923	853,615,611	10,517,366,573
May.....	2,285,397,123	1,636,452,900	1,255,643,200	1,424,695,525	1,219,396,600	1,144,350,550	1,000,994,099	869,076,833	10,836,006,830
June.....	2,193,267,718	1,573,490,870	1,272,714,200	1,368,734,245	1,062,833,250	1,198,698,600	969,620,358	818,452,698	10,477,811,939
July.....	2,147,942,450	1,718,552,030	1,566,175,200	1,331,544,655	1,186,590,270	1,249,036,610	989,466,163	832,820,975	11,022,128,353
August.....	1,983,630,868	1,770,840,525	1,711,666,200	1,455,152,030	1 250,864,920	1,087,482,780	997,526,712	860,299,380	11,117,463,415
September.....	2,036,778,472	1,770,378,690	1,538,847,400	1,358,653,265	1,321,585,700	867,646,330	967,548,932	813,884,544	10,675,273,333
October.....	2,252,606,692	1,821,438,630	1,541,653,000	1,271,066,145	1,043,243,190	1,254,716,520	1,001,811,070	789,884,182	10,976,419,429
November.....	2,083,470,040	1,715,059,320	1,517,565,800	1,241,553,320	1,024,256,330	1,048,986,610	968,251,129	825,310,766	10,424,453,315
December.....	2,160,886,079	1,841,680,330	1,728,905,200	1,430,971,436	1,069,117,250	971,970,440	991,421,685	892,930,690	11,087,883,110
Totals.....	25,586,096,760	20,878,458,325	18,071,951,800	16,484,933,126	14 134,763,180	13,936,270,880	11,358,805,434	10,255,844,833	130,707,124,338
								Total Pumpage Washington Heights.....	156,963,682
								Total Pumpage Norwood Park.....	28,195,000
								Grand Total.....	130,892,283,020

TABLE "*B*"—OPERATIONS OF PUMPING STATIONS DURING 1902.

	Fourteenth Street Pumping Station.	Sixty-eighth Street Pumping Station.	Twenty-second Street Pumping Station.	Chicago Avenue Pumping Station.
Bituminous coal, tons	15,660 $\frac{551}{2000}$	14,202 $\frac{375}{2000}$	17,391 $\frac{345}{2000}$	14,923 $\frac{1887}{2000}$
Price of bituminous coal, per ton	$3.17	$2.63	$2.25	$3.10
Cost of coal on hand January 1, 1902	$ 4,338.22	$ 1,613.30	$ 557.90	$ 298.69
Cost of coal delivered during 1902	46,638.99	36,260.74	39,138.08	46,408.79
Total	$50,977.21	$37,874.04	$39,695.98	$46,707.48
Cost of coal on hand January 1, 1903	1,276.00	540.42	548.38	441.00
Cost of coal burned during 1902	49,701.21	37,333.62	39,147.60	46,266.48
Cost of coal for baths, shops, etc	694.83	75.05	1,819.29	373.55
Cost of coal for operation	49,006.38	37,258.57	37,328 31	45,892.93
Salaries	39,360.03	42,524.49	32,846.65	46,480 69
Cost of oils, waste and grease	1,785.22	1,790.08	872.52	1,670.49
Cost of miscellaneous supplies	4,756.75	4,004.69	2,723.93	4,998 51
Total cost of operation	94,908.38	85,577.83	73,771.41	99,042.62
Repairs to buildings, pumps, engines and boilers	17,560.51	9,972.06	8,069.04	11,722.88
Cost of new work charged to repairs	4,850.00	9,510.00	3,210.00	3,000.00
Cost of n w work charged to construction	.....	1,654.80	.....	54,439.63
Cost of operation, maintenance and construction	117,318.89	106,714.69	85,050.45	168,205.13
Cost of coal for baths, shops, etc	694 83	75.05	1,819.29	373.55
Cost of coal on hand January 1, 1903	1,276 00	540.42	548.38	441.00
Total	$119,289.72	$107,330.16	$87,418.12	$169,019.68
Cost of coal on hand January 1, 1902	4,338.22	1,613.30	557.90	298.69
Total expense incurred in 1902	114,951.50	105,716.86	86,860.22	168,720.99
*Total gallons pumped during the year	25,586,096,760	20,878,458,325	18,071,951,800	16,484,933,126
*Per cent of pumpage of City as a whole	19.5	15.9	13.8	12.6
Greatest amount pumped in one day, gallons	(Feb. 7) 78,617,312	(Dec. 9) 68,109,890	(Dec. 9) 63,658,000	(Feb. 5) 59,995,415
Least amount pumped in one day, gallons	(Mar. 17) 34,871,844	(June 18) 38,569,890	(April 27) 30,014,600	(Oct. 12) 31,883,700
*Average pumped per day, gallons	70,098,895	57,201,256	49,512,169	45,164,200
Average head against pumps, in feet	110.8	111.1	98.9	104.7
Cost of fuel pumping 1,000,000 gallons one foot high	1 $\frac{73}{100}$c	1 $\frac{66}{100}$c	2 $\frac{08}{100}$c	2 $\frac{64}{100}$c
Total operative cost of pumping 1,000,000 gallons one foot high	3 $\frac{51}{100}$c	3 $\frac{63}{100}$c	4 $\frac{13}{100}$c	5 $\frac{74}{100}$c

*Except Norwood Park and Washington Heights Pumping Stations.

TABLE "*B*"—OPERATIONS OF PUMPING STATIONS DURING 1902—CONTINUED.

	Springfield Avenue Pumping Station.	Central Park Avenue Pumping Station.	Harrison Street Pumping Station.	Lake View Pumping Station.	The City as a Whole.
Bituminous coal, tons	8,265$\frac{200}{2000}$	7,769$\frac{740}{2000}$	7,245$\frac{1350}{2000}$	6,801$\frac{732}{2000}$	92,259$\frac{950}{2000}$
Price of bituminous coal, per ton	$2.89	$3.03	$3.35	$3.09	$2.87
Cost of coal on hand January 1, 1902	$ 553.35	$ 1,623.39	$ 454.30	$ 1,446.26	$ 10,885.41
Cost of coal delivered during 1902	23,603.89	22,07.24	23,892.02	19,576.16	257,585.91
Total	$24,157.24	$23,690.63	$24,346.32	$21,022.42	$268,471.32
Cost of coal on hand January 1, 1903	232.75	166.62	88.76	18.83	3,312.76
Cost of coal burned during 1902	23,924.49	23,524.01	24,257.56	21,003.59	265,158.56
Cost of coal for baths, shops, etc		.15			2,962.87
Cost of coal for operation	23,924.49	23,523.86	24,257.56	21,003.59	262,195.69
Salaries	25,061.68	26,083.80	23,795.63	27,710.49	263,863.46
Cost of oils, waste and grease	1,109.47	1,382.15	1,256.29	1,305.23	11,171.45
Cost of miscellaneous supplies	1,243.25	1,790.66	1,953.17	2,448.52	23,919.48
Total cost of operation	51,338.89	52,780.47	51,262.65	52,467.83	561,150.08
Repairs to buildings, pumps, engines and boilers	3,609.19	4,737.91	3,824.32	7,757.42	67,253.33
Cost of new work charged to repairs	2,550.00	6,500.00	1,500.00	9,000.00	40,120.00
Cost of new work charged to construction	9,241.21	10,926.74			76,762.33
Cost of operation, maintenance and construction	66,739.29	74,945.12	56,586.97	69,225.25	744,785.79
Cost of coal for baths, shops, etc		.15			2,962.87
Cost of coal on hand January 1, 1903	232.75	166.62	88.76	18.83	3,312.76
Total	$66,972.04	$75,111.89	$56,675.73	$69,244.08	$751,061.42
Cost of coal on hand January 1, 1902	553.35	1,623.39	454.30	1,446.26	10,885.41
Total expense incurred in 1902	66,418.69	73,488.50	56,221.43	67,797.82	740,176.01
*Total gallons pumped during the year	14,134,763,180	13,936,270,480	11,358,805,434	10,255,844,833	130,707,124,338
*Per cent of pumpage of City as a whole	10.8	10.7	8.7	8.0	100
Greatest amount pumped in one day, gallons	(Jan. 27) 56,342,800	(Feb. 4) 63,853,330	(Sep. 9) 32,647,475	(Jan. 6) 35,186,289	(Feb. 5) 423,421,634
Least amount pumped in one day, gallons	(Sep. 27) 19,144,070	(Sep. 7) 13,503,800	(Jan 19) 16,172,562	(July 27) 23,446,620	(Nov. 27) 316,250,935
*Average pumped per day, gallons	38,725,379	38,181,564	31,120,015	28,098,205	358,101,710
Average head against pumps, in feet	98.2	94.3	98.2	97.9	102.4
Cost of fuel pumping 1,000,000 gallons one foot high	1$\frac{72}{100}$c	1$\frac{79}{100}$c	2$\frac{17}{100}$c	2$\frac{09}{100}$c	1$\frac{95}{100}$c
Total operative cost of pumping 1,000,000 gals. one foot high	3$\frac{70}{100}$c	4$\frac{00}{100}$c	4$\frac{90}{100}$c	5$\frac{53}{100}$c	4$\frac{19}{100}$c

* Except Norwood Park and Washington Heights Pumping Stations.

The preceding tables give detailed information as to pumpage, expenditures, etc. Table "*A*" gives the monthly and annual pumpage at the various stations. Table "*B*" gives the more important figures relating to quantities and expense. The appended diagram shows the daily pumpage at each station, separately and combined, with the head pumped against, as well as the temperature of the water.

LAKE CRIBS.

TWO-MILE CRIB.

CARL JACOBSON, Keeper.

The smokestack at this crib became rusted out on account of severe action of the weather and a new one 20 inches in diameter and 20 feet long was put in place. All iron work in and around the crib was given two coats of paint. Certain boiler repairs were ordered by the Boiler Inspector, and in compliance with this order fusible plugs were inserted and considerable calking done. Various small repairs were made on the roofs. A number of oak planks 3x12 inches x 16 feet were replaced on the breakwater. The boat stand was renewed, also several 12x12 oak timber heads put in place. The living rooms were altered by cutting a doorway through the south end of the sitting-room and building a storm shed over same to allow entrance to bedrooms without going through kitchen or other bedrooms. A Cragin garbage crematory and hot water heater were installed.

CARTER H. HARRISON CRIB.

GILBERT JOHNSON, Keeper.

All iron work in and around this crib was given two coats of paint. New screens were built on one cylinder. In order to provide ventilation to well and living rooms, screens were fitted on all doors and windows of living rooms. The concrete plaster around the stairway on the east side of the crib was renewed. The lamp-room was also newly plastered. An opening 3x6 feet was cut through the masonry and a window put in place so as to allow ventilation to storeroom.

FOUR-MILE CRIB.

JOSEPH COSGROVE, Keeper.

All iron work in and around the crib was given two coats of paint. The brickwork of the living rooms was also given two coats of paint. The brick chimney was carried up 5 feet higher in order to provide better draft. Repairs were made on boilers in accordance with instructions from the Boiler Inspector. A new garbage crematory and hot water heater were installed.

SIXTY-EIGHTH STREET CRIB.

WILLIAM H. HUNCHE, Keeper.

All iron work and brickwork of living rooms was given two coats of paint. Built a new derrick and put same in place on breakwater. Installed Cragin garbage crematory and hot water heater.

LAKE VIEW CRIB.

PATRICK GRIFFIN, Keeper.

A Cragin garbage crematory and hot water heater were installed. Only minor repairs were made to this crib in order to keep it in serviceable condition until such time as a new superstructure is erected. This is an improvement that has been recommended for several years and should be made as soon as possible.

DIVISION OF WATER PIPE EXTENSION.

JAMES WALLACE, Superintendent; THOMAS F. KEIRNAN, Assistant Superintendent; GEORGE K. WHEELOCK, Assistant Engineer.

The past year has been one of usual activity in the Water Pipe Extension Division, having in charge the work of laying all water mains, placing hydrants and valves, keeping same in repair and protecting hydrants from frost during the winter, repairing leaks and breaks and making all connections over one inch in diameter, sizes of one inch and under being made by the Water Assessor's Division of the Water Office.

The largest and most important addition to the system made during the year 1902 was the extension of the 16-inch main in Ashland avenue and Oak avenue, south from Seventy-fifth street to the Washington Heights pumping station, a distance of three and one-half miles. By the laying of this main an abundant quantity of lake water was given to this territory which heretofore had a very inadequate supply, which came principally from artesian wells and small supply pipes.

LEAKS AND BREAKS.

A great number of leaks and breaks occurred during the past year, many of which threatened to become serious, but by the prompt action of the employes of this division the water was shut off without causing any great damage to adjacent property. The most serious break occurred in September last in the 36-inch main crossing the South branch of the river, called Mud Lake, at the Kedzie avenue crossing of the same, just north of the drainage canal. In this instance the pipe was undermined by the continual wash or scour from the river, causing the pipe to settle so

that three joints pulled apart, thereby necessitating the taking up of the entire river crossing for a distance of about 100 feet and relaying the same at greater depth on a pile foundation in order to avoid a recurrence of the break. This was accomplished by coffer-damming the river one-half the way at a time. No damage was done by the breaking of this main and no serious inconvenience sustained by water takers.

Another bad break occurred during the month of December in the 16-inch and 24-inch mains at the intersection of Chicago avenue and Union street. The pipe at this point had a depth of 28 feet, which made the work of repair both difficult and hazardous. Notwithstanding these difficulties, the break was repaired as quickly as possible and with but slight inconvenience to the large number of establishments in the immediate vicinity which depend on this feeder for their main supply.

The following is the total number of leaks and complaints reported to this office during the year 1902, all of which received as prompt attention as possible:

Repaired joint leaks in mains	1,292
Repaired hydrants	1,053
Private service pipes shut off	994
Private service pipes repaired by owners	1,223
Miscellaneous complaints	580
Total	5,142

FILLING OF HYDRANT BASINS.

A departure from the old custom of filling hydrant basins with manure was made at the beginning of the present winter which effected a saving of approximately $1,854.87, or ten per cent over former years (and this notwithstanding the increased cost of teaming of $4.00 per day per team as against $2.63 of previous years), at the same time doing the work in a more thorough and satisfactory manner than heretofore. This was accomplished by having the manure shipped in carloads to the various districts comprising the Water Pipe Extension Division, thereby enabling the employes to fill a greater number of basins each day than were filled before, when they were obliged to go from place to place picking up loads of manure wherever they could get them; then, too, the work of filling was begun at a much later date than was customary, a step which should insure its benefit to the hydrants for a longer period during the cold winter weather. In the past it has been noticeable that from the middle of January until the close of the winter the manure has lost its utility to a great extent as an agent of preserving warmth to the hydrants, hence the reason for the delay of filling the basins beyond the usual time.

HYDRANT AND VALVE BASINS CONSTRUCTED AND REPAIRED.

In the building of 215 hydrant basins, 259 valve basins, 9 fire cisterns and 6 brick piers, there were used 529,250 brick, 1,724 barrels of cement, 267 yards of sand, 4,754 feet of 4-inch, 99 feet of 6-inch, 206 feet of 9-inch and 16 feet of 16-inch sewer pipe, and in the rebuilding of 220 hydrant basins, 40 valve basins, and in general repairs to the water pipe system 658,120 brick, 3,389 barrels of cement, 580 yards of sand, 40 feet of 3-inch, 10,551 feet of 4-inch, 43 feet of 6-inch and 45 feet of 9-inch sewer pipe were used.

The rapid growth of our population and the large increase in the number of buildings erected and manufacturing industries in certain localities has caused numerous complaints of shortage of water and lack of pressure. This was particularly noticeable in the Hyde Park district west of Cottage Grove avenue and between Thirty-ninth and Sixty-third streets. All the large mains in Hyde Park extend north and south from the Sixty-eighth street pumping station, without any large feeder intersecting the smaller supply pipes from east to west, especially in the northern portion. It is therefore recommended that large feeders be laid, as shown by the following table in the streets named therein, from east to west and connecting all smaller pipes crossing the same. As the pumping capacity is sufficient for the present, this condition can be remedied by laying these cross feeders.

The great increase in the number of buildings erected during the past year on all the avenues between Fifty-first street and Fifty-ninth street, from South Park avenue to State street, being in nearly all cases from three to four stories in height, warrants the laying of a pipe not less than 12 inches in diameter in either Fifty-third or Fifty-fifth street, and connecting same with the 16-inch main in South Park avenue and the 8-inch main in State street, and all the 6-inch intersecting pipes between those points. The power house of the City Railway Company is located on Wabash avenue, near Fifty-second street, in this locality and is supplied by a 4-inch and 6-inch pipe connected to the 6-inch supply pipe in Wabash avenue. The large volume of water necessarily used in this plant is no doubt the cause of complaints coming frequently from the water takers in the immediate vicinity. By the laying of the pipe referred to above no doubt relief would be afforded. The same can be said of the necessity of laying all the large feeders recommended in the following table in the different divisions of the City named therein:

NINETY-FIFTH STREET BRIDGE—DECEMBER, 1902.

ADDITIONAL SUPPLY MAINS RECOMMENDED TO BE LAID.

STREET.	FROM	TO	Approximate No. Feet.	SIZE.	Estimated Cost Per Foot.	PAVING.	Estimated Cost Per Foot.	Total Estimated Cost of Work.
Springfield avenue	Springfield avenue Pumping Station.	North avenue	1200	36 in.	$10.00	No Paving		$12,000 00
West North avenue	Springfield avenue	N. Forty-fourth avenue	3300	36 in.	10.00	Cedar	$0.50	34,650.00
West North avenue	N. Forty-fourth avenue	Central avenue	8200	36 in.	10.00	No Paving		82,000.00
Central avenue	North avenue	Chicago avenue	5350	24 in.	7.00	No Paving		37,450.00
Central avenue	Chicago avenue	Madison	5350	24 in.	7.00	Asphalt	2.00	48,150.00
Madison	Central avenue	Hamlin avenue	12200	16 in.	4.00	Cedar	.50	54,900.00
						Total estimated cost		$269,150.00
Robey	Division	Lake	6670	16 in.	4.00	Cedar	.50	30,015.00
Robey	Lake	Harrison	3925	16 in.	4.00	Macadam	.35	17,073.75
						Total estimated cost		$47,088.75
Forty-seventh	Packers avenue	Halsted	3175	16 in.	4.00	Cedar	.50	14,287.50
Forty-seventh	Halsted	Emerald avenue	375	16 in.	4.00	Brick	.75	1,781.25
Forty-third	Emerald avenue	State	5000	16 in.	4.00	Cedar	.50	22,500.00
						Total estimated cost		$38,568.75
State	Forty-third	Forty-fifth	1300	16 in.	4.00	Cedar	.50	5,850.00
Forty-fifth	State	Grand boulevard	2600	16 in.	4.00	Cedar	.50	11,700.00
Forty-fifth	Grand boulevard	Cottage Grove avenue	2900	16 in.	4.00	Macadam	.35	12,615.00
Forty-third	Cottage Grove avenue	Greenwood avenue	2000	16 in.	4.00	Cedar	.50	9,000.00
						Total estimated cost		$39,165.00
Oglesby avenue or Yates avenue	Sixty-sixth street Pumping Station.	Seventy-ninth	7900	36 in.	10.00	1300 ft. Macadam.	.35	79,455.00
Fifty-third or Fifty-fifth	State	South Park avenue	2750	12 in.	2.75	Cedar Asphalt	.50 2.00	9,135.50
						Grand total		$482,563.00

IMPROVEMENT OF THE VALVE SYSTEM IN THE DOWNTOWN DISTRICT.

The single bad feature, the one weak point in our water supply system, is the lack of a sufficient number of valves, especially in the center or downtown district, and prudence demands that the earliest possible termination should be put to a condition of things whose existence is constantly threatening disaster, inconvenience to the public, as well as a heavy drain on the Water Fund. Serious contemplation of the foregoing facts requires no argument to show the vital importance of subordinating every contemplated improvement to the active and vigorous prosecution of the work necessary to repair a leak or break without having to shut off twenty-one and sometimes more valves in the territory between Chicago avenue on the north and Twelfth street on the south, Michigan avenue on the east and the river on the west.

During the year just closed four breaks occurred in the water mains in Jackson street between Clark street and Fifth avenue and it required the shutting down of twenty-one valves in each case to make the necessary repairs, as well as throwing the territory out of water bounded by Adams street on the north, VanBuren on the south, Clark street on the east and Fifth avenue on the west. These repairs had to be made at night, usually after 12 o'clock, in order not to inconvenience business interests which would have to shut down their plants and suspend operations if repairs were attempted in the daytime.

Thoroughly familiar as I know you to be with existing conditions, I do not deem it necessary to dwell on this subject longer than to urge that the attention of the Finance Committee be called to the necessity of appropriating the money needed to perfect the valve system in the territory described above. If this warning is not heeded I predict serious consequences will result in the future, as our pipe lines are growing old and are becoming more and more liable to breaks, and should a big fire occur when the water is shut off in such a large territory, as is now made necessary, it is hard to estimate the amount of damage which might result before the water could be turned on.

I also have to call your attention to the great damage liable to result from a bad break in the water mains in the business district before the water could be turned off with our present system of valves. Nearly every basement in the downtown district is used for business and storage and contains perishable goods of immense value; this is especially the case in the large wholesale and retail stores. Should a serious break occur it would take from two to three hours to shut off the water which, by properly perfecting the system, could be done in ten or fifteen minutes, thereby reducing the liability of the City to a minimum.

If the valve system were such as it should be, not more than one block would be shut off at one time. This could be accomplished by shutting off two valves instead of twenty-one or more, and property fronting on the water main on either side of the street would be inconvenienced for only a block instead of, as now, from one-fourth to one-half mile. Much of the work of repair is now done at night, for which the men receive time and one-half, and this could be done in the daytime if it were not for shutting off such an immense territory, and the inconvenience sustained by water takers reduced to the lowest possible limit.

Many other reasons could be given to show the necessity of prompt action in this matter, but the above are the most important and should be seriously considered. An approximate estimate of the amount of money needed to perfect the valve system in the territory above described is $20,000. One bad break, under present conditions, is liable to do damage to this amount and perhaps a great deal more.

Another bad feature, in connection with the water system, is the practice in the past of allowing our large mains and supply pipes to remain buried underneath great embankments along the lines of elevated roads and approaches to bridges and viaducts. This is a subject which in times past, it seems, has had little or no attention given it. The experience of the last two years has demonstrated that great expense will necessarily be incurred in making needed repairs and maintaining pipes underlying these elevations. For instance a little over a year ago a 6-inch water pipe crossing underneath the elevation of the North-Western railroad on the Mayfair branch in Irving Park burst, causing the embankment to be washed away and undermining the track to such an extent as to endanger the passing of trains. The railroad company, recognizing the danger, advanced the money to make connections so that the pipe could be abandoned underneath their tracks. This was but a 6-inch pipe; suppose it had been a large main and had burst, as they sometimes do, at night and with great violence, the derailing of a train might have resulted, accompanied with great loss of life and property. These are things which are made possible at any moment by allowing these water mains to remain underneath the elevations and serious consideration should be given this subject.

During the winter of 1902 a break occurred in the 36-inch main just south of Eighteenth street, under the embankment between the retaining walls along the line of the Lake Shore and Rock Island railroads. It was a difficult matter to locate it as the pipe was 18 feet deep and the water did not come to the surface but percolated through the retaining walls. We excavated opposite where the water showed through the wall, but after getting down to the pipe we found the water coming from the

south. Another opening was made and still another and the leak was finally located fully 50 feet away from where the water showed through the wall. It took three or four weeks to locate and repair this break, the ground being frozen to a depth of three feet and the mercury below zero. After getting down to the pipe a crack was discovered running around the pipe in a zigzag shape, which, on account of the great depth, made it very difficult to repair.

For several years it has been a rule of this division to carefully investigate the condition of the water system in all streets under contract to be improved, and to recommend such changes as are deemed necessary to perfect the system before such improvement is made.

In a number of cases, owing to lack of funds, the pavement has been permitted to proceed without these alterations being made, with the result that streets, especially in the district bounded by Chicago avenue, Twelfth street, Halsted street and Lake Michigan, had to be opened sometimes within the year to make repairs to small mains, viz.: 3-inch and 4-inch, which have been in use for many years and are now so worn by age that their days of usefulness are practically ended. Openings as well had to be made to disconnect service pipes from these small mains and place same on parallel feeders subsequently laid but never used for direct supply to abutting property, same being occasioned by complaints of lack of pressure and supply by owners of property.

This, as well as the placing of additional valves and hydrants, is made doubly expensive when not done before such pavement is laid, also injuring the pavement, which can never be restored to its original condition. The adoption of some plan to avoid this would be the means of saving an unnecessary waste of money. The only plausible reason that can be advanced why this has not been done in the past is lack of the necessary funds.

Other recommendations for the improvement of the system could be made, but I consider the above the most important and necessary.

The following tables show in detail the amount of different size pipe laid and lowered, together with the number of hydrants and valves placed in connection therewith:

WATER MAINS LOWERED.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in inches.
Drexel avenue	Crossing	Sixty-third	65	6
Ellis avenue	Crossing	Sixty-third	80	6
Forty-third	Ellis avenue	Eastward	220	6
Ingleside avenue	Crossing	Sixty-third	70	6
Michigan avenue	Kensington avenue	117th place	220 1,000	6 8
Sixty-third	Ellis avenue	Drexel avenue	880	8
Sixty-seventh	Stewart avenue	Parnell avenue	800	8
Wallace	260 ft. south of Seventieth	Southward	65	6
Woodlawn avenue	200 ft. south of Fifty-eighth	Southward	100	24
	Total		3,450	

HYDRANTS TAKEN OUT IN 1902, WHICH WERE REPLACED BY HYDRANTS OF DIFFERENT SIZE.

DIVISION.	2½-inch Single.	2½-inch Double.	2½-inch Double, with one 4-inch Single.	4-inch Double.	Total.
North	9				9
South	12	2			14
West	3			1	4
Hyde Park	7	1	1		9
Lake View	4				4
Lake		4	17		21
Jefferson	1				1
Calumet	1				1
Norwood Park					
Rogers Park					
Totals	37	7	18	1	63

HYDRANTS PLACED IN 1902.

DIVISION.	2½-inch Single.	2½-inch Double.	3½-inch Double.	Total.
North	.....	11	.....	11
South	1	24	.....	25
West	8	58	.....	66
Hyde Park	13	41	22	76
Lake View	3	25	.....	28
Lake	27	41	.....	68
Jefferson	9	58	.....	67
Calumet	11	31	.....	42
Norwood Park	.....	.....	.....	.....
Rogers Park	.....	1	.....	1
Totals	72	290	22	384

TOTAL NUMBER OF FIRE HYDRANTS AT THE CLOSE OF 1902.

DIVISION.	2½-inch Single.	2½-inch Double.	3½-inch Double.	4-inch Double.	2½-inch Double, with one 4-inch Single.	Total.
North	386	578	.....	133	.....	1,097
South	755	1,159	.....	194	.....	2,108
West	1,676	4,453	21	236	.....	6,386
Hyde Park	465	1,928	23	12	603	3,029
Lake View	301	1,226	.....	.....	1	1,528
Lake	426	1,009	.....	4	1,572	3,011
Jefferson	294	1,354	.....	4	.....	1,652
Calumet	196	535	.....	.....	55	786
Norwood Park	6	41	.....	.....	.....	47
Rogers Park	.....	1	.....	.....	.....	1
Totals	4,505	12,284	43	583	2,230	19,645

EAST DIVISION STREET BRIDGE—DECEMBER, 1902.

STOP VALVES PUT IN DURING THE YEAR 1902.

DIVISION.	SIZE OF VALVES.					Total.
	4-inch.	6-inch.	8-inch.	12-inch.	16-inch.	
North	1	16	1	.....	.....	18
South	1	21	10	3	.....	35
West	3	47	9	2	.....	61
Hyde Park	.....	28	12	1	.....	41
Lake View	.....	22	11	.....	.....	33
Lake	.....	16	10	1	6	33
Jefferson	.....	30	18	.....	.....	48
Calumet	.....	27	9	3	4	43
Norwood Park	.....	.....	.....	.....	.....	.....
Rogers Park	.....	.....	.....	.....	.....	.....
Totals	5	207	80	10	10	312

During the year 1902 there were taken out in the North Division eight 4-inch valves; in the West Division, seven 4-inch valves; in Hyde Park, one 4-inch valve; in Lake View, four 4-inch valves; in Town of Lake, two 4-inch valves. Total, twenty-two 4-inch valves; all of which were replaced by valves of different size.

TOTAL NUMBER AND SIZE OF VALVES IN USE AT THE CLOSE OF 1902.

DIVISION.	SIZE OF VALVES.												Total.
	3-inch.	4-inch.	6-inch.	8-inch.	10-inch.	12-inch.	14-inch.	16-inch.	18-inch.	20-inch.	24-inch.	30-inch.	36-inch.	
North	.....	130	528	329	.....	46	.....	13	.....	.....	19	.....	3	1,068
South	.....	154	809	697	1	97	.....	25	.....	.....	38	2	16	1,839
West	.....	546	2,714	1,397	.....	325	.....	78	.....	.....	34	.....	27	5,121
Hyde Park	.....	74	1,278	354	20	99	4	59	.....	1	23	.....	9	1,921
Lake View	1	194	964	212	.....	54	3	17	.....	3	14	1	5	1,468
Lake	.....	109	1,397	438	2	98	14	38	2	.....	25	4	2	2,129
Jefferson	.....	5	832	436	.....	96	.....	12	.....	.....	32	5	8	1,426
Calumet	.....	5	285	111	.....	12	.....	8	.....	.....	1	.....	.....	422
Norwood Park	.....	14	16	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	37
Rogers Park	.....	.....	4	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Totals	1	1,231	8,827	3,983	23	827	21	250	2	4	186	12	70	15,437

PIPES LAID IN NORTH DIVISION.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in Inches.
Banks	Crossing	Lake Shore drive	28	6
Burling	Crossing	Webster avenue	85	6
Concord	Crossing	Clybourn avenue	49	6
Cooper	Crossing	Clybourn avenue	79	6
Edwards court	Crossing	Webster avenue	46	6
Erie	St. Clair	Lincoln Park boulevard	337	6
Hudson avenue	Center	North avenue	2,557	6
Lake Shore drive	Oak	Bellevue place	290	8
Lake Shore drive	Schiller	Banks	383	6
Pearl court	Crossing	Webster avenue	42	6
Schiller	Crossing	Lake Shore drive	36	6
	Total		3,935	
	Add branch pipe for hydrants		132	6
	Total feet of pipe laid in North Division		4,067	

SOUTH DIVISION.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in Inches.
†Hamilton avenue	Bross avenue	Southward	252	6
†Lincoln	Thirty-second	Southward	485	6
†Paulina	Crossing	Thirty eighth	25	6
†Seeley avenue	Thirty-second	Thirty-third	680	6
†Thirty-third place	Archer avenue	S. E. and connect	298	6
†Thirty-eighth	Ashland avenue	Wood	1,200	6
Thirty-eighth	87 ft. east of west line of I. C. R. R. Right of way.	Eastward	79	4
Thirty-eighth court	Paulina	Eastward	86	6
†Winchester avenue	Thirty-second	Thirty-third	680	6
	Total		3,785	
	Add branch pipe for hydrants		12	4
	Add branch pipe for hydrants		288	6
	Total feet of pipe laid in South Division		4,085	

†Laid by Special Assessment.

WEST DIVISION.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in inches.
Alley 1st W. of Halsted.	Superior	Alley N. of Superior.	113	6
Alley 1st N. of Superior.	Halsted	1st alley west	106	6
Aberdeen	Crossing	Polk	30	6
Albany avenue	300 ft S. of Thirtieth	Southward	108	6
Augusta	Crossing	Monticello avenue	71	8
Burlington	Sixteenth	Eighteenth	866	6
Campbell avenue	Thomas	Cortez	282	6
Christiana avenue	Huron	Southward	352	6
†Cornelia	N. Forty-eighth ave.	N. Fiftieth avenue	1,278	6
*Drake avenue	Chicago avenue	Iowa	597	6
Fifty-first avenue, N.	Crossing	Indiana	38	6
Fifty-first avenue, N.	Crossing	Ontario	76	6
†Fifty-first avenue, S.	Washington boulevard	Randolph	380	6
Fifty-second avenue, N.	Crossing	Augusta	24	8
Flournoy	Crossing	S. Forty-fourth avenue	46	6
*Flournoy	Lawndale avenue	Westward	342	6
Fortieth avenue, S.	Nineteenth	Northward	199	8
Fortieth court, S.	Thirty-first	Thirty-second	640	6
Forty-second court, S.	Twenty-eighth	Thirtieth	788	6
Forty-fifth avenue, S.	Crossing	Lexington	72	6
Forty-fifth avenue, S.	Washington boulevard	Randolph	246	6
Forty-fifth court, S.	Crossing	Lexington	30	8
†Forty-seventh avenue, S.	Gladys avenue	Jackson	345	6
Franklin boulevard, N. S.	Albany avenue	Troy	340	6
Fulton	Crossing	Robey	70	6
†Gladys avenue	S. Forty-sixth avenue	S. Forty-seventh avenue	624	6
†Grenshaw	St. Louis avenue	Douglas boulevard	1,670	6
†Harding avenue	W. Twenty-sixth	W. Thirty-first	2,632	6
†Harrison	S. Forty-eighth avenue	S. Fiftieth avenue	1,078	8
*Harrison	S. Fiftieth avenue	206 ft. E. of S. Fifty-second ave.	1,856	8
†Harvard	S. Forty-eighth avenue	S. Fiftieth avenue	1,077	6
Iowa	Crossing	N. Fifty-second avenue	48	8
Jefferson	Crossing	Adams	84	8
†Kinzie	N. Forty-seventh avenue	Westward	328	6
Leavitt	Crossing	Madison	44	6
†Lexington	S. Forty-eighth avenue	S. Fiftieth avenue	1,076	6
Lumber	Throop	S westward	358	4
*Millard avenue	121 feet N. of Thirtieth	575 feet S. of Thirtieth	771	6
Miller	Crossing	Polk	77	6
†Monroe	690 feet W. of S. Fiftieth	Central avenue	3,458	6
Ontario	Crossing	N. Fifty-second avenue	66	8
†Polk	S. Forty-eighth avenue	S. Fiftieth avenue	1,077	6
Robey	Crossing	Walnut	53	6
St. Louis avenue	Crossing	Fillmore	56	6
†St. Louis avenue	Grenshaw	Twelfth	807	6
Superior	Halsted	1st alley west	106	6
Walnut	Crossing	Robey	72	6
	Total		23,796	
	Add branch pipe for hydrants		96	4
	Add branch pipe for hydrants		696	6
	Total feet of pipe laid in West Division		24,590	

*Laid by Deposit.
†Laid by Special Assessment.

HYDE PARK.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in inches.
Alley 1st E. of Grand boulevard	Forty-fourth	Southward	170	6
Alley 1st W. of Grand boulevard	157 feet S. of Forty-eighth	Forty-ninth	492	6
Alley 1st S. of Sixtieth	Washington avenue	Eastward	195	6
*Anthony avenue	Crossing	Seventy-ninth	75	8
Anthony avenue	Adams avenue	Seventy-ninth	987	8
†Coles avenue	294 feet S. of Seventy-fourth	Seventy-fifth	456	6
Commercial avenue	Ninetieth	South Chicago ave.	1,769	6
Cornell avenue	70 feet N. of Fifty-fifth	Fifty-sixth	730	6
Cornell avenue	Crossing	Fifty-sixth	24	6
*Curtis avenue	111th	272 feet N. of 113th	1,052	6
Escanaba avenue	Crossing	Ninety-sixth	53	6
Fifty-second	Madison avenue	Eastward	140	6
Fifty-third	Crossing	Cornell avenue	88	6
Fifty-sixth	Crossing	Cornell avenue	45	6
Fifty seventh	Michigan avenue	Indiana avenue	405	6
Forty-second place	Vincennes avenue	Eastward	163	6
Forty-ninth	Crossing	Greenwood avenue	25	6
†Front	116th	117th	487	6
†Indiana avenue	Seventy-first	Seventy-third	1,330	8
†Indiana avenue	111th	297 feet N. of 113th	965	6
†Jefferson avenue	Sixty-second	Sixty-third	810	6
Lake avenue	Seventy-eighth	Northward	571	6
Manistee avenue	Eighty-seventh	Northward	313	6
Ninety-second	Calumet River	Commercial avenue	2,550	8
Ninety-second	Commercial avenue	Exchange avenue	324	6
Ninety-sixth	Exchange avenue	Escanaba avenue	376	6
†117th	Crossing	Front	17	6
118th	Crossing	State	23	6
134th	Crossing	Superior avenue	43	6
135th	Crossing	Superior avenue	43	6
Seventy-fifth	Railroad avenue	Colfax avenue	350	8
Seventy-eighth	Crossing	Lake avenue	24	6
Sixty-second place	Madison avenue	90 feet E. of Madison avenue	112	6
Sixty-second place	90 feet E. Madison avenue	Eastward	95	4
Superior avenue	133d	136th	2,000	8
Wabash avenue	107th	Northward	432	6
†Washington avenue	184 feet S. of Sixty-second	Sixty-third	585	6
†Yates avenue	25 feet N. Ninety-second	Ninety-second place	384	8
Yates avenue	25 feet N. Ninety-second	Northward	435	8
	Total		19,088	
	Add branch pipe for hydrants		156	4
	Add branch pipe for hydrants		492	6
	Total feet of pipe laid in Hyde Park		19,736	

*Laid by Deposit.
†Laid by Special Assessment.

LAKE VIEW.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in inches.
*Alta Vista terrace	Crossing	Byron	31	6
Barry avenue	Crossing	Clark	52	6
Belleplaine avenue	Ashland avenue	Paulina	384	6
Berwyn avenue	Kenmore avenue	Winthrop avenue	379	6
*Bryn Mawr avenue	E. Ravenswood Park	Robey	1376	8
*Byron	Seminary avenue	Osgood	321	6
Byron	Southport avenue	Ashland avenue	1315	6
Clark	Diversey boulevard	Halsted	2256	8
Clark	Noble avenue	Belmont avenue	758	8
Deming place	Lake View avenue	Westward	50	6
*Grace	Herndon	Maple Grove avenue	335	6
Hazel	Wilson avenue	Southward	234	6
*Hedges court	Clarendon avenue	Evanston avenue	447	6
Hermitage avenue	Crossing	Devon avenue	31	6
†Hollywood avenue	259 ft. E. of Clark	Southport avenue	829	6
*Hoyne avenue	Waveland avenue	Addison	629	6
†Irving avenue	Crossing	School	25	6
*Kenesaw terrace	Clarendon avenue	Hazel	512	6
Lake View avenue	208 ft. S. of Wrightwood ave.	Deming place	339	6
*Maple Grove avenue	Crossing	Grace	62	6
*Melville place	Clark	Perry	756	6
*Osgood	Crossing	Byron	36	6
Paulina	Devon avenue	Southward	198	6
Perry	Crossing	Melville place	10	6
Ravenswood Park, E.	Crossing	Devon avenue	31	6
Ravenswood Park, W.	Crossing	Devon avenue	31	6
Robey	Berteau avenue	Aubert avenue	146	8
†Robey	Neslund place	Aubert avenue	720	8
Roslyn place	Crossing	Lake View avenue	24	6
†School	Leavitt	Western avenue	1282	8
Victoria	465 ft. E. of Clark	Eastward	200	6
Wellington	Crossing	Clark	50	6
		Total	13,849	
		Add branch pipe for hydrants	36	4
		Add branch pipe for hydrants	300	6
		Total feet of pipe laid in Lake View	14,185	

*Laid by Deposit.
†Laid by Special Assessment.

TOWN OF LAKE.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in Inches
Alley 1st N. of 55th	Carpenter	Westward	96	6
Alley 1st E. of Western boulevard	Forty-fifth	Southward	252	6
†Alley 1st E. of Western boulevard	Forty-eighth place	N. to connection	30	6
Ashland avenue	Seventy-fifth	Eighty-seventh	8000	16
Fifty-first	Western boulevard	California avenue	2768	16
†Fifty-second	Robey	P. C. C. & St. L. R. R.	1283	6
†Fifty-fifth	Spaulding avenue	Turner avenue	339	8
Forty-fifth	Loomis	Westward	187	6
Forty-fifth	Western boulevard	Alley E. of Western boulevard	143	6
†Forty-fifth	Honore	Wood	331	8
*Forty-sixth	Packers avenue	Eastward	1090	12
†Forty-eighth place	1st alley E. of Western avenue	Oakley avenue	304	6
Loomis	Crossing	Forty-fifth	18	6
†Morgan	300 ft. N. of Seventy-fourth	Seventy-fifth	808	8
Normal Parkway, S.	406 ft. E. of Stewart avenue	Eastward	123	6
Packers avenue	Crossing	Forty-first	18	8
†Robey	Seventieth place	Seventy-fourth	2303	8
†Seventieth place	Crossing	Robey	30	6
†Seventy-first	Crossing	Robey	30	6
*Seventy-eighth	Stewart avenue	Wentworth avenue	1204	6
†Sixtieth	Crossing	Spaulding avenue	30	6
Sixty-fourth place	Central Park avenue	77 ft. E. of Hamlin avenue	1314	6
†Spaulding avenue	Fifty-fifth	Sixtieth	3327	6
†Turner avenue	Fifty-fifth	Fifty-seventh	1287	6
*Vincennes road	Crossing	Seventy-eighth	51	8
Western boulevard	Crossing	Fifty-first	20	16
Yale avenue	175 ft. N. of Normal Parkway	Sixty-ninth	1106	6
	Total		26,492	
	Add branch pipe for hydrants		324	4
	Add branch pipe for hydrants		492	6
	Total feet of pipe laid in Town of Lake		**27,308**	

***Laid by Deposit.**
†Laid by Special Assessment.

JEFFERSON.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in Inches.
Alley 1st W. of Kedzie avenue	Crossing	Belden avenue	60	6
Byron	N. Fortieth avenue	N. Harding boulevard	397	6
Byron	Crossing	N. Forty-fourth ave.	29	6
Carpenter court	N. Fifty-sixth avenue	143 ft. N. W. of N. 56th court.	803	6
†Costello avenue	N. Forty-third avenue	N. Forty-fourth ave.	614	6
†Costello avenue	Springfield avenue	C. M. & St. P. R. R.	245	6
*Central Park avenue	75 ft. N. of Belleplaine	228 ft. N. thereof	153	6
*Central Park avenue	228 ft. N. of Belleplaine	Berteau avenue	374	6
Central Park avenue	302 ft. S. of Dunning.	Southward	60	8
†Choctaw avenue	Crossing	N. Forty-first avenue	33	6
Cortland	155 ft. E. of N. 47th av.	Eastward	340	6
†Cullom avenue	N. Fortieth avenue	N. Forty-first avenue	449	6
†Dickens avenue	Springfield avenue	330 ft. E. N. 40th ave.	327	6
†Evergreen court	Humboldt boulevard	Southeastward	324	6
N. Fifty-fifth avenue	Lawrence avenue	Roberts avenue	457	6
Forest Glen avenue	Catalpa avenue	Northward	517	8
†Forty-first avenue N.	Belleplaine avenue	Irving Park blvd.	622	6
†Forty-first avenue N.	Montrose avenue	16 ft. N. of Miller avenue	1330	6
†Forty-second avenue N.	Milwaukee avenue	Melrose	1463	8
Forty fourth avenue N.	Byron	Northward	363	6
*Forty-fourth avenue N.	Sunnyside avenue	Wilson avenue	670	6
Forty-fifth court N.	Crossing	Armitage avenue	24	6
Forty-seventh court N.	Crossing	Armitage avenue	51	6
Forty-ninth avenue N.	Crossing	Armitage avenue	54	6
†Fullerton avenue	Grand avenue	135 ft. W. of N. Seventy-first ave.	3331	8
†George	Hamlin avenue	Lawndale avenue	947	6
Grace	Sacramento avenue	Richmond	341	8
Grand avenue	240 ft. N. W. of Forty-eighth ave	Northwestward	624	8
†Grand avenue	135 ft. W. of N. Seventy-first ave.	N. Seventy-second avenue	800	8
†Grand avenue	N. Sixtieth avenue	Fullerton avenue	4373	8
Harding ave. blvd. W. S.	Byron	Avondale avenue	388	6
Harding ave. blvd. E. S.	Byron	Avondale avenue	455	6
*Harding avenue	330 ft. N. of School	Roscoe	275	6
†Homer	N. Forty-eighth court	N. Forty-ninth ave.	525	6
†Humboldt avenue	Springfield avenue	C. M. & St. P. R. R.	375	8
Irving Park boulevard	Crossing	N. Forty-seventh ave.	71	8
Irving Park blvd. S. S.	N. Forty-seventh ave.	Eastward	193	8
†Irving Park blvd. S. S.	Richmond	Mozart	536	8
Irving Park blvd. S. S.	Sacramento avenue	Humboldt avenue	268	8
Lawndale avenue	215 ft. S. of Dunning.	Southward	215	6
†Lawndale avenue	Crossing	George	35	6
Lawndale avenue	Humboldt avenue	Lyndale avenue	320	6
*Lawndale avenue	Milwaukee avenue	148 ft. S. of Belmont.	725	6
Lyndale avenue	Lawndale avenue	Westward	352	6
McLean avenue	143 ft. W. of N. Forty-seventh ave.	464 ft. E. of N. 47th avenue	673	6
†Melrose	N. Forty-second ave.	Eastward	212	6
†Monticello avenue	316 ft. S. of Diversey avenue	70 ft. S. of Schubert avenue	407	6
Monticello avenue	Humboldt avenue	Lyndale avenue	321	6
*Monticello avenue	Fullerton avenue	Belden avenue	643	6
†Montrose avenue	N. Forty-second ave.	N. Forty-third avenue	802	8
Richmond	Grace	Addison	13.5	6
Richmond	Humboldt boulevard	Northward	139	6
†Ridgeway avenue	George	Diversey avenue	665	6

*Laid by Deposit.
†Laid by Special Assessment

EAST DIVISION STREET BRIDGE—DECEMBER, 1902.

JEFFERSON—CONTINUED.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in Inches.
Roscoe	N. Forty-second ave.	Westward	144	8
†Sacramento avenue	Addison	178 ft. S. of Waveland	433	8
Seventy-first avenue N.	Fullerton avenue	Northward	310	6
†Springfield avenue	Dickens avenue	Humboldt avenue	665	6
Wabansia avenue	Springfield avenue	Avers avenue	300	6
†Whipple	Addison	Waveland avenue	672	6
	Total		32,619	
	Add branch pipe for hydrants		108	4
	Add branch pipe for hydrants		696	6
	Total feet of pipe laid in Jefferson		33,423	

† Laid by Special Assessment.

CALUMET DISTRICT.

STREET	FROM	TO	Length of Pipe in feet.	Diameter in inches.
Ashland avenue	Seventy-fifth	Ninety-fifth	5,344	16
†Center avenue	119th	120th	650	8
Clark	Crossing	115th	80	6
Eighty-ninth	Crossing	Ashland avenue	47	8
Elizabeth	101st place	102d place	347	6
Emerald avenue	Crossing	118th	80	6
Harvard avenue	Crossing	118th	46	6
Lowe avenue	Crossing	118th	60	6
†Morgan	Crossing	119th	21	8
Ninety-fifth	Ashland avenue	Oak avenue	170	16
Oak avenue	Ninety-fifth	103d	5,586	16
101st place	Elizabeth	Westward	252	6
103d place	Wallace	Stewart avenue	1,252	6
107th	Wentworth avenue	114 ft. W. of alley E. of Stewart ave	1,275	12
†109th place	110 ft. E. of Princeton ave.	540 ft. W. of Princeton ave.	718	6
†109th place	430 ft. W. of State	Wentworth avenue	861	6
†112th place	Stewart avenue	Princeton avenue	681	6
†113th	Stewart avenue	Princeton avenue	661	6
†113th	Wentworth avenue	180 ft. W. of Perry ave	355	6
†113th place	Wentworth avenue	Eastward	180	6
†114th	State	Wentworth avenue	1,309	6
†114th place	Wentworth avenue	Eastward	26	6
†117th	Eggleston avenue	Wallace	945	8
118th	Stewart avenue	Peoria	3,266	16
†119th	Sangamon	Center avenue	1,665	8
120th	Peoria	Center avenue	1,987	12
†Parnell avenue	Ninety-ninth	100th	674	6
Peoria	118th	120th	1,334	16
†Perry avenue	114th	115th	634	6
Union avenue	118th	Northward	248	6
Vincennes road	103d	Washington Heights, P. S.	625	16
†Wentworth avenue	113th place	115th	930	8
Wentworth avenue	Crossing	115th	80	8
Wentworth avenue	118th	119th	640	8
		Total	32,824	
		Add branch pipe for hydrants	132	4
		Add branch pipe for hydrants	372	6
		Total feet of pipe laid in Calumet District	33,328	

†Laid by Special Assessment.

ROGERS PARK.

STREET.	FROM	TO	Length of Pipe in feet.	Diameter in inches.
Sheridan Road	Crossing	Hayes avenue	8 37	8 6
	Total		45	
	Add branch pipe for hydrants		12	6
	Total feet of pipe laid in Rogers Park		57	

RECAPITULATION OF PIPE LAID DURING 1902, INCLUDING HYDRANT BRANCHES.

DIVISION.	DIAMETER OF PIPE IN INCHES.					Total length of Pipe in feet.
	4-inch.	6-inch.	8-inch.	12-inch.	16-inch.	
North	.....	3,777	290	.....	.....	4,067
South	91	3,994	.....	.....	.....	4,085
West.	454	21,180	2,956	.....	.....	24,590
Hyde Park	251	11,374	8,111	.....	.....	19,736
Lake View	86	7,611	6,538	.....	.....	14,185
Lake	324	11,256	3,850	1,090	10,788	27,308
Jefferson	108	18,974	14,341	.....	.....	33,423
Calumet	132	8,731	4,928	3,262	16,275	33,328
Norwood Park	.....	.....	.....	.....	.....	.....
Rogers Park	.....	49	8	.....	.....	57
Totals	1,396	86,946	41,022	4,352	27,063	160,779

TABLE SHOWING AMOUNT OF PIPE IN THE CITY OF CHICAGO AT THE CLOSE OF 1902.

DIAMETER OF PIPE IN INCHES.	1901	1902			
	Amount in use in feet.	Amount taken up or abandoned in feet.	Amount laid in feet.	Grand total in feet, in use at the close of 1902.	Grand Total in miles.
48	2,873	.....	.....	2,873	$0\frac{2873}{5280}$
36	197,641	.....	.....	197,641	$37\frac{3241}{5280}$
30	38,291	.....	.....	38,291	$7\frac{3291}{5280}$
28	160	.....	.....	160	$0\frac{160}{5280}$
24	346,755	.....	.....	346,755	$65\frac{2675}{5280}$
20	7,931	.....	.....	7,931	$1\frac{2651}{5280}$
18	1,000	.....	.....	1,000	$0\frac{1000}{5280}$
16	304,623	.....	27,063	331,686	$62\frac{3126}{5280}$
14	22,552	.....	.....	22,552	$4\frac{1432}{5280}$
12	583,358	.....	4,352	587,710	$111\frac{1910}{5280}$
10	26,860	.....	.....	26,860	$5\frac{4460}{5280}$
8	2,077,740	510	41,022	2,118,252	$401\frac{972}{5280}$
6	5,379,705	458	86,946	5,466,193	$1,035\frac{1393}{5280}$
4	980,902	8,242	1,396	974,056	$184\frac{2536}{5280}$
3	8,996	.....	.....	8,996	$1\frac{3716}{5280}$
Totals in feet....	9,979,387	9,210	160,779	10,130,956	.....
Totals in miles..	$1,890\frac{1467}{5280}$	$1\frac{9289}{5280}$	$30\frac{2778}{5280}$	$1,918\frac{3816}{5280}$	$1,918\frac{3816}{5280}$

The following comparative statement showing the cost of labor for repairing and maintaining the water pipe system during the past two years and of the years 1895 and 1896 may be of interest:

Year.	Miles of Pipe in Use.	Hydrants in Use.	Valves in Use.	Cost of Labor.	Saving in 1901-02 over 1895 and 1896.
1895	1546.7	16,466	12,073	$456,531.03	
1896	1612.2	17,375	12,907		
1901	1872.1	19,324	15,147	367,213.20	
1902	1918.6	19,645	15,437		$89,317.83

It will be seen from the above table that the water plant of the City has increased almost 25 per cent since the year 1895. Water mains have been extended to Cicero and Norwood Park, and the Town of Rogers Park has been annexed in that time. These additions very materially increased the area to be covered by the Repairs and Maintenance forces of this division. Besides, age is beginning to tell very noticeably as the increased

number of leaks each year clearly indicates, and, notwithstanding the natural growth of the water system, the increased area to be covered, and the greater number of breaks and leaks to be attended to, a saving in the operating expenses of almost $90,000 for this particular work has been accomplished. The actual saving on the basis of 1895 and 1896 expense is fully forty per cent, and this could not have been accomplished without strict adherence to duty, and a faithful compliance with the rules of economy and reform inaugurated at the beginning of the first term of the present administration, which is responsible for the accomplishment of such successful results.

DIVISION OF BRIDGES AND VIADUCTS.

MR. THOMAS G. PIHLFELDT, Structural Iron Designer in Charge.
MR. ALEXANDER VON BABO, Assistant Designer.

During the year 1902 the following plans and specifications were prepared:

For the superstructure of the new bridge over the North branch of the Chicago river at West Division street.

For a temporary pontoon bridge at North Western avenue over the North branch of the Chicago river.

For a thorough overhauling and strengthening of the stationary bridge at Ashland avenue over the Illinois and Michigan canal.

For the substructure completed and the superstructure partly completed of a new bridge at North Western avenue over the North branch of the Chicago river.

For the substructure and superstructure of a new bridge at Archer avenue over the South fork of the South branch of the Chicago river.

For a subway at North Forty-third avenue under the Chicago and North-Western Railway.

Plans were drawn up for repairs to the north abutment of the Dearborn street bridge, for minor additions to the Clybourn place bridge, and for trolley supports for several bridges.

Another portion of the work of this office consisted in preparing miscellaneous plans, plats and data for various projects and in examining designs and plans for steel and similar structures of interest to the City.

NEW BRIDGE CONSTRUCTION.

GEORGE F. SAMUEL, Assistant Engineer.

During the year four new bascule bridges have been in course of construction, one at Clybourn place over the Chicago river, one at East Di-

vision street over the canal; one at West Division street over the Chicago river, and one at Ninety-fifth street over the Calumet river, and two temporary bridges were erected and thrown open for traffic, one at Blackhawk street and one at North Western avenue.

CLYBOURN PLACE BRIDGE.

The contract for the substructure of this bridge was let November 16, 1900, to the FitzSimons & Connell Company, and the contract was completed December 19, 1901. The contract for the superstructure was let February 20, 1901, to the American Bridge Company of New York and the bridge was thrown open for traffic May 24, 1902. This bridge is of the trunnion bascule type and was designed in the City Engineer's office and was the first bridge of that design. This type of bridge possesses many advantages over any other lift bridge heretofore designed, and its operation has been entirely satisfactory, with a small expenditure of power and no expense for repairs. This is a double leaf three-truss bridge with a fixed center, each leaf turning on three trunnions. The trusses are 21 feet center to center and 9-foot sidewalks, the total width of the structure being 60 feet and the length between pivots 128 feet. The clear width of channel provided is 100 feet. The length between abutments is 217 feet. A description of this bridge is given in detail in the report of the Department for 1900.

EAST DIVISION STREET BRIDGE.

The contract for this work was let July 11, 1900. By January 1, 1902, the contractors had completed the two piers on the west side of the canal and the piers and tail-pit walls on the east side of the canal. The west tail-pits were completed in January and the work of repairing tail-pits, paving approaches and removing cofferdams was carried on up to June 1st. On June 14th the erection of the superstructure was begun and carried on during the remainder of the year. The two leaves of the bridge were lowered in place November 28th. The work is now so far advanced that it should be completed about March 1, 1903.

NINETY-FIFTH STREET BRIDGE.

This bridge is being built by the same contractors as are building the East Division street bridge, and is in about the same stage of progress. This contract was let June 21, 1900, and the east piers and tail-pits and the west piers were completed by December 31, 1901. The west tail-pits were put in during January and February. Two new sewer outlets were put in and the erection of the superstructure begun June 26th. By December 31st

the iron work was mostly in place and one side painted. This bridge should be ready for traffic in March, 1903.

WEST DIVISION STREET BRIDGE.

The contract for this work was let March 28th to the FitzSimons & Connell Company, but to avoid interfering with the traffic on Goose island the contractors were requested not to begin work until May 1st. The removal of the old structure began then and building the cofferdams was begun June 6th. By December 31st all the piers and tail-pits were practically completed and the east curb walls built and the approach filled.

WESTERN AVENUE TEMPORARY BRIDGE.

A temporary bridge was erected at North Western avenue for use until such time as a new bascule bridge could be completed. This is an 80-foot span 12 feet wide and is built to carry teams and foot passengers. It is a pontoon bridge with one end turning on a pivot and wheel and the other end resting on a pontoon that is raised or lowered to suit the river level by admitting or discharging water from a water-tight compartment. This contract was let to the Jackson & Corbett Company and the bridge was thrown open to traffic in July, 1902.

BLACKHAWK STREET TEMPORARY BRIDGE.

A temporary bridge was erected over the river at Blackhawk street to give access to Goose island pending the completion of the new bridge at West Division street. This is a swing bridge for teams and foot passengers and is the old superstructure of the West Division street bridge, which was repaired and strengthened and placed on a new pile center pier. The contract was let to the FitzSimons & Connell Company and the bridge was thrown open to traffic in May, 1902.

REPAIRS AND MAINTENANCE.

MR. THOMAS G. PIHLFELDT, Structural Iron Designer in Charge.
MR. JOHN A. LENNARTSON, Assistant.

This division has under its supervision forty-four movable bridges, fifteen fixed spans and thirty-seven systems of viaducts. During the year of 1902 four bridges were operated by steam, thirteen by electricity and twenty-seven by hand power.

The following statement shows the amounts expended by the City for repairs and maintenance, exclusive of bridge-tenders' salaries, of the various bridges and viaducts during the year 1902:

BRIDGES.

Adams street	$ 1,361.42	Main street	$ 9.25
Archer avenue	402.87	Ninety-second street	2,003.87
Ashland avenue (S. Fork)	59.80	Ninety-fifth street	16.25
Ashland avenue (W. Fork)	21.60	North avenue	1,749.93
Belmont avenue	903.01	106th street	1,095.85
Canal street	410.76	Polk street	2,226.61
Chicago avenue	1,578.09	Riverdale	104.48
Chittenden	842.21	Rush street	4,225.87
Clark street	7,920.88	State street	18.02
Clybourn place	666.02	Taylor street	2,260.73
Dearborn street	5,687.36	Twelfth street	19,243.35
Deering street	1,061.87	Twenty-second street	4,221.09
Diversey street	564.88	Thirty fifth street	948.77
E. Division street	40.24	Van Buren street	4,747.90
W. Division street	132.06	Washington street	4,126.37
Eighteenth street	2,503.97	Webster avenue	391.03
Erie street	727.41	Wells street	1,308.66
Fuller street	1,063.59	N. Western avenue	320.53
Fullerton avenue	1,651.20	S. Western avenue	226.23
N. Halsted street (Canal)	2,668.46	Addison avenue	420.13
N. Halsted street (River)	2,455.97	Ashland avenue (Canal)	304.60
S. Halsted street	5,330.75	California avenue	246.57
Harrison street	176.13	Blackhawk street	692.94
Indiana street	430.88	Irving Park	43.38
Jackson street	4,148.46	Kedzie avenue (Canal)	1,075.67
Kinzie street	2,164.23	Steamer "Hopkins"	679.53
Lake street	1,555.82	General account	17,653.20
Laurel street	486.00		
Madison street	1,982.44	Total	$119,358.69

VIADUCTS.

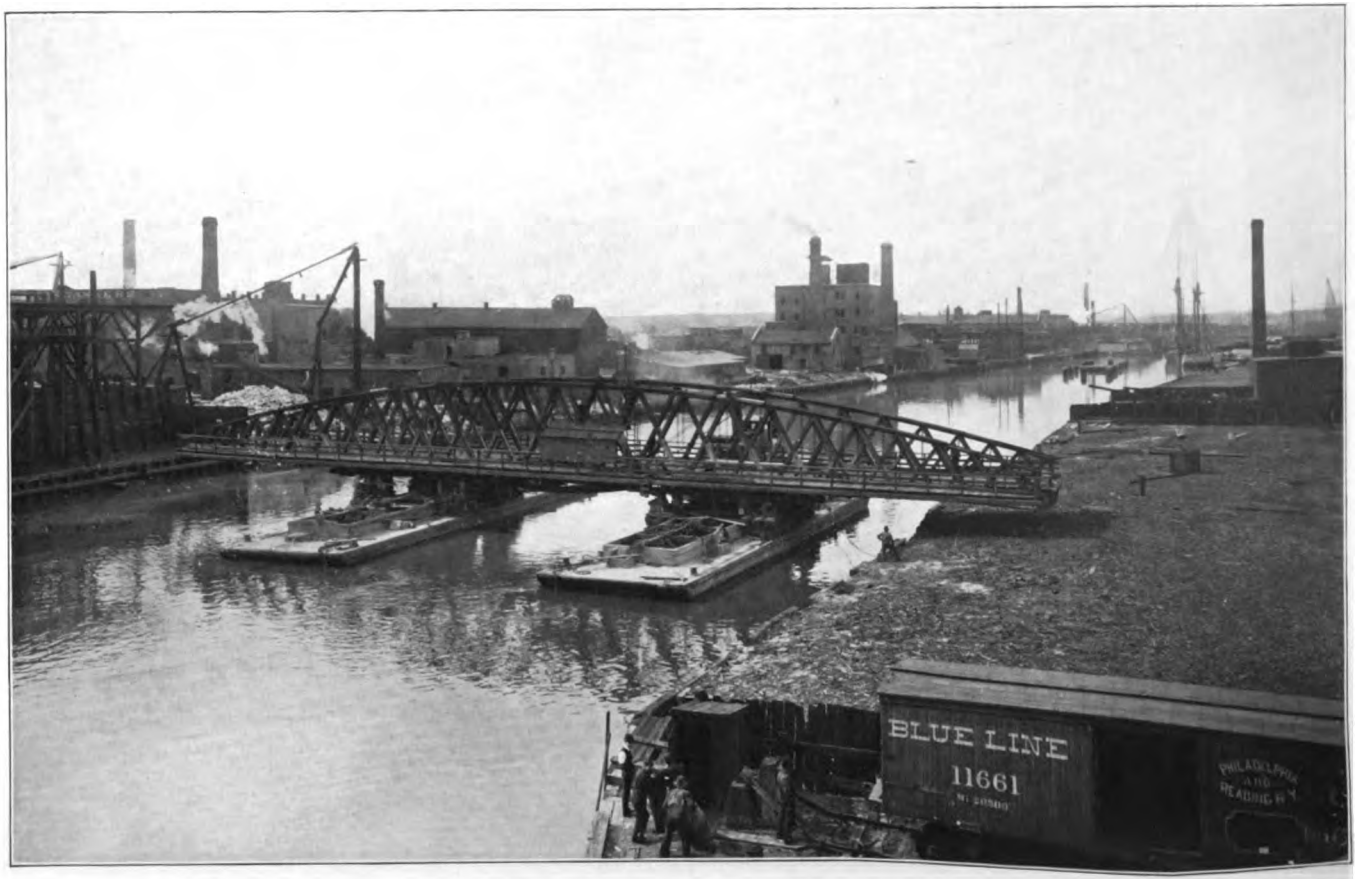
W. Taylor street	$ 17,117.39	Eighteenth street	$ 96.05
Blue Island avenue	1,000.65	Indiana street	10.95
Ogden avenue	2,488.33	Polk street	36.72
S. Halsted and Sixteenth street	58.32		
N. Ashland avenue	289.77	Total	$ 21,600.69
Sangamon street	306.51		
Dearborn street	196.00	Grand total	$140,959.38

The repairs to the viaducts, amounting to $21,600.69, were charged to the different railroad companies.

The following statement shows the character and extent of the repairs to the various bridges and viaducts during the year 1902:

BRIDGES.

ADAMS STREET BRIDGE.—The sidewalks and fences on the bridges and approaches were repaired and the spider rods adjusted.



MOVING OLD BRIDGE FROM WEST DIVISION STREET TO BLACKHAWK STREET—MAY 15, 1902.

ARCHER AVENUE BRIDGE.—Repairs were made to the chord cover, sidewalks and hand-rail, and the planking in the basement of the bridge-house was renewed.

ASHLAND AVENUE BRIDGE over the canal was repaired extensively, the roadway, floor and sidewalk being renewed entirely, the chord and portal strut were reinforced, the south approach was anchored back, and all the iron work received one coat of paint. All this work was done by contract.

BELMONT AVENUE BRIDGE.—The planking on the roadway and sidewalks was partly renewed and the bridge-house was repaired.

BLACKHAWK STREET BRIDGE.—This bridge was moved by the Fitz-Simons & Connell Company from West Division street to its present site on May 15, 1902. The City force repaired the sidewalks, fences, roadway and chord cover. The spider rods, drum, rack and locks received a general overhauling, and the bridge-house was sheeted.

CALIFORNIA AVENUE BRIDGE was damaged by fire January 23, 1902, the south end of the bridge being burned to a considerable extent. This damage was repaired and the bridge put in serviceable condition.

CANAL STREET BRIDGE.—The pontoon was dismantled, the old approaches taken up, and the protection piles for the pontoon removed. A new landing for the ferry boat was built.

CHICAGO AVENUE BRIDGE had the center pier protection, planking on roadway, and chord cover repaired. Repairs were also made to end rollers, locks and bridge-house.

CHITTENDEN BRIDGE.—A new pontoon scow was built and put in position.

CLARK STREET BRIDGE.—The subplanking, wheel guards, paving, chord cover and sidewalks were renewed and repairs made to rack, wheels, drum and locks. Twenty-nine piles were driven in the center pier protection.

DEARBORN STREET BRIDGE.—A new timber tower bent was built to support the north approach, which was in danger of collapsing, the north abutment having been struck repeatedly by vessels and damaged to such an extent as to render it unsafe. Five pile clumps of thirteen piles each were driven to protect the abutments and a new submarine cable was put in place. Repairs were also made to locks, rack, drum, crown wheels and end rollers and the bridge-house was painted.

DEERING STREET BRIDGE.—Repairs were made on the roadway and sidewalks and the truck bearings were adjusted.

DIVERSEY STREET BRIDGE.—The planking on the roadway and sidewalks was repaired and the bridge-house floor was relaid.

EAST DIVISION STREET PONTOON BRIDGE.—The approaches and pontoon scow were repaired.

EIGHTEENTH STREET BRIDGE.—A new cast steel pinion was put in place and the machinery and boilers received a general overhauling. The chord cover and sidewalks were partly renewed and the approaches braced.

ERIE STREET BRIDGE.—A new pinion was put in place, the rack segments were changed, and the wheels, spider rods, locks and end rollers were adjusted. Repairs were also made to the bridge-house and bridge-seats.

FULLER STREET BRIDGE.—The west approach was reinforced and braced and new braces were put in the truss, and the bridge-house was repaired.

FULLERTON AVENUE BRIDGE.—The timber bents under the approaches were braced and the approaches were jacked up. The motor was repaired and repairs were also made to the sidewalks and railings.

NORTH HALSTED STREET BRIDGE (Canal).—New end circle joists, end circle rails and new wheels were put in and a new bulkhead was built to retain filling on north approach. The sidewalks have been partly relaid and the iron work on the turntable was overhauled.

NORTH HALSTED STREET BASCULE BRIDGE.—The bridge-house was reshingled, the sidewalks and roadway repaired, and the machinery received an overhauling.

SOUTH HALSTED STREET BRIDGE.—A new feed-water pump and a new driving gear wheel were installed and the buffer cylinders were put in a serviceable condition. The operating cables were tightened, equalized and greased, new furnace bars were put in the boilers, and a new police shanty was built. Repairs were also made to the machinery, as well as to the roadways, sidewalks and gates.

INDIANA STREET BRIDGE.—The center pier protection was changed in order to widen the west draw. This work was done and paid for by the Shipowners' Dry Dock Company. The City force repaired the sidewalks and abutments and put a new pinion in place.

JACKSON STREET BRIDGE.—The roadway was repaved and the operating house was painted and repairs were made to sidewalks and machinery.

KEDZIE AVENUE BRIDGE (Canal).—All the floor beams except two were renewed, as was also the entire decking. A new sidewalk was built and the bridge was lowered about 1½ feet.

KINZIE STREET BRIDGE.—The west approach was replanked, braced and reinforced in a substantial manner.

LAKE STREET BRIDGE.—Two clumps of thirteen 45-foot piles each were driven to protect the west abutment, and the sidewalks and fences were repaired. The west abutment was damaged considerably by collisions with steamers and constant chopping out of the concrete was required in order to get enough clearance to swing the bridge. The Lake

Street Elevated Railroad Company installed a new G. E. 800 motor in place of the one that was burned out on the eighth of September, 1902.

LAUREL STREET BRIDGE.—Repairs were made to the planking on the bridge and to the approaches.

MADISON STREET BRIDGE.—Two pile clumps were driven in the center pier protection and the end circle planks were renewed.

NINETY-SECOND STREET BRIDGE.—The approaches were strengthened in a thorough manner and sixty-three piles were driven to protect the center pier and the abutments. The sidewalks, chord cover and hand-rails were repaired.

NORTH AVENUE BRIDGE.—Fifty 40-foot piles were driven in the protection, the end rollers were shimmed up and the sidewalks patched.

ONE HUNDRED AND SIXTH STREET BRIDGE.—New supports and braces were put in under the approaches, one bridge seat was renewed, and thirty-seven piles were driven. The sidewalks and planking were partly relaid.

POLK STREET BRIDGE.—The turntable wheels and the lateral rods of the floor system were adjusted, the bent floor beams and stringers straightened, and the damaged end rollers replaced. Thirty-eight piles were driven in place and a new fender was put on the center pier protection. A new floor was put in the bridge-house and the sidewalks were repaired.

RIVERDALE BRIDGE.—A new timber bent was built under the south approach and the sidewalks were patched.

RUSH STREET BRIDGE.—The paving on one of the roadways was renewed, the sidewalks were partly relaid, and the end circles, rack segments and spider rods were adjusted.

TAYLOR STREET BRIDGE.—New submarine operating cables were put in place and heel locks and pit pumps were repaired.

TWELFTH STREET BRIDGE underwent extensive repairs. The work on the center pier protection, which was commenced in 1901, was completed. The sub-planking, wheel guards, paving, chord cover and sidewalks were entirely renewed and the floor beams and stringers partly painted. The boilers and machinery received a thorough overhauling and the bridge-house was jacked up and properly supported and received one coat of paint.

THIRTY-FIFTH STREET BRIDGE received a new circle beam, the truss rods were tightened up, and a disc was put in the center stop.

TWENTY-SECOND STREET BRIDGE.—A new circle beam and a new bridge-seat were put in and the west approach was reinforced by additional timbers and piles. Forty-six piles were driven in place and sidewalks and roadways on the bridge and approaches were patched repeatedly.

VAN BUREN STREET BRIDGE.—Two new G. E. 67 motors were installed in the west engine-room and a new centrifugal pit pump on the

east side, and the machinery was repaired. New platforms were built in the pits, and the roadways and sidewalks were patched.

WASHINGTON STREET BRIDGE.—The sidewalk joists were leveled up and the sidewalks and roadway repaired. The piles which were protruding above the roof of the tunnel and obstructing navigation in the west draw were removed by divers and the loose stones on the west abutment were taken out and replaced by concrete. Fifty-three piles were driven in the center pier protection.

WEBSTER AVENUE BRIDGE.—The sidewalks and roadway were patched and the locks were repaired.

WELLS STREET BRIDGE.—The work on the center pier protection, which was commenced last year, was completed. The bridge-house was moved from the west side to the east side of the street and received one coat of paint. Some repairs were made to the approaches and sidewalks.

NORTH WESTERN AVENUE BRIDGE.—Part of the old span was taken down and the bridge-house was repaired.

SOUTH WESTERN AVENUE BRIDGE.—The sidewalks and decking were patched and the locks and rollers adjusted.

In addition to the repairs mentioned, a number of minor repairs were made on these and other bridges, nearly every bridge operated by the City having received some repairs during the year.

On account of the tugmen's strike last summer the number of collisions of vessels with the bridges was considerably greater than during previous years, about 180 having occurred during the year, and the expense of repairing the damage necessarily increased in proportion.

VIADUCTS.

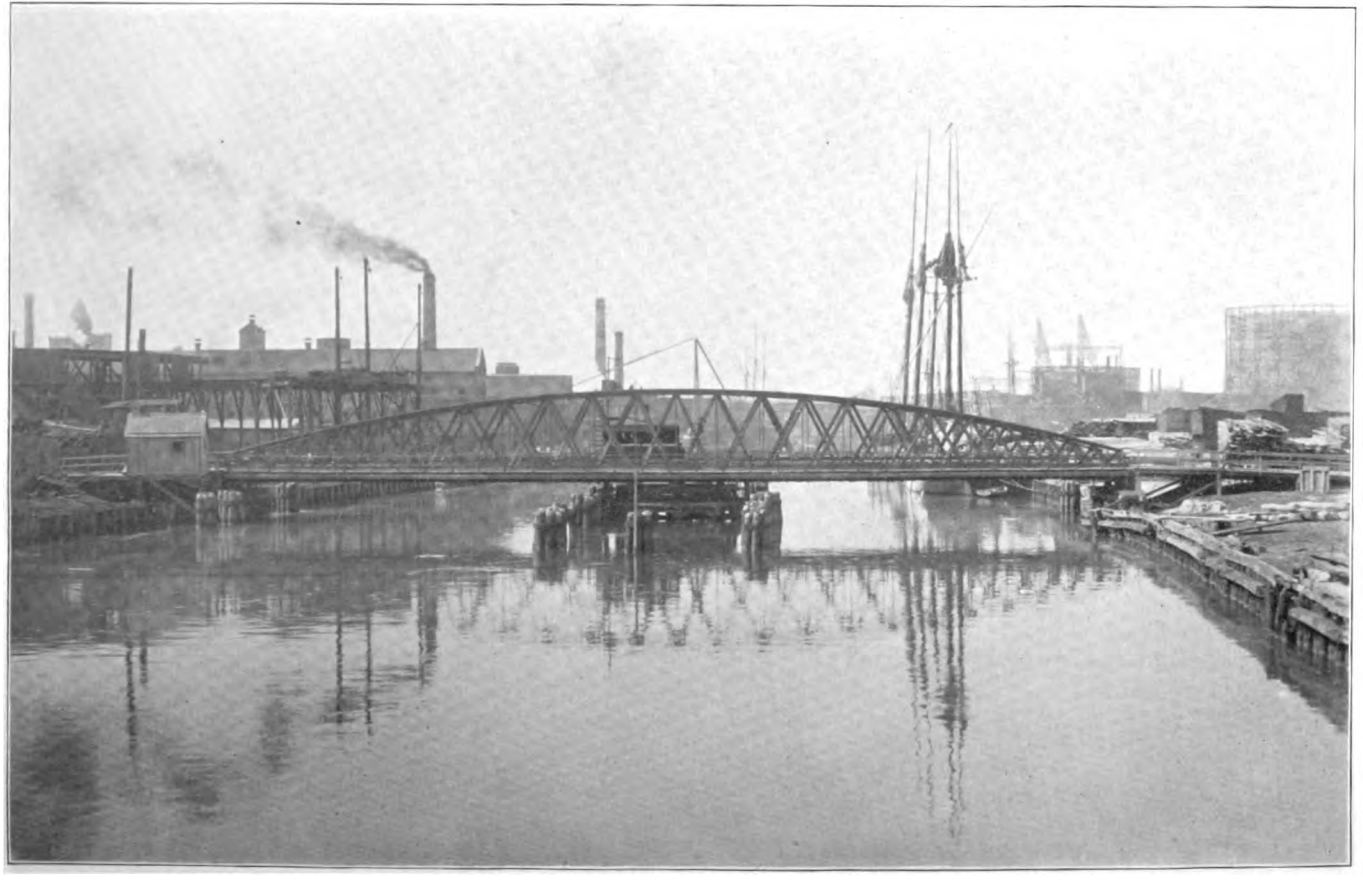
WEST TAYLOR STREET VIADUCT between the bridge and the truss span received very extensive repairs. All the sub-planking, wheel guards, paving and about 80 per cent of the sidewalks were renewed, and all the iron work was painted.

OGDEN AVENUE VIADUCT over the right of way of the Chicago & North-Western Railway Company had new sub-planking, wheel guards and chord cover put in, and the paving renewed on the north and south roadways.

BLUE ISLAND AVENUE VIADUCT.—About 75 per cent of the sub-planking, all the wheel guards and sidewalks were relaid and the roadway was repaved over the tracks of the Chicago & North-Western Railway Company.

HARRISON STREET VIADUCT had the roadway patched.

DEARBORN STREET VIADUCT.—The counter rods and bars were adjusted.



TEMPORARY SWING BRIDGE AT BLACKHAWK STREET.

ASHLAND AVENUE VIADUCT.—The Howe truss span over Kinzie street was strengthened by means of three timber bents. The roadway in the alley leading up to the east side of the north approach to Sangamon street viaduct about 117 feet north of the north line of Kinzie street was rebuilt.

Other repairs to the various viaducts were made by the different railroad companies at their own expense.

DIVISION OF HARBORS.

This division has supervision over the Harbor of the City of Chicago, which consists of the Chicago river, its branches and slips, the Calumet river, its forks and branches and adjacent slips, and Lake Michigan from the north to the south boundary lines of the City, and for a distance of five miles beyond or east of this latter line Sanitary jurisdiction of the City of Chicago extends.

RICARD O'S. BURKE, Harbor Engineer in Charge.
CAPTAIN JOHN MCCARTHY, Harbor Master.
THOMAS J. ELDERKIN, Vessel Dispatcher.

The following is a brief summary of work done in the Chicago harbor during year 1902:

DOCKING AND BREAKWATERS IN CHICAGO AND CALUMET RIVERS AND HARBORS—DOCK PERMITS AND FEES.

NEW CONSTRUCTION.

	Permits.	Feet.	Fees.
North branch Chicago river	1	150.	$ 37.50
Calumet river	2	836.	11.25
Lake Front	6	1,967.	437.50
South branch (S. D.)	4	1,847.71	.....
Miscellaneous	3	Clumps	7.25
Total	16	4,809.71	$493.50

REBUILDING.

	Permits.	Feet.	Fees.
North branch	10	1572	$393.00
Calumet river	7	749.8	187.45
Lake Front	4	851.	58.75
Main river, Chicago	5	1,665.	416.25
South branch, Chicago	16	2,763.	690.75
Total	42	7,600.8	$1,746.20

REPAIRING.

	Permits.	Feet.	Fees.
Calumet river	5	755.	$98.00
South branch Chicago river	1	100.	12.50
Main river, Chicago	2	275.	34.37
Lake Front	1	400.	50.00
Total	9	1,530.	$194.87

SUMMARY OF DOCK WORK.

	Permits.	Feet.	Fees.
New construction	16	4,809.71	$ 493.50
Rebuilding	42	7,600.80	1,746.20
Repairing (no piling)	9	1,530.	194.87
Total	67	13,940.51	$2,434.57

DREDGING DURING 1902.

	Permits.	Cubic Yards.	Fees.
Calumet river	13	91,000	$364.00
Main Chicago river	1	2,000	8.00
North branch Chicago river	6	14,000	56.00
South branch Chicago river	7	12,000	48.00
Total private work	27	119,000	$476.00

SUMMARY OF DREDGING.

	Cubic Yards.	Cost.
By the United States, Calumet river	1,041,910	$165,6[illegible]
By the United States, outer harbor, Chicago	998,800	70,[illegible]
By the Sanitary District, Chicago	367,554	93,[illegible]
Private dredging	119,000	
Total dredging done	2,527,264	[illegible]

The dredging done by the Sanitary District was in the South branch and in its West fork, making a central channel to a depth of 26 feet below City datum for a width of 100 feet, then rising to 16 feet below datum at the dock line.

There were 16 towing permits issued during the year, yielding $196.00 fees.

SUMMARY OF FEES.

Docking	$2,434.57	
Dredging	476 00	
Towing	196.00	
Total		$3,106.57

The chief items charged during the year to the appropriation for dock renewals are:

Repair of River street dock	$ 228.24
Rebuilding 179¾ feet Ashland Avenue Pipe Yard dock	2,768.15
Rebuilding 51 feet Hillock Avenue dock	785.40

The first of the above items was done by Fitz Simons & Connell Co., the other two were done under contract with Lydon & Drews Company.

The Sanitary District of Chicago rebuilt 3,179 lineal feet of dock in the Chicago river at $24.75 per lineal foot, amounting to $78,680.25.

CALUMET RIVER AND HARBOR.

CALUMET RIVER.

No work was done by the United States Government in the Calumet river during this year. Colonel Ernst, Corps of Engineers, U. S. A., in charge, states the progress of work under the various projects for the improvement of this river. The project adopted by Congress in 1884, and modified in 1886, contemplated securing a channel 200 feet wide and 16 feet in depth below low water in Lake Michigan, from the mouth of Calumet river, Illinois, to one-half mile east of Hammond, Ind.

The project was modified by the River and Harbor act of June 3, 1896, so as to provide for dredging the channel for two miles southward from the mouth of the river to 20 feet depth.

Under the project of 1884 there was dredged a channel measured from the harbor southward to the full width of 200 feet and depth of 16 feet, 19,518 feet in length, except that over a short portion where rock was encountered the width was reduced to 85 feet and the depth to 14 feet.

In addition there was removed 248,516 cubic yards of material from the channel between "The Forks" and one-half mile east of Hammond, Ind., in an effort to secure a practicable channel 10 feet deep and 60 feet wide, resulting in failure, due to rapid refilling of channel.

Under the supplementary project of 1896 there had been 320,405 cubic yards of material removed under contract, completing the channel 20 feet deep, a distance of two miles, and providing a winding or turning basin 20 feet deep at the first cut-off above the mouth of the river.

Winding or turning basins should be provided at intervals of from one to two miles along the river.

The River and Harbor act of June 13, 1902, appropriated $75,000 for the improvement of the Calumet river, and provided for an extension of the 20-foot channel from 106th street to 122d street, a distance of 2.2 miles for the resumption of the work above "The Forks." No useful results can be obtained from expenditures above "The Forks."

Total expended by the United States on the improvements of the Calumet river to June 30, 1902, $399,982.86.

It is contemplated to expend $67,000 on the improvement of the Calumet river during the year 1903.

The rock encountered in the work of dredging the channel of this river lies between 112th and 113th streets on the easterly side of the river. Recent surveys show a 20.8-foot channel, generally along the center of the river from the harbor to about the ship yard; thence about 19.8 feet to 106th street bridge. Seventeen and eight-tenths feet can be carried to 118th street, thence to Hammond, Ind., not exceeding 5 feet at low water.

CALUMET HARBOR.

The new breakwater, enlarged by the Act of Congress of March 3, 1899, to a length of 4,400 feet, has been completed on October 31st of this year from the north face of the Illinois Steel Company's slip due east a distance of 4,413 feet to a depth of water of 32 feet. Cost, $343,642.42.

It was suggested by the United States Engineer, in 1896, that another breakwater should be built running due south from the east end of the first breakwater, and so located on that south line as to leave no less than 2,500 feet of an open space as mouth for this harbor of shelter. For this north and south pier there is now substituted by authority of the Act of Congress of June 13, 1902, "an extension of the east and west breakwater from the eastern end thereof, not to exceed 2,500 feet in a southeasterly direction." The accompanying map shows the constructed work as well as the former proposal, and the substitute extension southeasterly of the east and west pier.

The United States has contracted with Gillen & Gillen of Racine, Wisconsin, for the construction of the 2,500 feet of this southeasterly breakwater. Work will be commenced in 1903.

The piers at the mouth of the Calumet river are 300 feet apart; the south pier projects about 2,165 feet and the north pier about 1,140 feet beyond or east of the present shore line. In the first part of the year it was apparent from United States surveys that a bar was forming in the lake in a direct line with the channel between the harbor piers and at a distance of 8,250 feet from the outer end of the north pier. It is about 200 feet

in diameter and the shallowest sounding found thereon was 20.5 feet. As vessels are forced further out towards this bar by the extension of the new breakwater it is, in stormy weather, a serious obstruction, and a red and black striped spar buoy has been placed about 300 feet to the northward in 21 feet of water. Shoaling has also taken place along both sides of the channel and a bar formed on the northerly side of the harbor entrance extending about one-half the distance across the channel, with depths ranging from 17.7 feet on the line of the axis of the north pier to 20.3 feet nearly in mid-channel. This bar at the approach to the Calumet harbor or river mouth has been dredged away and a depth of 21 feet below City datum has been obtained. About two-thirds of the area sheltered by the east and west breakwater has been dredged to a depth of 21 feet by the United States. This work was commenced on April 10th and finished on December 6th of 1902.

At the westerly end of the north pier 460 feet of dock has been rebuilt by the United States, costing about $11,000 exclusive of superintendence and contingencies.

The total appropriation made by the United States for the Calumet harbor from July 11, 1870, to the Act of June 28, 1892, amount to $1,342,750.00

Expended to June 30, 1902	855,764.98
Balance unexpended June 30th, 1902	$ 486,985.02

CHICAGO RIVER AND HARBOR.

CHICAGO RIVER.

No dredging has been done in this river west of Rush street bridge by the United States during the year. The river channel east from Rush street and the bar at the approach to the harbor have been dredged to a depth of 21 feet below City datum. The Sanitary District, to facilitate the flow of the large volume of water required for the dilution of the sewage discharged into the drainage canal, has undertaken and in many places accomplished the widening of the river to 200 feet and a central depth of 26 feet. The South fork of the South branch and the North branch, however, do not share in these benefits. "In the South fork, particularly, the dimensions of the channel obtained by the operations of the government were seriously impaired by the change of slope." "The Chicago River," says Colonel Ernst, Corps of Engineers, "is the main sewer of Chicago, and as such is subject to deteriorating influences as a navigable channel from which there is no escape. The City ordinances against dumping solid matter into it are ample, and, I think, generally well observed." But a

large amount of solid matter must of necessity go into it with a perfectly legitimate use of it as a sewer.

"Periodical dredging will be necessary to maintain it as a navigable channel and, eventually, to maintain it even as a sewer. That work would seem to be as much the duty of the City as the maintenance of any other part of its sewer system. So far as the South branch is concerned, the question has been solved by the necessities of the drainage canal, but the Sanitary District has not accepted responsibility for maintaining the other branches. Whether that organization or some other representing the people of Chicago should do the work is for them to decide, but it seems to me clear that the United States should not be called upon to do it. Accordingly, no estimate for maintaining the channel excavated by the United States under the project of 1896 is submitted."

Preparations were made last year "for the improvement of the Chicago river under the Act of Congress of June 13, 1902, by constructing turning basins of proper size therein." These basins are two in number and are located, one at the forks of the South branch eastward of Ashland avenue bridge over the West fork and the other on the North branch south from North avenue bridge at the junction of the North branch with the Ogden canal. The City has already located and in part dredged a turning basin next south from Diversey avenue on the North branch about two miles north of North avenue bridge; but piling has been driven into it by the Deering Harvester Company last summer, and that company carried the matter into the United States Court to get an injunction enjoining the City from removing these piles or interfering with the Company's work there. The Court refused the injunction, but no recent information has been received from the law department as to the removal of this obstructing piling from the waterway of the harbor there. There is the sum of $500,000 available for the construction by the United States of these two turning basins. The work will commence when the necessary land is secured by condemnation or purchase and the United States Attorney General approves of the title and contracts are let for the same.

OUTER HARBOR OF CHICAGO.

The exterior breakwater is about three-quarters of a mile northeast of the entrance to the river; it is 5,413 feet long, 30 feet wide, and was constructed between 1880 and 1889 in water varying from 18 to 32 feet in depth. It has proved a decided benefit to navigation. The harbor of refuge between this breakwater and the entrance to the river has a depth of 18 to 32 feet. The easterly breakwater is about 4,037 feet long with a shore return at the north end about 300 feet long. The southerly breakwater begins about 700 feet south of the southerly end of the easterly break-

water and is about 3,000 feet long. The easterly and southerly breakwaters with the South pier to the north and the shore to the west form the so-called "Outer basin." A bulkhead was built in 1896 along the dock line, established by the Secretary of War in August, 1871, and September, 1890; the area west of this bulkhead has been designated as a public park and is being gradually filled in, thereby reducing the area of the basin to 270 acres. Its length is about 7,300 feet and its greatest width is about 2,000 feet. The distance between the piers at the mouth of the Chicago river is about 470 feet, narrowing to about 320 feet just after passing the north entrance to the basin and to about 200 feet just after passing the bridge of the Illinois Central Railroad.

During the year the United States dredged in the mouth of the Chicago river as far west as Rush street to a depth of 21 feet below City datum, and also obtained the same depth forming an anchorage area in the outer basin for a distance of 3,000 feet southwardly from the south pier and for a width of 1,150 feet, removing 998,800 cubic yards, at a cost of 7 4-45 cents per scow yard.

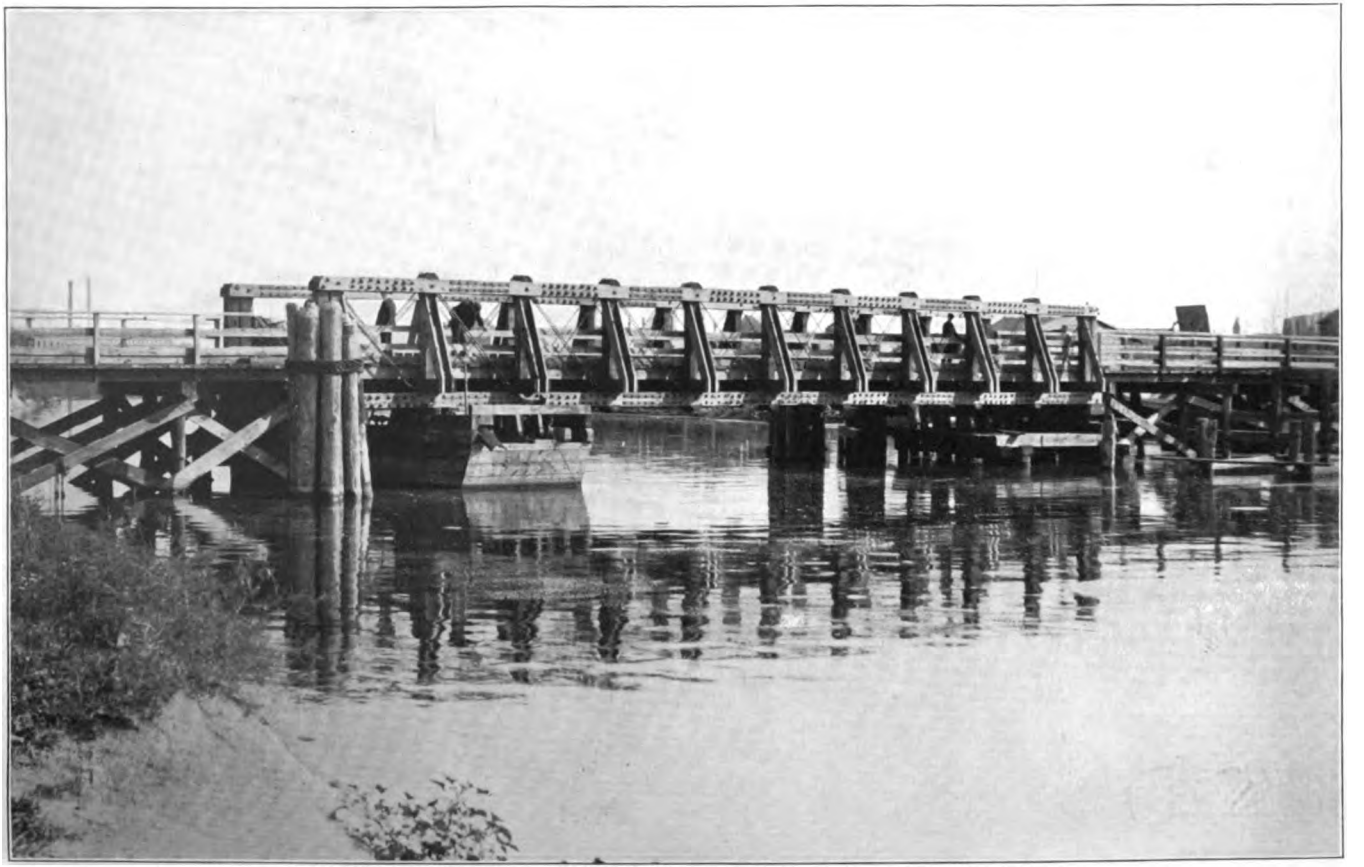
SURVEY OF THE LAKE FRONT.

The field work of this survey was commenced April 22d of this year. Primary points were established from Fiftieth street, south to the Indiana boundary line, and were each marked by a steel-shod one-inch gaspipe two feet long, centering on station point. Base lines were run from these primary points and connections were made with the street and the United States section lines and a traverse line was run along shore of the lake as far south as the Indiana state line, except through that part of the lake front enclosed by the Illinois Steel Company, who did not give permission to the field party to enter the grounds they have enclosed. It was therefore necessary to carry a base line from the piers along the front of this property from which the shore line was established, the triangulation tying in with the primary work north and south of the Illinois Steel Company's enclosure.

The survey of 1890 terminated by Fiftieth street and was united with the work of the present year north of the Chicago Beach Hotel. The survey of 1890 from the mouth of Chicago river as far south as Sixteenth street was incomplete, and towards the close of the season the party was placed on it and finished the field work there about the 7th of November. The appropriation of $2,000 was mainly expended on this work by the end of November, only a balance of about $85 remained. An appropriation has been asked to continue the lake front survey from the mouth of the Chicago river northward to the City limits and to complete the platting of the field notes of the survey already made.

TABLE SHOWING ELEVATION OF SURFACE OF LAKE MICHIGAN, IN FEET, REFERRED TO CITY DATUM BY MONTHS, YEAR 1902, FROM OBSERVATIONS TAKEN AT TWO-MILE CRIB.

MONTHS	Max.	Min.	Mean.	Range.	REMARKS.	
January....	—0.03	—0.67	—0.30	1.0	Max. Jan. 12....0.1	Min. Jan. 14..—0.9
February....	—0.13	—0.70	—0.39	0.9	" Feb. 17....0.1	" Feb. 4...—0.8
March.....	0.10	—0.77	—0.30	0.8	" Mar. 28....0.0	" Mar. 6..—0.8
April.....	0.17	—0.37	—0.15	0.8	" April 8....0.3	" April 24.—0.5
May.....	0.37	—0.33	0.08	1.0	" May 10....0.6	" May 7...—0.4
June.....	0.63	—0.17	0.28	1.3	" June 29....0.7	" June 25.—0.6
July.....	0.77	0.23	0.51	1.8	" July 16....1.2	" July 16..—0.6
August.....	0.70	0.30	0.52	0.9	" August 6..0.9	" August 7..0.0
September..	0.97	—0.20	0.31	1.4	" Sept. 24...1.0	" Sept. 10.—0.4
October	0.57	—0.13	0.17	1.1	" Oct. 4.....0.8	" Oct. 20....0.3
November..	0.40	—0.60	—0.02	1.4	" Nov. 27....0.6	" Nov. 30.—0.8
December...	0.60	—1.03	—0.19	2.1	" Dec. 18....0.9	" Dec. 31..—1.2
Year 1902...	1.20	—1.20	+0.04	2.4		



NORTH WESTERN AVENUE PONTOON BRIDGE—AUGUST 28, 1902

TABLE SHOWING PRECIPITATION AND MEAN TEMPERATURE AND MEAN BAROMETRIC PRESSURE (ACTUAL) IN INCHES AND IN DEGREES FAHR., OVER THE BASIN IN UPPER LAKES, AND MEAN WATER IN LAKE MICHIGAN IN INCHES, BY YEARS, FROM 1871 TO 1902, BOTH INCLUSIVE, WITH THE ANNUAL INCREASE OR DECREASE.

Year	BASIN OF UPPER LAKES.									LAKE MICHIGAN.		
	Precipitation	Difference with Preceding Year		Mean Temp.	Difference with Preceding Year		Pressure.	Difference with Preceding Year		Levels of Mean Water	Difference with Preceding Year	
	Inches	Inc.	Dec.	Deg's.	Inc.	Dec.	Inches	Inc.	Dec.	Inches	Inc.	Dec.
1871	30.75	.....	.....	47.2	.....	.....	29.26	.....	.....	21.24	.....	.....
1872	29.59	.....	1.16	44.2	.....	3.0	29.26	0.00	0.00	9.62	.....	11.62
1873	32.49	2.90	.....	44.3	0.1	.....	29.25	.....	.01	16.80	7.18	.....
1874	29.56	.....	2.93	46.3	2.0	.....	29.31	.06	.....	20.04	3.24	.....
1875	33.06	3.50	.....	42.0	.....	4.3	29.26	.....	0.5	17.40	.....	2.64
1876	28.93	.....	4.13	45.1	3.1	.....	29.25	.....	0.1	30.72	13.32	.....
1877	36.23	7.30	.....	47.5	2.4	.....	29.28	.03	.....	27.72	.....	3.00
1878	38.35	2.12	.....	49.2	1.7	.....	29.22	.....	.06	24.00	.....	3.72
1879	35.51	.....	2.84	46.5	.....	2.7	29.30	.08	.....	12.72	.....	11.28
1880	38.36	2.85	.....	47.0	0.5	.....	29.28	.....	.02	13.92	1.20	.....
1881	42.42	4.06	.....	47.1	0.1	.....	29.29	.01	.....	15.12	1.20	.....
1882	37.28	.....	5.14	48.2	1.1	.....	29.29	.00	.00	24.00	8.88	.....
1883	32.66	.....	4.62	44.4	.....	3.8	29.28	.....	.01	25.20	1.20	.....
1884	34.31	1.65	.....	46.2	1.8	.....	29.28	.00	.00	26.88	1.68	.....
1885	32.99	.....	1.32	43.8	.....	2.4	29.26	.....	.02	28.56	1.68	.....
1886	30.56	.....	2.43	45.8	2.0	.....	29.28	.02	.....	31.68	3.12	.....
1887	29.63	.....	0.93	45.5	.....	0.3	29.29	.01	.....	23.52	.....	8.16
1888	27.57	.....	2.06	43.8	.....	1.7	29.31	.02	.....	15.60	.....	7.92
1889	28.65	1.08	.....	45.9	2.1	.....	29.29	.....	.02	9.24	.....	6.36
1890	34.58	5.93	.....	46.0	0.1	.....	29.30	.01	.....	7.56	.....	1.68
1891	29.62	.....	4.96	46.4	0.4	.....	29.30	.00	.00	0.60	.....	6 96
1892	34.15	4.53	.....	44.7	.....	1.7	29.31	.01	.....	—2.04	.....	2.64
1893	31.46	.....	2.69	43.8	.....	0.9	29.26	.....	.05	—2.35	.....	0.31
1894	29.51	.....	1.95	46.9	3.1	.....	29.28	.02	.....	6.00	8.35	.....
1895	26.03	.....	3.48	44.9	.....	2.0	29.29	.01	.....	—5.88	0.00	11.88
1896	31.59	5.56	.....	46.1	1.2	.....	29.30	.01	.....	—6.96	0.00	1.08
1897	30.36	.....	1.23	45.9	.....	0.2	29.31	.01	.....	+3.96	10.92	.....
1898	31.32	0.96	.....	46.2	0.3	.....	29.27	.....	.04	+5.64	1.68	.....
1899	29.26	.....	2.06	44.7	.....	1.5	29.31	.04	.....	+6.36	.72	.....
1900	31.25	1.99	.....	46.7	2.0	.....	29.31	.....	.....	+1.44	.....	4.92
1901	26.88	.....	4.37	45.0	.....	1.7	29.27	.....	.04	+4.68	3.24	.....
1902	31.21	4.33	.....	44.8	.....	0.2	29.25	.....	.02	+0.48	.....	4.20

MAXIMUM, MINIMUM AND MEAN ELEVATION (IN FEET) OF WATER IN LAKE MICHIGAN FOR EACH YEAR FROM 1854 TO 1902, INCLUSIVE.

Referred to City Datum (Low Water of 1847.)

YEAR.	LAKE MICHIGAN.			YEAR.	LAKE MICHIGAN.		
	Maximum.	Minimum.	Mean.		Maximum.	Minimum.	Mean.
1854.....	.....	.....	1.88	1878.....	3.14	0.51	2.00
1855.....	3.45	0.15	1.56	1879.....	2.51	—0.49	1.06
1856.....	3.05	0.42	1.60	1880.....	2.81	—0.99	1.16
1857.....	4.35	0.60	2.42	1881.....	3.01	—2.19	1.26
1858..... ..	4.69	1.33	2.00	1882.....	3.01	—0.99	2.00
1859.....	4.45	1.31	2.98	1883.....	3.81	—0.99	2.10
1860.....	3.53	1.30	2.54	1884.....	3.31	—0.01	2.24
1861.....	4.40	1.20	2.56	1885.....	3.71	—0.01	2.48
1862.....	3.30	0.70	2.50	1886.....	4.41	0.01	2.64
1863.....	3.30	—0.80	2.10	1887.....	3.11	0.01	1.96
1864.....	2.80	—0.40	1.57	1888.....	3.01	0.01	1.80
1865.....	3.66	—1.08	1.30	1889.....	2.51	—0.79	0.77
1866.....	2.50	0.00	1.07	1890.....	2.21	—0.99	0.63
1867.....	2.60	—0.41	1.49	1891.....	1.61	—2.39	0.05
1868.....	2.58	—1.00	1.01	1892.....	1.30	—3.60	—0.17
1869.....	2.13	0.41	1.13	1893.....	1.70	—0.30	0.69
1870.....	3.25	—0.30	2.09	1894.....	1.80	—1.80	0.50
1871.....	2.80	—0.40	1.77	1895.....	0.00	—1.57	—0.49
1872.....	1.80	—0.74	0.81	1896.....	0.00	—1.70	—0.58
1873.....	2.70	—0.76	1.40	1897.....	1.60	—1.30	0.38
1874.....	2.80	—0.20	1.67	1898.....	1.09	—1.25	0.47
1875.....	3.01	—0.34	1.45	1899.....	2.10	—1.50	0.53
1876.....	4.31	0.34	2.56	1900.....	1.20	—1.60	0.12
1877.....	3.56	1.04	2.31	1901.....	1.70	—0.90	0.39
....	.....	.....	.....	1902.....	1.20	—1.20	0.04

COMMERCE BY LAKE.

During the year the total entrances and clearances for the City of Chicago decreased 520 vessels or 3 2-10 per cent as compared with last year, which was itself greatly reduced from the returns of our lake trade for 1900. Of our total trade for last year 2,599 vessels, or 16½ per cent, used the Calumet river, carrying over one-third or 35 6-10 per cent of the total tonnage of the City. While last year the number of vessels taking the Calumet decreased by 9 as compared with the number for the preceding year, yet the tonnage for that year increased by 564,176 tons, or about 13 per cent over that for 1901. Although the total number of vessels using the ports of the City of Chicago decreased 3 2-10 per cent from the number for 1901 as above shown, the tonnage of the City increased over that year by 604,494 tons or 4 4-10 per cent, bringing the average cargo for the City up to 904 tons as against 838 tons for 1901.

This decrease in the lake trade of the Chicago river and the increase of the trade of our southern deep-water port, the Calumet, emphasize the necessity of some immediate improvement of the tunnel conditions in the former river. In this connection the United States Engineer has said: "This decline has been steady and is bound to continue unless the obstructions to navigation in the river are removed. These improvements (widening and deepening the channel of South branch and remodeling the bridges) are of great value and importance and of necessity as well, but they will accomplish little without the removal of the tunnels under the river. These tunnels now have about 17 feet of water over them and limit safe navigation to a draft of 16 feet. The attitude of Congress towards them is that they are legal structures, and until removed by the authority which placed them there, the City of Chicago, they limit the extent to which the river can be improved. No lake port which cannot safely accommodate vessels drawing more than 16 feet can hold its own in these days of deep draft vessels. The evil which these tunnels are doing does not seem to be fully appreciated by the people. The bridges and narrow channels are obstructive, but the tunnels absolutely close the door to the best class of vessels. Chicago will do well to remove the tunnels without further delay if she is to arrest the decay in her lake shipping, which has been going on almost continuously for the last ten years." (Appendix K. K. Report Chief of Engineers, 1902.)

The following table gives the number of vessels, total tonnage and average cargo for the Chicago river and the Calumet river by year since 1890, the year following annexation. It shows clearly how much greater would have been our loss of lake trade had we not had a deep water port in the southern part of our City, which has grown from one-tenth of the trade of the Chicago river in 1893 to over one-half of the Chicago river trade in last year.

STATEMENT OF ENTRANCES, CLEARANCES, TONNAGE AND AVERAGE CARGOES OF CHICAGO RIVER AND CALUMET RIVER, BY YEARS, FROM 1890 TO 1902, INCLUSIVE.

YEAR.	CHICAGO RIVER.			CALUMET RIVER.		
	Vessels.	Tons.	Average Cargo.	Vessels.	Tons.	Average Cargo.
1890.....	18,472	8,774,156	475	1,661	1,841,895	808
1891.....	18,100	9,267,846	512	1,581	1,595,052	1,009
1892.....	18,325	9,770,457	533	2,052	2,009,936	980
1893.....	16,073	9,807,434	610	971	980,595	1,010
1894.....	14,697	8,687,044	591	1,505	1,597,134	1,061
1895.....	15,324	9,188,339	600	2,908	3,442,841	1,184
1896.....	14,256	9,506,772	667	2,743	3,459,040	1,261
1897.....	15,170	10,608,878	700	2,695	3,668,362	1,361
1898.....	15,887	10,751,880	699	3,125	4,364,546	1,397
1899.....	13,879	9,108,394	656	2,295	3,490,845	1,521
1900.....	14,426	9,966,082	691	2,550	4,024,812	1,578
1901.....	13,666	9,225,539	675	2,608	4,409,365	1,691
1902.....	13,155	9,165,857	697	2,599	5,073,541	1,952

TONNAGE OF THE DISTRICT OF CHICAGO, 1902.

ENTERED AT	FROM AMERICAN PORTS.		FROM FOREIGN PORTS.		TOTALS.	
	Vessels	Tonnage.	Vessels	Tonnage.	Vessels	Tonnage.
Chicago.....	6,416	4,443,270	151	178,566	6,567	4,621,836
South Chicago.....	1,268	2,470,404	2	1,642	1,270	2,472,046
Michigan City.....	215	64,336	.....	.....	215	64,336
Waukegan.....	31	20,835	.....	.....	31	20,835
Totals.....	7,930	6,998,845	153	180,208	8,083	7,179,053

CLEARED FROM	TO AMERICAN PORTS.		TO FOREIGN PORTS.		TOTALS.	
	Vessels	Tonnage.	Vessels	Tonnage.	Vessels	Tonnage.
Chicago.....	6,381	4,316,506	207	227,515	6,588	4,544,021
South Chicago.....	1,284	2,545,665	45	55,830	1,329	2,601,495
Michigan City.....	218	64,360	.....	.....	218	64,360
Waukegan.....	29	19,466	.....	.....	29	19,466
Totals.....	7,912	6,945,997	252	283,345	8,164	7,229,342

CITY OF CHICAGO—SUMMARY OF COMMERCE BY LAKE—1902.

ENTRANCES.	No.	Tons.
Chicago river	6,567	4,621,836
Calumet river	1,270	2,472,046
Total	7,837	7,093,882
CLEARANCES.		
Chicago river	6,588	4,544,021
Calumet river	1,329	2,601,495
Total	7,917	7,145,516
Grand total	15,754	14,239,398

Average cargo, Chicago river..... 697 tons.
Average cargo, Calumet river..... 1,952 tons.
Average cargo, City of Chicago..... 904 tons.

SOUTH CHICAGO—COASTWISE SHIPMENTS—1902.

ARTICLES.	Quantity.	ARTICLES.	Quantity.
Unclassified ..... tons	37,600	Oats ..... bush.	3,252,023
Flour ..... bbls.	319,350	Barley ..... "	145,000
Wheat ..... bush.	5,691,843	Oil ..... bbls.	117,020
Corn ..... "	10,035,760	Manufactured Iron ..... tons	.....

SOUTH CHICAGO—COASTWISE RECEIPTS—1902.

ARTICLES.	Quantity.	ARTICLES.	Quantity.
Unclassified ..... tons	9,900	Grain ..... bush.	1,771,112
Lumber ..... M.	41,619	Coal—Anth. ..... tons	36,669
Shingles ..... "	5,450	Salt ..... bbls.	1,275,250
Posts ..... pieces	107,000	Iron Ore ..... tons	3,334,841
Ties ..... "	166,700	Manufactured Iron .... "	.....
Poles ..... "	65,175	Plaster ..... bbls.	314,250

EXPORTS BY LAKE—1902.

COMMODITIES.	Quantity.	Value.
Corn ..... bush.	500,932	$ 304,758
Flaxseed ..... "	50,800	68,104
Oats ..... "	194,100	79,401
Rye ..... "	323,870	179,747
Wheat ..... "	3,027,846	2,218,874
Flour ..... bbls.	41,334	132,887
Pork ..... "	5,119	88,397
Lard ..... tcs.	.....	.....
Manufactured Iron ..... tons	691	19,906
Lumber ..... M.	.....	.....
Agricultural Implements ..... parts	1,354	59,976
Cured Meats ..... boxes	2	60
Oil Cake ..... sacks	30,314	133,284
Unclassified ..... tons	7,043	29,959
Total value	.....	$3,347,130

CHICAGO—COASTWISE RECEIPTS—1902.

ARTICLES.	Quantity.	ARTICLES.	Quantity.
Unclassified Mdse ..... tons	618,995	Manufactured Iron ..... tons	.....
Canned Goods ..... boxes	636,277	Sugar ..... bbls.	1,707,670
Groceries ..... tons	506,860	Syrup ..... "	.....
Lumber ..... M.	596,745	Flour ..... "	.....
Shingles ..... "	97,150	Potatoes ..... bush.	179,060
Lath ..... "	6,120	Cheese ..... pkgs.	.....
Posts ..... pieces	1,605,765	Fish ..... tons	.....
Ties ..... "	1,809,588	Copper ..... bars	103,850
Poles ..... "	83,198	Sulphur ..... bbls.	14,312
Wood ..... cords	12,754	Plaster ..... "	17,365
Coal ..... tons	262,843	Cement ..... "	738,008
Shoes ..... boxes	309,525	Asphalt ..... "	48,390
Salt ..... bbls.	1,156,473	Hides ..... bales	36,775
Iron Ore ..... tons	53,085	Grain ..... bush.	1,821,555

CHICAGO—COASTWISE SHIPMENTS—1902.

ARTICLES.	Quantity.	ARTICLES.	Quantity.
Unclassified Mdse.....tons	377,925	Lard.....tierces	47,350
Flour.....bbls.	2,143,430	Sugar.....bbls.	44,045
Wheat.....bush.	10,285,445	Syrup..... "	9,785
Corn..... "	15,324,000	Groceries.....tons	17,375
Oats..... "	4,106,150	Canned Goods .....pkgs.	127,831
Flaxseed ..... "	394,175	Cured Meats.....boxes	10,670
Rye..... "	1,352,250	Pork .....bbls.	11,380
Barley..... "	156,000	Beef..... "	390
Grass Seed.....sacks	32,022	Broomcorn .....bales	2,430
Millstuffs ..... "	1,323,400	Manufactured Iron.....tons	6,490
Glucose.....bbls.	27,697	Hides.....bales	11,100
Malt.....sacks	57,464	Leather..... "	8,857
Oil Cake..... "	126,020	Tallow .....bbls.	16,935
Bullion, Lead, etc.....pigs	52,445	Wool and Hair.....sacks	36,119

VESSELS BUILT IN DISTRICT OF CHICAGO, 1902.

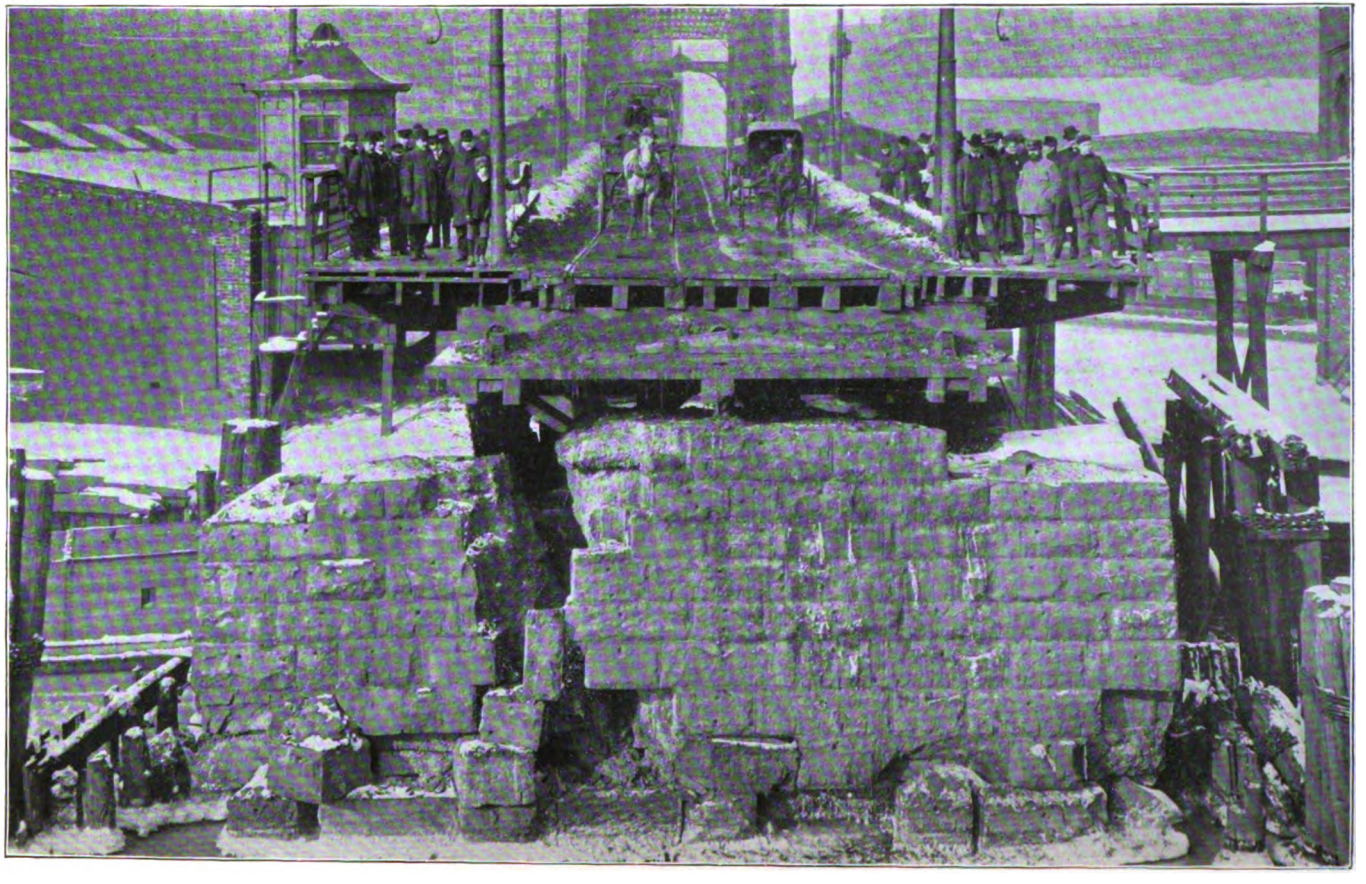
CLASS.	NAME.	Built of	Tons.	Cost.
Screw steamer.....	A. G. Brower.....	Steel	2,778	$ 220,000.00
Screw steamer.....	Horace S. Wilkinson....	Steel	3,057	230,000.00
Screw steamer.....	Luzon	Steel	2,778	220,000.00
Screw steamer.....	Milwaukee.....	Steel	2,424	280,000.00
Screw steamer.....	Panay.....	Steel	2,778	230,000.00
Screw steamer.....	W. W. Brown	Steel	2,778	220,000.00
Stern-wheel yacht....	John H. Kirby.....	Steel	55	20,000.00
Screw steam yacht...	Oswegatchie	Wood	20	12,000.00
Sloop yacht.....	Iroquois.....	Wood	11	3,000.00
Schooner yacht.....	Noreen	Wood	7	500.00
	Total.....	.....	16,686	$1,435,500.00

Of the vessels engaged in the trade of the City 83½ per cent used the Chicago river, carrying only 64⅓ per cent of the City tonnage, as against 67 7-10 per cent of tonnage for last year, a material decrease in the tonnage of Chicago river. Of the vessels that sought the Chicago river 31 per cent did not go west of Rush street, 69 per cent of them going west of it, as against 70 6-10 per cent for last year. Of the vessels that passed west of Rush street 73 6-10 passed beyond Wells street, 50 2-10 per cent of them going up the North branch through Kinzie street bridge, 49 8-10 per cent passing south through Lake street bridge. There is also a movement of vessels from branch to branch of the Chicago river, 1,074 vessels going from the South branch north through Kinzie street, and 1,067 vessels going from the North branch into the South branch, without in either case any of these vessels passing east of Wells street bridge. Of the vessels that passed Lake street bridge going south 7 7-10 per cent stopped north of Twelfth street, 25 3-10 per cent stopped north of Eighteenth street, and 26 4-10 per cent stopped north of Twenty-second street bridge, 73 6-10 per cent of all vessels that passed into the South branch at Lake street going south of Twenty-second street bridge, as against 77 7-10 per cent for year 1901.

In connection with the table of movement of vessels and that showing our lake commerce by years from 1862 to 1902 it may be worthy of attention to note that if Chicago desires to regain her former place in lake trade, her efforts must speedily be applied to freeing her commerce from any and all restraints and embarrassments now so damaging to her and which have brought her down to the fifth place in the standing of lake ports. A return of the Bureau of Statistics for the eleven months ending November 30th last shows:

Duluth, Minn.	10,285,815	tons
Cleveland, O.	9,873,843	"
Buffalo, N. Y.	9,727,364	"
Milwaukee, Wis.	9,097,468	"
Chicago	8,772,905	"
So. Chicago	4,177,686	"

The reports for year 1902 I do not think will alter the relative standing of these lake ports.



DEARBORN STREET BRIDGE—NORTH ABUTMENT.

MOVEMENTS OF VESSELS IN CHICAGO RIVER.

BRIDGES.	Days in Service.	NUMBER.			AVERAGE.					PERCENTAGE OF TIME.	
		Hours Open.	Vessels Passed.	Swings of Bridges.	Number of Vessels per Day.	Number of Swings per Day.	Time Open per Swing, in Minutes.	Time Open per Hour, in Minutes.	Time Open per Day in Minutes.	Closed.	Open.
Rush street.....	249	293.40	9,088	7,643	36.49	30.69	2.30	2.94	70.69	95.10	4.90
Wells street.....	259	262.90	6,687	5,708	25.81	22.03	2.76	2.53	60.90	95.78	4.22
Lake street.....	259	267.38	5,466	4,664	21.10	18.00	3.45	2.58	61.94	95.70	4.30
Van Buren street	68	81.45	1,521	1,372	22.36	20.17	3.56	2.99	71.86	95.01	4.99
Twelfth street.....	252	252.46	5,047	4,239	20.02	16.82	3.57	2.50	60.11	95.83	4.17
Eighteenth street.....	259	159.11	4,085	3,504	15.77	13.52	2.72	1.53	36.86	97.45	2.55
Twenty-second street....	252	255.81	4,029	3,465	15.98	13 75	4.42	2.53	60.90	95.78	4.22
Kinzie street.....	250	251.68	5,503	4,381	22.01	17.52	3.44	2.51	60.40	95.81	4.19
Chicago avenue.....	252	131.18	1,806	1,767	7.16	7.01	4.45	1.30	31.23	97.84	2.16

NOTE.—This table gives time only for actual service per telephone operator at the designated bridges, night and day. It does not give percentage of time when bridges are being repaired and not in service.

YEAR 1902—DETAILS OF VESSEL MOVEMENTS PASSING BRIDGES, BY MONTHS.

MONTHS.	RUSH STREET.			WELLS STREET.			LAKE STREET.			VAN BUREN STREET.			TWELFTH STREET.			EIGHTEENTH STREET.			TWENTY-SECOND STREET.			KINZIE STREET.			CHICAGO AVENUE.		
	No. Vessels.	No. Swings.	Minutes Open.	No. Vessels.	No. Swings.	Minutes Open.	No. Vessels.	No. Swings.	Minutes Open.	No. Vessels.	No. Swings.	Minutes Open.	No. Vessels.	No. Swings.	Minutes Open.	No. Vessels.	No. Swings.	Minutes Open.	No. Vessels.	No. Swings.	Minutes Open.	No. Vessels.	No. Swings.	Minutes Open.	No. Vessels.	No. Swings.	Minutes Open.
April.....	548	472	1,141	551	478	1,364	435	380	1,303	.....	.....	.....	371	320	1,232	339	303	801	302	273	1,113	344	296	1,039	155	147	644
May.....	1,129	983	2,341	865	711	2,552	708	585	2,07	.....	.....	.....	684	551	2,121	540	444	1,236	543	453	2,105	576	470	1,677	237	228	1,014
June.....	1,218	1,015	2,316	908	771	2,121	734	594	2,238	.....	.....	.....	692	576	2,063	562	459	1,252	563	471	1,932	637	526	1,907	255	257	1,080
July.....	1,505	1,179	2,693	855	723	1,874	706	612	2,091	.....	.....	.....	695	584	2,001	531	464	1,212	546	469	1,950	698	597	2,109	216	213	920
August.....	1,501	1,252	2,954	887	761	2,076	734	632	2,225	.....	.....	.....	695	579	2,023	581	511	1,386	575	500	2,391	829	667	2,344	237	232	1,043
September	1,187	998	2,276	823	727	1,908	690	603	1,936	676	591	1,969	660	573	1,966	497	424	1,136	497	432	1,975	747	562	1,872	235	230	1,009
October...	998	856	1,852	883	720	1,793	710	602	1,887	373	356	1,291	611	516	1,785	482	403	1,214	491	415	1,847	771	574	1,855	200	194	867
November.	801	696	1,624	694	608	1,541	552	472	1,658	351	307	1,178	490	405	1,471	389	343	949	402	352	1,607	666	511	1,687	213	208	1,006
December.	201	192	407	221	209	545	197	184	627	121	118	449	149	135	486	164	153	361	110	100	429	235	178	611	58	58	288
[illegible]	[illegible]	[illegible]	17,804	6,687	5,708	15,774	5,466	4,664	16,048	1,521	1,372	4,887	5,017	4,289	15,148	4,085	3,504	9,547	4,029	3,465	15,349	5,503	4,381	15,101	1,806	1,767	7,871

OPERATION OF BRIDGES, YEAR 1902.

BRIDGES.		Average Time of each Swing in Minutes.	Average Number of Swings Each Month.	Total Number of Swings Annually.
Adams street	Electricity	5⅔	495	4,706
Archer avenue	Hand	6⅘	144	1,368
Ashland avenue (Thirty-ninth street)	"	.....	.....	.....
*Ashland avenue (river)		.....	.....	.....
Belmont avenue	Hand	.....	.....	.....
Blackhawk street	(6½ months) "	4⅗	280	1,814
‖Chicago avenue	"	4.45	210	1,767
Chittenden	"	20	23	220
Clark street	Electricity	1⅕	477	4,537
*Canal street		.....	.....	.....
Clybourn place	(5½ months) Electricity	3⅘	121	665
Deering street (low bridge)	Hand	4⅘	860	8,179
Diversey boulevard	"	5	9	89
*Division street (canal)		.....	.....	.....
Division street (river)	(3½ months) Hand	5	144	505
Dearborn street	Electricity	2⅕	582	5,530
‖Eighteenth street	Steam	2.72	407	3,504
Erie street	Hand	6	160	1,570
Fuller street	"	6½	189	1,804
Fullerton avenue	Electricity	3½	91	862
*Harrison street		.....	.....	.....
Halsted street (canal)	Hand	4⅗	307	2,920
Halsted street (South)	Steam	4½	408	3,876
Halsted street (North, river)	Electricity	4⅗	130	1,232
Indiana street	Hand	5	220	2,063
Jackson boulevard	Electricity	2	507	4,822
‖Kinzie street	Hand	3.44	528	4,381
‖Lake street	Electricity	3 45	542	4,664
Laurel street	Hand	4⅗	1	12
Madison street	Steam	3⅓	470	4,456
*Main street		.....	.....	.....
North avenue	Hand	2½	240	2,265
Ninety-second street	"	5⅓	340	3,-19
*Ninety-fifth street		.....	.....	.....
106th street	Hand	9	95	900
Polk street	"	5	440	4,188
Riverdale	"	.....	.....	.....
*Randolph street		.....	.....	.....
‖Rush street	Electricity	2.30	921	7,643
*State street		.....	.....	.....
§Taylor street	Electricity	6	450	4,310
‖Twelfth street	Steam	3.57	505	4,239
‖Twenty-second street	Hand	4.42	412	3,465
Thirty-fifth street	"	7	62	586
‖Van Buren street	Electricity	3.56	597	1,372
Washington street	"	2⅘	461	4,376
Webster avenue	Hand	3	108	1,031
Weed street	"	.....	.....	.....
‖Wells street	Electricity	2.76	664	5,708
Western avenue (North)	(5½ months) Hand	9⅗	9	49
Western avenue (South)	"	5⅓	78	741

*New bridge under construction.
§Bridge was open 12,097 minutes for dredging draw and making repairs.
‖Compiled from reports of bridge telephone operators.

COMMERCE BY LAKE AND CANAL—CITY OF CHICAGO.

FROM 1848 TO 1902, BY YEARS, WITH POPULATION 1831 TO 1902. COMPILED FROM OFFICIAL RECORDS OF THE DEPARTMENT.

Years	VESSELS BY LAKE. Total No.	Total Tonnage.	Average, Cargo, Ton.	BY ILL. & MICH. CANAL. Boats No.	Tonnage.	Tolls, Dollars.	POPULATION.	REMARKS.
1848	.....	.....	.....	.....	.....	87,890	20,023	
1849	.....	.....	.....	.....	.....	118,375	23,047	
1850	.....	.....	.....	.....	.....	125,504	28,296	
1851	.....	.....	.....	.....	.....	173,300	34,000	
1852	.....	.....	.....	.....	.....	168,577	38,734	
1853	.....	.....	.....	.....	.....	173,372	60,662	
1854	.....	.....	.....	.....	.....	198,326	65,872	
1855	.....	.....	.....	.....	.....	180,519	80,023	
1856	.....	.....	.....	.....	.....	184,310	86,000	
1857	.....	.....	.....	.....	.....	197,830	93,000	
1858	.....	.....	.....	.....	.....	197,171	84,000	
1859	.....	.....	.....	.....	.....	132,147	94,000	
1860	.....	.....	.....	201	367,437	138,554	109,460	
1861	.....	.....	.....	194	547,295	218,040	120,000	
1862	14,687	3,847,246	262	211	673,590	264,647	137,030	
1863	17,135	4,333,832	252	240	619,599	210,386	150,000	
1864	17,762	4,339,770	244	228	510,286	156,607	161,288	
1865	20,179	4,199,135	208	228	616,140	300,810	178,492	
1866	22,199	4,620,092	208	230	746,815	202,958	200,418	
1867	24,370	5,101,203	209	209	746,954	252,231	225,000	
1868	26,399	6,005,403	265	218	737,827	215,720	252,054	
1869	27,602	6,273,346	227	219	817,738	238,759	280,000	
1870	25,172	6,033,207	239	179	585,970	149,635	298,700	
1871	24,632	6,178,336	251	186	628,975	159,050	334,270	
1872	25,353	6,077,542	239	173	783,641	165,874	367,396	
1873	23,734	6,564,542	239	172	849,533	166,641	380,000	
1874	21,547	6,329,711	294	152	712,020	144,831	395,400	
1875	21,095	6,279,055	298	142	676,025	107,081	407,000	
1876	19,245	6,167,736	320	146	691,946	113,293	420,000	
1877	20,517	6,585,415	321	145	605,912	96,913	439,776	
1878	20,984	7,239,673	345	140	598,792	84,330	450,000	
1879	23,873	7,757,395	325	136	669,559	89,064	475,000	
1880	25,520	9,154,351	345	133	751,360	92,296	503,298	
1881	26,005	8,762,247	337	133	826,133	85,130	540,000	
1882	26,977	9,754,949	362	132	1,011,287	85,947	560,693	
1883	23,982	7,790 337	325	132	925,575	77,975	580,000	
1884	22,826	7,508,696	330	134	956,721	77,102	630,000	
1885	21,542	7,306,222	339	135	827,355	66,800	664,634	
1886	22,372	7,877,080	352	130	808,019	62,516	704,000	
1887	23,972	8,749,852	365	132	742,074	58,024	760,000	
1888	22,095	8,890,658	402	127	751,055	56,028	830,000	
1889	21,788	10,267,831	471	114	917,047	60,605	1,100,000	
1890	20,133	10,116,051	502	104	742,392	65,112	1,208,669	
1891	19,680	10,862,898	522	97	641,156	49,557	1,323,339	
1892	21,123	11,780,393	565	95	783,288	54,937	1,438,010	
1893	17,044	10,788,029	692	82	529,816	38,702	1,502,868	
1894	16,202	10,284,178	635	85	617,811	44,928	1,567,727	
1895	18,232	12,631,180	693	83	591,407	39,106	1,584,070	
1896	16,999	12,965,812	763	67	446,762	34,543	1,600,413	
1897	17,865	14,277,235	799	64	600,000	41,000	1,726,000	
1898	18,512	15,116,426	817	64	395,017	38,570	1,851,588	
1899	16,174	12,599,239	779	64	469,352	41,022	2,000,000	
1900	16,976	13,990,894	824	60	121,759	20,866	*2,007,695	
1901	16,274	13,634,904	838	41	81,456	11,551	†2,100,000	
1902	15,754	14 239,398	904				2,157,695	

Population, Prior Years.

1831	60
1832	600
1833	350
1834	1,800
1835	3,265
1836	4,000
1837	4,179
1838	4,000
1839	4,200
1840	4,470
1841	5,500
1842	6,590
1843	7,580
1844	8,000
1845	12,088
1846	14,169
1847	16,859

* School Census, 1900. † Estimated.

DEARBORN STREET BRIDGE—NORTH ABUTMENT.

TABLE SHOWING MOVEMENTS OF COMMERCE BY LAKE IN PERIODS FROM 1863 TO 1902, BOTH INCLUSIVE.

PERIOD.	YEARLY AVERAGE TONNAGE.			YEARLY AVERAGE NO. VESSELS.			YEARLY AVERAGE CARGO.		
	Tons.	Increase or Decrease.		No.	Increase or Decrease.		Tons.	Increase or Decrease.	
		Tons.	Per Cent.		No.	Per Cent.		Tons.	Per Cent.
1863 to 1872	5,316,187	.....	.....	23,080	.... ..	.....	234	.....	.....
1873 to 1882	7,459,507	+2,143,320	40.32	22,950	−130	0.56	319	+85	36.32
1883 to 1892	9,115,002	+1,655,495	22.19	21,951	−999	4.35	417	+98	30.72
1898 to 1902	13,052,730	+3,937,728	43.20	17,003	−4,948	22.54	774	+357	85.61

DAMAGE DONE BY VESSELS.

Statement of damages done to the bridges in the Chicago and Calumet rivers during the year 1902:

MONTHS.	Accidents	Damage.
January	1	.....
February	2	.....
March	2	$49.89
April	26	958.34
May	30	2,506.07
June	32	991.95
July	25	586.85
August	15	521.17
September	15	784.63
October	16	854.12
November	11	280.89
December	5	177.64
Totals	180	$7,713.05

A study of the diagram herewith in which appear curves representing pressure, temperature and precipitation over the basin of the upper lakes is instructing. It was stated in last year's harbor report that "the elevation of the lake for the year 1902 would be lower than for the year 1901," which is correct, as the mean elevation of the lake at the Two-mile crib is only 0.48 of an inch above datum for year 1902, being 4.2 inches lower than the elevation for year 1901. We will have a higher elevation in the lake during the year 1903, higher even than that for the year 1899 unless there is a very great increase in mean temperature over the basin of the upper lakes and the precipitation is much below the normal over that area, conditions not at all probable.

The City is indebted to the courtesy of O. P. Austin, Chief of the Bu-

reau of Statistics, and to Hon. William Penn Nixon, United States Collector, Treasury Department, to the officers of the Weather Bureau at Chicago, Milwaukee, Duluth, Sault St. Marie, Green Bay, Grand Haven, Alpena and Detroit, and at other stations over the basin of the upper lakes for valuable information and meteorological data.

The City is especially indebted to Colonel Ernst, Corps of Engineers, U. S. A., and his assistants for much valuable information.

MONTHLY MEAN BAROMETRIC PRESSURE—(IN INCHES) ANNUAL MEANS FROM 1873 TO 1902—FOR CHICAGO.

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.	YEAR.
1873	29.13	29.14	29.14	29.05	29.02	29.10	29.13	29.17	29.17	29.15	29.11	29.21	29.13	1873
1874	.21	.22	.18	.19	.11	.09	.13	.18	.16	.21	.19	.22	.17	1874
1875	.31	.19	.10	.10	.06	.10	.12	.10	.17	.10	.17	.03	.13	1875
1876	.16	.15	.10	.09	.10	.02	.12	.16	.12	.06	.10	.18	.11	1876
1877	.22	.27	.14	.07	.15	.04	.09	.09	.14	.11	.14	.19	.14	1877
1878	.14	.05	.04	28.91	.06	.06	.11	.04	.18	.12	.15	.16	.08	1878
1879	.22	.19	.18	29.13	.16	.13	.10	.11	.21	.25	.18	.19	.17	1879
1880	.13	.16	.19	.06	.11	.10	.12	.16	.18	.18	.28	.21	.16	1880
1881	.23	.21	.00	.13	.15	.07	.15	.15	.09	.20	.18	.21	.15	1881
1882	.23	.13	.16	.15	.11	.02	.15	.12	.21	.14	.25	.20	.16	1882
1883	.23	.35	.15	.07	.06	.06	.12	.20	.20	.22	.19	.19	.17	1883
1884	.25	.13	.13	.07	.07	.16	.06	.17	.15	.24	.19	.20	.15	1884
1885	.22	.10	.18	.13	.05	.15	.10	.11	.16	.11	.09	.15	.13	1885
1886	.15	.17	.08	.17	.09	.12	.11	.11	.17	.30	.13	.27	.16	1886
1887	.16	.23	.18	.07	.11	.11	.10	.14	.20	.17	.17	.16	.15	1887
1888	.31	.14	.20	.25	.04	.05	.16	.16	.19	.09	.24	.17	.17	1888
1889	.03	.21	.11	.13	.07	.10	.10	.20	.14	.25	.18	.15	.14	1889
1890	.23	.16	.18	.21	.14	.11	.14	.19	.23	.06	.17	.20	.16	1890
1891	.16	.11	.14	.12	.23	.07	.16	.12	.25	.22	.17	.14	.16	1891
1892	.20	.20	.17	.15	.02	.06	.20	.15	.21	.18	.17	.20	.16	1892
1893	.08	.19	.11	.01	.03	.10	.10	.15	.12	.13	.14	.18	.11	1893
1894	.17	.20	.11	.12	.07	.13	.16	.17	.17	.06	.17	.19	.14	1894
1895	.10	.22	.14	.12	.13	.17	.14	.08	.14	.18	.21	30.00	.25	1895
1896	29.23	29.04	29.16	29.14	29.07	29.11	29.15	29.16	29.15	29.17	29.21	29.27	29.16	1896
1897	29.20	29.16	29.13	29.17	29.14	29.10	29.08	29.13	29.29	29.20	29.18	29.17	29.16	1897
1898	29.12	29.18	29.20	29.18	29.08	29.13	29.17	29.12	29.15	29.13	29.15	29.16	29.15	1898
1899	29.19	29.15	20.06	29.13	29.14	29.16	29.12	29.11	29.19	29.24	29.17	29.15	29.15	1899
1900	29.16	29.10	29.16	29.16	29.09	29.09	29.10	29.15	29.19	29.21	29.18	29.16	29.15	1900
1901	29.12	29.15	28.03	29.21	29.01	29.04	29.03	29.10	29.14	29.23	29.23	29.13	29.14	1901
1902	29.24	29.11	29.08	29.08	29.13	29.05	29.12	29.13	29.11	29.15	29.18	29.18	29.12	1902

PRECIPITATION AT CHICAGO, ILL., IN INCHES, BY MONTHS, SEASONS AND YEARS, FROM 1843 TO 1902, INCLUSIVE.

Year.	MONTHLY TOTALS.												TOTALS, SEASONS AND YEARS.				
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Spring.	Summer.	Autumn.	Winter.	Annual.
1843	2.0	1.9	3.0	4.5	4.0	4.6	1.4	2.4	3.0	1.2	5.1	2.4	11.5	8.4	9.3	. . .	35 50
1844	2.8	1.3	1.76	2.76	6.0	5.5	5.0	4.2	0.8	1.6	0.7	0.7	10.52	14.7	3.1	6.5	33.12
1845	2.0	0.5	2.2	6.5	2.0	3.8	3.5	7.2	4.4	1.4	3.3	1.5	10.7	8.5	9.1	3.2	32.30
1846	4.9	1.8	2.6	7.8	2.4	4.3	2.9	1.0	5.0	0.8	1.5	5.0	12.8	8.2	7.3	8.2	40.00
1847	2.3	3 5	1.5	2.1	3 3	1.5	2.8	2.0	3.2	4.6	4.8	1.2	6.9	6.3	12.6	10.8	32.80
1848	1.6	2.4	4.5	3.3	3.8	4.4	3.4	5.1	2.2	3.2	2.1	8.4	11.6	12.9	7.5	5.2	44.40
1849	5.5	1.0	4.7	1.8	3.8	3.6	2.3	3.5	2.6	2.8	1.4	1.2	10.3	9.4	6.8	14.9	41.20
1850	2.1	0.7	2.0	3.8	1.9	3.1	2.1	6.4	1.4	2.0	3.2	1.7	7.7	11.6	7.6	4.0	30.40
1851	1.5	3.8	0.8	4.2	6.7	5.3	3.8	3.1	3.2	2.3	2.3	1.6	11.7	12.2	7.8	7.0	38 60
1852	2.0	1.2	5.5	4.8	2.4	2.5	3.4	0.6	2.3	6.8	4.0	3.3	12.7	6.5	13.1	4.8	38.80
1853	1.4	2.2	1.8	2.8	4.4	4.9	6.1	2.2	4.2	2.0	2.1	2.3	9 0	13.2	9.3	6.9	36 40
1854	1.3	1.9	2.1	2.1	3.1	2.6	3.0	0.9	1.6	3.6	1.0	1.4	7.3	6.5	6.2	5.5	24.60
1855	8.0	0.6	2.6	1.4	2.5	3.7	5.8	3.2	2.3	2.0	2.2	2.0	6.5	12.7	6.5	10.0	36 30
1856	0.9	1.8	0.6	2.6	4.8	2.5	2.1	1.3	2.5	2.1	3.98	3.86	8.0	6.9	8.55	4.7	29.04
1857	1.09	5 43	2.5	2.19	6.33	4.14	3.0	5.0	2.2	4.0	2.7	1.2	11.02	12.14	8 9	10.38	39.83
1858	1.3	1.4	3.0	3.1	7.8	6.3	5.9	3.2	4.0	4.6	4.5	2.0	13.9	15.4	13.1	3.9	47.10
1859	1.4	1.8	5.2	3.4	3.6	1.7	0.9	0.4	2.2	4.1	2.8	1.8	12.2	3.0	9.1	5.2	29.30
1860	1.6	1.6	1.0	2 8	4.6	3.5	5.3	2.6	2.8	4.1	2.3	4.2	8.4	11.4	9.2	5.0	36.40
1861	1.4	3.0	3.4	4.7	3.7	2.1	4.3	2.4	3.4	7.5	1.5	1.9	11.8	8.8	13.4	8.6	39.30
1862	4.0	0.7	2.0	5.2	4.3	2.9	6.7	3.6	5.6	2.92	1.2	1.3	11.5	13.2	9.72	6.6	40.42
1863	2.8	2.6	2.1	2.1	5.1	1.3	2.3	4.2	1.6	4.0	1.9	3.6	9.3	7.8	7.5	6.7	33.60
1864	1.6	0.4	2.1	3.2	1.9	2.1	6.4	1.1	2.1	1.9	3.1	2.5	7.3	9.6	7.1	5.6	28.40
1865	0.4	3.1	3.1	3.8	1.5	5.1	6.1	7.2	4.8	4.0	0.5	0.6	8.4	18.5	9.3	6.0	40.20
1866	2 8	1.6	2.2	2.	2.0	4.4	4.7	4.2	4.6	2.8	0.8	3.4	7 0	13.3	8.2	5.0	36.30
1867	1.93	2.22	1.58	1.70	4.42	1.86	1.52	2.33	0.57	1.28	1.89	1.11	7.70	5.71	3.74	7.55	22.41
1868	1.28	0.92	5.24	3.00	3.74	3.11	2.87	3.55	7.08	1.69	2.60	1.40	11.98	9.45	11.37	3.31	36.48
1869	1.97	2.23	1.33	4.30	5.69	5.03	3.26	1.32	0.89	1.10	2.42	2.03	11.22	10.61	4.41	5.60	31 57
1870	1.95	0.86	1.81	1.15	0.80	1.70	3.71	2.07	2.82	2.43	1.16	2.46	3.76	7.48	6.41	4.84	22.92
1871	4.13	1.45	2.66	3.79	3.90	5.56	2.52	2.01	0.74	1.88	3.62	3.44	10.35	10.10	12.24	8.04	35.61
1872	0.68	0.84	3.79	3.03	3 24	3.45	3.09	2.59	6.48	0.65	1.06	0.22	10.06	9.13	8 14	5.14	29.07
1873	2.56	0.47	0.89	6.22	7.20	1.44	4.04	1.58	3.53	2.43	1.61	4.44	14.31	7.06	7.57	3.25	36.41
1874	3.47	1.51	2.15	2.67	2.08	3.25	0.58	3.15	3.76	2.55	2.83	0.63	6.90	6.98	9.14	9 42	28.63
1875	0.96	1.99	1.43	2.32	3.64	5.17	7.18	3.28	4.39	4.32	0.75	2.62	7.39	15.60	9.46	3.58	38.06
1876	3.22	3.90	4.04	2.07	1.85	5.96	3.11	3.66	3.74	1.20	3.25	0.48	7.96	12.73	8.29	9.74	36.48
1877	1.91	0.06	5.37	2.42	1.81	6.04	2.98	3.06	2.02	6.15	6.08	2.75	9.60	12.06	14.25	2.45	41.01
1878	1.31	2.12	4.39	5.57	5.22	3.02	6.09	3.66	1.99	5.17	0.83	2.58	15.18	12.77	7.99	6.18	41.95
1879	0.54	1.47	2.37	1.93	3.89	3.18	5.58	0.45	1.18	2.72	4.93	2.47	8.19	9.21	8.83	4.59	30.71
1880	3.53	2.91	2.25	5.20	4.97	3.50	3.07	4.47	2.25	3.19	0.87	1.11	12.42	10.04	6.31	8.91	37.32
1881	0.87	5.08	2.99	1.84	1.85	5.93	4.31	0.54	4.34	6.89	5.97	2.67	6.68	10.78	17.21	8.06	44.18
1882	1.55	2.24	3.43	6 72	5.52	5.71	3.43	4.96	0.91	3.40	1.48	1.99	15.67	14.00	5.97	6.46	41.34
1883	1.74	4.74	0.42	8.72	7.32	5.61	5.58	1.21	1.36	1.36	5.26	1.59	11.46	12.35	13.98	8.47	45.86
1884	1.39	8.27	5.16	3.05	1.53	2.11	3.71	2.50	2.29	3.59	1.80	4.21	9.74	8.32	7.68	6.25	34.61
1885	3.18	2 01	0.57	4.00	3.17	5.20	2.44	11.28	2.97	3.87	2.33	3.35	7.74	18.92	9.17	9.40	44.37
1886	3.56	1.51	1.79	1.29	1.00	0.94	1.53	3.38	6.93	1.42	1.66	1.76	4.08	5.85	10 01	8.42	28.77
1887	3 13	5.10	0.89	0.46	1.38	1.63	1.05	3.35	4.03	2.03	2.41	3.67	2.63	6.03	4.47	9.99	29.13
1888	1.56	1.51	2.99	2.13	6.22	1.66	3.93	2.10	0.98	2.95	2.89	1.94	11.34	7.69	6.72	6.74	30.86
1889	1.64	1.31	1.43	2.35	5.38	2.93	9.56	0.39	2.75	1.82	3.49	1.90	9.18	12.88	8.06	4.09	34.95
1890	2.98	2.42	2.10	8.23	5.13	3.25	2.57	2.58	1.39	4.20	1.59	1.25	10.46	8.40	7.18	7.30	32 69
1891	1.99	1.95	2.13	3.14	2.09	2.42	2.47	4.52	0.32	0.36	2.83	1.32	7.36	9.41	4.51	5.19	26.54
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	11.15	14.66	5.56	4.88	36.56
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	7.78	6.85	6.18	6.15	27.47
1894	1.55	2.15	2.66	2.65	3 35	1 96	0.60	0.60	8.28	0.84	1.18	1.66	8.66	3.16	10.30	5.84	27.46
1895	2.15	1 60	1.82	0.86	1.99	1.79	2.42	6.49	0.89	0.51	5.60	6.76	4.17	10.70	7.00	5.41	32 38
1896	1.12	3.48	1.26	2 79	4.16	2.88	3.61	3.52	6.70	1.36	2.16	0.16	8.21	9.96	10 22	11 36	39.14
1897	4.53	2.22	3.56	2.23	0.84	3.60	1.47	1.70	0.84	0.18	3.06	1.62	6.63	6.77	4.06	6.91	25.85
1898	3.54	2 59	4.60	0.76	2.23	5.30	1.94	3.03	3.16	3.26	2.25	1.11	7.59	10.27	8.67	7 24	33.77
1899	0.58	1.60	2.11	0.14	4.35	2.71	6.6	0.91	2.39	2.09	2.73	1.81	6.60	10.28	7.21	3.99	28.08
1900	1.21	3.52	1.58	1.02	3.59	2.06	4.64	4.24	1.56	1.35	3.30	0.58	6.19	10.94	6.21	6.54	28.65
1901	1.15	2.05	3.36	0.33	2.18	2.42	4.25	2.00	2.92	1.29	0.85	1.70	5.89	8.69	5.06	4.90	24.52
1902	0.66	1.58	4.16	2.26	5.08	6.45	5.78	1.44	4.83	1.45	2.03	1.90	11.50	13.67	8.31	3.89	37.57

TEMPERATURE BY MONTHS, SEASONS AND YEARS, FROM 1830 TO 1902, BOTH INCLUSIVE—AT CHICAGO, ILL.

Year.	MONTHLY MEANS.												MEANS, SEASONS AND YEARS.					Year.
	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Annual.	
1830	28	30	37	53	59	64	75	72	58	57	45	26	49.7	70.3	53.3	.....	50	1830
1831	18	20	37	43	57	69	72	70	51	49	32	15	45.7	70.3	47.3	21.3	45	1831
1832	24	15	37	49	55	68	70.6	71.4	62.9	54	39.9	33.2	47	70	52.3	18	48	1832
1833	29.7	27.6	33.3	50.5	60.1	68.6	72.4	70 3	64	45.5	39.8	34.1	48	68.8	49.8	30.2	49.2	1833
1834	13.3	34.9	36.6	47.4	54.6	62.9	74.3	71.2	60.1	46.3	40.3	29.6	46.2	69.5	48.9	27 4	47.6	1834
1835	28.1	14	32	42.5	54.6	63.1	67.1	65.2	54.3	47.9	34.2	24.8	43	65.1	45.5	23 9	44	1835
1836	22.4	21.7	26.1	42.4	53.5	58 6	66.5	61.9	56.7	46.8	34.3	24.2	40.7	62.3	45.9	23	42.9	1836
1837	24	25	28	38	48	61	66	65	59	50	40	26	38	64	49.7	24.1	44	1837
1838	25	11	42	40	50	66	74	69	58	48	25	19	44	69.7	43.7	20.7	44	1838
1839	29	28	35	53	54	61	73	66	54	59	31	27	47.3	66.7	48	25.3	48	1839
1840	21	28	37	46	58	66	68	66	56	49	35	26	47	66.7	46.7	25.3	46	1840
1841	22	23	35	41	55	67	69	67	57	48	37	27	43.7	67.7	47.3	23.7	46	1841
1842	25	28	43	52	52	59	67	65	61	52	30	22	49.7	63.7	47.7	26.7	46	1842
1843	26	13	16	45	53	65	71	67	65	44	33	32	38	67.7	47.3	20 4	44	1843
1844	22	30.8	38.4	55 3	58.7	64	73.6	68	68.6	48	34	31	50.8	68.5	50.2	28.3	49	1844
1845	35	23	39	51	58	68	75	70	63	51	37	23	49.3	71	50.3	33	50	1845
1846	39	31	42	49	62	64	78	75	62	53	43	34	51	72.3	54	31	53	1846
1847	20	30	32	47	53	65	76	67	64	51	41	30	44	69.3	52	28	48	1847
1848	32	31	36	46	58	68	69	69	58	55	36	27	46.7	68.7	49.7	31	49	1848
1849	22	21	38	42	50	66	70	66	62	50	45	22	43 3	67.3	52.3	23.3	46	1849
1850	30	32	34	41	51	66	74	71	61	51	43	26	42	70.4	51.7	28	48	1850
1851	28	35	40	45	53	64	71	69	67	51	36	23	46	68	51.3	29.7	49	1851
1852	22	32	34	39	55	66	72	69	59	54	35	28	42.7	69	51	25.7	47	1852
1853	29.7	29.1	37	45	52	67	68	68	62	50	39	30	44.7	67.7	50.4	28.9	48	1853
1854	19	29	38	44	54	66	74	72	67	55	38	28	45.3	70.7	53.3	26	49	1854
1855	26	18	31	48	56	62	70	67	62	46	37	22	45	66.6	48.3	24	45	1855
1856	13	17	27	44	51	68	71	65	59	49	35	18.4	40.7	68	47.7	17.3	43	1856
1857	10.7	30.6	27.9	34.6	50.4	63.1	71.5	67.7	62.8	48.9	29.9	31.4	37.6	67.8	47.2	19.9	44.2	1857
1858	33	19	36	43	52	68	73	70	63	50	35	28	43.7	70.4	49.3	27.8	48	1858
1859	27	29	38	41	55	62	74	71	59	49	32.9	15.7	44.7	69	47	20.8	46	1859
1860	18 1	26.8	35.1	42.6	57.7	63	68.2	68.8	57.6	49.5	31.3	20.5	45.1	66.7	45.8	20.2	44.9	1860
1861	21 9	29.4	31 7	43	49.1	63.2	66.2	68.5	61	48.4	34.1	28.4	41.3	66	47.8	23.9	45.4	1861
1862	18.2	20.9	32.1	43	51.8	57	68	70.9	63.8	51.2	34.4	30.3	42.3	65.3	49.9	22.5	45.1	1862
1863	33.5	20.6	31 9	41.9	52.7	59.4	65.6	65 6	56.9	39.9	33.4	26.3	42.2	63.5	48.4	28.1	44.3	1863
1864	16.2	23.6	27.4	38.6	55.7	60.6	67.9	68	58 4	43	32.5	17.8	40 6	65.5	44.6	22	42 5	1864
1865	17.2	26	32.2	42.5	51.3	66.1	62.9	65.2	66.3	46.6	35.4	20.2	42	64.7	49.4	20.3	44.3	1865
1866	17.7	17.9	26.4	43 8	51.4	69.4	72.2	68.9	60.8	53.8	40.9	25.8	40.5	71.8	51.8	18.6	46.2	1866
1867	19.9	30.8	29.5	46.5	50.7	72.4	73.1	74.5	67.4	56.1	43.5	28.8	42.2	73.3	55.7	25.5	49.4	1867
1868	17.9	24.7	42.4	44.4	54.2	66	80.6	71.8	61.3	50.8	38	22.6	47	72.8	50	23.8	47.9	1868
1869	31.2	29.3	29.5	45.2	53.1	64.3	71.2	72.1	64.9	43.2	33.9	28.6	42.6	69.2	47.3	27.7	47.2	1869
1870	25.9	27.5	32.5	48.4	62.4	69.3	76.8	72.7	68.7	55.1	42.3	27.1	47.8	72.9	55.4	27.3	50.7	1870
1871	30.9	30.2	41.2	51.2	56.7	66.8	73	72.7	61	54.6	35	20	49.7	70.8	50.2	29.7	49.4	1871
1872	23	25.5	28.1	47.2	56.1	69.2	72.2	71.8	63.9	50.1	31.5	19	43.8	71.1	48.5	22.8	46.5	1872
1873	20.4	24.1	34.3	43	53.8	70.3	70.8	72.1	62.1	48.9	34.3	32	43.7	71.1	48.4	21.2	47.2	1873
1874	28.9	31.4	36.5	38.6	59.3	70.5	74.8	71.8	66.4	53	40.3	33.5	44.8	72 4	58.2	30.4	50.4	1874
1875	17.9	14.7	31.8	42.5	55.5	63.1	68.8	68.4	61	47.5	37	36.8	43.3	66.8	48.5	22	45.4	1875
1876	33	31.8	33.9	46.5	59	67.5	73.5	73.5	61 1	48.8	39.3	20	46.5	71.5	49.7	33.9	49	1876
1877	21.9	36.4	29.4	45.4	56.9	66 1	73.1	71.5	66.5	54.7	39.7	42.8	43.9	70.1	53.6	26.1	50.3	1877
1878	31.2	35.7	44.3	52.2	55.5	65.4	74.8	73.6	65.9	52	43.1	23.7	50.7	71.3	53.7	36.6	51.4	1878
1879	21.4	27.4	39.1	46.8	57.6	64.7	73	72.6	61.2	59.9	41.9	30.3	47.8	70.1	54.3	24.2	49.9	1879
1880	40.1	34.6	37.9	48.5	64.2	69.9	72.4	72.4	62.5	50.8	31.4	23	50.2	71.6	48.2	35	50.6	1880
1881	19.5	24.7	32.2	41.5	61	63	72.9	75	69.5	55.9	39.9	37.1	44.9	70.3	55.1	22.4	49.4	1881
1882	28 3	33.2	38.3	45.9	51.7	63.6	68.6	71.2	65	56.5	41 7	26	45.3	67.8	54.1	34.5	49 6	1882
1883	16.3	23	31.4	45.6	52.1	64.1	71	68.3	60.7	51.8	41.5	30.1	43	67.8	51.3	21.8	46.3	1883
1884	19.2	27.7	34.2	44.3	56.7	65	69.2	68.8	68.9	56.4	39.6	28.4	45.1	67.7	55	25.7	48.2	1884
1885	18.3	16.8	30	45.3	52.8	65.4	72.8	68.1	63.9	51	41.9	31.1	42.7	69.1	52.3	21.2	46.4	1885
1886	21.4	28.1	36.1	49.1	57	66	71.	72.4	66.1	56.6	38.2	25	49.7	69.9	53.6	26.9	49	1886
1887	17.3	27.1	31.9	47.4	59.4	67.3	76	69.7	62.5	47.3	38	28.1	46.2	70	49.3	23.1	47.7	1887
1888	15.1	23	30.5	45.4	52 6	67.4	72.6	69.4	59.8	49.1	41.6	32.2	42.8	69.8	50.2	22.1	46.6	1888
1889	29	19.9	38.4	46.8	56.8	62 3	70 5	70.6	62.8	49.4	38.6	40.6	47.7	67.8	50.3	27	48.8	1889
1890	30.8	32.4	29.5	45.6	53.4	70.2	72.1	67.6	60.4	51.4	41.9	30.6	42.8	70	51.2	34.6	48.8	1890
1891	30.2	28.6	30.6	47	53.4	65.7	67	69	69	52.6	33.8	35.4	43.7	67.2	51.8	29.8	48.5	1891
1892	19.5	30.2	31	44	52.4	61.4	71.6	70.9	63.9	53.6	34.7	23.4	42.5	67.9	50.7	28.4	46.6	1892
1893	12	21.5	33.2	44.3	52.4	67.8	73.8	69.8	64.1	52.6	36	25.4	43.3	70.5	50.9	18.9	46.1	1893
1894	27.5	23	41.2	46.8	56.1	71.4	73.4	70.8	66.2	52.1	34.4	32.4	48	72.5	50.9	25.3	49.6	1894
1895	17.5	17	31.7	46.1	59.1	70	70.2	72.5	68.6	46.2	36.5	30	45 6	70.9	50.4	22.3	47.1	1895
1896	27	26.6	31.3	53.4	65.4	67	72.3	72.8	60.5	49.5	38.4	32.1	50	70.7	49.4	27.8	49.8	1896
1897	21.8	28.6	34.7	46	55	65.2	74.2	69	69.5	58.4	38.7	25	45.2	69.5	55.5	27.5	48.8	1897
1898	28.6	27.6	40.4	44.4	56.2	68.8	73.4	71.4	67.6	50.6	37	24.3	47	71.2	51.7	27.1	49.2	1898
1899	23	17.9	29.8	50	59	69.9	72.2	73.5	62.7	58	44.8	27.2	46.3	71.5	55.2	21.7	49	1899
1900	28.7	20.1	29	46.8	58.1	69.0	71.6	76.3	65.6	61.4	38.4	30	44.6	70.6	67.8	25.3	49.2	1900
1901	26	17.1	34	45	54.1	69	77.4	71.6	64.2	55.2	37.6	24	44.3	72.7	71.1	24.8	47.9	1901
1902	25.2	20.8	38.6	46.4	59.1	64.2	72.6	68.3	60.8	55.2	47.0	26.5	48.0	68.4	54.3	28.2	48.7	1902

WEST DIVISION STREET BRIDGE PIERS.

TABLE OF DAILY PRECIPITATION, CHICAGO, YEAR 1902.

DATE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	.00	.01	.04	T	T	.43	.00	.00	.00	.00	.00	.00
2	.00	.08	.05	T	.14	.00	.23	.00	.00	.00	.16	.30
3	T	.02	T	.00	T	.71	.13	.00	.01	T	T	.28
4	T	.06	.00	.00	.50	.00	.00	T	.00	.03	.08	T
5	.00	.02	.00	.09	.06	.00	.00	.18	.00	.09	1.16	T
6	.00	.10	.00	.08	.39	.46	.00	.00	T	.00	T	.12
7	.00	.00	T	T	.00	.76	.61	.04	.00	.00	.00	.04
8	.00	.00	.04	.01	.00	.02	.38	.00	T	.00	.00	.00
9	.00	.01	.00	.00	.00	.00	.85	T	1.15	.00	.00	.00
10	.00	.05	.00	.00	.48	.00	.00	.27	.00	.00	T	T
11	.00	.06	.08	T	.00	.33	.00	.00	.02	.00	.16	.02
12	T	T	2.02	.00	.00	T	.00	.00	T	.08	.00	T
13	.00	.04	.00	.00	.63	.68	.00	.57	.00	.41	.04	.02
14	.00	.00	.00	.00	.00	.38	.02	.00	.00	.00	.10	.00
15	.00	T	.70	.00	.00	.47	.15	.08	.00	.00	.00	.28
16	T	.03	.02	T	T	.00	.05	.00	.00	.00	.21	.03
17	.00	.02	T	T	.00	.00	.25	T	.00	.00	.05	T
18	.00	.00	T	T	.35	.09	1.28	T	.58	.04	.00	.00
19	.00	.01	.00	.00	T	T	.15	.00	.00	.00	.00	.36
20	.16	.00	T	.00	T	.15	.09	.26	.00	.00	.00	.15
21	.14	.00	.00	.00	.10	T	.11	.00	.00	.00	.00	.07
22	.03	.00	.00	.11	T	.00	.00	.00	.00	.00	T	.02
23	.01	.00	.00	.00	.38	.00	.69	.00	.65	.00	.00	T
24	T	.00	.00	.00	.45	T	.00	.00	1.11	.71	.00	.20
25	T	.00	.00	1.95	1.60	.17	.03	.00	.22	T	.00	T
26	.14	.00	.02	.02	.00	.00	.00	.00	T	.00	.01	T
27	.00	16	T	.00	.00	.01	.34	.00	.28	.09	.05	.00
28	T	.86	.14	.00	.00	.40	.00	.00	T	.00	.00	T
29	.02	.....	.03	T	T	.71	T	.00	.00	.00	.01	.01
30	.06	.....	1.01	.00	T	.68	.00	.00	.81	.00	.00	T
31	.10	.....	.01	.....	T	.....	.42	.04	.....	.00	.....	.00

T indicates *Trace* of precipitation.

TABLE OF MEAN DAILY TEMPERATURE, CHICAGO, YEAR 1902.

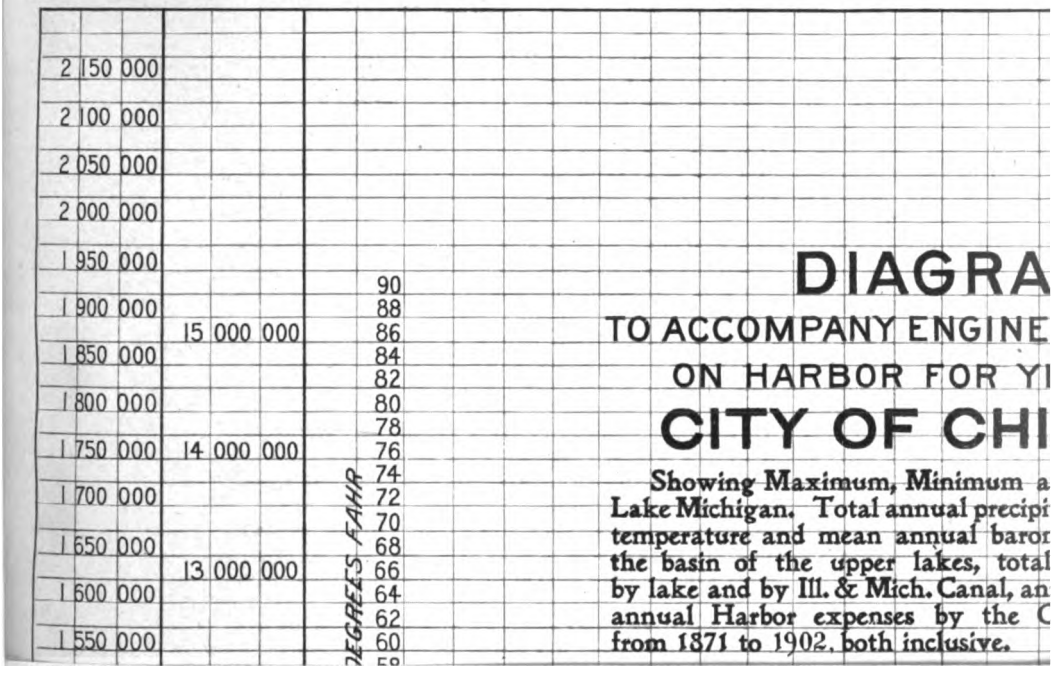
DATE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	29	23	32	33	52	70	60	68	70	51	60	41
2	29	8	25	35	68	74	72	77	68	56	56	38
3	14	2	26	36	60	72	78	72	63	58	48	34
4	21	0	29	36	60	64	82	72	54	53	56	30
5	25	1	34	44	48	58	81	75	64	54	50	30
6	31	15	40	48	60	74	82	66	68	56	43	26
7	36	6	41	29	56	66	76	69	68	60	45	14
8	37	6	38	34	65	58	76	66	66	62	50	4
9	42	10	41	44	48	64	67	67	56	54	58	16
10	32	20	52	56	42	67	64	68	62	56	52	32
11	23	12	60	49	44	70	70	62	58	64	56	32
12	17	18	46	44	50	74	73	64	50	58	66	29
13	17	24	38	39	51	63	77	64	50	50	58	27
14	30	21	47	36	48	72	78	66	56	42	54	24
15	31	23	46	40	48	76	72	64	57	54	41	32
16	28	19	28	46	54	64	73	62	62	52	44	28
17	32	20	9	52	62	66	76	66	70	50	46	24
18	32	18	18	56	73	71	67	72	58	60	44	33
19	28	22	34	44	77	63	70	68	56	57	46	37
20	32	22	38	51	74	60	64	72	59	51	50	40
21	32	28	38	65	67	55	64	66	67	52	52	38
22	30	34	38	64	74	57	72	63	69	62	46	35
23	26	38	40	48	69	60	67	63	64	66	40	34
24	24	36	42	44	64	62	73	68	58	68	44	20
25	24	36	42	56	66	62	77	70	56	60	38	8
26	16	42	50	51	54	60	81	68	61	59	35	10
27	—3	39	57	52	45	58	68	68	60	49	32	16
28	6	39	47	54	50	56	66	69	59	41	33	22
29	16	.....	44	60	63	56	70	70	61	44	33	26
30	20	.....	38	48	67	56	80	77	57	56	33	14
31	24	.....	38	.....	68	....	75	76	.....	58	.....	27

TABLE OF MINIMUM DAILY TEMPERATURE, CHICAGO, YEAR 1902.

DATE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	24	20	27	31	42	64	54	66	62	48	52	32
2	18	—3	23	31	53	64	62	68	61	51	45	34
3	9	—5	24	33	45	63	71	68	54	56	39	28
4	15	—6	27	33	45	53	74	68	48	50	50	25
5	17	—7	31	38	45	52	74	67	54	52	45	28
6	24	8	32	35	48	64	75	61	59	46	40	21
7	32	1	36	23	51	56	69	57	55	53	40	7
8	32	0	35	26	54	52	67	63	51	51	42	—1
9	34	3	37	38	36	56	60	63	49	49	50	3
10	26	10	42	43	38	54	60	63	50	47	43	29
11	20	4	55	42	41	57	64	55	51	57	45	30
12	14	11	35	39	43	57	64	57	48	58	62	26
13	9	20	33	35	46	57	66	60	42	40	49	25
14	20	18	40	34	46	59	73	64	45	35	43	22
15	23	19	39	36	45	66	66	62	50	43	39	26
16	24	12	15	38	48	59	62	59	53	46	42	23
17	22	16	3	42	55	59	64	59	59	46	44	18
18	27	11	11	49	60	61	64	63	52	53	41	26
19	25	18	20	38	70	59	63	64	54	52	37	32
20	29	18	35	36	69	55	57	64	57	47	41	36
21	30	23	35	47	56	48	57	63	61	47	48	35
22	29	28	35	51	69	49	63	62	64	51	38	32
23	21	30	36	39	61	54	61	60	58	58	31	30
24	20	33	38	41	57	57	66	63	56	59	41	8
25	18	33	35	42	56	56	71	66	54	53	35	5
26	—2	35	39	43	43	55	72	64	57	49	31	6
27	—8	36	49	40	40	55	63	66	55	44	29	9
28	—4	34	39	48	45	54	64	66	56	38	28	16
29	13	.....	39	48	50	54	66	66	56	38	28	21
30	18	.....	32	41	58	53	71	69	53	49	26	7
31	21	.....	33	.....	60	.....	68	72	.....	49	.....	17

TABLE OF MAXIMUM DAILY TEMPERATURE, CHICAGO, YEAR 1902.

DATE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	34	26	37	35	61	75	67	70	78	54	68	50
2	40	20	27	39	82	84	81	86	75	61	67	43
3	20	9	29	38	76	80	85	77	72	59	57	39
4	27	7	31	40	74	76	89	76	60	56	62	34
5	33	9	36	51	51	64	88	83	73	55	56	31
6	38	22	48	61	72	84	89	70	77	67	46	32
7	41	10	46	35	60	77	83	81	80	66	50	21
8	42	11	42	41	76	63	85	69	81	74	59	8
9	50	17	45	50	61	73	74	71	62	59	66	29
10	39	24	63	68	46	80	68	72	74	66	60	35
11	26	20	65	56	48	82	75	68	65	71	66	33
12	20	25	56	48	56	91	82	70	53	63	70	32
13	25	28	43	43	56	69	88	69	59	59	66	29
14	41	24	54	38	51	86	83	69	66	49	65	27
15	39	27	53	45	52	86	78	67	64	65	43	39
16	32	26	40	54	61	69	84	65	72	58	47	32
17	42	25	15	62	70	72	89	74	80	55	48	30
18	36	26	26	63	86	81	70	82	65	68	48	40
19	30	25	44	51	84	67	77	73	59	62	54	42
20	35	26	40	66	80	65	70	80	61	55	58	43
21	34	32	40	83	78	62	70	69	73	58	55	42
22	32	40	42	77	80	65	81	64	74	74	53	38
23	31	45	43	57	77	65	73	66	70	73	49	37
24	28	39	46	47	71	68	80	72	59	76	47	33
25	29	39	50	69	76	69	83	73	58	67	42	10
26	33	48	62	59	64	64	90	72	65	68	39	15
27	2	42	65	64	50	60	73	71	64	54	36	24
28	17	44	55	61	55	58	68	72	62	44	38	28
29	19	.....	48	72	76	59	74	74	66	51	38	32
30	22	.....	43	54	76	59	90	85	61	62	40	21
31	27	.....	43	.....	75	.....	82	81	.....	67	.....	37



DIVISION OF ARCHITECTURE.

MR. C. F. HERMANN, City Architect.

The following buildings have been designed and their construction supervised by this division during the year 1902:

BUREAU OF ENGINEERING.

A machine shop addition to the Sixty-eighth street pumping station was built of pressed brick and stone trimmings at a cost of $2,347.

POLICE DEPARTMENT.

Plans were made for a police patrol barn at Forty-sixth and Halsted streets. Different sketches and plans were made by this department for a police station to be built in the First ward to take the place of the old Harrison street station. On account of lack of appropriation, the above work was not started.

FIRE DEPARTMENT.

Plans were made and work completed for a frame fire engine-house, situated at Throop and Lumber streets.

Plans were completed and work started for a frame fire engine-house at 114th street, near Michigan avenue.

Plans were made and work let for the following fire engine-houses: (1) Two-story and basement brick building to be located at 3042 Forty-first court. (2) Two-story and basement brick building, situated at Wilcox and Fortieth avenues.

The following plans were made, for which contracts are to be let during 1903: (1) For a two-story and basement corner brick fire engine-house at Fourteenth street and Michigan avenue. (2) For a two-story and basement brick fire engine-house situated at 778 North Robey street. (3) For a two-story and basement brick fire engine-house to be located at 6843 Jefferson avenue. (4) For a corner brick fire engine-house to be built in the neighborhood of Sixty-ninth and Peoria streets. (5) For a brick fire engine-house with stone fronts to be built on Chicago avenue, east of the Water Works. This building will be, when completed, one of the finest in the City.

HEALTH DEPARTMENT.

Plans and specifications were made for a two-story and basement public bathhouse to be built at Holt street, near Blanche street. Bids were received for this work. The first story contains twenty showers, one tub bath and waiting-room; the second story has five living rooms.

DOG POUND.

Plans were made for a dog pound. No site having been selected, the contracts could not be let.

BRIDEWELL.

A new cell-house was built at the House of Correction. The steel cells of the John Worthy School were removed to the new cell-house. The work was completed at a cost of $15,000.

SEWAGE PUMPING STATIONS.

Plans are now being made for a new sewage pumping station at Jackson Park avenue and Seventy-third street. This station will cost about $40,000.

CITY HALL CHANGES.

Plans and specifications were made and work supervised for alterations of Election Commissioners' office, Collector's office, and Water bureau. Various sketches and plans were made for new work, changes and alterations for other departments, for which contracts have not been let.

Permit me in closing this report to thank you for the hearty co-operation and the valuable advice you at all times have rendered me.

The heads of the various divisions and other employes, who the past year were the same as during 1901, with very few exceptions, have given the City faithful and efficient service.

Very respectfully,

JOHN ERICSON,

City Engineer.

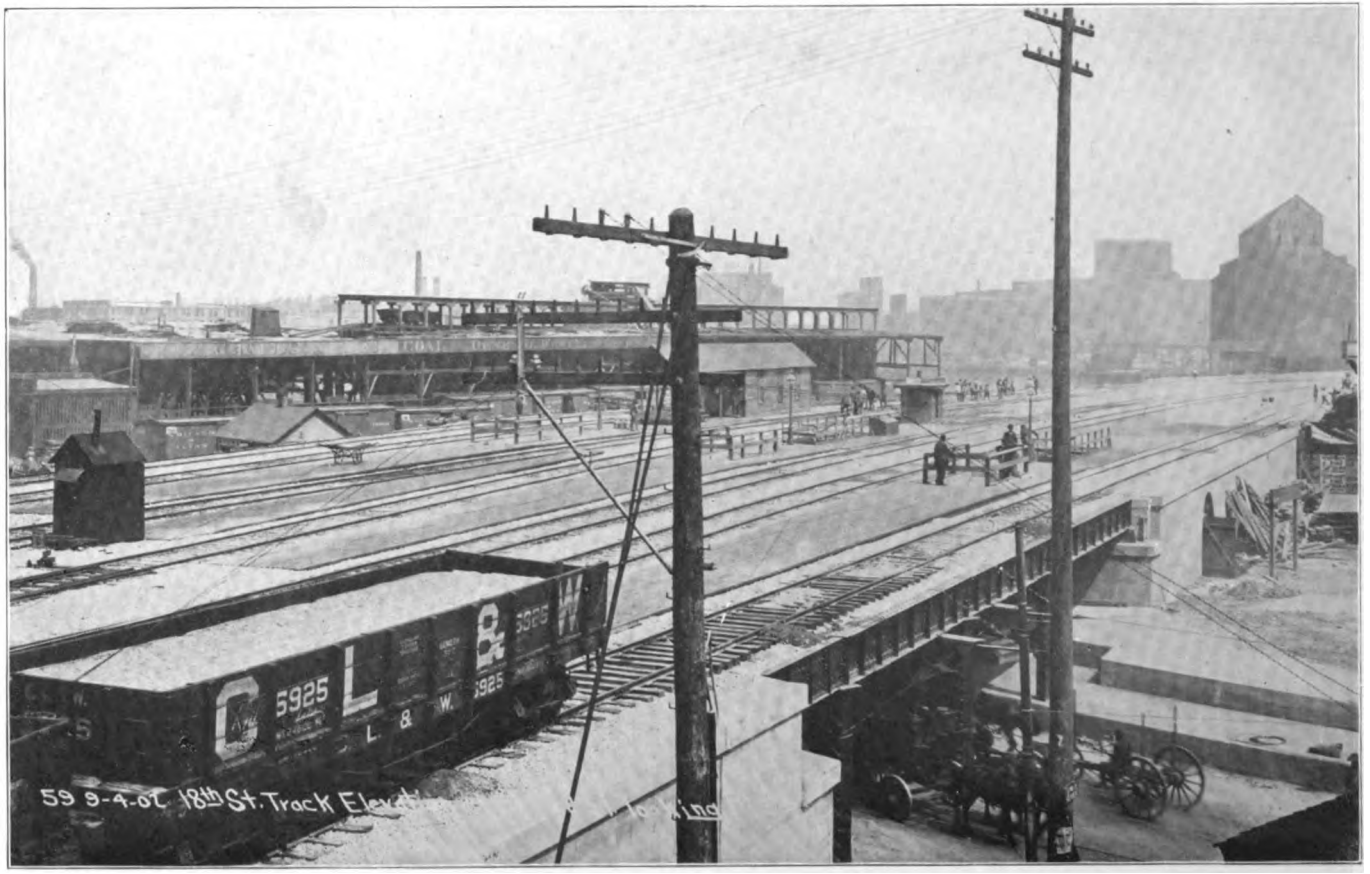
ANNUAL REPORT

Bureau of Water

CITY OF CHICAGO

1902

H. O. NOURSE
Superintenden



EIGHTEENTH STREET TRACK ELEVATION—HALSTED STREET LOOKING NORTHEAST—A. T. & S. F., C. & A. AND C. M. & N. RYS.

WATER OFFICE REPORT

HON. F. W. BLOCKI,

Commissioner of Public Works.

DEAR SIR: Herewith I hand you in detail the Annual Report for the Bureau of Water, covering the conduct of affairs within the Bureau for the year 1902.

TABLE No. I.

SHOWING AMOUNTS UNCOLLECTED DECEMBER 31, 1897, DECEMBER 31, 1898, DECEMBER 31, 1899, DECEMBER 31, 1900, DECEMBER 31, 1901, AND DECEMBER 31, 1902, IN COMPARISON.

	1897	1898	1899	1900	1901	1902
Amount standing as uncollected on the ward ledgers	$689,961.84	$124,431.86	$378,949.29	$357,755.98	$330,028.74	$761,689.87
Amount standing as uncollected on the meter rate ledgers	153,660.37	84,252.41	63,019.34	70,180.78	121,839.16	136,826.31
Amount standing as uncollected on the meter mechanical ledgers	4,237.26	3,642.56	4,752.47	4,704.58	4,179.02	3,164.63
Total	$847,859.47	$512,326.83	$446,721.10	$432,641.34	$456,046.92	*$901,680.81

* The ordinance going into effect May 1, 1902, extending the discount payment periods in Wards 9 to 26 inclusive (Wards 9 to 14 from December 31st to January 15th, Wards 15 to 20 to January 31st, and Wards 21 to 26 to February 15th) is the occasion for the uncollected amounts being larger than heretofore. During the months of January and February, 1903, over $500,000 will be collected.

TABLE No. II.

SHOWING BUILDINGS EXAMINED BY THE DIVISION OF INSPECTION.

1902	One-Story	Two-Story	Three-Story	Four-Story	Five-Story and Over	Special Examinations	New Buildings Examined	Examination for Vacancies	Pipe Petition and Pipe Deposit Examinations	Barn Examinations	TOTAL
January	1,090	2,334	1,065	323	230	824	1,011	658	185	1,170	8,840
February	2,805	2,919	629	165	70	656	662	157	120	1,422	9,605
March	2,093	3,952	1,181	326	195	541	587	110	163	1,504	10,652
April	665	1,952	1,878	393	164	594	831	68	62	1,031	7,638
May	666	1,907	1,072	322	79	1,166	1,313	186	41	1,277	8,029
June	246	1,278	1,269	240	138	1,304	806	480	144	1,007	6,912
July	235	1,014	860	292	44	1,619	1,047	412	5	822	6,350
August	336	1,288	943	293	77	1,058	886	437	28	822	6,168
September	531	2,164	1,549	423	83	519	1,103	203	93	858	7,526
October	751	1,426	851	288	38	3,027	1,103	108	274	669	8,485
November	925	1,291	340	26	5	1,526	1,393	226	120	921	6,773
December	1,326	1,358	246	68	7	1,891	1,250	458	71	1,142	7,812
Total	11,669	22,883	11,878	3,159	1,130	14,725	11,992	3,498	1,256	12,645	94,885

An annual examination has been completed in the following wards: Fourth, Fifth, Sixth, Seventh, Eighth and Twenty-ninth.

TABLE No. III.

MAKING A COMPARISON OF METER RATES IN SOME OF THE LARGE CITIES; ALSO SHOWING AMOUNT OF WATER TAX AGAINST AN EIGHT-ROOM TWO-STORY DWELLING SUPPLIED WITH BATH, CLOSET, WASH BASIN, KITCHEN SINK, LAUNDRY TUBS, AND HOSE FOR SPRINKLING PURPOSES.

NAMES OF CITIES.	Meter Rates per 1,000 Gallons.	Water Tax for average Eight-room Residence.
Detroit	$0.05	$ 6.30
Boston	.15 3/10	19.00
Cincinnati	.09 1/6	5.30
Milwaukee	.06	18.50
New York	.13 1/3	9.00 (*a*)
Philadelphia	.04	9.00
Pittsburg	.08 to .20	20.50
San Francisco	.33	17.00 (*b*)
St. Louis	.30	19.50
Cleveland	.05 1/3	9.50 (*a*)
New Orleans	.30	30.00 (*a*)(*b*)
Buffalo	.06	8.50 (*a*)
Chicago	.10 (*c*)	....
Chicago	.08 (*d*)	....
Chicago	.04 (*e*)	10.50
Chicago	...	8.93 (*f*)

(*a*) Without hose.
(*b*) Private ownership.
(*c*) Rate for first 165,000 gallons used on one premises in one month.
(*d*) Rate for all in excess of 165,000 gallons used on one premises in one month.
(*e*) Rate for all in excess of 5,000,000 gallons used on one premises in one month.
(*f*) Chicago rate for prompt payment, being 15 per cent discount from gross amount.

TABLE No. IV.

WATER SERVICE PIPES LAID BY CONTRACT DURING THE YEAR 1902, SHOWING NUMBER OF PIPES AND TOTAL AMOUNT OF CONTRACT.

STREET.	FROM	TO	No. of Pipes.	Total Cost.
Avers avenue	Fourteenth	Ogden avenue	150	$ 1,893.38
Albany avenue	Elston avenue	Irving Park avenue	106	1,276.64
Bradley place	Leavitt	Hoyne avenue	18	180.60
Barry avenue	Clark	Evanston avenue	11	133.85
Ceylon avenue	W. Circle avenue	Avondale avenue	23	239.56
Crescent avenue	E. Circle avenue	Avondale avenue	31	317.22
Cornelia	N. Forty-eighth avenue	N. Forty-ninth ave.	36	388.80
W. Circle avenue	L 11, B 5, etc.	L 17, B 12, etc.	48	444.15
Carmen avenue	Clark	E. Ravenswood Park	51	567.85
Campbell avenue	Thirty-ninth	C. & A. R. R.	6	78.00
E. Circle avenue	L 13, B 25, etc.	L 1, B 15, etc	65	649.36
Dickens avenue	Ballou	Hamlin avenue	49	564.40
Drake avenue	Huron	Ohio	Work	not accepted.
Devon avenue	Clark	Ridge avenue	32	304.80
Forty first avenue	Sixteenth	300 ft. south	6	50.63
Forty-third court	Twenty second	C. B. & Q. R. R.	62	556.95
Forty-first court	Twenty-sixth	Thirty-first	99	889.94
Forty-first avenue	Twenty-sixth	Thirty-first.	113	1,035.81
Forty-fifth	Marshfield avenue	Honore	10	100.00
Forty-third avenue	Twenty-second	Ogden avenue	38	532.00
Fortieth court	Twenty-sixth	Thirty-first.	126	1,591.42
Fulton	Forty-sixth avenue	Fiftieth avenue	97	1,231.69
Forty-fourth court	Harrison	Colorado avenue	30	334.95
Fifty-first court	Park avenue	Randolph	6	74.80
Forty-second court	Twenty-sixth	Thirty-first.	135	1,262.09
Front avenue	116th	117th	13	101.92
Fortieth avenue	Sixteenth	Thirty-first.	233	2,766.41
Grand avenue	Fifty sixth avenue	Sixtieth avenue	98	914.82
Grand avenue	Fortieth avenue	Fifty-second avenue.	228	2,724.22
Harding avenue	Fourteenth.	Sixteenth	51	511.14
Hawley avenue	Twenty-second	C. B. & Q. R. R.	58	515.67
Honore	Thirty-fifth	Thirty-ninth	33	425.85
Harvard	Forty-eighth avenue	Fiftieth avenue	69	772.38
Hoyne avenue	W. Thirty-fourth	Bross avenue	28	420.00
Lowe avenue system.	Ninety-ninth.	103d	336	3,397.60
Leavitt	Thirty-fourth.	Thirty-seventh	22	211.50
Loomis	Sixty-seventh	Seventy-first	94	818.64
Michigan ave. system.	Sixty-sixth	Sixty-eighth	174	1,827.47
Magnolia avenue	Devon avenue	Granville avenue	38	348.51
Mulberry avenue	E. Circle avenue	Crescent avenue	7	69.27
Myrtle avenue.	Ceylon avenue	Crescent avenue	15	165.90
Monticello avenue	Huron	Kinzie.	53	456.48
Michigan avenue	115th	119th	66	747.65
113th	Perry avenue	Stewart avenue.	69	788.38
105th place	Wentworth avenue	Stewart avenue	56	459.04
106th	Wentworth avenue	Stewart avenue	64	568.32
106th place	State	Stewart avenue	68	592.50
107th	Indiana avenue	Michigan avenue.	14	157.92
110th	Indiana avenue	Michigan avenue.	7	87.88
114th place	Indiana avenue	Perry avenue	39	340.86
116th	Michigan avenue.	Front	31	306.45

TABLE No. IV.—Continued.

STREET.	FROM	TO	No. of Pipes.	Total Cost.
117th	Michigan avenue	Front	86	$ 465.45
117th place	Michigan avenue	Indiana avenue	7	78.12
118th	Michigan avenue	Indiana avenue	16	143.52
110th place	Michigan avenue	1st alley W. of Princeton ave.	20	175.26
Perry avenue	113th	115th	12	126.00
Seeley avenue	Thirty-second	Thirty-fourth	71	878.22
Springfield avenue	W. Fourteenth	W. Sixteenth	61	522.30
Spaulding avenue	Jackson boulevard	W. Van Buren	7	74.90
Smalley court	Fullerton avenue	Wrightwood avenue	25	350.00
Seeley avenue	Thirty-fifth	Thirty-seventh	10	130.00
State street system	111th	115th	164	1,667.70
Seventy-first	Halsted	Morgan	463	5,292.60
Sixty-sixth	Halsted	Lowe avenue	8	102.40
Thirty-eighth	S. Ashland avenue	S. Robey	58	694.41
Troy	Waveland avenue	Irving Park boul.	78	889.38
N. side of Twenty-second	Fortieth avenue	Belt R. R.	72	784.40
S. side of Twenty-second	Fortieth avenue	Belt R. R.	80	816.00
Thirty-fourth	Wood	Archer avenue	35	454.50
Thirty-fourth place	Wood	Robey	23	293.41
Twenty-fourth	Fortieth avenue	Forty-second	28	234.06
Thirty-third place	Wood	Archer avenue	18	229.19
Wentworth avenue	115th	119th	87	896.61
Wabansia avenue	Central Park avenue	Hamlin avenue	34	330 00
Woodlawn avenue	Lake avenue	Fifty-ninth	59	452 78
Wentworth avenue	113th	115th	86	476.28
Total			4,820	$51,703.11

Average cost per pipe under contract let in 1901 ..... $ 9.72 $\frac{33}{100}$
Average cost per pipe under contract let in 1902 ..... 10.72 $\frac{2771}{4840}$

TABLE No. V.

DIVISION OF PERMITS.

SCREW FERRULES INSERTED DURING THE YEAR 1902.

MONTHS.	¾-inch Ferrules Inserted.	¾-inch Ferrules Inserted.	1-inch Ferrules Inserted.	Total of Screw Ferrules Inserted.
January	47	42	15	104
February	26	29	4	59
March	99	134	27	260
April	242	806	47	1,095
May	152	1,025	15	1,192
June	260	695	41	996
July	154	279	20	453
August	184	792	23	999
September	109	569	16	694
October	249	951	26	1,226
November	133	855	33	1,021
December	100	565	29	694
TOTAL	1,755	6,742	296	8,793
1901	1,788	5,483	302	7,573

TABLE No. VI.

RE-TAPS INSERTED DURING THE YEAR 1902.

5/8-inch	273
3/4-inch	231
1-inch	41
TOTAL	545

The number of applications made at this office for ferrules to water service pipes during the past year (exclusive of City contracts and re-taps) was as follows:

	Ferrules Inserted during 1902.	Ferrules Inserted during 1901.
Inserted in old part of City	920	782
Inserted in Calumet	193	272
Inserted in Cicero	214	383
Inserted in Hyde Park	487	519
Inserted in Jefferson	634	537
Inserted in Lake View	473	915
Inserted in Town of Lake	308	465
Total	3,229	3,873

TABLE No. VII.

PERMIT DIVISION.

PERMITS WERE ISSUED DURING THE YEAR 1902 AS FOLLOWS:

	Permits Issued during 1902.	Permits Issued during 1901.
For tapping water mains for pipes to inside curb for future use	5,019	3,136
For tapping water mains for service pipes to houses for immediate service	3,229	3,873
For connection to service pipes inside curb	506	673
For 12-inch cast iron pipes to be used as service pipes	2	.....
For 8-inch cast iron pipes to be used as service pipes	7	4
For 6-inch cast iron pipes to be used as service pipes	10	13
For 4-inch cast iron pipes to be used as service pipes	57	38
For 3-inch cast iron pipes to be used as service pipes	6	13
For 2 inch cast iron pipes to be used as service pipes	90	91
For 1½-inch cast iron pipes to be used as service pipes	89	127
For 1¼-inch cast iron pipes to be used as service pipes	90	47
For miscellaneous or special permits	410	368
Total	9,515	8,383

TABLE No. VIII.

TABULATED STATEMENT SHOWING THE NUMBER OF FERRULES INSERTED EACH YEAR FOR THE LAST TWENTY-THREE YEARS, AND THE TOTAL NUMBER IN USE DECEMBER 31, 1902.

Year.	Original Town.	*Lake View.	Hyde Park.	*Town of Lake.	*Calumet.	*Cicero.	*Jefferson.	Total.
a1880	63,510	.....	.....	.....	.....	.....	.....	63,510
1880	4,439	.....	.....	.....	.....	.....	.....	4,439
1881	5,678	.....	.....	.....	.....	.....	.....	5,678
1882	5,213	.....	.....	.....	.....	.....	.....	5,213
1883	6,656	.....	.....	.....	.....	.....	.....	6,656
1884	6,637	.....	.....	.....	.....	.....	.....	6,637
1885	6,555	.....	.....	.....	.....	.....	.....	6,555
1886	8,083	.....	.....	.....	.....	.....	.....	8,083
1887	8,808	.....	.....	.....	.....	.....	.....	8,808
1888	10,089	.....	.....	.....	.....	.....	.....	10,089
1889	.....	.....	b8,775	.....	.....	.....	.....	8,775
1889	7,617	889	1,730	1,286	.....	.....	.....	11,522
1890	10,127	3,440	3,833	3,951	152	289	20	21,812
1891	10,237	2,458	5,658	4,165	234	59	570	23,381
1892	7,224	3,173	4,813	3,882	271	63	2,146	21,572
1893	7,990	2,334	3,586	4,223	308	153	1,435	20,029
1894	6,642	2,271	2,770	1,922	392	843	1,044	15,884
1895	5,015	2,262	3,152	1,750	410	750	1,326	14,665
1896	3,551	1,927	2,792	1,838	292	1,663	869	12,932
1897	2,607	851	891	2,552	197	1,004	1,837	9,939
1898	1,183	527	1,765	662	242	516	1,312	6,207
1899	2,259	966	1,228	790	504	652	1,116	7,515
1900	1,239	588	893	1,420	919	2,350	1,635	9,044
1901	1,127	946	1,049	773	857	1,042	1,215	7,009
1902	1,619	585	936	895	1,118	1,637	1,458	8,248
Total	194,105	23,217	43,871	30,109	5,896	11,021	15,983	324,202

* Number of ferrules inserted in suburbs previous to annexation unknown.
a Number of ferrules inserted previous to 1880.
b Number of ferrules inserted in Hyde Park previous to annexation.

TABLE No. IX.

DIVISION OF PERMITS—INCOME ACCOUNT.

DEBIT.

Stock account, January 1, 1902, per inventory		$ 1,390.32	
Amount paid for ferrules	$ 3,920.89		
Amount paid for fittings and miscellaneous material	177.99		
		4,098.88	
Amount paid for printing and stationery	31.25		
Amount paid for transportation	888.70		
Amount paid for tools, etc	231.26		
Amount paid for miscellaneous	16.01		
		1,167.22	
Salaries of clerks	$ 2,100.00		
Salaries of inspectors	9,920.54		
Salaries of tappers	13,684.88		
Salaries of expressmen	11,268.00		
Salary of foreman	900.00		
Salaries of laborers	10,212.25		
		48,086.17	
			$54,742.59

CREDIT.

Amount received for inserting ferrules	$15,754.77		
Earnings for material furnished and labor performed for Bureau of Engineering	1,145.62		
		$16,900.89	
Stock on hand January 1, 1903, as per inventory		711.17	
			17,611.56
Net loss to the division (1902)			$37,131.03
Net loss to the division (1901)			31,051.42
Net loss to the division (1900)			33,151.10

TABLE No. X.

DETAILED STATEMENT OF ASSESSOR'S INCREASE AND DECREASE CHECKS FOR THE YEAR 1902.

	INCREASE.				DECREASE.			
1902	Current Tax.	Back Tax.	Shutoff.	Total.	Current Tax.	Back Tax.	Drawback.	Total.
January	$6,268.28	.....	$ 295.37	$6,563.65	$3,677.01	$3,598.15	$ 963.88	$8,239.04
February	5,655.47	$ 76.50	137.00	5,868.97	1,845.76	1,440.28	203.62	3,489.66
March	4,635.58	776.00	591.89	6,003.47	1,599.53	2,907.20	121.10	4,627.83
April	2,533.14	121.50	815.87	3,470.51	2,260.70	3,471.33	34.23	5,766.26
May	11,517.80	115.41	1,615.87	13,249.08	6,576 16	4,406.25	2,339.00	13,321.41
June	9,165.17	129.94	222.99	9,518.10	7,875.14	3,150.64	1,765.49	12,791.27
July	11,274.91	51 20	342.50	11,668.61	9,320 52	3,639.06	1,967.44	14,927.02
August	6,328.74	17.88	518 26	6,864.83	6,234.94	1,586 52	1,402 02	9,223.48
September	10,211.43	18.00	1,857.25	12,086.68	3,396.51	1,682 95	163.62	5,242.08
October	20,587.37	979.50	401.25	21,968.12	5,838.59	901.88	68.62	6,808.59
November	5,763.66	145.00	226.02	6,134.68	4,190.30	3,569.90	2,960.96	10,721.16
December	7,100.53	49.50	34.50	7,184.53	108,728.93	2,345.59	2.853.87	113,928.39
Total 1902	$101,042.08	$2,180.33	$7,058.77	$110,581.23	$161,544.09	$32,699.25	$14,842.85	$209,086.19
Total 1901	92,030,40	2,09 .07	8,789 39	102,913.86	151,767.21	28,327.62	19,777.54	199,872 37

Of the total decrease $106,962.70 is the result of the decreases to municipal, State, religious, charitable and educational institutions.

TABLE No. XI.

DETAIL OF GENERAL ASSESSMENT FROM MAY, 1902, TO MAY, 1903.

WARD.	Frontage.	Water Closets.	Urinals.	Baths.	Wash Basins.	Extra Rooms and Persons.	Saloons.	Hose, Trough and Fountain.	Laundries.	Steam Heating and Engines.	Stables.	Miscellaneous.	Total Assessment.
1st....	$28,769.00	$13,274.50	$1,262.50	$2,086.50	$6,035.25	$7,408.00	$1,195.00	$1,026.00	$137.00	$1,938.75	$2,643.50	$2,400.25	$68,176.25
2d.....	39,464.50	12,097.00	376.50	4,616.00	3,480.00	5,019.50	429.00	3,341.50	207.50	474.00	3,223.00	1,133.50	73,862.00
3d.....	42,267.50	11,845.50	492.00	5,987.00	3.245.50	3,417.00	339.00	3,609.50	76.00	487.25	2,364.00	771.50	74,901.75
4th....	34,608.00	8,475.00	322.00	1,281.00	1,034.00	10,452.50	527.00	305.50	33.00	561.00	1,562.50	953.75	60,115.25
5th....	38,494.00	5,228.00	278.50	1,294.50	1,010.00	4,386.00	578.00	369.50	9.00	249.00	1,212.50	638.50	53,747.50
6th....	55,920.50	18,212.50	279.50	12,445.50	6,154.50	2,005.00	27.00	9,739.00	82.00	788.35	3,606.25	524.50	109,784.60
7th....	52,511.50	20,748.50	822.50	14,347.00	6,851.50	2,707.50	264.00	6,625.00	155.00	1,642.00	2,201.50	613.50	109,489.50
8th....	40,330.00	6,327.50	374.00	2,828.50	1,969.00	4,211.75	655.00	1,879.00	25.00	914.10	1,267.50	869.80	61,651.15
9th....	26,248.50	8,287.00	341.50	1,062.00	1,535.00	13,507.25	437.00	397.00	108.00	1,128.00	2,481.50	1,116.90	56,649.65
10th....	24,468.50	9,630.00	486.00	1,056.50	1,772.50	15,893.00	513.00	440.50	93.00	883.00	2,113.50	1,175.00	58,524.50
11th....	29,832.50	11,848.00	452.50	2,712.00	1,638.00	14,120.00	584.00	605.50	78.00	531.00	1,954.50	1,060.25	65,416.25
12th....	42,367.50	13,006.50	459.50	4,764.50	2,476.50	7,611.50	633.00	916.50	85.00	418.00	1,598.00	1,079.00	75,415.50
13th....	46,030.50	17,450.50	388.00	11,580.00	4,918.00	2,360.00	344.00	3,116.00	61.00	263.00	1,747.50	727.00	88,985.50
14th....	48,208.00	13,244.00	473.50	6,067.50	3,006.50	5,136.50	426.00	1,646.50	163.00	873.00	2,458.00	887.75	82,540.25
15th....	37,075.00	17,118.50	533.00	7,250.50	3,411.50	8,658.50	356.00	2,108.00	57.50	2,281.00	1,745.75	737.00	81,332.25
16th....	32,257.00	12,462.00	379.00	1,616.50	1,609.00	15,636.00	614.00	465.50	59.00	390.00	1,754.00	999.25	68,241.25
17th....	38,910.50	18,528.50	667.00	2,153.50	2,664.50	22,860.50	876.00	468.00	183.00	689.50	2,867.00	1,750.50	92,618.50
18th....	31,909.00	11,171.00	665.50	3,348.00	4,630.00	4,646.00	923.00	813.00	123.00	1,371.00	2,656.50	1,729.50	63,985.50
19th....	33,423.00	10,673.00	363.50	3,293.50	2,321.50	11,419.50	673.00	399.00	55.00	4,801.00	2,499.25	1,126.50	71,047.75
20th....	53,793.50	16,177.50	408.00	8,559.00	5,240.50	3,034.50	389.00	3,689.50	96.00	915.80	3,920.75	940.50	97,164.55
21st....	41,193.50	16,389.50	589.00	7,106.50	5,055.50	5,733.50	554.00	3,613.50	122.00	1,016.50	3,038.50	1,330.50	85,740.50
22d.....	34,651.50	17,578.50	550.00	3,101.50	3,555.50	16,343.75	913.00	530.00	179.00	2,625.50	3,101.00	1,761.50	84,890.75
23d.....	36,077.00	15,333.50	399.00	5,814.50	3,141.50	8,612.50	396.00	2,442.50	130.00	412.50	2,150.00	896.80	75,805.80
24th....	36,988.00	13,459.50	376.50	5,375.00	2,650.50	6,631.00	471.00	2,168.50	52.50	1,199.00	2,170.00	1,729.25	73,270.75
25th....	56,174.00	20,210.00	451.00	13,020.50	5,873.00	3,410.00	375 00	10,667.00	177.00	365.00	2,830.00	700.50	114,253.00
26th....	50,922.00	11,332.50	287.00	5,985.50	3,028.00	2,391.50	337.00	8,245.50	29.00	75.75	1,996.00	710.25	85,340.00
27th....	54,026.00	6.357.50	244.00	3,151.50	1,700.50	999.50	391.00	3,374.50	12.00	390.00	1,474.00	666.75	72,787.25
28th....	49,497.00	15,548.50	495.00	5,591.00	3,403.25	5,391.00	508.00	2,146.50	53.00	501.50	1,859.00	946.75	85,940.50
29th....	39,112.00	5,682.00	377.00	1,160.50	1,132.00	6,075.50	741.00	645.50	10.50	421.00	1,550.00	1,021.50	57,928.50
30th....	43,891.00	10,171.00	512.50	4,152.00	2,623.50	6,291.00	653.00	1,104.50	81.00	536.80	2,210.75	957.00	73,184.05
31st....	54,025.50	13,326.50	400.50	8,001.00	3,903.50	2,082.50	257.00	3,160.00	59.00	851.00	2,022.50	727.25	88,816.25
32d.....	59,107.50	10,345.00	389.00	6,338.00	3,746.50	1,227.00	265.00	7,308.50	104.00	809.00	2,309.25	787.10	92,735.85
33d.....	50,943.00	6,644.00	407.00	2,632.00	1,855.50	2,060 50	350.00	1,720.00	18.00	272.50	1,297.50	503 00	68,703.00
34th....	29,109.50	6,755.50	266.50	4,542.50	1,862.50	720.00	271.00	1,955.00	43.50	52.20	912.50	254.50	46,745.20
35th....	22,905.00	3,424.50	208.00	2,150.00	1,009.00	440.00	119.00	645.00	23.00	377.00	452.00	144.75	31,897.25
Total, 1902	$1,435,511.00	$428,363.00	$15,776.50	$176,471.50	$109,543.50	$232,899.75	$17,383.00	$91,686.50	$2,979.50	$31,504.00	$75,248.00	$34,321.85	$2,651,688.10
" 1901	1,406,027.50	398,982.00	14,795.50	165,214.00	100,388.25	229,486.50	16,852.50	92,368.00	2,833.50	29,073.95	72,795.50	31,829.40	2,560,646.60
Increase for 1902													$91,041.50

During the year 1901 annual or house-to-house examinations were made in 14 wards, and the general assessment account was increased to the extent of, as shown at that time, $70,801.90.

During the year 1902 annual or house-to-house examinations were made in only 6 wards, and the general assessment account was increased to the extent of $91,041.50.

TABLE No. XI.

DETAIL OF GENERAL ASSESSMENT FROM MAY, 1902, TO MAY, 1903.

WARD.	Frontage.	Water Closets	Urinals.	Baths.	Wash Basins	Extra Rooms and	Saloons.	Hose, Trough and	Laundries	Steam Heating and	Stables.	Miscellaneous	Total As-

TABLE No. XII.

DETAILED STATEMENT OF ASSESSOR'S MISCELLANEOUS RECEIPTS FOR 1902.

1902.	Cement Walks.	Leak and Waste.	Shut-off.	Sprinkling.	Miscellaneous.	Total.
January	$ 3.54	.....	$ 19.88	.....	$ 28.05	$ 51.47
February	.30	.....	.....	.....	40.00	40.30
March	26.26	.....	9.00	.....	105.52	140.78
April	81.24	.....	13.00	$ 87.50	282.90	464.64
May	39.57	.....	29.25	2,050.00	116.55	2,235.37
June	28.53	.....	21.75	2,205.00	98.55	2,353.83
July	27.53	$ 3.38	3.50	1,725.00	20.00	1,779.41
August	26.54	2.55	8.00	1,771.20	61.70	1,869.99
September	27.67	2.25	1.25	1,700.00	90.00	1,821.17
October	37.40	14.00	.....	25.00	43.75	120.15
November	21.68	21.00	.....	50.00	88.00	180.08
December	13.94	.....	3.50	50.00	151.26	218.70
Total	$333.60	$43.18	$109.13	$9,663.70	$1,126.28	$11,275.89

TABLE No. XIII.

METER MECHANICAL DIVISION.

Number of meters in service December 31, 1901	6,728	
Number of meters set in new location during 1902	419	
Total number of meters in service during 1902		7,147
Number of meters removed—property assessed—during 1902	33	
Number of meters removed—supply cut off—during 1902	26	
Number of meters removed and not replaced during 1902	13	
Total number of meters removed permanently during 1902		72
Total number of meters in use December 31, 1902	7,075	
Total number of meters in use December 31, 1901	6,728	
Increase in number of meters in use year ending December 31, 1902		347
Number of meters set in new location during 1902	419	
Number of meters set replacing others during 1902	39	
Total number of meters set during 1902		458
Number of meters in stock January 1, 1902	69	
Number of meters placed in stock during 1902	12	
Number of meters furnished by private parties during 1902	458	
Total number of meters on hand during 1902		539
Number of meters set during 1902		458
Number of meters on hand January 1, 1903		81
Number of meters repaired during 1902, for which bills were rendered		2,760
Number of meters removed to shop and reset during 1902		235

The net addition to the number of meters in service for the year 1902 is 347, as compared with 332 for the previous year.

The number of meters repaired during the year is 2,760, as compared with 2,729 for the year 1901.

TABLE No. XIV.

NAMES AND SIZES OF WATER METERS IN USE DECEMBER 31, 1902.

MAKE.	SIZE.													TOTAL.
	⅛-inch.	⅝-inch.	¾-inch.	1-inch.	1¼-inch.	1½-inch.	2-inch.	3-inch.	4-inch.	6-inch.	8-inch.	10-inch.	12-inch.	
Worthington	5	216	387	1,164	2	987	956	479	35	7	.....	.....	.....	4,238
Pittsburg	.....	77	208	399	43	363	197	64	30	21	.....	.....	.....	1,402
Crown	.....	9	97	126	.....	110	118	48	90	24	.....	.....	.....	622
Hersey	.....	5	42	66	.....	96	118	65	56	29	.....	.....	.....	477
Thomson	.....	1	11	11	.....	39	24	11	14	7	.....	.....	.....	118
Nash	.....	5	14	39	.....	39	14	2	3	.....	.....	.....	.....	116
Gem	.....	.....	.....	.....	.....	.....	16	10	10	13	5	2	.....	56
Union	.....	9	4	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
Trident	.....	1	3	.....	.....	5	10	2	1	.....	.....	.....	.....	22
Empire	.....	1	.....	2	.....	1	1	.....	.....	.....	.....	.....	.....	5
Torrent	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	2
Westinghouse	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Venturi	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Total	5	324	766	1,810	45	1,640	1,454	681	239	101	7	2	1	7,075

TABLE No. XV.

METER MECHANICAL DIVISION.

SHOWING WATER METERS IN USE AND HOW DISTRIBUTED.

Stores and flats	1,118
Business houses	1,126
Residences and apartment buildings	1,244
Railroads	549
Manufactories	1,338
Breweries	148
Liveries	216
Packing houses	130
Laundries	133
Hotels	250
Office buildings	254
Theaters	26
Miscellaneous	467
Charitable institutions	76
Total	7,075

TABLE No. XVI.

METER MECHANICAL DIVISION.

INCOME ACCOUNT.

DEBIT.

Stock account, per inventory, January 1, 1902—			
Comprising material	$ 7,767.04		
and bills receivable	4,179.02		
		$11,946.06	
Amount paid for covers and frames	$ 1,960.27		
Amount paid for fittings	6,286.90		
Amount paid for lumber	597.97		
		8,845.14	
Amount paid for transportation	$ 64.55		
Amount paid for horse feed, etc	259.32		
Amount paid for tools	136.35		
Amount paid for sundries	48.48		
		508.70	
Salary of foreman	$ 1,500.00		
Salaries of clerks	2,080.00		
Salaries of meter setters	4,862.25		
Salaries of laborers	1,378.12		
Salaries of expressmen	2,878.50		
		12,698.87	
			$33,998.77

CREDIT.

Amount received for setting of large meters	$ 4,743.05		
Net cash received for material sold from stock on hand and repairing meters	14,279.66		
Earnings from material furnished Bureau of Engineering, etc	23.70		
		19,046.41	
Amount due and uncollected for repairs		3,164.63	
Stock on hand, as per inventory, December 31, 1902		9,379.32	
			31,590.36
Net loss to the Division			*$ 2,408.41

NOTE.—The Meter Mechanical Division of the Bureau is conducted at a loss to the City, as may be seen by a comparison of the dates and figures following:

1896.	Net loss	$11,812.57
1897.	Net loss	11,703.05
1898.	Net loss	8,455.81
1899.	Net loss	3,234.04
1900.	Net loss	5,624.84
1901.	Net loss	5,749.09

It may be observed by comparing these figures that the loss of this division for the year 1901 was $5,749.09, and for the year 1902, $4,128.86.

*Shop work performed by Water Works shops, amounting to $1,720.45, not included.

TABLE No. XVII.

ANALYSIS OF LEDGER—ASSESSED RATES ACCOUNT.

Ward.	DEBIT.							CREDIT.					
	Balance Jan. 1, 1902.	Redistriction Increases.	General Assessment.	Increases.	Refunds.	Discounts.	Total.	Redistriction Decreases.	Decreases.	Discounts.	Collections.	Balance Dec. 31, 1902.	Total.
1.....	$ 7,359.84	$ 4,096.81	$ 68,176.25	$ 5,765.28	$ 196.15	$ 29.02	$ 85,623.35	.....	$ 11,323.52	$ 7,767.49	$ 56,827.12	$ 9,705.22	$ 85,623.35
2.....	8,257.44	522.66	73,862.00	1,587.68	79.26	10.91	84,319.95	.....	8,245.01	9,255.58	60,387.72	6,431.64	84,319.95
3.....	6,473.43	.....	74,901.75	2,688.80	136.53	20.62	84,221.13	$ 732.44	6,317.49	9,260.29	60,943.69	6,967.22	84,221.13
4.....	5,643.73	1,952.94	60,115.25	4,551.64	131.11	18.92	72,413.59	.....	6,788.63	8,229.23	52,126.31	5,269.42	72,413.59
5.....	6,122.35	1,689 93	53,747.50	5,889.72	168.12	19.85	67,637.47	.....	5,850.76	7,329.71	47,534.45	6,922.55	67,637.47
6.....	8,591.15	.....	109,784.60	7,335.00	217.84	24.99	125,953.58	1,082.60	10,260.04	14,348.13	92,937.36	7,325.45	125,953.58
7.....	4,616.69	8,758.66	109,489.50	7,036.22	333.84	53 87	130 288.78	.....	8,650 24	13,621.39	89,86 .16	18,149.99	130,288.78
8.....	2,898.20	9.849.09	61.651.15	2,773.30	146.72	17.93	77,336.39	.....	5,487.29	8,042.38	51,611 41	12,195.31	77,336.39
9.....	3,024.20	2,458.26	56.649.65	1,675.99	82.79	11.56	63,902.45	.....	5,671.09	5,119.51	32,738.96	20.372.89	63,902.45
10.....	8,479.49	.....	58,524.50	3,116,02	124.03	20.91	70,264.95	3,277.25	4.839.63	5,738.83	38,170.16	18,239.08	70,264.95
11.....	7,944.22	.....	65,416.25	616 85	141.55	20.92	74.139.79	2,805.84	4,574.47	6,909.21	43,525.70	16,324.57	74, 39.79
12.....	14,741.80	.....	75,415.50	5,474.29	166.74	22.36	95,820.69	4,800.28	3,493.04	8,268.01	55,818.17	23,441.19	95,820.69
13.....	12,571.30	.....	88,985.50	3,491.09	219.95	33.80	105,301.64	4,350.61	4,364.93	7,843.63	53.187.54	35,.54.93	105.301.64
14.....	5,465.61	5,876.46	82,540.25	1,668.00	237.43	36.96	95,824.71	.....	3,576.43	7,133.23	47,733.49	37,381.56	95,824.71
15.....	11,071.27	.....	81.332.25	1,841.41	79.37	8.41	94,332.71	5,087.86	7,556 17	7,931.82	50,214.27	23,542.59	94,332.71
16.....	4.257.37	.....	68,241.25	1,021.97	31.78	2.39	73,554.76	424.34	2,766.23	7,487.82	45,330.38	17,545.99	73,554.76
17.....	7,834.70	797.30	92.618.50	870.53	82.06	11.69	102.214.78	.....	5,0.9.98	8,847.67	54,383.66	33,903.47	102,214.78
18.....	12,326.85	3,672.69	63,985.50	1,608.81	79.86	9.22	81,682.93	....	5,214.34	5,050.20	36,4 6.12	34,982.27	81,682.93
19.....	8,242.79	683.05	71,047.75	1,663.74	67.89	9.59	81,714 81	.....	9,412.70	5.947.18	38,447.28	27,907.65	81,714.81
20.....	3,752.87	2,081.30	97,164.55	1,426.70	186.65	27.21	104.639.28	.....	6,504.67	7,834.02	50.036 01	40,264 58	104,639.28
21.....	2,949.02	3,072.35	85.740.50	1,283.27	98.97	12.17	93,156.28	.....	6,659.17	6.692.91	43,500.69	36,303.51	93,156.28
22.....	2,614.73	5,992.27	84,890 75	1,185.52	79.71	13.01	94,775.99	.....	6,224.62	6,664.44	41,546.25	40,340.68	94,775.99
23.....	6,512.30	.....	75 805.80	667.04	174.38	26.02	83,185.54	3.335.02	4,758.71	6,124.34	37,742.78	31,224.69	83,185.54
24.....	5,919.47	.....	73,270.75	1,896 97	97.60	10.00	81,194.79	1,185.40	6.140.64	5,993.81	37,915.07	29,959.83	81,194.79
25.....	5,190.07	.....	114,253.00	6,516.68	168.32	26.69	126,154.76	28.87	4,893 64	9,558.30	62,851.43	48,822.52	126,154.76
26.....	7,667.74	.....	85,340.00	5,205.11	187.11	29.89	98,429.85	1,038.89	4,568.18	7,237.06	48,769.76	36.815.96	98,429.85
27.....	22,000.97	831.39	72,787.25	6,106.37	205.75	23.90	101,955.63	....	7,208.66	8,667.56	59.299.14	26,780.27	101,955.63
28.....	10,323.84	.....	85,940.50	2,838.65	156.19	17.12	99,276.30	3,685.09	4,624.41	10,368.82	65,403.71	15,194.27	99,276.30
29.....	13,138.37	.....	57,928.50	2,676.02	159.06	23.36	73,925.31	424. 1	4,892.69	7,645.10	48,948.62	12,.14.09	73,925.31
30.....	22,445.27	.....	73.184.05	4,145.12	216.97	30.38	100,021.79	10,930.72	6,465.04	9,821.36	64.387.53	8,417.14	100,021.79
31.....	28,748.35	.....	88.816.25	2,764.72	137.70	18.22	120, 85.24	8,590 71	7,208.86	11,490 89	74,089.89	19,104 89	120,485.24
32.....	10,873.88	12,893.03	92,735.85	3,484.90	120.48	17.21	120,125.35	.....	8,113.46	11,873 53	76,951.82	23,186.54	120,125.35
33.....	14,342.52	13.96	68,703.00	3,062.36	115.04	17.82	86,254.70	.....	5.874.90	9,266.86	57,704.73	13,408 21	86,254.70
34.....	27,408.62	.....	46,745.20	5,308.86	119.13	13.90	79,595.71	16,139.47	3,915.80	5,706.80	41,799.34	12,.34.30	79,595.71
35.....	218.29	2,901.02	31,897.25	1,826 85	102.26	14.70	36,960.37	.....	2.076.46	3,927.68	25,3 0.83	5,655.40	36,960.37
Total	$330,028.74	$68,143.17	$2,651,688.10	$111,071.48	$5,048.34	$705.52	$3,166,685.35	$67,920.20	$209,601.94	$283,004.79	$1,844,468.55	$761,689.87	$3,166,685.35

TABLE No. XVIII.

SHOWING NET COLLECTIONS FROM ALL SOURCES FOR THE YEAR 1902, AS COMPARED WITH 1901.

SOURCES.	1901.	1902.	Increase.	Decrease.	Net Decrease.
Assessed rates	$2,149,255.08	$1,835,225.84	.....	*$314,029.24	.....
Meter rates	1,197,405.06	1,329,684.69	$132,271.63	.....	.....
Permit division	19.763.83	16,900 39	.....	2,863.44	.....
Assessor's miscellaneous	15.377.30	13,974.98	.....	1,402.32	.....
Meter Mechanical division	16,127.60	19,046.41	2,918.81	.....	.....
Water Pipe Extension misc.	.....	9,035.24	9,035.24	.....	.....
Total	$3,397,928.87	$3,223,867.55	$144,233.68	$318,295.00	$174,061.32

*It may be observed the collections for this year are shown to be less than for the preceding year. The explanation for this grows out of the fact that the ordinance going into effect May 1st, 1902, extended the discount payment periods in wards 9 to 26, inclusive, beyond December 31st. (See foot-note to Table 1.)

TABLE No. XVIII B.

CASH COLLECTED BY CASHIER OF BUREAU OF WATER DURING THE YEAR 1902.

Assessed rates	$1,844,468.55
Meter rates	1,330,805.29
Permits	15,445.70
Assessor's miscellaneous	11,275.89
Meter Mechanical	14,286.76
Water Pipe Extension miscellaneous	9,035.24
Total	$3,225,317.43
Special deposit fund	42,922.35
Total	$3,268,239.78

TABLE No. XIX.

DETAILED STATEMENT OF CASH COLLECTED DURING 1902, AFTER DEDUCTING REFUNDS OCCASIONED BY DUPLICATE, WRONG PROPERTY, AND OVERPAYMENTS, ERRONEOUS ASSESSMENTS, COUNCIL ORDERS, ETC.

1902.	Assessed Rates.	Meter Rates.	Permits.	Assessor's Miscellaneous.	Meter Mechanical Division.	Water Pipe Extension.	For Large Meters.	For Ferrules by Special Assessm't Bureau.	For use of Water in Construction of Cement Walks.	Earnings of Permit Division.	Earnings of Meter Mech. Division.	Total.
January....	$ 37,735.33	$ 98,862.01	$ 364.10	$ 51.47	$ 1,169.23	$ 66.85	.....	.....	$ 840.58	.....	.....	$ 139,089.57
February..	26,789.16	103,347.05	227.00	40.30	756.78	.....	$ 114.75	.....	.....	.....	.....	131,275.04
March.....	19,277.50	122,954.56	718.60	140.78	917.50	.....	202.40	.....	131.69	.....	.....	144,343.03
April	12,503.08	101,705.30	1,305.30	464.64	1,068.43	476.25	460 05	.....	.....	$ 7.00	$ 1.50	117,991.55
May	251,701.35	116,284.44	1,589.20	2,235.37	1,319.20	7.25	.....	.....	.....	302.07	.....	373,338.88
June	364,797.58	109,016.78	1,164.60	2,353.83	1,412.19	630.00	169.35	.....	2.17	.....	8.00	479,554.50
July	260,373.34	112,644.57	1,252.30	1,779.41	1,568.74	828.00	558.65	.....	9.00	613.93	14.20	379,642.14
August	221,901.32	106,924.27	1,580.30	1,869.99	1,586.05	1,607.00	.....	.....	5.40	.....	.....	335,474.33
September	29,955.85	115,351.58	1,104.40	1,821.17	1,159.12	1,353.57	597.55	.....	18.83	.....	.....	151,862.07
October ...	11,217.26	122,023.76	2,223.10	120.15	882.41	1,113.00	774.90	.....	48.20	.....	.....	138,402.78
November.	265,818.12	107,514.75	1,210.30	180.08	1,105.43	1,807.00	.....	.....	286.09	.....	.....	377,921.77
December.	333,255.95	113,055.62	2,706.50	218.70	1,334.58	646.32	1,865.40	.....	1,357.13	531.69	.....	454,971.89
Total 1902.	$1,835,225.84	$1,329,684.69	$15,445.70	$11,275.89	$14,279.66	$9,035.24	*$4,743.05	.....	*$2,699.09	*$1,454.69	*$23.70	$3,223,867.55
Total 1901.	$2,149,255.08	$1,197,405.06	$15,459.11	$12,760.86	$13,753.15	.....	‡$2,357.45	†$2,329.00	‡$2,616.44	‡$1,975.72	‡$17.00	$3,397,928.87
Increase ..	.....	132,279.63	.....	.....	526.51	$9,035.24	2,385.60	.....	82.65	.....	6.70	.....
Decrease..	314,029.24	.....	13.41	1,484.97	.....	.....	.....	$2,329.00	.....	521.08	.....	174,061.32

*Collections through warrants for collection.
†Collected by Bureau of Special Assessments.
‡Collected by City Comptroller.

TABLE No. XX.

DETAILED STATEMENT OF PAY-ROLLS FOR THE YEAR ENDING DECEMBER 31, 1902.

MONTHS.	DIVISIONS.							
	Assessor's.	Collection.	Inspection.	Meter Rates.	Meter Mechanical.	Permit.	Shut-off.	Total.
January	$ 1,178.36	$ 3,626.76	$ 2,487.10	$ 2,337.75	$ 1,009.75	$ 3,394.75	$ 2,442.75	$ 16,477.22
February	1,157.33	3,552.97	2,460.27	2,211.20	893.50	3,262.00	2,181.75	15,719.02
March	2,250.19	7,070.32	4,788.63	3,056.83	1,197.49	5,036.53	2,467.50	25,867.49
April	1,471.68	4,693.41	3,163.22	2,624.00	1,052.83	4,068.00	2,128.25	19,206.39
May	1,471.66	4,901.53	3,069.35	2,701.01	1,100.83	4,158.84	2,534.75	19,937.97
June	1,418.88	4,935.92	3,034.92	2,624.50	1,026.95	3,950.68	2,317.25	19,309.10
July	1,554.99	5,119.25	3,007.02	2,721.36	1,076.83	4,126.58	2,588.75	20,194.78
August	1,371.66	5,069.67	3,069.36	2,652.00	1,092.58	4,194.03	2,562.50	20,011.80
September	1,479.99	5,032.17	3,050.00	2,575.50	1,087.34	4,014.20	2,562.50	19,801.70
October	1,663.32	4,912.40	3,050.00	2,642.00	1,0.2.59	3,891.62	2,656.25	19,908.18
November	1,479 99	4,807.42	2,817.50	2,515.00	1,005.59	3,901.60	2,468.75	18,995.85
December	1,534.02	5,695.85	2,825.00	2,639.00	1,062.59	4,087.84	2,480.75	20,324.55
Total, 1902	$18,032.07	$59,417.67	$36,827.37	$31,300.15	$12,698.87	$48,086.17	$29,391.75	$235,754.05
Total, 1901	$21,519.72	$55,090.64	$41,308.32	$28,977.98	$13,379.09	$43,729.31	$29,505.00	$233,510.06

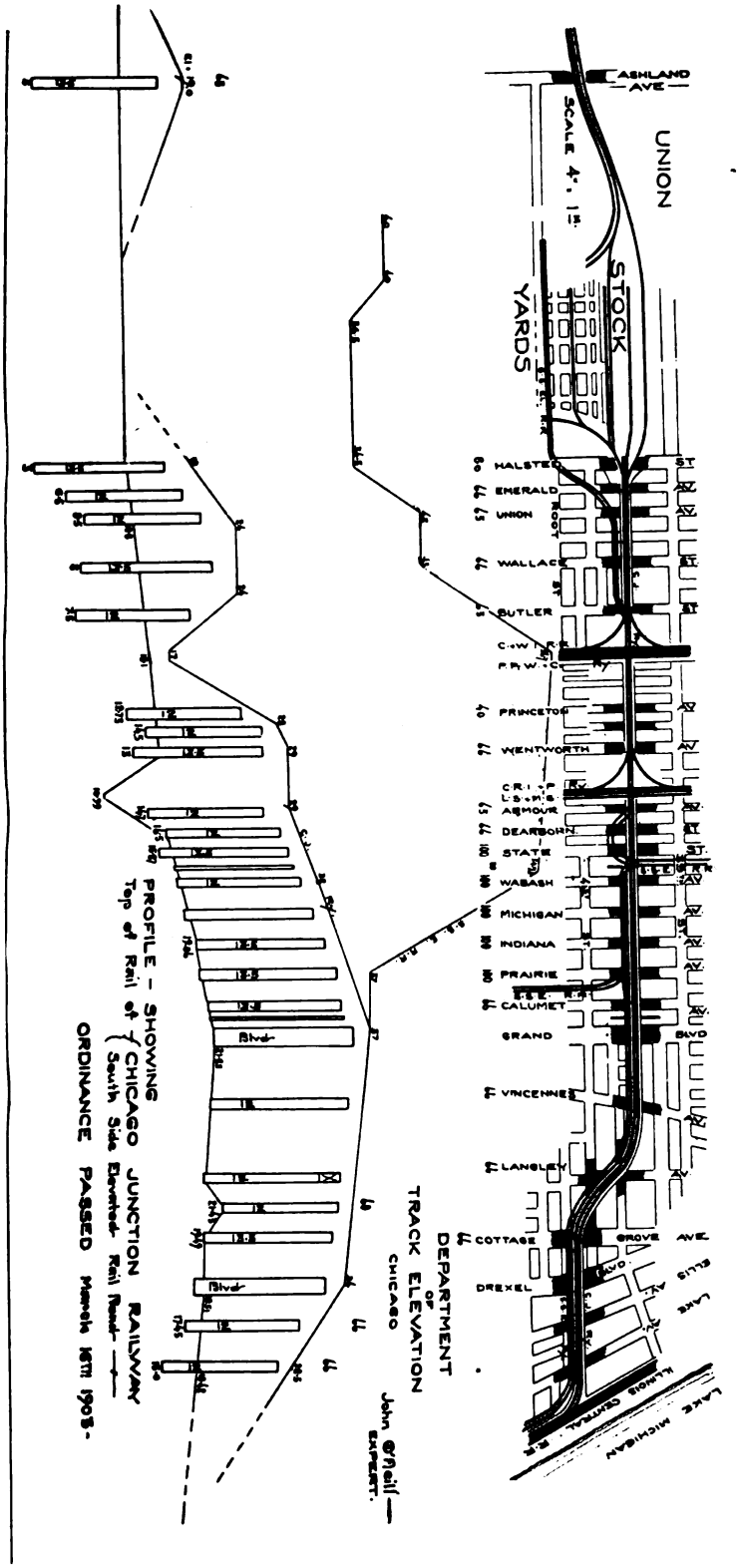
TABLE No. XXI.

DETAILS OF MISCELLANEOUS EXPENSES OF THE WATER OFFICE FOR THE YEAR 1902.

MONTHS.	Binding Vouchers.	Postage.	Railroad Tickets.	Street Car Tickets.	Stationery.	Sundries.	Shut-off Tools.	Total.
January	$ 2.00	.....	.....	.....	$ 86.40	$ 198.33	$21.84	308.57
February	2.00	.....	$ 25.50	.....	133.72	18.35	.....	179.57
March	2.00	500.00	35.15	.....	272.23	1.24	14.90	825.51
April	43.29	1,000.00	18.90	.....	535.10	.....	.....	1,597.29
May	7.50	1,010.00	22.80	$666.50	339.57	138.90	5.90	2,191.17
June	.....	510.00	62.00	.....	128.39	9.73	.50	711.23
July	2.00	.....	.....	.....	112.52	159.62	.....	274.14
August	2.00	.....	29.35	617.05	342.77	1,054.50	12.44	2,058.11
September	2.00	805.00	113 25	447.20	259.12	436.00	.....	2,062.57
October	2.00	.....	.....	286.50	55.88	3,247.72	.....	3,542.10
November	.....	500.00	54.80	242.95	369.70	1,087.77	.....	2,255.22
December	45.38	3,500.00	274.05	166.95	339.78	1,565.86	21.35	5,913 37
Total	$110.17	$7,825.00	$636.40	$2,377.15	$2,975.17	*$7,918.02	$76.93	$21,918.84

*Includes following expense incurred by installation of new system of accounting by Messrs. Haskins & Sells:

Two arithmometer machines, at $375.00	$ 750.00	
Three duplex receipting perforators, at $100.00	300.00	
One addressograph, cabinet, setting case, links, addresses and sundries	479.66	(Meter Rate Division)
One addressograph, cabinets, and 192,761 addresses	4.093.87	(Collection Division)
Twenty lines cash carriers	693.00	
Total	$6,316 53	



VISION.

arges for itting Off Water.	
$	295.37
	187.00
	591.89
	815.87
	1,615.87
	222.99
	342.50
	518.26
	1,857.25
	401.25
	226.02
	34.50
$	7,058.77

TABLE No. XXI.

DETAILS OF MISCELLANEOUS EXPENSES OF THE WATER OFFICE FOR THE YEAR 1902.

TABLE No. XXII.

WORK PERFORMED BY THE LEAK, WASTE AND SHUT-OFF DIVISION.

1902.	Shut Off for Back Taxes.	Shut Off by Request of Owner.	Water Turned on and Permits Issued.	Notices Served by Hand.	Charges for Shutting Off Water.
January	279	62	203	3,939	$ 295.37
February	128	26	161	4,224	167.00
March	452	20	367	4,715	591.89
April	889	.....	310	4,608	815.87
May	283	25	276	4,540	1,615.87
June	174	116	195	4,710	222.99
July	880	30	322	4,590	842.50
August	735	97	636	4,330	518.26
September	534	99	496	3,627	1,857.25
October	303	73	216	3,082	401.25
November	218	89	160	1,990	226.02
December	173	368	160	1,376	34.50
Total	4,048	1,005	3,502	45,731	$7,058.77

TABLE No. XXIII.

ACCOUNTING DIVISION.

INCOME ACCOUNT.

REVENUE.

General assessment, May 1, 1902		$2,651,688.10	
General assessment increase		222.97	
Increase to back tax		2,480.38	
Increase to current tax		101,042.08	
Increase to shut off		7,058.77	
			$2,762,492.30
Less—			
Discounts allowed		$ 282,299.27	
Erroneous assessments refunded		4,194.87	
Decrease on account of municipal buildings, in accordance with Section 24 of the City ordinance:			
City property, including City Hall	$10,215.00		
Police stations	1,927.50		
Public schools	50,056.54		
Engine houses	2,939.50		
		65,138.54	
Decreased on account of charitable, educational and religious institutions, in accordance with Section 24 of the City ordinance:			
Churches and religious institutions	$22,573.39		
Schools and colleges	10,411.36		
Hospitals	4,934.16		
Asylums and homes	3,905.25		
		41,824.16	
Decreased on account of overpayments, as per affidavits and special examinations, buildings removed and destroyed, changes to meter control, and other causes		87,280.64	
Allowance on current bills to cover drawbacks on amounts previously paid on vacant property, in accordance with City ordinance		14,842.85	
Decrease of general assessment		25.50	
			495,605.33
Net revenue from assessed rates			$2,266,886.97

Brought forward			$2,266,886.97
Charges as per meter readings		$1,366,257.86	
Less—			
Decrease, account of charitable, educational and religious institutions, in accordance with Section 24 of the City ordinance:			
Municipal institutions	$1,998.60		
State institutions	1,955.75		
Religious institutions	4,040.00		
Colleges and schools	5,208.00		
Asylums and homes	1,533.90		
Hospitals	3,299.70		
	$18,035.95		
Decreased on account of erroneous readings	3,550.07		
		21,586.02	
Net revenue from meter rates			1,344,671.84
Assessor's miscellaneous charges for sprinkling wagons, construction of cement walks, etc.			18,974.98
Revenue of Water Pipe Extension Division			9,035.24
			$3,684,569.03
Less—			
Net loss of operating Division of Permits (See Table IX)		37,131.03	
Net loss of operating Meter Mechanical Division (see Table XVI)		2,408.41	
			39,539.44
			$3,595,029.59
EXPENSES.			
Less—			
Binding vouchers	$ 110.17		
Postage	7,825.00		
Railroad transportation	636.40		
Street car tickets	2,377.15		
Printing and stationery	2,975.17		
Shut-off tools	76 93		
Sundries	7,918.02		
Pay rolls (Meter Mechanical and Permit Divisions omitted)	174,969.01		
Rent	11,845.00		
			208,732.85
Net income, Bureau of Water			$3,386,296.74

TABLE No. XXIV.

BALANCE SHEET.

DEBIT.

Balance uncollected December 31, 1901.....		$ 456,046.92	
Inventory, Meter Mechanical Division, December 31, 1901.....		7,767.04	
Inventory, Permit Division, December 31, 1901.....		1,890.82	
Disbursements during 1902 for merchandise.	$ 13,181.62		
Disbursements during 1902 for salaries.....	235,754.05		
Disbursements during 1902 for postage.....	7,825.00		
Disbursements during 1902 for sundry expenses.....	11,588.61		
Disbursements during 1902 for street car tickets.....	8,959.15		
Disbursements during 1902 for rent.....	11,845.00		
Disbursements during 1902 for miscellaneous appropriation items.....	34.40		
		284,187.83	
Net income, 1902, as per income account (see Table No. XXIII).....		3,886,296.74	
			$4,135,688.85

CREDIT.

Debit balance against Comptroller, December 31, 1902, as follows:

Net collections made by Bureau of Water..	$3,214,947.02		
Amount collected by City Collector for Bureau of Water for large meters.....	4,743.05		
Amount collected by City Collector for use of Water in construction of cement walks	2,699.09		
Amount collected by City Collector for earnings of Permit Division.....	1,454.69		
Amount collected by City Collector for earnings of Meter Mechanical Division.....	23.70		
		$3,223,867.55	
Inventory, Meter Mechanical Division, December 31, 1902.....		9,879.32	
Inventory, Permit Division, December 31, 1902.....		711.17	
Balance uncollected, December 31, 1902, assessed rates.....	$ 761,689.87		
Balance uncollected, December 31, 1902, meter rates.....	136,826.31		
Balance uncollected, December 31, 1902, Meter Mechanical Division.....	3,164.63		
		901,680.81	
			$4,135,688.85

TABLE No. XXV.

SHOWING PER CAPITA CONSUMPTION OF WATER OF TEN PRINCIPAL CITIES IN THE UNITED STATES.

CITY.	Population.	Consumption per Capita per Day.
Chicago	2,000,000	161 gallons
New York	3,457,000	121 "
Philadelphia	1,293,000	211 "
Boston	560,000	120 "
Cincinnati	325,000	114 "
Cleveland	381,000	168 "
Buffalo	352,000	247 "
San Francisco	342,000	80 "
Detroit	285,000	153 "
Pittsburg	321,000	230 "

TABLE No. XXVI.

COMPARISON OF GENERAL ASSESSMENT FOR THE YEARS 1896, 1897, 1898, 1899, 1900, 1901 AND 1902.

	1896.	1897.	1898.	1899.	1900.	1901.	1902.
Frontage	$1,419,187.75	$1,437,077.50	$1,475,055.25	$1,358,846.50	$1,388,697.00	$1,406,027.50	$1,435,511.00
Water closets	345,825.75	360,141.75	372,827.00	365,894.00	372,265.00	398,982.00	428,363.00
Urinals	9,589.50	10,500.25	12,536.00	12,478.00	13,145.00	14,795.50	15,776.50
Baths	136,357.75	141,616.00	147,340.75	149,499.50	158,585.50	165,214.00	176,471.50
Wash basins	102,403.25	104,550.50	101,904.50	97,516.50	95,258.50	100,388.25	109,548.50
Extra rooms and persons	279,020.25	292,580.75	239,954.25	228,787.50	227,803.50	229,486.50	232,899.75
Saloons	27,712.00	30,878.00	18,048.50	16,928.50	16,934.00	16,852.50	17,383.00
Hose, trough and fountain	106,808.50	105,563.50	82,704.00	80,646.50	87,782.00	92,368.00	91,686.50
Laundries	3,228.00	3,265.75	2,971.75	2,639.25	2,702.00	2,833.50	2,979.50
Steam heating and engines	34,084.70	27,856.45	27,679.40	24,929.55	24,366.30	29,073.95	31,504.00
Stables	68,595.75	69,817.00	70,864.50	68,204.75	71,023.00	72,795.50	75,248.00
Miscellaneous	34,021.70	35,174.45	33,249.60	30,823.50	31,332.90	31,829.40	34,321.85
Total	$2,566,834.90	$2,619,021.90	$2,585,185.50	$2,437,194.05	$2,489,844.70	$2,560,646.60	$2,651,688.10

TABLE No. XXVII.

SHOWING NET RECEIPTS AND EXPENSES, AND PER CENT OF EXPENSES TO COLLECTIONS, FOR THE YEARS 1891 TO 1902, INCLUSIVE.

YEAR.	Receipts.	Expenses.	Per Cent.
1891	$2,331,286.20	$303,879.86	13
1892	2,592,111.67	336,956.79	13
1893	2,837,827.35	294,968.60	10 5/10
1894	3,010,259.92	287,306.92	9 5/10
1895	3,215,187.10	309,273.30	9 5/10
1896	3,003,692.61	288,497.84	9 6/10
1897	3,177,706.83	281,878.72	8 8/10
1898	3,489,390.87	298,982.07	8 5/10
1899	3,203,569.71	285,887.71	8 9/10
1900	3,248,411.36	264,648.64	8 1/10
1901	3,397,928.87	253,182.64	7 5/10
1902	3,223,867.55	252,810.28	7 8/10

During the year the United States Express Company, under the contract with the Department of Public Works, made the following collections:

	Number of Bills.	Amount.
From January 11 to August 30, 1902	37,228	$186,061.02
From September 6 to January 3, 1903	31,849	134,390.19
Total for 1902	69,077	$320,451.21
Total for 1901	92,102	$443,396.09

INSPECTION DIVISION.

The force employed in the Inspection Division is smaller now than it has been at any time within the past decade.

During the year, in addition to the regular routine work, annual, or house to house examinations were made in the Fourth, Fifth, Sixth, Seventh, Eighth and Twenty-ninth wards. While fewer wards were thoroughly examined than during the year previous, a larger credit to the general assessment fund is shown. For the year 1902 this item is shown to be $91,041.50, as against $70,801.90 for the year 1901.

ASSESSOR'S DIVISION.

Contracts were let for laying water service pipes in seventy-six streets, as compared with fifty-nine streets for the year previous.

Estimates for laying service pipes in one hundred and four streets have been prepared and returned to the Board of Local Improvements, as compared with one hundred and seventy streets for the year 1901.

During the year four plat books of one hundred and forty pages each have been added to the seventy-three plat books completed up to the beginning of the year 1902.

COLLECTION DIVISION.

The work of arranging the accounts under assessed rates in conformity with the redistriction of the City by wards and collection districts, which was initiated at the close of the year 1901, was completed during the year 1902, and the accounts under assessed rates adjusted in accordance with the new ward boundaries.

This change entailed an immense amount of detail work, requiring the closest attention to minutiæ of any work connected with the accounting of this Bureau since its inauguration. The ordinance providing for the accounting in accordance with the redistriction by wards also, as is stated elsewhere, changed the discount collection period, extending it beyond December 31st, as had governed previously, in the Ninth to the Fourteenth wards, inclusive, until January 15th; in the Fifteenth to Twentieth wards, inclusive, until January 31st; and in the Twenty-first to Twenty-sixth wards, inclusive, until February 15th. As a consequence, the collections for the year are less than for the previous year. For the months of January and February the collections will exceed $500,000.

METER DIVISION.

There are in service 7,075 meters, of which number 347 were installed during the year. There have been repaired during the year 2,760 meters. The net collections of this Division of the Bureau were $1,330,805.29, as compared with $1,197,405.06, for the year 1901, being an increase of $133,400.23.

There have been investigated about 1,350 complaints, growing out of alleged excessive meter bills. Fully 90 per cent of these complaints were found to be the result of leakage.

SHUT-OFF DIVISION.

The ordinance requiring the water to be shut off, where there are buffalo or shut-off boxes, thirty days prior to the close of the collection period, has been religiously lived up to; so that in every premises in the City where there is a shut-off box, in good order, and where the taxes had not been paid within the period, the water has been shut off.

GENERAL.

While the net collections for the Bureau have not been quite so large as for the year previous, by virtue of the change in the ordinance extending the discount payment period in nearly one-half of the wards beyond the close of the year, and while the work incident to adjusting the books in accordance with the same ordinances has been extremely arduous and heavy, the expenses for collection have been less than for the preceding year.

Before closing, I wish again to call your attention to the suggestions contained at the close of the Annual Report for the year 1901, as they relate to the question of leakage and the remedies therefor, as well as to the question of the effect of electrolysis upon the mains and service pipes throughout the City.

In three previous reports, for the years 1899, 1900 and 1901, I have recommended that a meter testing plant be provided at the water works shops, and again urge its necessity.

In conclusion, permit me, please, on behalf of the employes of the Bureau, to extend to his Honor, the Mayor, and yourself our hearty appreciation for the consideration extended to us during the year just closed.

Respectfully submitted,

H. O. NOURSE,
Superintendent of Water.

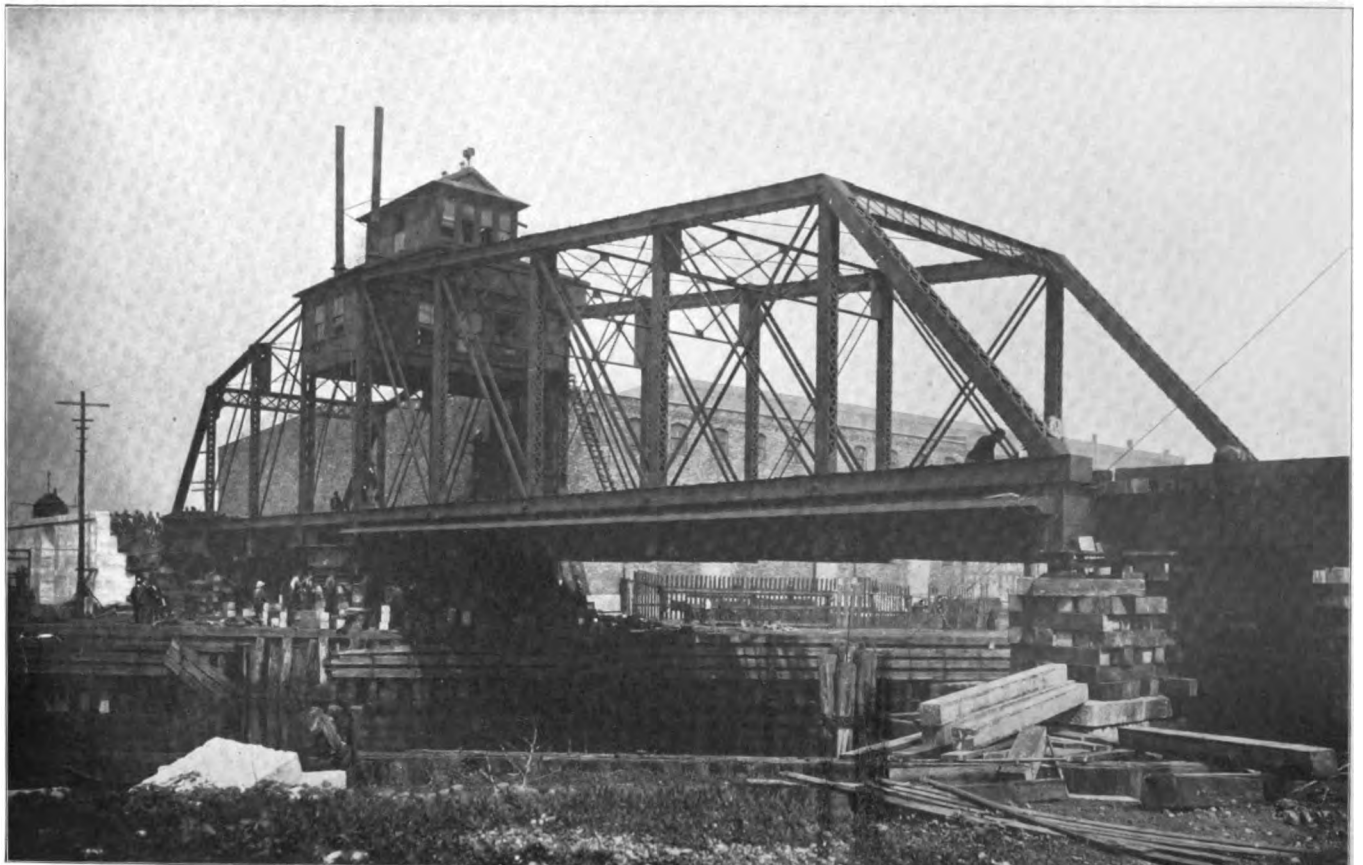
ANNUAL REPORT

Bureau of Sewers

CITY OF CHICAGO

1902

WM. E. QUINN
Superintendent



EIGHTEENTH STREET TRACK ELEVATION—RAISING BRIDGEPORT DRAWBRIDGE—LOOKING EAST.

BUREAU OF SEWERS.

HON. F. W. BLOCKI,

Commissioner of Public Works.

DEAR SIR: I beg to submit Annual Report of the Bureau of Sewers for the year ending December 31, 1902, being the Twenty-seventh Annual Report of this Bureau under the Department of Public Works, and the Forty-seventh Annual Statement of the work done in connection with the sewers of the City.

EXPENDITURES.

Sewer Fund	$ 251,099.75
Intercepting sewers (Water Fund)	1,153,780.59
Fullerton avenue pumping station (Water Fund)	19,700.96
Total	$1,424,581.80

Distributed as follows:

GENERAL FUND.

Office expenses	$ 11,265.41
House drains	32,222.04
Sixty-ninth street pumping station	3,365.88
Woodlawn pumping station (including reserve on coal)	12,874.00
Seventieth street pumping station (including reserve on coal)	7,866.89
Seventy-third street pumping station (including reserve on coal)	6,039.08
Kensington pumping station (including reserve on coal)	5,440.27
Pullman pumping station (including reserve on coal)	7,863.63
Rogers Park system	3,500.00
Repairing sewers and catch-basins (including reserve on teaming)	89,490.79
Repairing catch-basins and manhole covers (including reserve on teaming)	18,000.00
Cleaning sewers and catch-basins (including reserve on teaming)	95,872.51
Restoration of streets (including reserve on teaming)	1,327.82
Wiring Sixty-ninth street electric pump	2,526.02
Enlarging motor pit, Sixty-ninth street and Halsted street	1,201.01
Removing sewers from Lake View avenue	500.00
South Park Commission for opening street	3.90
Miscellaneous work for departments and public	1,740.50
Total General Fund	$251,099.75

WATER FUND.

Fullerton avenue pumping station (including reserve on coal)	$ 19,700.96
Section B, reconstruction Twenty-first street outfall	269.68
Section C, Thirty-ninth street conduit	472,515.78
Restoration of Thirty-ninth street	7,418.18
Pumping, Halsted street slip	14,988.93
Section D, Lawrence avenue conduit	2,789.55
Pumping at Lake Michigan (Lawrence avenue)	10,149.56
Section G, Thirty-ninth street to Fifty-sixth street	365,893.10
Section H, Fifty-sixth street to Seventieth street	114,435.62
Deposited South Park Commission for restoration	20,000.00
Section L, main conduit, Thirty-ninth street produced	83,465.90
Section M, intake, breakwater and pier, Thirty-ninth street produced	46,067 07
Section O, pumping station, Thirty-ninth street	3,721.93
Section L, pumping machinery, Thirty-ninth street conduit	166.67
Section S, connecting lateral sewers	1,012.50
Office expenses	10,865.17
Bill of South Park Commission	20.95
	$1,173,481.55

SEWERS AND CATCH-BASINS CLEANED (BY DIVISIONS) IN THE CITY OF CHICAGO DURING THE YEAR 1902.

METHOD.	District No. 1.		District No. 2.		District No. 3.		District No. 4.		Total.		Average Cost per 100 Feet.
	Feet Cleaned.	Cost.	Feet Cleaned.	Cost.	Feet Cleaned.	Cost.	Feet Cleaned.	Cost.	Fee Cleaned.	Cost.	
Flushing.....	552,500	$4,864.97	785,800	$ 9,831.72	78,600	$ 523.20	27,900	$ 128.96	1,444,800	$15,348.85	$1.06
Iron scraper.....	12,220	2,196.23	29,600	914.83	88,050	4,387.00	76,375	4,386.58	206,245	11,884.64	5.76
Wood scraper.....	198,400	2,692.88	.....	.....	.....	.....	.....	.....	198,400	2,692.88	1.36
Total.....	763,120	$9,754.08	815,400	$10,746.55	166,650	$4,910.20	104,275	$4,515.54	1,849,445	$29,926.37	.....
Opening inlets to catch-basins, attending complaints, etc.....										$23,917.03	
Total.....										$53,843.40	

	No.	Cost.	No.	Cost.	No.	Cost.	No.	Cost.	Total No.	Cost.	Average Cost per Basin.
Catch-basins cleaned.....	5,282	$18,289.11	3,516	$10,870.84	1,483	$4,041.91	1,773	$5,189.08	12,054	$38,390.94	$3.18
Cost of cleaning sewers and catch-basins.....										$92,234.34	
Miscellaneous bills, tools, supplies, etc.....										3,638.24	
Amount paid Rogers Park Water Company for water used flushing sewers.....										3,500.00	
Total.....										$99,372.58	

Of the above amount $471.97 is reserved on teaming contract.

AMOUNTS EXPENDED FOR REPAIRS OF SEWERS, MANHOLES AND CATCH-BASINS, DURING THE YEAR 1902.

No.	DESCRIPTION OF WORK DONE.	Cement	Brick	Iron Covers	Wood Covers	Straight Pipe 6-in.	Straight Pipe 9-in.	Straight Pipe 12-in.	Straight Pipe 15-in.	Straight Pipe 18-in.	Curved Pipe 6-in.	Curved Pipe 9-in.	Curved Pipe 12-in.	Curved Pipe 15-in.	Curved Pipe 18-in.	Traps	Bottoms	Junctions	Slants	Labor and Teaming	Material	Total Cost
9	New manholes built.....																					
10	New catch-basins built																					
216	Manholes repaired																					
839	Catch-basins repaired.....																					
148	Feet of 6-inch drains repaired ...																					
2710	Feet of 9-inch drains repaired...																					
468	Feet of 12-inch drains repaired .																					
402	Feet of 15-inch drains repaired .	1,075	214,500	195	40	482	1,814	201	397	246	13	95	11	17	5	30	11	27	2	$32,484.10	$7,287.54	$39,771.64
282	Feet of 18-inch drains repaired .																					
84	Feet of 2-foot sewers repaired ..																					
29	Feet of 2½-foot sewers repaired.																					
18	Feet of 3-foot sewers repaired ..																					
8	Feet of 4-foot sewers repaired ..																					
66	Feet of 5-foot sewers repaired ..																					
4	Feet of 6-foot sewers repaired ..																					
62	Feet of 10-foot sewers repaired .																					

	Wood Covers		Iron Covers		Wood Lids		Iron Lids		Grates	Labor and Teaming	Material	Total Cost
	Manholes.	Catch-Basins	Manholes.	Catch-Basins	Manholes.	Catch-Basins	Manholes.	Catch-Basins				
[illegible]hole and catch-basin covers rep'red	148	151	28	17	2,400	2,000	258	18	34	$14,874.20	$2,846.95	$17,721.15
Total.....												$57,492.79

Of the above amount $3,100.61 is reserved on teaming contract.

During the year 8,842 complaints were attended to by this Bureau.

THE FOLLOWING STATEMENT SHOWS THE AMOUNT EXPENDED PER MILE PER YEAR FOR THE PAST SIXTEEN YEARS, IN CLEANING SEWERS AND CATCH-BASINS.

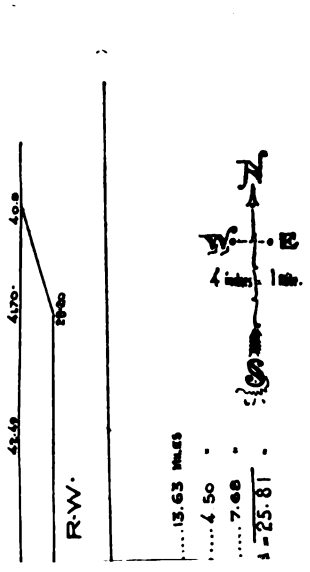
YEAR.	Miles of Sewer to Maintain.	Cost of Cleaning Sewers and Catch-Basins.	Cost per Mile of Cleaning Sewers and Catch-Basins per Year.
1887	474	$ 50,264.65	$106.04
1888	492	52,423.41	106 55
1889	712	61,503.01	86.38
1890	785	107,878.84	137.42
1891	888	123,620.44	139.21
1892	992	142,720.52	143.87
1893	1,145	132,633.51	115.84
1894	1,211	154,225.45	127.35
1895	1,248	134,424.44	107.71
1896	1,306	96,901.65	74.20
1897	1,345	91,414.89	67.96
1898	1,388	92,961.88	66.98
1899	1,424	72,439 07	50.92
1900	1,453	80,985.64	55.73
1901	1,475	94,369.87	63.98
1902	1,501	99,372 58	66.20

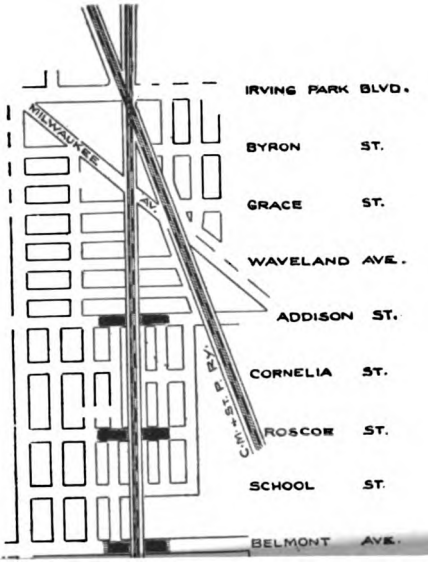
RECEIPTS OF HOUSE DRAIN DEPARTMENT FOR THE YEAR 1902.

DIVISION.	Extension Permits.	Fee Permits.	Credits by Cancellation.	Receipts.	EXTRA JUNCTION SEWER PIPES SET.								Council Order Drains.	Inspection Receipts.	Guarantee Fund Receipts.	Special Assessment Costs.	Receipts.
					6-inch.	Receipts.	9-inch.	Receipts.	12-inch.	Receipts.	20-inch.	Receipts.					
North	840	524	.....	$ 2,620.00	69	$172.50	31	$155.00	...	.....	...	.....	39	$ 20.00	$ 20.00	...	.....
South	1,623	1,221	.....	6,105.00	152	380.00	66	330.00	...	.....	...	.....	46	88.50	40.00	...	.....
West	2,229	1,600	$65.00	7,935.00	117	292.50	56	280.00	6	$45.00	1	$12.50	216	136.25	81.00	1	$7.00
Totals	4,692	3,345	$65.00	$16,660.00	338	$845.00	153	$765.00	6	$45.00	1	$12.50	301	$244.75	$141.00	1	$7.00

Total receipts for regular house drain permits	$16,660.00
Total receipts for special assessment costs	7.00
Total eceipts for junction sewer material fund	1,667.50
Total receipts for miscellaneous engineering and inspections	244.75
Total receipts for miscellaneous guaranteed fund	141.00
Total receipts for 355 drain layers' licenses	1,775.00
Grand total receipts on all	$20,495.25

Total new house drains by permits	3,345
Total new house drains by Council orders	301
Total new house drains by special assessments	4,636
Grand total new house drains	8,482
Total number of sewer drain inspections, extensions and repairs	4,692
Total number of sewer drain inspections, new permit connections	3,345
Total number of sewer drain inspections, extra junctions set	498
Total number of sewer drain inspections, Council orders	301
Grand total number of sewer drain inspections	8,836





SEWERAGE PUMPING STATIONS, 1902.

WILLIAM DONLAN, Chief Mechanical Engineer.

SEVENTIETH STREET STATION.

The pumpage in this station has increased 34 per cent over last year, owing to the heavy rains during the year. It was necessary at times to run both pumps to keep the water low in the well. Sewage pumped during the year, 2,830,000,000 gallons. Total operating expense, $7,874.96; less coal reserve, $230.49. Actual expenditures for the year, $7,644.47.

During the year the following repairs were made: Engine No. 1, new slide valve and piston-rod made for low-pressure side, new pins put in eccentric rods, valve stem adjusted, new rings put in air pumps. Engine No. 2, valves put in air pumps, crank and wrist pins rebabbitted on low-pressure engine; also repairs were made to roof of engine and boiler-room.

Repairs necessary during the coming year: New set of flues put in boiler No. 2. General overhauling of engine No. 1. Brass bushing turned in pumping engine No. 2. Interior of engine and rooms needs painting and calcimining; otherwise the plant is in good condition.

SEVENTY-THIRD STREET STATION.

The pumpage in this station has increased 38 per cent over last year. It was necessary to run the large pump from fifteen to twenty-two hours per day during the heavy rains in the month of June. Sewage pumped during the year, 2,007,000,000 gallons. Total operating expense, $6,039.09. Less coal reserve, $174.51. Actual expenditures for the year, $5,864.58.

During the year a few minor repairs were made to engine No. 2: Main shaft lined up and rebabbitted; lost motion was taken up in valve connections as much as possible. A new set of flues was put in boilers Nos. 1 and 3. Water columns on boilers Nos. 1 and 2 were repaired.

During the coming year it will be necessary to put a new set of flues in boiler No. 2. Engines Nos. 1 and 2 need a general overhauling. A few alterations to the steam pipes connecting boilers and engines are needed. This plant was run very satisfactorily during the year.

PULLMAN STATION.

This station was run almost continuously during the year with one pump in operation, except during the rainy season, when it was necessary to run both pumps to keep the well pumped out. Sewage pumped during the year, 716,000,000 gallons. Total operating expense, $7,875.76; less coal reserve, $330.58. Actual expenditures for the year, $7,545.18. During the year a few alterations and repairs were made to engines, boilers

steam fitting and building that were necessary to its operation. During the coming year some repairs will be needed to pumps Nos. 1 and 2, also to boilers and main steam pipe and building.

KENSINGTON STATION.

This station was run very economically during the year. Considerable trouble was experienced during heavy rains. The water was so high in the Calumet river that the pumps had to be worked against a back pressure which reduced their efficiency considerably. Sewage pumped during the year, 610,000,000 gallons. Total operating expense, $5,452.15; less coal reserve, $149.03. Actual expenditures for the year, $5,303.12. During the year a few minor repairs were made that were incidental to its operation.

Repairs necessary during the coming year: Engines Nos. 1 and 2 need lining up; brasses refitted in wrist and crank pins; piston valves overhauled; brickwork around boilers needs repairs; also interior of engines and boilers needs painting.

WOODLAWN STATION.

At this station there was a slight increase in the pumpage over last year. During the heavy rains the four pumps were worked to their full capacity against a back pressure varying from 20 to 60 pounds, this being due to the discharge pipes being too small to relieve the pump. At times it was impossible for the pumps to gain on the water. During the month of June the greatest amount of rain fell; the back pressure was so great on the pumps that it caused twelve rubber hoods on discharge valves to give out; crossheads on pump No. 3 and three clam-mouth valves broke. The repairs were made as soon as possible without letting the water get too high in sewers.

During the year the following repairs were made: Pump No. 2, new brass sleeves put in water end of pump, piston rods turned to fit same, three new clam-mouth valves, six rubber hoods. Pump No. 3, new crossheads, two new clam-mouth valves, nine rubber hoods, overhauling condenser No. 1; old main steam pipe connecting boilers and engines was taken out and new pipes put in.

Owing to the numerous complaints of smoke at this station, boilers Nos. 2 and 3 were equipped with the "Perfect Combustion Smoke Consuming Device." With the approval of the Commissioner of Public Works this device was installed about six months ago. It consists of one small 5-horse power engine, which operates a 36-inch fan with 6-inch pipes so arranged as to admit air directly over the fires. The pipes are provided with slide valves that can be regulated to admit a sufficient amount of air to form a perfect combustion. The device is simple in construction and can be operated with very little expense. Since the boilers have been

equipped with this smoke consumer no complaints have been made. The device works satisfactorily in every respect. Owing to the lack of funds this year we were not in a position to purchase same, but would recommend that provision be made next year, as I believe it will pay for itself within a year.

During the coming year it will be necessary to make repairs on brickwork under boilers Nos. 2 and 3, overhaul feed pump No. 1; engine No. 1 needs new high-pressure piston head and rings; engines Nos. 2 and 3 need new plunger rods, sixteen rubber hoods, six new valves, and lining up and rebabbitting rocker arms; engine No. 4, new brass bushing for pump bearing condensers Nos. 1 and 2, new rods and pins. The slate roof on engine-room needs repairs badly, also the coal shed will have to be shingled. Total operating expenses, $12,775.30; less coal reserve, $664.95. Actual expenditures for the year, $12,110.35. Sewage pumped during the year, 2,911,000,000 gallons.

SIXTY-NINTH STREET STATION.

During the year it was necessary to run the steam plant on two different occasions on account of the location of motor pump. This motor is located in pit 12 feet below grade, and the supply of water is regulated by a 20-foot gate valve. During the heavy rains the water raised four feet above the motor in the main sewer while motor was in operation. The valve is so regulated to admit the water as fast as the pump can discharge it. Through some unknown cause the fuse burned out on the switchboard, causing the motor to stop. Before the regulating valve could be closed the water rushed in, covering the motor in four feet of water. The armature and field coils had to be taken to the shop and baked out before the pump could be started; later on it was necessary to put in a new set of gear teeth. In the meantime the steam pump at the station was started to relieve the district as much as possible. Since then the motor has run very satisfactorily owing to the improvements made to the pit. The floor was ceiled up with cement to prevent water from coming in. An addition, 8x12 feet, was built to old chamber electric fan; lights and ventilating pipes were put in; feed wires were strung from Sixty-fourth street electric light station to Sixty-ninth street motor; switchboards and other fixtures have been provided for to connect up motor with generator at Sixty-fourth street plant to furnish power during the night. A double throw switch will be put in to use power from the Chicago City Railway Company during the day when necessary. These connections will be made as soon as possible. Sewage pumped during the year, 1,133,000,000 gallons. Operating expense, $3,365.88. Improvements, enlarging pit and stringing wire, $3,727.03.

FULLERTON AVENUE STATION.

At this station the pumpage increased 14 per cent over last year. The engines were run to their full capacity, pumping about 1,000,000 cubic feet of lake water into the North branch of the Chicago river per hour, which keeps the river in fairly good condition from Fullerton avenue to Lake street. The effect of this flushing is more noticeable when for any reason the station has to be shut down two or three days for repairs, as was the case last July when the key in main shaft between the engine and water-wheel pulled out of its coupling, making it necessary to put in two 1.5x17-inch steel pins at right angles with the shaft as auxiliary keys, the boring for which had to be done by hand ratchet drilling while the shaft was lined up in its place. This being slow work the engine was shut down about five days, and the river showed the effect by its unmistakable pungency. On this occasion, for the reason of the engine being suddenly released from its load, a matter that could not be foreseen, the connecting rods slightly bent and had to be taken to the shop and straightened. Mr. James Garland, the engineer on watch at the time, deserves great credit for his prompt and fearless action in getting the steam turned off before the engine attained a breaking speed.

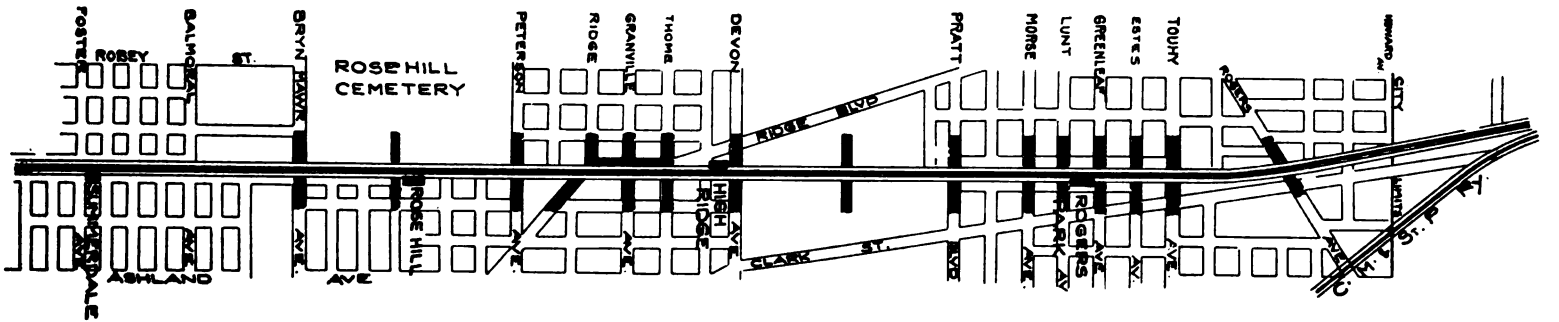
The ordinary repairs were made in this plant during the year, as well as the annual close-down in midwinter for a general overhauling of the engines and pumps, that this time may not be lost in the summer season when it is more necessary to keep the river flushed.

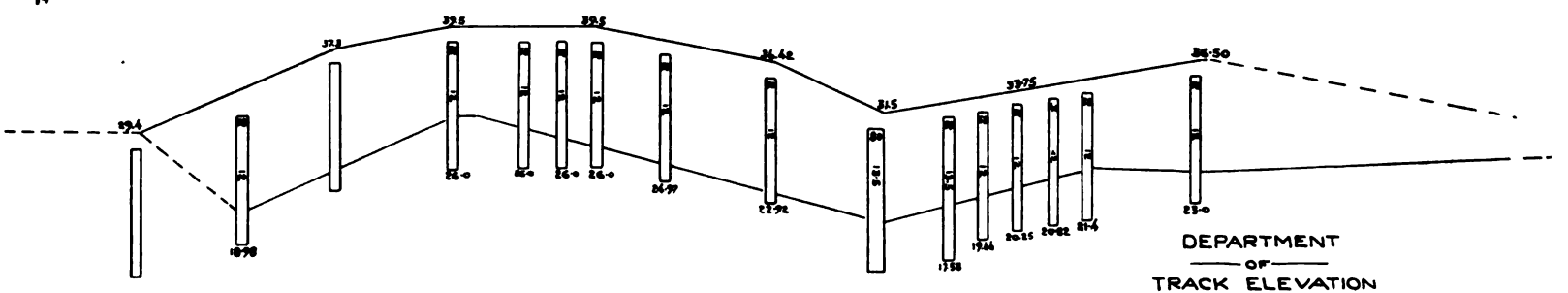
Among the repairs that must be done this year is the putting in of new bearing on the water-wheel shaft. This being under water surface, it will be necessary to let down the main tunnel gates and pump the water out of the tunnel, also the air pump will require sixteen new brass boxes. These repairs will leave the engine in good working condition for the year and will need but the ordinary repairs thereafter. Total cubic feet of water pumped into the river during the year, 5,239,000,000. Total operating expense for the year, $19,700.95; less coal reserve, $1,160.19. Actual expenditures for the year, $18,540.76.

ROGERS PARK SEWER SYSTEM.

The sewage in this district is discharged into the lake by six small "Shone ejectors" which are operated by an air compressor at the Rogers Park water works. This sewer system is provided with eighteen flush tanks, which are used one or two days each month to flush the sewers and prevent their becoming stopped up.

During the year a few minor repairs were made to the air compressor. The ejectors are in good condition. The system was run very satisfactorily during the year. Operating expense for the year, $3,500.





DEPARTMENT
OF
TRACK ELEVATION
CHICAGO

PROFILE OF C. AND N. W. Ry.

ORDINANCE PASSED
March 23rd 1903

John O'Neill
Expert.

CITY DATUM

SEWERS CONSTRUCTED BY PRIVATE CONTRACT DURING THE YEAR 1902.

STREET.	FROM	TO	Diam. in Feet.	Length.	NAME OF CONTRACTOR.
Alley E. of Lawndale ave.	Humboldt	300 feet north	¾	310	M. J. Joyce.
Alley E. of Michigan ave.	110th	263 feet N. of center of 110th	¾	263	Andrew Maloney.
Alley E. of Perry	Cullom avenue	Melville place	1	346	Wm. F. Healy.
Beach avenue	N. Forty-seventh avenue	280 ft. E. of N. Forty-seventh av.	1	321	Metropolitan Contracti'g Co.
Drake avenue	Iowa	Alley N. of Chicago avenue	1	475	Wm. F. Healy.
Edgecomb place	Clarendon avenue	Evanston avenue	1	415	McNichols & Co.
S. Fortieth court	W. Thirty-first	410 feet S of W. Thirty-first	1¼	445	Wm. F. Healy.
N. Forty-seventh avenue.	North avenue	Le Moyne avenue	1½	653	Metropolitan Contracti'g Co.
N. Forty-seventh avenue.	Le Moyne avenue	Hirsch	1	646	Metropolitan Contracti'g Co.
N. Forty-seventh court	Le Moyne avenue	100 feet N. of Hirsch	1	558	Metropolitan Contracti'g Co.
Fulton	Chicago river	Canal	5	200	Jas. H. Roche.
Harding avenue	Byron	Half way to Avondale avenue	1	439	Wm. F. Healy.
Harding avenue	Half way to Avondale ave	Avondale avenue	¾	381	Wm. F. Healy.
Harding avenue	330 feet N. School	Roscoe	1	310	Jas. H. Roche.
Humboldt	N. Lawndale avenue	Alley E. of Lawndale avenue	1	300	M. J. Joyce.
Iowa	Central Park avenue	Drake avenue	1¼	337	Wm. F. Healy.
Kenesaw terrace	Clarendon avenue	Hazel	1	470	Wm. F. Healy.
N. Lawndale avenue	Belmont avenue	Alley N. of Milwaukee avenue.	1	775	Jas. H. Roche.
Le Moyne avenue	N. Forty-seventh place	280 ft. E. of N. Forty-seventh av.	1	645	Metropolitan Contracti'g Co.
McLean avenue	N. Forty-third avenue	330 feet west	1	330	Wm. F. Healy.
Melville place	Perry	Clark	1	710	Wm. F. Healy.
Monticello avenue	Fullerton avenue	Belden avenue	1¼	670	Wm. F. Healy.
Pierce avenue	N. Forty-seventh avenue	280 ft. E. of N. Forty-seventh av.	1	316	Metropolitan Contracti'g Co.
S. Springfield avenue	Ogden avenue	Nineteenth	1	1,083	McNichols & Co.
N. Springfield avenue	W. Belle Plaine avenue	Berteau avenue	1	670	Thos. Burke.
N. Springfield avenue	Irving Park boulevard	Avondale avenue	1	1,312	Wm. F. Healy.
Thirty-eighth	Morgan	465 feet west	1¼	466	J. H. McCarthy.
Thirty-eighth	465 feet west	S. Center avenue	1	455	J. H. McCarthy.
Trumbull avenue	Grand avenue	264 feet N. of Iowa	1¼	1,010	Wm. F. Healy.
Trumbull avenue	264 feet N. of Iowa	Alley N. of Chicago avenue	1	721	Wm. F. Healy.
W. Twentieth	S. Fortieth avenue	S. Forty-first avenue	2	664	P. J. McNulty.
W. Twentieth	Wing sewer		1¼	34	P. J. McNulty.
Wabansia avenue	Springfield avenue	300 feet east	1	300	Wm. F. Healy.
Woollacut place	Halsted	400 feet east	1	305	Wm. F. Healy.
			¾	290	Wm. F. Healy.
		Total length		17,625	

NEW SEWERS AND CATCH-BASINS BUILT DURING THE YEAR 1902, AND THE COST OF SAME.

Length.	DIAMETER, IN FEET.	COST.
2,682	¾	$ 2,360.36
65,164	1	89,673.40
26,894	1¼	43,024.39
2,676	1½	7,029.68
5,000	2	12,289.89
1,385	2 (Double Invert)	4,388.75
1,490	2½	4,270.50
2,010	3	8,804.70
3,125	3½	8,587.60
2,235	4	9,945.75
2,000	4½	8,900.00
3,530	5	26,810.00
2,645	5½	18,515.00
*480	1	
*1,248	1¼	
*2,365	13½	
*3,207	14¼	1,153,780.58
*4,522	15¼	
*1,331	16	
*4,922	20	
138,311		$1,398,329.60

*Intercepting sewers.

TOTAL COST OF THE CONSTRUCTION OF SEWERS AND CATCH-BASINS AND MAINTAINING SAME, SINCE THE ESTABLISHMENT OF THE SEWERAGE SYSTEM IN 1855 TO JANUARY 1, 1903.

Year.	Lineal feet of Sewers Built.	No. of Catch-Basins Built.	No. of Manholes Built.	No. of House Drains Put in.	Cost of Cleaning Sewers and Catch-Basins.	Street Intersections and Repairs of Sewers.	Cost of Construction.
Previous to 1861	283,586	1,174	2,103	2,194	$ 5,819.48	No. amts. found on reports.	$665,188.46
1861	2,826	18	33	243	1,715.60	$ 2,951.76	3,617.31
1862	15,676	72	66	365	4,897.24	3,024.07	57,036.42
1863	39,605	192	204	536	5,065.40	2,058.11	169,527.38
1864	25,021	189	183	512	9,417.81	4,597.68	87,221.48
1865	29,948	223	168	1,288	13,818.07	7,493.56	137,648.02
1866	48,127	327	271	3,732	28,445.16	773.65	225,564.53
1867	89,681	418	555	3,703	26,540.81	9,581.42	416,730.51
1868	47,841	480	293	3,261	26,954.06	11,287.08	197,152.92
1869	139,705	771	928	3,979	26,015.68	7,527.16	654,141.26
1870	78,166	626	468	5,187	21,464.30	10,954.74	258,664.70
1871	50,716	277	357	3,093	17,415.46	42,557.72	153,295.36
1872	47,842	245	341	1,435	21,484.16	16,975.40	173,255.76
1873	146,702	897	1,015	4,691	31,229.27	29,781.97	450,222.90
1874	222,322	1,054	1,474	6,292	36,884.57	21,996.72	587,507.38
1875	120,971	958	789	3,365	32,098.28	28,107.40	342,932.89
1876	15,248	155	75	1,172	29,545.41	19,803.29	79,545.28
1877	64,666	363	431	1,822	35,763.33	16,959.44	291,829.53
1878	88,031	492	603	1,514	25,704.37	19,259.49	37,264.97
1879	145,881	820	1,043	2,953	29,286.67	10,649.69	130,840.50
1880	79,128	271	554	4,196	25,561.48	25,068.11	92,544.08
1881	132,076	548	917	4,810	34,512.15	30,967.89	452,310.06
1882	98,515	792	725	5,677	33,969.35	26,618.05	224,450.16
1883	75,364	835	497	5,963	34,749.74	25,140.81	231,084.33
1884	101,547	751	654	5,957	43,678.03	37,893.29	258,020.91
1885	118,647	796	854	6,325	46,532.18	45,333.02	203,188.03
1886	103,193	734	723	7,441	51,110.46	50,707.64	177,647.24
1887	90,584	756	605	8,100	50,264.65	43,789.60	186,496.98
1888	104,903	816	674	8,152	52,422.41	53,782.07	228,567.57
1889	171,023	1,351	1,190	4,803	61,503.01	63,459.25	350,234.54
Annexed Districts previous to 1890	993,573	6,102	8,620	Estimated cost of maintenance not known		Estimated cost of construction, not known	2,614,224.75
1890	379,203	2,986	2,604	9,279	107,873.84	83,383.08	826,718.67
1891	546,918	3,979	3,736	11,312	123,620.44	95,906.75	1,532,990.44
1892	549,258	3,866	3,714	12,562	142,720.52	70,747.83	1,290,017.98
Norwood and Rogers Park annexed previous to 1893	96,697	326	231	No. of house drains and cost of construction not known.			172,846.30
1893	708,176	4,811	4,825	14,198	132,633.51	114,702.78	1,606,720.09
1894	350,944	2,597	2,259	8,928	154,225.45	130,749.03	1,014,489.86
1895	196,349	1,515	1,409	1,621	134,424.44	93,713.66	356,950.01
1896	303,172	2,201	1,990	6,161	96,901.65	91,339.54	721,869.88
1897	206,450	1,842	1,550	8,241	91,414.89	90,651.29	446,249.53
1898	256,618	1,812	1,916	2,635	92,961.88	100,986.06	682,229.10
1899	191,790	1,466	1,384	2,647	72,439.07	84,004.37	793,623.28
Part of town of Cicero annexed previous to 1900	154,895	995	1,075	No. of house drains, cost and cost of construction not known.			
1900	155,866	1,591	1,176	4,750	80,985.64	102,677.89	475,783.36
1901	117,546	899	906	5,508	94,369.87	Sewer Repairs. 55,965.24	454,273.53
1902	138,311	1,326	927	8,482	99,372.58	57,492.79	1,398,329.60
Totals	*8,122,207	55,715	†57114	208705	$2,287,411.82	$1,848,426.24	$21,911,992.94

* Of this amount 49,199 feet have been taken up and replaced by sewers of larger size, leaving in place January 1, 1903, 8,073,108 lineal feet, or 1,529 miles. Of this amount 561.32 miles are of brick construction and 967.68 miles are of vitrified tile pipe.

† Of this number 343 manholes have been abandoned, leaving in place, January 1, 1903, 56,771.

DIVISION OF STANDARD BENCH MONUMENTS, BENCH MARKS AND STREET GRADES.

W. H. HEDGES, Bench and Street Grade Engineer.

STANDARD BENCH MONUMENTS.

During the year ending December 31, 1902, no new concrete bench monuments were built, as no appropriation was made in that year for that purpose.

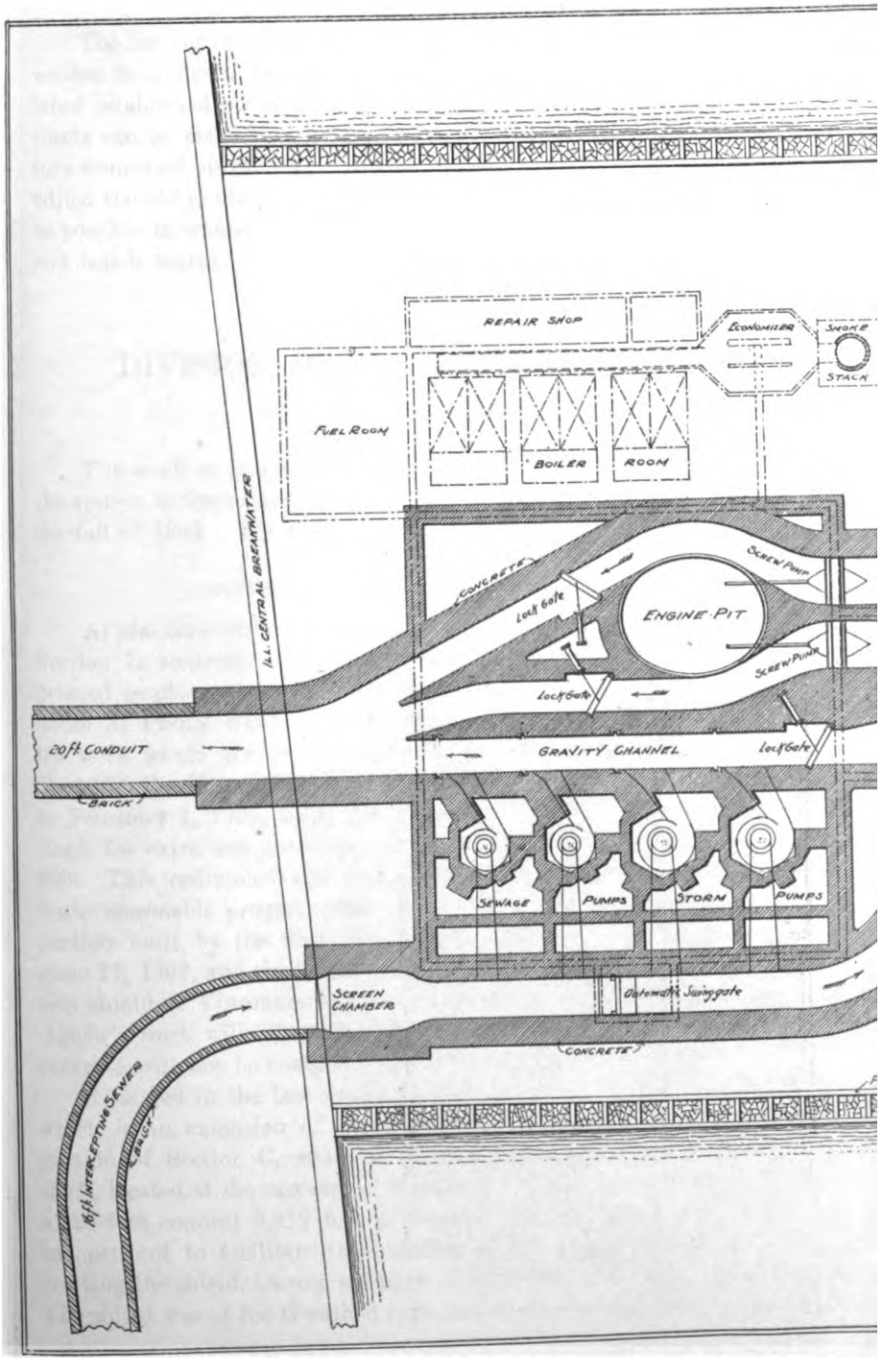
At the close of the year 1900, eighty-two of these monuments had been built, and during the year 1901 the remainder of the exact levels were run, establishing the elevations on the last of the monuments then built. Therefore, during the year 1902, nothing was done in the way of extending this work farther south in the town of Hyde Park, and into the towns of Lake and Calumet. If desired, reference can be made to page 186 of the Twenty-sixth Annual Report of the Department of Public Works (1901), for further information on this subject.

BENCH MARKS.

As the establishing of ordinary bench marks on buildings, curbstones, etc., has been done in connection with and along the lines of the exact levels run to establish the concrete bench monuments, it follows that no new bench marks were established during the year 1902. There are, however, now nine hundred and thirty-five of these bench marks already recorded in the books of this department. It is found that, in addition to the written records of these benches, it will be a great convenience and a saving of time to have blue line prints that shall show at a glance the location of each bench. It is proposed to have six of these blue line prints, that shall finally show all the benches in the whole City. Tracings for this purpose are now well under way in this department, and it is hoped that they will be completed and the benches located thereon before spring.

STREET GRADES.

During the year ending December 31, 1902, the City Council has by ordinance established 2,474 street grades, that were prepared and presented by this division of the Bureau of Sewers. The new street grade record books are now completed, and, with the street grade maps, are kept posted right up to date.



The issuing of blue line sheets of street grades, approximately a half section to a sheet, has been begun. These sheets show at a glance the latest established street grades at any point therein. Before any of these sheets can be made up, careful levels must be taken over the whole territory comprised in the sheet, to determine new grades where vacant, and to adjust the old grades to the correct City datum, conforming them as nearly as possible to whatever improvements have been made from the old incorrect bench marks.

DIVISION OF INTERCEPTING SEWERS.

WM. S. MACHARG, Consulting Engineer.

The work in this division has progressed well during the year, so that the system in the southern section of the City will be in partial operation in the fall of 1903. The following is a report in detail:

SECTION C, THIRTY-NINTH STREET CONDUIT.

At the time of the last annual report the work on this section and on Section L, contracts for both of which were held by John P. Agnew, was delayed pending action by the City Council on a request of the Commissioner of Public Works that the contracts be forfeited on the ground that the work would not be completed within the contract time. On January 27, 1902, the City Council passed an ordinance extending the contract time to February 1, 1903, upon the condition that Mr. Agnew should waive a claim for extra compensation which, if just, would amount to about $120,000. This ordinance was accepted by the contractor and the work has made reasonable progress since that date. Connection was made with the portion built by the Star Construction Company at Dearborn street on June 17, 1902, and the shield on the eastern section met the Star Construction shield at Vincennes avenue on December 11th. The cleaning of Mr. Agnew's work will take till about the middle of next March; so that the contract will not be completed quite within the extended time.

As stated in the last report, the contractor desired to build Section L, which is an extension of Section C, 476 feet eastward, and the eastern portion of Section C, which is 2,343 feet in length, from the lake shore shaft, located at the east end of Section L. This made a continuous stretch of 20-foot conduit 2,819 feet in length. Of this length 82 feet was built in open cut to facilitate the building of the shaft, setting air locks and erecting the shield, leaving a length of 2,737 feet to be built with the shield. The shield was of the Greathed type and similar to that used by Mr. Agnew

on the western section, operated by thirty 5-inch hydraulic jacks each of a rated power of 65 tons.

The ground in this section is of soft blue clay up to the middle of the shield and above this point a fine blue sand with some clay or silt, full of water to the level of the sewers above and running very badly, being of a kind which is in this City commonly called "quicksand." The roof over the tunnel is about twenty-one feet of this sand except that it is drained by the sewers for a depth of eight or ten feet from the surface of the street.

The shield was started on May 5th and met the Star Construction shield on December 11th, making the run of 2,737 feet in two hundred and twenty-one days, or at the rate of 12.38 feet per day. The contract provision was for continuous operation, but no work was done on Sundays, except cleaning up, and several days were lost in repairs or on account of bad ground. The rate of progress was remarkably good and was far superior to that made by the Star Construction Company in similar ground. This was due largely, without doubt, to the more direct and uniform application of the pressure by using smaller jacks, each provided with a proper shoe and working the water at a high pressure. Less than one-half the rated power of the jacks was used. A further advantage existed in the use of surfaced oak in the tubbing or wooden shell against which the jacks bore. By surfacing the tubbing was made tight and the shield was kept 50 feet to 70 feet ahead of the masonry so that it could be operated during the three daily shifts without interference with bricklaying.

SECTION L, THIRTY-NINTH STREET CONDUIT.

This section of the conduit from the east line of Lake avenue to a point near the Illinois Central breakwater, Lake Michigan, is built on the center line of Thirty-ninth street, produced, and was made necessary by the advantageous change in the site of the pumping station from Lake avenue to the ground to be made in Lake Michigan east of the breakwater.

It is proposed to lay out a private way from Lake avenue and to build a foot bridge over the Illinois Central tracks for access to the pumping station.

The construction of this section is included in the foregoing report on Section C, of which it forms a continuation.

SECTION D, LAWRENCE AVENUE CONDUIT.

In pursuance of the notice of intention on the part of Joseph Hanreddy to ask an order of court to restrain the City from building this work by day labor, a hearing was had and an order issued by the Superior Court so

restraining the City. The matter was taken to the Appellate Court and the lower court was sustained.

The matter was felt to be of such importance to the City that it was decided to carry the case to the Supreme Court and it is anticipated that a decision will be rendered by April next.

SECTION M, BREAKWATER AND PROTECTION PIER, THIRTY-NINTH STREET CONDUIT.

At the end of Thirty-ninth street, produced to Lake Michigan, the City procured a site for the pumping station outside of the Illinois Central breakwater, obtaining a quit-claim deed from the Illinois Central Railroad Company for an area 300 feet wide and extending easterly into the lake 1,000 feet, and also obtained from the Legislature the right to this submerged land. A large saving resulted from this as set forth in the report for the year 1898.

As stated in last year's report, the work of enclosing the area necessary for the pumping station and intakes was let and the work about one-third completed. The constant northerly wind of last summer so delayed the work that it is barely completed at the present time. It is however so far complete as to make it practicable to proceed with the construction of the foundations for the machinery and buildings.

SECTION O, PUMPING STATION THIRTY-NINTH STREET.

The general plan of this work is shown at page 218.

The Trustees of the Sanitary District of Chicago early this year requested the City of Chicago to so construct the pumping station at Thirty-ninth street that they would be able to install additional pumps to discharge 120,000 cubic feet of lake water per minute through the Thirty-ninth street conduit instead of the 40,000 cubic feet per minute contemplated by the contract between the City and the Sanitary District, dated November 18, 1899. On October 6, 1902, the City Council passed an order authorizing a new contract with the Sanitary District increasing the plant to a capacity of 120,000 cubic feet of water per minute, the additional pumps required of a capacity of 80,000 cubic feet per minute to be installed by the Sanitary District at its own cost, and the cost of more extensive foundations, intake, buildings and other appliances made necessary by the change to be divided between the City and the Sanitary District, the City paying 55 per cent of the amount and the District paying 45 per cent. The construction to be carried on by the City as originally provided.

Under this arrangement the contract for the foundations for

machinery and buildings has been let to the Lydon & Drews Company, to be completed May 31, 1903.

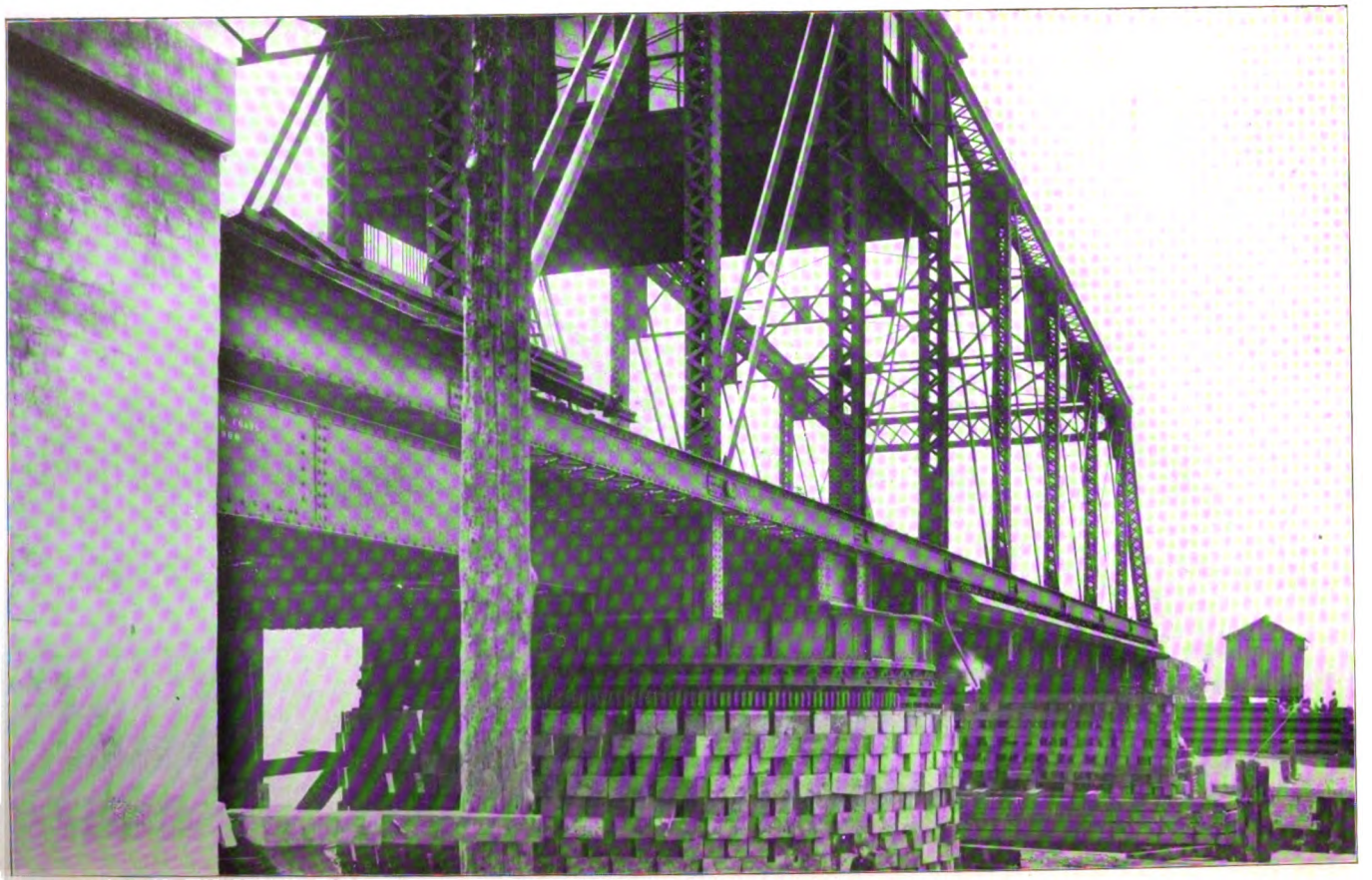
SECTION S, PUMPING MACHINERY, THIRTY-NINTH STREET STATION.

The contract with the Sanitary District of Chicago dated November 18, 1899, provides that the City of Chicago is to build a pumping station with pumps of a capacity of 40,000 cubic feet per minute to deliver water through the Thirty-ninth street conduit. The increase in the size of Sections G and H, by Council order of May 29, 1899, to enable an extension of the drainage area of these sections to Eighty-seventh street on the south made the capacity of the pumps provided by the contract about equal to the storm water discharge of the district under its new boundaries.

The increase in the quantity of water to 120,000 cubic feet per minute desired by the Sanitary District made it necessary to work the Thirty-ninth street conduit under a head not previously intended. The conduit built of sewer brick is 12,192 feet in length; 69 feet at the pumping station is of connecting channels and changing in form to a circular section 20 feet inside diameter, the 20-foot circular section is 10,014 feet long and changes to a horseshoe section 22 feet wide and 18½ feet high with a length to outlet of 2,108 feet; the bottom and side walls of the horseshoe section are of concrete and the arch of sewer brick. Two large sewers, 5 feet and 3 feet diameter, respectively, discharge into manholes in the top of the conduit arch of the horseshoe section. Of the three shafts used in construction of the tunnel section of the conduit, two will be closed over flush with the arch, but one will probably be left open; this shaft is of the same diameter as the tunnel.

When the Fullerton avenue conduit was completed in 1879 certain measurements of head and velocity and a record of the obstructions, etc., were made. The following is the record:

"The height of water was taken on graduated rods fixed permanently in the shafts divided to .01 feet. The rods were set by water level when the gates were closed at both ends of the conduit, and then checked by instrument. The velocity of flow was measured by an electric current meter, which during each period was placed at different positions in the conduit and the velocity noted. To insure a correct reading of the meter, the shaft where this instrument was placed was closed by lagging forming a section of the tunnel, so as to eliminate, as far as possible, all disturbances caused by eddies. In the cover was an opening just large enough to admit the meter. Careful observers were placed at each station, and the readings taken every five minutes. The time occupied by the experiment was two days. The result is given in the following:



EIGHTEENTH STREET TRACK ELEVATION—BRIDGEPORT DRAWBRIDGE ELEVATED—LOOKING WEST.
A. T. & S. F., C. & A. AND C. M. & N. RYS.

TABLE.

SHOWING THE VELOCITIES OF WATER IN FULLERTON AVENUE CONDUIT, MEASURED WITH AN ELECTRIC CURRENT METER AT DIFFERENT POSITIONS IN THE CONDUIT. DIAMETER OF CONDUIT, 12 FEET. LENGTH, 8,900 FEET BETWEEN STATIONS. OBSTRUCTION TO FLOW, SIXTEEN SHAFTS, 6 FEET DIAMETER; TWO SHAFTS, 12 FEET DIAMETER; TWO BENDS, 45 FEET RADIUS; ANGLE, 30 DEGREES.

Head on Conduit for a Length of 8,900 feet.	VELOCITIES.						Cubic Feet per Minute.
	Location of Meter above the Bottom of Conduit.					Mean.	
	8 in.	1 ft. 8 in.	1 ft. 11 in.	2 ft. 10 in.	Center.		
0.82	1.284	1.423	1.386	1.445	1.631	1.394	9,451
0.967	.....	1.723	1.732	1.785	1.758	1.662	11,270
1.821	1.7	2.051	2.147	2.245	2.183	2.025	13,729
1.525	2.057	2.085	2.135	2.191	2.3	2.131	14,448
1.695	1.927	2.128	2.282	2.304	2.355	2.141	14,516
1.962	1.176	2.468	2.481	2.519	2.468	2.256	15,265

Applying the quantities and velocities above given to Kutter's formula, the value of n under these conditions is found to vary from 0.018 to 0.021. In the case of the flushing tunnel at Milwaukee, described by Mr. Benzenberg as very smooth brick masonry, the value of n for different velocities was 0.014 and 0.015.

Under the conditions which obtain in the Thirty-ninth street conduit it was deemed advisable to use the factor 0.017 in determining the possible head against the pumps. With this factor the head to discharge 120,000 cubic feet per minute through the tunnel 20 feet in diameter and 12,192 feet long is 8.89 feet. With the completion of the work there will be an opportunity to determine the true value under the conditions.

The contract for the pumps to be furnished by the City was awarded in January to the Allis-Chalmers Company. The pumping engines are two centrifugal pumps with triple expansion engines, each to deliver 75 cubic feet of sewage per second against a head of 22 feet, and two centrifugal pumps with triple expansion engines, each to deliver 250 cubic feet of storm water and sewage per second against a head of 13 feet.

SECTIONS G AND H, INTERCEPTING SEWER SOUTH OF THIRTY-NINTH STREET.

These sections, which are being built by the City directly with day labor, have progressed satisfactorily this year.

Section G is completed with the exception of about 400 feet of

15¼-foot sewer, just north of Fifty-first street, in the Illinois Central freight yard and in the southwest corner of the Chicago Beach Hotel property, and this will be completed about March 1, 1903.

This sewer will then be complete and ready for the connection of the main sewers from Thirty-ninth street to Sixtieth street, about 2¾ miles. These connections can be made when the pumps are installed at the Thirty-ninth street pumping station in the fall of 1903, or upon the installation of a temporary pumping plant to discharge the daily flow of sewage into the Thirty-ninth street conduit about the first of June if it is decided to install such a plant.

The cost of the work on these sections has been quite in accord with the anticipation of the department, and it is evident at this time that Section G, which is nearly complete from Thirty-ninth street to Fifty-sixth street, a distance of 12,764 feet, will have been built for about $14,000 less than it would have cost at the lowest price bid and about $38,000 less than the estimate made to the Council in 1899, notwithstanding an advance in cost of material and labor of over 10 per cent.

This work has been well and faithfully carried on by the Assistant Engineers in charge. The men employed directly by the City on this work have done the work satisfactorily, as is evidenced by the rate of progress, and have been satisfied with the system of employment. All labor has been secured through the civil service, and while it took a little longer time to organize the gangs by this method, the character of men secured was equal to any engaged anywhere in this class of work.

The question of liability insurance of the men so employed arose with the first work done. The insurance companies asked a rate of 9 per cent on the pay roll. It was decided that the City could better care for injuries paying the men for time lost while unable to work. The system has worked well, the City Physician has taken each case and given attention when desired and upon his reports the men have gone back to work. The cost to the City for the two years the system has been in operation is less than 2 per cent of the pay roll.

INTERCEPTING SEWERS CONSTRUCTED DURING THE YEAR 1902.

Sections.	STREET.	FROM	TO	Diameter, Feet.	Length, Feet.	CONTRACTORS.
C.	Thirty-ninth	East of Stewart avenue.	Dearborn	20	2,103	John P. Agnew.
	Thirty-ninth	Vincennes avenue	Lake avenue	20	2,343	John P. Agnew.
G.	On Lake Shore	Forty-second place	Forty-fourth place	16	1,331	City of Chicago, by day labor.
	On Lake Shore	Forty-fourth place	North of Fifty-first	15¼	4,522	City of Chicago, by day labor.
	Cornell avenue	South of Fifty-first	Fifty-sixth	14¼	3,207	City of Chicago, by day labor.
H.	Jackson Park and Jackson Park ave.	Fifty-sixth	South of Fifty-ninth	13½	2,365	City of Chicago, by day labor.
L.	Jackson Park avenue	Fifty-sixth	South of Fifty-ninth	1¼	1,248	City of Chicago, by day labor.
	Jackson Park avenue	Fifty-sixth	South of Fifty-ninth	1	480	City of Chicago, by day labor.
	Thirty-ninth produced	Lake avenue	Ill. Central breakwater	20	476	John P. Agnew.

TOTAL LENGTH OF INTERCEPTING CONDUITS BUILT TO DECEMBER 31, 1902.

Sections.	STREET	FROM	TO	Diameter Feet	BUILT, FEET		
					Previous Work	Work in 1902	TOTAL
A.	Fourteenth	Chicago river	State	5½	1,075	.....	1,075
	State	Fourteenth	Twelfth	5¼	1,280	.....	1,280
	Twelfth	State	Wabash avenue	4½	400	.....	400
	Twelfth	Wabash avenue	Illinois Central railroad	4	817	.....	817
B.	Twenty-first	Chicago river	State	8	3,287	.....	3,287
	21st and Prairie avenue	State	Twenty-second	5¼	2,227	.....	2,227
	State	Twenty-first	Twenty-second	6	518	.....	518
	Intersection	Prairie avenue and	Twenty-second	5¼	92	.....	92
	Intersection	State and	Twenty-second	3	50	.....	50
	Twenty-second	Prairie avenue	Illinois Central railroad	New Invert	861	.....	861
C.	Thirty-ninth	Halsted	Butler	18½x22	2,091	.....	2,091
	Thirty-ninth	Halsted	Butler	1¼	88	.....	88
	Thirty-ninth	Halsted	Butler	1	1,916	.....	1,916
	Thirty-ninth	Butler	Lake avenue	20	5,064	4,446	9,510
D.	Lawrence avenue	Chicago river	Beacon	16	730	.....	730
	Lawrence avenue	Beacon	Lake Michigan	16	3,906	.....	3,906
	Lawrence avenue	Beacon	Lake Michigan	1¼	4,022	.....	4,022
	Lawrence avenue	Beacon	Lake Michigan	1½	4,018	.....	4,018
E.	Sheridan road	Lawrence avenue	Argyle avenue	8	1,477	.....	1,477
	Sheridan road	Argyle avenue	Balmoral avenue	7¾	2,458	.....	2,458
	Sheridan road	Balmoral avenue	Ardmore avenue	7½	2,661	.....	2,661
	Sheridan road	Ardmore avenue	Granville avenue	7	2,640	.....	2,640
	Sheridan and Devon avenue	Granville avenue	Sheridan road	6¾	2,692	.....	2,692
	Sheridan road	Devon avenue	Pratt avenue	6	2,641	.....	2,641
	Sheridan road	Pratt avenue	Lunt avenue	5	1,372	.....	1,372
	Sheridan road	Lunt avenue	Touhy avenue	4¼	1,378	.....	1,378
	Sheridan road	Touhy avenue	Bryan avenue	4¾	1,303	.....	1,303

F.	Sheridan, Lakeside and Clarendon aves..	Lawrence avenue	Montrose avenue	6	3,925	.....	3,925
	Clarendon, Grasmere and Pine Grove aves.	Montrose avenue	Lake Shore drive	5¼	2,792	.....	2,792
	Lake Shore drive.....	Pine Grove avenue.....	Addison	4¾	2,450	.....	2,450
	Lake Shore drive.....	Addison	Melrose avenue	4¼	2,900	.....	2,900
	Lake View avenue	Melrose avenue	Wellington avenue	3⅛	1,660	.....	1,660
	Lake View avenue	Wellington avenue	Surf	8	855	.....	855
G.	Along Lake Front.....	Thirty-ninth	Forty-fourth place	16	2,942	1,331	4,273
	Along Lake Front.....	Forty-fourth Place	Fifty-first and Cornell ave..	15¼	.....	4,522	4,522
	Cornell avenue.....	Fifty-first.....	Fifty-sixth.....	14¼	144	3,207	3,351
	Cornell avenue.....	Fifty-first.....	Fifty-sixth.....	1¼	1,280	.....	1,280
	Cornell avenue.....	Fifty-first.....	Fifty-sixth.....	1	5,138	.....	5,138
H.	Jackson Park and Jackson Park avenue.	Fifty-sixth	South of Fifty-ninth.....	13⅛	.....	2,365	2,365
	Jackson Park avenue.....	Fifth-sixth	South of Fifty-ninth.....	1¼	.....	1,248	1,248
	Jackson Park avenue.....	Fifty-sixth	South of Fifty-ninth.....	1	.....	480	480
J.	Farwell avenue	Sheridan road.....	Lake Michigan	1¼	760	.....	760
	North Shore avenue.....	Sheridan road.....	Lake Michigan	1¼	960	.....	960
L.	Thirty-ninth produced.....	Lake avenue.....	Illinois Central breakwater.	20	.....	476	476
	Total	.....	.....	....	76,870	18,075	94,945

Respectfully submitted.

WM. E. QUINN,

Superintendent Bureau Sewers.

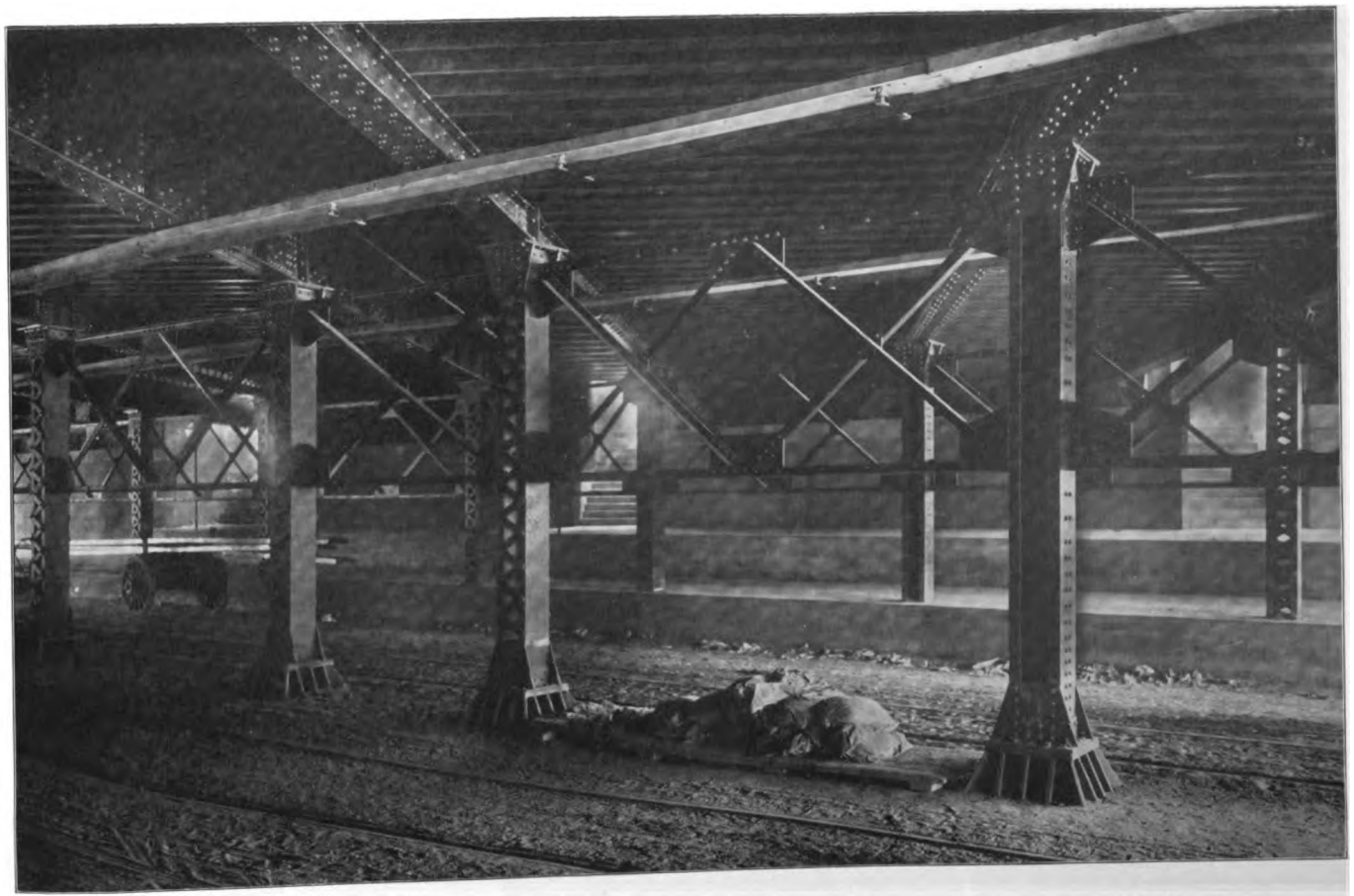
ANNUAL REPORT

Bureau of Streets

CITY OF CHICAGO

1902

M. J. DOHERTY
Superintendent



EIGHTEENTH STREET TRACK ELEVATION—HALSTED STREET—A. T. & S. F., C. & A. AND C. M. & N. RYS.

BUREAU OF STREETS.

HON. F. W. BLOCKI,

Commissioner of Public Works.

DEAR SIR: I have the honor to submit herewith the Twenty-seventh Annual Report of the Bureau of Streets for the fiscal year ending December 31, 1902:

FINANCIAL STATEMENT.

(APPROPRIATION FOR 1902.)

For removal of garbage, street and alley cleaning, repairing improved and unimproved streets and alleys, repairing sidewalks	$961,050.00	
For restoration of streets	40,000.00	
For removal of snow, First Ward	86,000.00	
For maintenance of dumps	40,000.00	
For ward superintendents' salaries	49,000.00	
For rental of ward yards	7,500.00	
For corporation inspectors' salaries	40,000.00	
For maintenance of public parks	14,050.00	
For office salaries	19,766.00	
For obstruction inspectors' salaries	9,000.00	
For office expenses	1,500.00	
For engineer, etc., steam roller	1,630.00	
For maintenance of children's playground	1,000.00	
For repairing snow dump	1,500.00	
For bills of the R. F. Conway Company	23,538.44	
For City's share of repairing Walton place	1,180.00	
For bill of D. C. Childs & Company	33.00	
For bill of Jno. Claney Company	256.85	
For bill of Independent Stone Company	208.96	
For purchase of sweepers and sprinklers	6,000.00	
For construction and purchase of plant and site to destroy garbage	131,000.00	
		$1,384,213.25

SPECIAL APPROPRIATIONS.

For repairing right-of-way where obligations are on railroad company	$50,000.00	
For making survey to widen Halsted street	15,000.00	
		65,000.00
		$1,449,213.25

DISBURSEMENTS.

For removal of garbage	$546,550.69	
For street and alley cleaning	270,225.15	
For repairing improved streets and alleys	57,245.16	
For repairing unimproved streets and alleys	41,037.72	
For repairing sidewalks	37,694.83	
For miscellaneous expenses	7,476.28	
For restoration of streets	17,101.04	
For removal of snow, First Ward	20,637.65	
For maintenance of dumps	39,896.96	
For ward superintendents' salaries	48,474.05	
For rental of ward yards	5,869.95	
For corporation inspectors' salaries	28,211.11	
For maintenance of public parks	10,748.77	
For office salaries	19,567.04	
For obstruction inspectors' salaries	7,537.50	
For office expenses	1,443.43	
For engineer, etc., steam roller	1,630.00	
For maintenance of children's playground	1,000.00	
For repairing snow dump	1,800.10	
For bills of the R. F. Conway Company	23,538.44	
For City's share of repairing Walton place	1,176.47	
For bill of D. C. Childs & Company	83.00	
For bill of Jno. Claney Company	256.85	
For bill of Independent Stone Company	208.96	
For purchase of sweepers and sprinklers	9.36	
For purchase of sweepers and sprinklers, unexpended balance carried forward December 31, 1902	5,990.64	
Unexpended balance	254,852.10	
		$1,449,213.25

GARBAGE.

During the year there were removed 1,349,474 cubic yards of garbage, or 272,935 loads, at a cost of $546,550.69. There were 1,417 garbage complaints during 1902 as compared with 2,086 during 1901.

Referring to the work done by the department during the past year, I would call your attention to the increased amount of garbage removed and especially to the increased output of ashes during the past winter, over 50 per cent more than former years, due to the use of bituminous coal and wood on account of the scarcity of anthracite. This increase in the output of ashes necessitated a larger number of teams to haul the refuse away.

The removal of garbage for the year 1902 was at an increased cost of about $50,000, for the reason that during the month of July the City Council ordered that the teams should receive $4.00 per day instead of $3.50 and because of the necessity of hiring lead teams and building of

roadways to enable the garbage teams to reach the dumps in the rainy season. This, and taking into consideration the fact that the appropriation for the year was $118,000 less than for the previous year, practically means that the appropriation was reduced by $168,000. The department, however, was enabled to remove more garbage than in 1901 for the reason that we filled in many streets and alleys in the outlying wards, which meant shorter hauls and more loads per day for the team.

In this connection I might state that the department is greatly hampered for dumping space and it is absolutely necessary that something be done in the near future in the way of providing garbage crematories or other methods for the disposition of garbage. Within six months the City of Chicago will be without a place to dump in. In my report for the year 1901 attention was called to the urgent need of garbage destruction plants, but no action has been taken in this direction. It is imperative that something be done at once.

Owing to the inability of the Police Department to furnish police officers during the past year it was almost impossible to do anything towards enforcing the provisions of the clean street ordinance. This was unfortunate, as during the year 1901 the department had made great headway in the installation of metal receptacles and manure vaults, as provided by this ordinance, and I trust the Police Department will be in a position during the coming year to assist us. The rigid enforcement of the clean street ordinance is specially desired, and, as I stated in my report of last year, to make it thoroughly effective service should be given daily, and this will necessitate a greatly increased appropriation.

STREET AND ALLEY CLEANING.

During the year there were cleaned 18,175 miles of streets and alleys, necessitating the removal of 161,400 loads of street dirt; 1,873,365 lineal feet of weeds were cut; 229,113 inlets to catch-basins were opened and cleaned. There were also removed during 1902 21,268 loads of snow. The cost of cleaning streets and alleys, cutting weeds and opening inlets to catch-basins was $270,225.15. Cost of removal of snow, $20,637.65.

The cost of street cleaning for the year 1902 was much less than for the year 1901, for the reason that the department employed three extra sets of sweepers which were utilized in the outlying wards where street cleaning by hand was formerly the custom, and for the fact that a large number of streets were newly paved and were easily kept in good condition.

The following number of dead animals were removed during the year, at no expense to the city:

Horses	3,350
Cows	87
Dogs	11,170
Cats	2,190
Goats	102
Colts	87
Calves	76
Sheep	27

REPAIRING IMPROVED STREETS AND ALLEYS.

During the year the following work was done on the repair of streets and alleys:

29,495 square yards of new cedar blocks were laid.
31,528 square yards of old cedar blocks were relaid.
8,652 square yards of granite blocks were laid.
2,700 square yards of asphalt were laid.
2,212 square yards of macadam were laid.
1,243 square yards of brick were laid.

In connection with which the following material was used:

Gravel	1,389⅓	cubic yards.
Crushed stone	2,628	cubic yards.
Cinders and spawls	43,643	cubic yards.
Tar	17⅓	barrels.
New lumber	46,477	lineal feet.
Old lumber	10,202	lineal feet.

at a total cost of $57,245.16.

REPAIRS ON UNIMPROVED STREETS AND ALLEYS.

978,386 lineal feet of ditches were opened and cleaned.
1,328,196 lineal feet of grading by hand and machines.
424 new and repaired aprons.
3,038 new and repaired crossings.
1,180 new and repaired culverts.
52 box drains.

In connection with which the following material was used;

New lumber	288,658	lineal feet.
Old lumber	121,453	lineal feet.
Nails	101⅓	kegs.
Cinders and slag	53,059	cubic yards.

at a total cost of $41,038.72.

SIDEWALK REPAIRS.

During the year the following work was done:

1,542 new and repaired intersections.
24,571 general repairs.

In connection with which the following material was used:

New lumber	662,969 lineal feet.
Old lumber	1,379,058 lineal feet.
Nails	745 kegs.
Cinders	708 loads.

at a total cost of $37,694.83.

In connection with this work there were a great many sidewalks in the outlying districts, which were beyond repair and in a dangerous condition, taken up and the space filled in with street cleanings and ashes and then topped over with cinders. This not only furnished the department with short hauls for the disposition of the street sweepings but was the means of a saving of sidewalk repairs and a prevention of damage suits against the city.

The department is desirous, if possible, during the coming year to expend more money for sidewalk repairs, and will do so providing the appropriation for the year will warrant such expenditures.

SMALL PARKS.

There are at present thirty-two small parks and triangles belonging to the City, as follows:

Ellis Park.
Aldine Square.
Green Bay.
Lakewood Park.
Bickerdike Square.
Irving Park.
Eldred Park.
De Kalb Square.
Dauphin Park.
Normal Park.
Douglas Monument Park.
Washington Square.
Oak Park.
Kedzie Park.
Congress Park.
Jefferson Park.
Gross Park.
Norwood Park.
East End Park.
Fernwood Park.
Triangle bounded by Ogden avenue, Clark and Wells streets.
Triangle bounded by N. Clark street, Belden avenue and Sedgwick street.
Triangle bounded by Clark, La Salle and Eugenia streets.
Patterson Park.
Rosalie Park.
Kosciusko Park.
Amy L. Barnard Park.
Austin.
Seventy-second Street Park.
Crescent Park.
Powell Park.
Adam.

The appropriation for the year was $14,050.00. During the year eight new small parks were taken under the jurisdiction of the department which were not considered in the amount appropriated. The total expenditure for the year amounted to $11,039.77, of which the sum of $6,914.22 was expended in salaries and labor and $4,125.55 was paid for improving the various parks, as follows: Putting in water, planting trees, black soil, laying sod, bedding plants, tools, repairs, etc.

Three hundred and forty-nine trees were planted, 520 cubic yards of black soil were used, 3,300 yards of sod and 6,300 bedding plants were used in improving the various parks.

Water was put in the following parks: Normal Park, Irving Park, Patterson Park, Jefferson Park, Green Bay Park and Lakewood Park.

Green Bay Park and Lakewood Park were provided with fences.

All parks improved prior to 1902 were maintained, and although the amount of money expended was very small, they were provided with plants, shrubs, flowers, water and other improvements and were kept in good condition throughout the year.

There were on an average thirteen laborers and gardeners employed during the year.

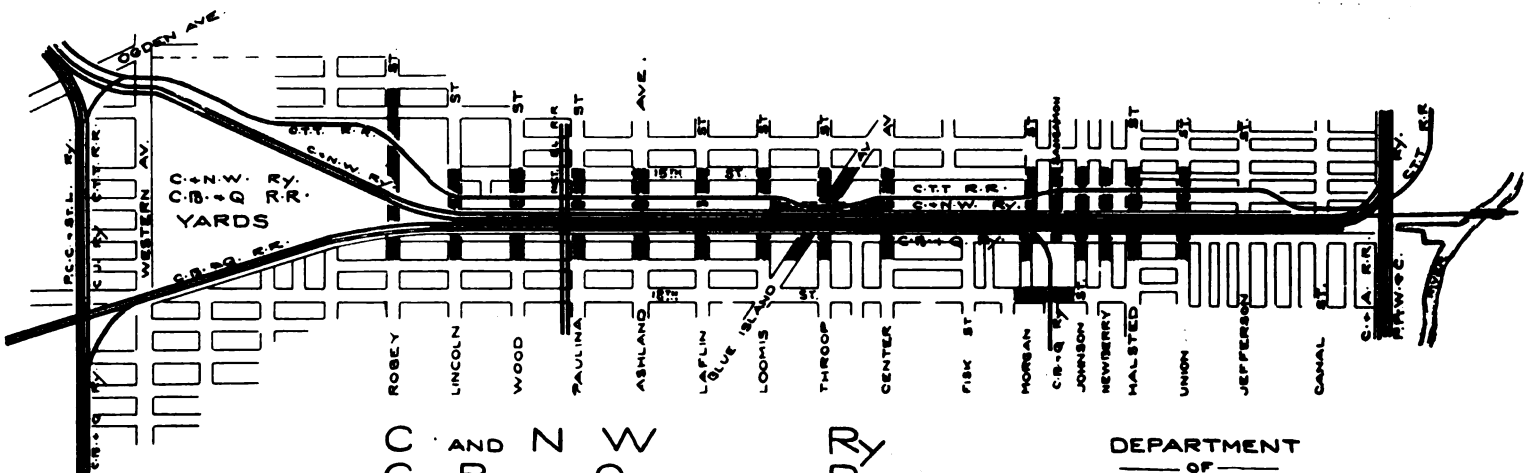
In the densely settled districts these breathing spots proved a great blessing to the poorer classes, and during the hot summer days were constantly thronged with men, women and children. It would be most desirable if all the parks could be improved next year. The expense would not be very great and the benefits incalculable.

In my report of last year I called attention to the fact that special police protection for the small parks was very necessary, and that only skilled laborers should be employed in taking care of the parks. As yet nothing has been done in either direction, but I trust that steps will be taken to furnish sufficient police protection this year and that an examination will be held for skilled "park" laborers with as little delay as possible.

PERMITS.

Permits were issued to open improved streets as follows:

People's Gas Light & Coke Company	14,040
Chicago Edison, and Commonwealth Electric Company	610
Chicago Telephone Company	241
Ogden Gas Company	269
Various corporations	163
City departments	1,243
Plumbers and sewer builders	1,420
Manure vaults, improved alleys	30
Unimproved street opening permits	3,459
Use of streets	658
Inspection	25
Miscellaneous	2,191
Total number of permits issued	24,849



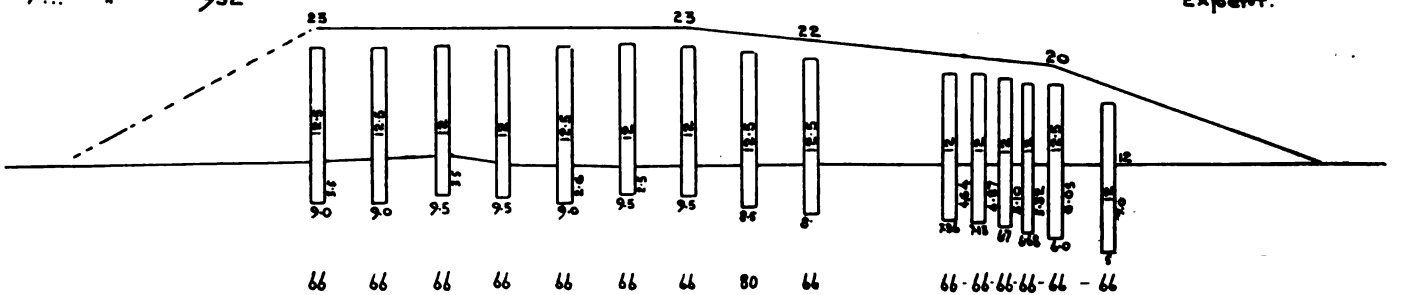
C AND N W RY
C B AND Q RY.
C T T R.R

DEPARTMENT
— OF —
TRACK ELEVATION
CHICAGO

John O'Neill —
Expert.

ORDINANCE PASSED

APRIL 2ND 1902	"	2750
JUNE 23RD	"	719
JULY 7TH	"	932



PAVEMENTS REPAIRED BY THE PEOPLE'S GAS LIGHT & COKE COMPANY ON STREET OPENING PERMITS.

Square Yards, Cedar.	Square Yards, Macadam.	Square Yards, Granite.	Square Yards, Brick.	Square Yards, Asphalt.
99,498	28,513	10,156	878	1,328

PAVEMENTS REPAIRED BY THE CHICAGO EDISON COMPANY ON STREET OPENING PERMITS.

Square Yards, Cedar.	Square Yards, Macadam.	Square Yards, Granite.	Square Yards, Brick.	Square Yards, Asphalt.
7,513.16	886.94	7,880.69	2,164	802.28

PAVEMENTS REPAIRED BY THE COMMONWEALTH ELECTRIC COMPANY ON STREET OPENING PERMITS.

Square Yards, Cedar.	Square Yards, Macadam.	Square Yards, Granite.	Square Yards, Brick.	Square Yards, Asphalt.
3,484.43	202.22	.....	16	.....

PAVEMENTS REPAIRED BY THE CHICAGO TELEPHONE COMPANY ON STREET OPENING PERMITS.

Square Yards, Cedar.	Square Yards, Macadam.	Square Yards, Granite.	Square Yards, Brick.	Square Yards, Asphalt.
13,866.43	6,582.80	655.22	1,094.99	400.78

PAVEMENTS REPAIRED BY THE OGDEN GAS COMPANY ON STREET OPENING PERMITS.

Square Yards, Cedar.	Square Yards, Macadam.	Square Yards, Granite.	Square Yards, Brick.	Square Yards, Asphalt.
21,658	12,737	.....	362	409

ANNUAL REPORT HOUSE MOVING, 1902.

MONTHS.	No. Permits Issued.	DIMENSIONS. Stories High. One.	Two.	Three.	Front Width. Lineal Feet.	DESCRIPTION. Frame.	Brick.	DIVISION. North.	South.	West.	FEES. $1.00	$5.00	Amount.	REMARKS.
January.....	26	11	14	1	528	25	1	5	7	14	8	18	$ 98.00	
February.....	23	9	13	1	470	21	2	3	10	10	12	11	67.00	
March.....	58	31	26	1	1,219	49	9	9	28	20	41	16	121.00	J 95 issued in lieu of J 64 revoked.
April.....	75	41	34	1	1,636	63	13	17	30	29	48	25	193.00	Two buildings moved on Permit J 152. Two buildings moved on Permits J 208, 209 and 220, respectively.
May.....	75	41	37	.....	1,636	68	10	19	29	30	34	38	238.00	J 198 spoiled.
June.....	52	27	24	1	1,087	46	6	8	17	27	27	25	152.00	J 272 and 273 paid for on July 14th. J 280 and 281 spoiled. Buildings not to be moved.
July..... ...	52	28	23	1	1,129	45	6	12	19	21	25	27	160.00	J 336 and 363 spoiled. Frame shaft moved on J 347.
August.....	56	27	28	1	1,159	51	5	14	20	22	33	24	152.00	J 408 void—sample copy.
September.....	62	37	19	1	1,203	46	11	11	23	28	43	19	138.00	Five (5) cables moved.
October.....	47	17	26	.....	928	37	6	8	18	21	28	19	128.00	Four (4) cables moved. J 500 and 508 spoiled.
November.....	33	15	17	1	711	26	7	4	12	17	16	17	101.00	
December.....	17	3	9	1	818	11	2	3	3	11	4	13	69.00	Four (4) cables moved.
Total.....	576	287	269	10	12,029	488	78	118	216	250	318	252	$1,612.00	

In conclusion, I wish to say that considering the way the department was hampered by an inadequate appropriation, I am well satisfied with the work of the past year, and desire to thank the assistant superintendents and the various employees connected with the department for their hearty co-operation.

Very respectfully,

M. J. DOHERTY,

Superintendent of Streets.

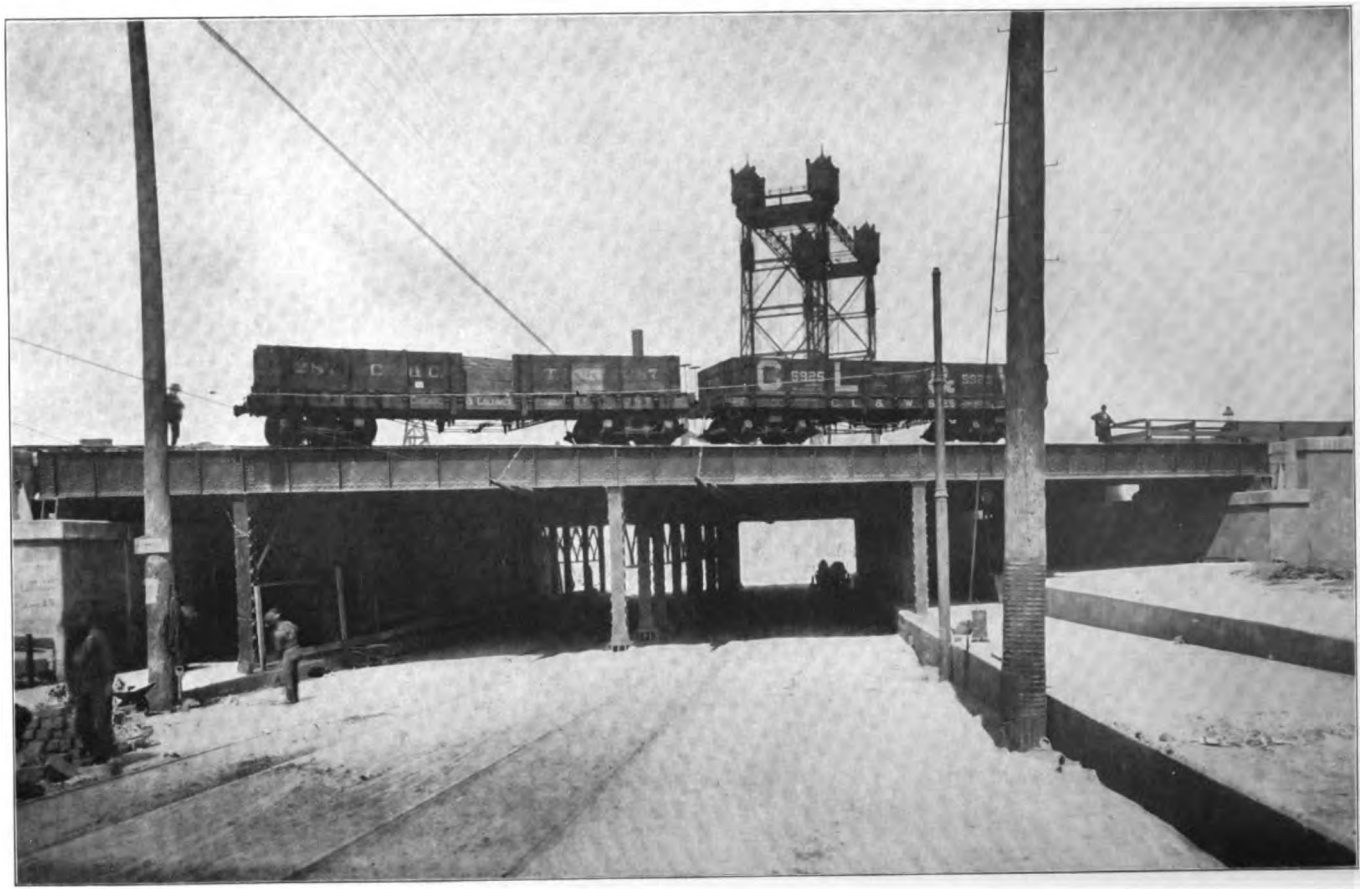
ANNUAL REPORT

Bureau of Maps and Plats

CITY OF CHICAGO

1902

CHAS. J. BUHMANN
Superintendent



EIGHTEENTH STREET TRACK ELEVATION—HALSTED STREET—LOOKING NORTH—A. T. & S. F., C. & A. AND C. M. & N. RYS.

BUREAU OF MAPS AND PLATS.

CHICAGO, January 1, 1903.

HON. F. W. BLOCKI,
Commissioner of Public Works.

DEAR SIR: I have the honor to herewith submit to you the Annual Report of the Bureau of Maps and Plats for the year ending December 31, 1902.

The work performed and completed for the various departments and the public and for various municipal officials is as follows:

MILEAGE OF PLATS MADE FOR THE BOARD OF LOCAL IMPROVEMENTS.

272	Street Improvement Assessment plats	207.10	miles.
383	Street Improvement Estimate plats	218.91	"
413	Sidewalk Improvement Assessment plats	237.72	"
96	Sewer Improvement Assessment plats	34.75	"
4	Lamp Post Improvement Assessment plats	1.75	"
109	Water Pipe extension plats	35.52	"
1,277	plats, covering	735.75	miles.

ACREAGE OF PLATS MADE FOR THE BOARD OF LOCAL IMPROVEMENTS (OTHER THAN ABOVE).

40	Street Improvement Assessment plats	2,030.00	acres.
15	Street Improvement Estimate plats	460.00	"
62	Sidewalk Improvement Assessment plats	2,193.25	"
19	Sewer Improvement Assessment plats	1,682.00	"
9	Lamp Post Assessment plats	60.00	"
20	Water Pipe Extension plats	850.00	"
13	Survey plats	242.00	"
145	Condemnation plats	962.00	"
2	Special Assessment plats	40.00	"
325	plats, covering	8,519.25	acres.

MISCELLANEOUS PLATS FOR VARIOUS DEPARTMENTS AND OFFICIALS.

11	plats for Commissioner of Public Works	5.00	miles.
15	plats for Corporation Counsel	27.00	"
1	plat for Comptroller	.50	"
1	plat for City Collector	.50	"
2	plats for City Council	2.00	"
1	plat for Law Department	3.00	"
2	plats for Record	.75	"
1	plat for Street Department	.50	"
2	plats for miscellaneous	1.75	"
36	miscellaneous plats, covering	41.00	miles.

MISCELLANEOUS PLATS FOR VARIOUS OFFICIALS AND DEPARTMENTS.

145	Condemnation plats	962.00	acres.
53	plats for Commissioner of Public Works (street obstructions)	920.00	"
17	plats for Corporation Counsel	465.00	"
288	plats for Comptroller (sidewalk)	1,485.00	"
10	plats for City Collector	115.00	"
1	plat for Police Department	20.00	"
1	plat for Track Elevation Department	40.00	"
1	plat for Water Department	10.00	"
1	plat for City Clerk	10.00	"
6	plats for Record	30.00	"
3	plats for Law Department	55.00	"
2	plats for Street Department	10.00	"
2	plats for Small Park Commission	23.00	"
2	plats for City Real Estate Agent	100.00	"
32	plats for City Council	397.50	"
17	plats for miscellaneous	422.00	"
581	miscellaneous plats, covering	5,064.50	acres.

Served in person or by mail, 729 house number notices.

MISCELLANEOUS MAPS.

Map of First Ward for the Mayor	1
Map of First Ward for Commissioner of Public Works	2
Map of Thirtieth Ward for Water Department	1
Map of Sidewalk Districts (cement)	7

WORK OF MISCELLANEOUS CHARACTER.

House moving petitions verified	279
Miscellaneous petitions verified	436
New subdivisions approved	165
Signs for various departments	44

1 man checking plats	191	days.
1 man waiting on public	303	"
1 man on new atlas work	222	"
1 man on miscellaneous	54	"
1 man checking miscellaneous petitions	30	"
1 man examining street obstructions for Commissioner of Public Works.	26	"
1 man serving house number notices	17	"
1 man tracing old Chicago map for Comptroller	14	"
1 man on outside work for City Collector	4	"
1 man lettering map for Health Department	3	"
1 man on map for Board of Local Improvements	3	"
1 man looking up Records	40	"
1 man examiuing public bath for Mayor	3	"
1 man on map for Street Department	3	"
1 man on map for Building Department	1	"
1 man on map for Track Elevation Department	1	"
1 man on map for City Council	..	"
1 man on map for Corporation Counsel	1	"
18 men on miscellaneous work	916	days.

Legal descriptions issued at 25c	2,248
Miscellanous descriptions issued free	8,826
House numbers issued	6,264
Total of public requiring the personal attention of employes of this department	17,338

Three streets have been renamed, namely:

Hedge court changed to *Edgecomb court.*
Olga street changed to *Waveland court.*
Fake street changed to *Lloyd avenue.*

Total mileage of streets in 1901	4,163.11
Total mileage of streets added in 1902	3.98
Total mileage	4,167.09

In conclusion I wish to express my appreciation for the co-operation and support extended to me by you, and the various officials of the City of Chicago with whom my duties bring me in contact.

Respectfully submitted,

CHAS. J. BUHMANN,
Superintendent of Maps and Plats.

Bookkeeper's Statement

A. T. & S. F., C. & A. AND C. M. & N. RYS.

BOOKKEEPER'S STATEMENT.

HON. F. W. BLOCKI,

Commissioner of Public Works.

DEAR SIR: I have the honor to submit herewith statement of the receipts and expenditures of your department for the fiscal year ending December 31, 1902:

CORPORATE FUND.

REVENUE, JANUARY 1 TO DECEMBER 31, 1902.

Bureau of Maps—Fees	$ 562.00
Bureau of Engineering—Permits	3,089.57
Bureau of Engineering—Bridges and Viaducts	36,668.24
Bureau of Engineering—Miscellaneous	3,858.96
Bureau of Streets—Permits	2,242.00
Bureau of Streets—Dumps	1,341.00
Bureau of Streets—Sidewalk certificates	412.50
Bureau of Streets—Miscellaneous	57,356.25
Bureau of Sewers—Permits	18,366.00
Bureau of Sewers—Miscellaneous	3,669.62
Total	$127,566.14

APPROPRIATION AND EXPENDITURES.

	Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
COMMISSIONER OF PUBLIC WORKS.			
Office salaries—10 per cent.....$1,886.00			
Less transfer ordered by City Council to City Hall salaries 300 00			
	$ 1,586.00	$ 1,430.03	$ 155.97
Office expenses, printing annual report, etc., 10 per cent	450.00	448.08	1.92
BUREAU OF MAPS AND PLATS.			
Office salaries—25 per cent	4,354.50	3,919.78	434.72
Office expenses—25 per cent	250.00	191.09	58.91
BUREAU OF ENGINEERING.			
Office salaries—10 per cent—including City Architect's office	1,728.00	1,659.20	68.80
Carried forward	$ 8,368.50	$ 7,648.15	$ 720.32

CORPORATE FUND — CONTINUED.

	Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward	$ 8,868.50	$ 7,648.15	$ 720.32
Office expenses—10 per cent	250.00	42.77	207.23
Horse board	350.00		350.00
Street car, surface and railroad transportation.	1,000.00	964.35	35.65
Inspection and engineering, to be refunded by corporations	15,000.00	2,846.50	12,153.50
Changing La Salle street tunnel entrance	3,000.00	2,980.55	19.45
Work done for the Board of Local Improvements:			
Salaries $8,888.00			
Less transfer to Board of Local Improvements, ordered by City Council 2,300.00			
	6,588.00	3,927.60	2,660.40
Supplies	200.00	16.50	183.50
Chicago harbor, salaries	19,400.00	19,379.54	20.46
Emergency removal of sunken vessels and other obstructions	1,500.00	145.01	1,354.99
Renewal of street ends and other City docks..	5,000.00	3,833.69	1,166.31
Survey of lake front from Fifty-first street south	2,000.00	1,934.79	65.21
Bridges and viaducts:			
Repairs and renewals and operation $150,000.00			
By transfer from Clybourn place bridge construction, ordered by City Council 20,000.00			
	170,000.00		
Expended as follows:			
Repairs and renewals, labor and material $125,490.67			
15 per cent reserve on contracts. 2,450.40			
$127,941.07			
Superintendent's salary 2,616.00			
Operation, supplies, etc. 7,883.60			
Operation, fuel $4,029.88			
15 per cent reserve on contracts 567.20			
4,597.08			
		142,987.75	27,012.25
Unpaid bills	193.98		193.98
Refund to Northwestern Elevated Railroad Company	7,000.00		7,000.00
Bridge tenders, salaries	84,570.00	77,569.44	7,000.56
Ninety-fifth street bridge, construction:			
Expenses vouchered $89,559.04			
15 per cent reserves on contract.. 33,851.25			
	139,480.75	123,410.29	16,070.46
Division street (canal) bridge, construction:			
Expenses vouchered $93,051.47			
15 per cent reserves on contract... 28,323.28			
	143,965.25	121,374.70	22,590.55
Carried forward	$ 607,866.48	$ 509,061.66	$ 98,804.82

CORPORATE FUND — CONTINUED.

		Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward		$ 607,866.48	$ 509,061.66	$ 98,804.82
Clybourn place bridge, construction	$67,554.00			
Less transfer to bridge and viaduct repairs, ordered by City Council	20,000.00			
		47,554.00	46,998.50	555.50
Division street (river) bridge, construction:				
Expenses vouchered	$75,339.24			
15 per cent reserves on contract	10,771.29			
		125,000.00	86,110.53	38,889.47
North Western avenue bridge, construction		25,000.00	8,610.48	16,389.52
Archer avenue bridge, construction		175,000.00	380.84	174,619.16
North avenue bridge, construction		175,000.00		175,000 00
Twenty-second street bridge, construction		210,000.00		210,000.00
Thirty-seventh street bridge, construction		175,000.00		175,000.00
Torrens avenue bridge, construction		175,000.00		175,000.00
Weed street bridge, construction		100,000.00		100,000.00
Chicago avenue bridge, construction		175,000.00		175,000.00
Auburn Park bridge, construction		2,000.00		2,000.00
BUREAU OF STREETS.				
Office salaries		19,766.00	19,567.04	198.96
Inspectors of street openings and obstructions, salaries		9,000.00	7,537.50	1,462.50
Office expenses		1,500.00	1,443.43	56.57
Unpaid bills		33.00	33.00	
Ward Superintendents, salaries		49,000.00	48,474.05	525.95
Steam roller, salaries		1,680.00	1,680.00	
Rental of ward yards		7,500.00	5,369.95	2,130.05
Purchase and maintenance of sweepers and sprinklers		6,000.00		
Expenses vouchered			9.36	
Unexpended balance carried forward			5,990.64	
City's share of repairing Walton place		1,180.00	1,176.47	3.53
R. F. Conway & Co. for street repairs		23,538.44	23,538.44	
Unpaid bills		465.81	465.81	
Corporation and Sub-Corporation Inspectors, salaries		40,000.00	28,211.11	11,788.89
Restoration of streets:				
Expenses vouchered	$16,958.28			
15 per cent reserves on contract	142.76			
		40,000.00	17,101.04	22,898.96
Repairing "right of way" where obligations are on railroad companies		50,000.00		50,000.00
Maintenance of Ellis and Douglas Monument Parks and Aldine square		3,000.00		
Expenses, Ellis Park	$904.30			
Expenses, Douglas Monument Park	698.23			
Expenses, Aldine square	706.04			
			2,308.57	691.43
Carried forward		$2,245,033.73	$ 814,018.42	$1,431,015.31

CORPORATE FUND—CONTINUED.

	Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward	$2,245,033.73	$ 814,018.42	$1,431,015.31
Maintenance of Washington square, Green Bay and Oak Parks	2,500.00		
Expenses, Washington square $1,322.05			
Expenses, Green Bay Park 507.50			
Expenses, Oak Park 466.10			
		2,295.65	204.35
Maintenance of Lakewood Park	300.00	270.50	29.50
Maintenance of Kedzie Park	150.00	81.00	69.00
Maintenance of Bickerdike square, Congress, Irving, Jefferson and Gross Parks, De Kalb square, Norwood, Dauphin, Eldred, Merrick and Holden Parks	5,700.00		
Expenses, Bickerdike square $462 41			
Expenses, Congress Park 132.00			
Expenses, Irving Park 455 35			
Expenses, Jefferson Park 491.89			
Expenses, Gross Park 350.90			
Expenses, De Kalb square 205 47			
Expenses, Norwood Park 450.08			
Expenses, Dauphin Park 413.66			
Expenses, Eldred Park 277.50			
Expenses, Merrick Park 246.50			
Expenses, Holden Park 237 11			
		3,722.87	1,977.13
Improving two triangular pieces of ground, bounded respectively by Ogden front, North Clark and Wells streets, and by North Clark street, Belden avenue and Sedgwick street.	300.00	166.25	133.75
Improving Normal Park	1,000.00	994.32	5 68
Improving Fernwood Park	400.00	346.76	53.24
Maintenance of temporary playgrounds for children	1,000.00	1,000.00	
Seventy-second Street Park	500.00	441.83	58.17
Patterson Park	200.00	121.02	78.98
Snow-dump repairs:			
Expenses vouchered $1,219.67			
15 per cent reserves on contract 80.43			
	1,500.00	1,300.10	199.90
Survey for widening Halsted street	15,000.00		15,000.00
Construction and purchase of sites and plants to destroy garbage $150,000 00			
Less transfer to Bureau of Sewers, $5,000.00, and for crematory for House of Correction, $14,000.00, ordered by City Council 19,000.00			
	131,000.00		131,000.00
Removal of snow, First ward	36,000.00	20,637.65	15,362.35
Maintenance of dumps, 4 per cent of ward appropriations:			
Expenses vouchered $39,884.64			
15 per cent reserves on contract 12.32			
	40,000.00	39,896.96	103.04
Carried forward	$2,480,583.73	$ 885,293.33	$1,595,290.40

CORPORATE FUND — CONTINUED.

			Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward			$2,480,583.73	$ 885,293.33	$1,595,290.40
Removal of garbage, etc. (less 4 per cent for dumps):					
First ward		$ 82,100.00			
Second ward	$29,375.00				
By transfer from miscellaneous receipts, as per Council order, Sept. 22, 1902	1,850.00				
		31,225.00			
Third ward	$29,375.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	2,130.00				
		31,505.00			
Fourth ward		23,330.00			
Fifth ward		23,330 00			
Sixth ward	$33,700.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	2,680.00				
		36,380.00			
Seventh ward	$34,560.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	3,000.00				
		37,560.00			
Eighth ward		23,545.00			
Ninth ward		23,330.00			
Tenth ward		20.735.00			
Eleventh ward		19,870.00			
Twelfth ward		21,600.00			
Thirteenth ward	$23,395.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	1,130.00				
		24,525.00			
Fourteenth ward		27,650 00			
Fifteenth ward		23,760 00			
Sixteenth ward		26,785.00			
Seventeenth ward		28,500.00			
Eighteenth ward		35,855.00			
Nineteenth ward		32,315.00			
Carried forward		$573,900.00	$2,480,538.73	$ 886,293.38	$1,595,290.40

CORPORATE FUND — CONTINUED.

			Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward		$573,900.00	$2,480,583.73	$ 885,293.33	$1,595,290.40
Twentieth ward	$31,105.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	1,120.00				
		32,225.00			
Twenty-first ward	$35,425.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	3,220.00				
		38,645.00			
Twenty-second ward	$27,650.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	420.00				
		28,070.00			
Twenty-third ward		23,330.00			
Twenty-fourth ward		22,465.00			
Twenty-fifth ward	$25,920.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	3,500.00				
		29,420.00			
Twenty-sixth ward		25,920.00			
Twenty-seventh ward		19,450.00			
Twenty-eighth ward		23,330.00			
Twenty-ninth ward		27,215.00			
Thirtieth ward		28,080.00			
Thirty-first ward		23,330.00			
Thirty-second ward		27,650.00			
Thirty-third ward	$23,545.00				
By transfer from miscellaneous receipts, Council order, September 22, 1902	50.00				
		23,595.00			
Thirty-fourth ward		18,060.00			
Thirty-fifth ward		15,465.00			
		$980,150.00			
Transferred back to miscellaneous receipts		19,100.00			
			961,050.00		
Carried forward			$3,441,633.73	$ 885,293.33	$1,595,290.40

CORPORATE FUND — CONTINUED.

		Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward		$3,441,633.73	$ 885,293.33	$1,595,290.40
Expenses as per detailed statement:				
Expenses vouchered	$958,154.08			
15 per cent reserves on contract	2,075.75			
			960,229 83	820.17
BUREAU OF SEWERS.				
Office salaries	$8,880.00			
Less transfer ordered by City Council	1,000.00			
		7,880.00	7,880.00	
Bench monuments, salaries		2,900.00	2,885.41	14.59
Office expenses		500.00	500.00	
House drain division, salaries		32,224.00	32,222.04	1.96
Sixty-ninth Street Pumping Station:				
Power, attendance and salaries	$3,800.00			
Less transfer ordered by City Council	800.00			
	$3,000.00			
Coal, supplies, etc	$ 209.75			
By transfer ordered by City Council	200.00			
	409.75			
		3,409.75	3,365.88	43.87
Woodlawn Pumping Station:				
Salaries		5,175.00	5,165.00	10.00
Coal	$5,000.00			
By transfer ordered by City Council	100.00			
		5,100.00		
Expenses vouchered	$4,330.05			
15 per cent reserves on contract	763.65			
			5,093.70	6.30
Supplies, etc	$1,000.00			
Less transfer ordered by City Council	100.00			
		900.00	862.93	37.07
Seventieth Street Pumping Station:				
Salaries		3,735.00	3,735.00	
Coal		1,550.00		
Expenses vouchered	$1,252.28			
15 per cent reserves on contract	222.42			
			1,474.70	75.30
Supplies, etc	$ 600.00			
By transfer ordered by City Council	250.00			
		850.00	837.09	12.91
Seventy-third Street Pumping Station:				
Salaries	$3,735.00			
Less transfer ordered by City Council	125.00			
		3,610.00	3,586.77	23.23
Coal		1,240.00		
Carried forward		$3,510,707.48	$1,913,131.68	$1,596,335.80

CORPORATE FUND — CONTINUED.

		Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward		$3,510,707.48	$1,918,181.68	$1,596,335.80
Expenses vouchered	$ 988.86			
15 per cent reserves on contract	174.50		1,163.36	76.64
Supplies, etc	$ 700.00			
Less transfer ordered by City Council	250.00	450.00	418.02	31.98
Kensington Pumping Station:				
Salaries		3,735.00	3,735.00	
Coal	$1,500.00			
Less transfer ordered by City Council	450.00	1,050.00		
Expenses vouchered	$ 765.36			
15 per cent reserves on contract	137.15		902.51	147.49
Supplies, etc	$ 600.00			
Less transfer ordered by City Council	150.00	450.00	429.31	20.69
Pullman Pumping Station:				
Salaries		3,735.00	3,735.00	
Coal	$2,500.00			
Less transfer ordered by City Council	100.00	2,400.00		
Expenses vouchered	$1,824.49			
15 per cent reserves on contract	318.45		2,142.94	257.06
Supplies, etc	$1,000.00			
Less transfer ordered by City Council	150.00	850.00	810.41	39.59
Operating air-compressor, Rogers Park		8,500.00	8,500.00	
Repairs to engines, pumps, buildings, etc.:				
Woodlawn Pumping Station	$1,500.00			
By transfer ordered by City Council	300.00	1,800.00	1,752.37	47.63
Seventieth Street Pumping Station	$2,000.00			
Less transfer ordered by City Council	150.00	1,850.00	1,820.10	29.90
Seventy-third Street Pumping Station	$ 700.00			
By transfer ordered by City Council	250.00	950.00	870.93	79.07
Kensington Pumping Station	$ 700.00			
Less transfer ordered by City Council	300.00	400.00	373.45	26.55
Carried forward		$3,531,877.48	$1,934,785.08	$1,597,092.40

CORPORATE FUND — CONTINUED.

			Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward			$3,531,877.48	$1,934,785.08	$1,597,092.40
Pullman Pumping Station	$ 1,000.00				
By transfer ordered by City Council	200.00				
			1,200.00	1,175.28	24.72
Cleaning sewers and catch-basins	$90,000.00				
By transfer ordered by City Council	5,875.00				
			95,875.00		
Expended as follows:					
Salaries, 1st district	$30,285.72				
Salaries, 2d district	22,562.12				
Salaries, 3d district	14,044.97				
Salaries, 4th district	12,980.25				
		$79,873.06			
Supplies, etc., 1st district	$ 7,288.69				
Supplies, etc., 2d district	2,837.58				
Supplies, etc., 3d district	2,943.57				
Supplies, etc., 4th district	2,457.71				
	$15,527.55				
15 per cent reserves on contracts	471.90				
		15,999.45			
				95,872.51	2.49
Repairing sewers and catch-basins, etc		$50,000.00			
By transfer ordered by City Council		7,500.00			
			57,500.00		
Expended as follows:					
Repairing sewers, salaries		$27,690.79			
Repairing catch-basins, salaries		12,000.00			
Repairing sewers, supplies, etc	$9,382.24				
15 per cent reserves on contract	2,417.76				
		$11,800.00			
Repairing catch-basins, supplies, etc	$5,319 15				
15 per cent reserves on contracts	680.85				
		6,000.00			
				57,490.79	9.21
Removing sewer from Lake View avenue			500.00	500 00	
Restoration of streets, alleys and pavements		2,000.00			
Less transfer ordered by City Council		500 00			
			1,500.00		
Expenses vouchered		$ 1,325.85			
15 per cent reserves on contract		2.00			
				1,327.85	172.15
Miscellaneous work for other departments, etc			10,000.00	1,740.50	8,259.50
Unpaid bills			8.90	8.90	
Carried forward			$3,698,456.38	$2,092,895.91	$1,605,560.47

CORPORATE FUND — CONTINUED.

		Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance Transferred to General Fund.
Brought forward		$3,698,456.88	$2,092,895.91	$1,605,560.47
Wiring from power plant, Sixty-ninth street pump	$ 3,000.00			
Less transfer ordered by City Council	400.00			
		2,600.00	2,526.02	73.98
Enlarging motor pit, etc., Sixty-ninth street pump	$ 1,500.00			
Less transfer ordered by City Council	200.00			
		1,300.00	1,201.01	98.99
		$3,702,356.88	$2,096,622.94	$1,605,733.44
CITY HALL.				
Salaries	$36,318.20			
By transfer from Commissioner's office salaries, ordered by City Council	300.00			
		36,618.20	36,608.91	9.29
Repairs and renewals		4,500.00		
Expended as follows:				
Engine and machinery repairs	$ 1,223.81			
Boiler repairs	1,453.14			
Building repairs	1,822.88			
			4,499.83	.17
Operation, supplies, coal, etc		17,181.80		
Expended as follows:				
Fuel	$11,970.02			
Part of 15 per cent reserve on contract	11.25			
	$11,981.27			
Oil, waste, etc	562.74			
Electric current	1,724.70			
Miscellaneous supplies	2,913.09			
			17,181.80	
Total		$3,760,656.88	$2,154,913.48	$1,605,742.90

RECAPITULATION.

CORPORATE FUND.	Appropriation.	Expenditures Vouchered.	Balance Carried Forward, 15 per cent Reserves Retained on Contracts.	Unexpended Balance Transferred to General Fund.
Commissioner's Office	$ 2,036.00	$ 1,878.11	.....	$ 157.89
Bureau of Maps and Plats	4,604.50	4,110 87	.....	493.63
Bureau of Engineering	1,985,779.98	569,209.66	$75,963.37	1,340,606 95
Bureau of Streets	1,449,213.25	1,186,059.25	8,301 90	254,852.10
Bureau of Sewers	260,722.65	245,911.10	5,188.68	9,622.87
	$3,702,356 38	$2,007,168.99	$89,453.95	$1,605,733.44
City Hall	58,300.00	58,279.29	11.25	9.46
Total	$3,760,656.38	$2,065,448.28	$89,465.20	$1,605,742.90

EXPENDITURES FOR REMOVAL OF GARBAGE, STREET CLEANING, ETC., 1902.

WARDS.	DISTRIBUTION.								
	Cleaning Streets.	Garbage.	Repairing Streets.	Repairing Sidewalks.	Unimproved Streets.	Miscellaneous Expenditures.	Total Vouchered.	Repairing Sidewalks, 15% Reserve on Contracts.	Total, Including 15% Reserve.
First	$ 57,616.76	$ 16,718.25	$ 3,920.41	$ 328.79	.....	$ 578.36	$ 79,157.57	$ 20.18	$ 79,177.75
Second	6,913.77	22,132.00	2,061.46	95.69	.....	19.53	31,222.45	.....	31,222.45
Third	6,644.45	22,797.50	1,461.76	400.16	$ 148.25	21.83	31,473.95	26.11	31,500.06
Fourth	4,893.85	12,593.00	712.67	1,630.63	1,377.00	390.49	21,597.64	94.49	21,692.13
Fifth	5,557.37	9,748.00	2,165.71	2,853.40	1,276.25	29.87	21,630.60	122.80	21,753.40
Sixth	8,252.53	26,072.75	1,804.25	91.62	8.00	139.03	36,368.18	6.97	36,375.15
Seventh	9,832.44	21,919.75	4,505.03	1,049.21	91.75	96.53	37,494.71	43.51	37,538.22
Eighth	2,094.52	8,384.75	384.16	2,701.13	7,402.56	895.26	21,862.38	128.99	21,991.37
Ninth	5,397.35	13,448.75	1,460.30	938.19	128.25	230.43	21,603.27	47.81	21,651.08
Tenth	5,000.68	12,294.50	2,032.30	1,246.93	31.40	51.95	20,657.76	58.13	20,715.89
Eleventh	4,367.79	12,305.50	1,631.22	1,219.71	33.75	88.53	19,646.50	68.79	19,715.29
Twelfth	4,167.92	9,849.63	1,875.02	2,261.06	708.25	536.50	19,398.38	119.64	19,518.02
Thirteenth	6,472.30	15,782.75	1,292.60	619.47	.....	316.14	24,483.26	36.70	24,519.96
Fourteenth	5,960.75	19,620.00	1,337.15	415.00	185.50	19.53	27,537.93	19.95	27,557.88
Fifteenth	6,461.95	14,350.00	1,502.26	1,196.98	35.00	102.19	23,648.38	37.06	23,685.44
Sixteenth	7,221.99	13,526.75	2,316.18	1,254.02	103.00	306.14	24,728.08	55.93	24,784.01
Seventeenth	6,587.44	18,950.75	1,271.88	836.01	393.75	209.22	28,249.05	55.03	28,304.08
Eighteenth	17,476.97	14,032.25	2,002.01	231.48	.....	407.82	34,150.53	.....	34,150.53
Nineteenth	7,299.97	23,084.75	749.10	473.18	171.61	302.13	32,080.74	3.26	32,084.00
Twentieth	7,478.07	23,532.51	879.47	172.76	.....	150.10	32,212.91	11.26	32,224.17
Twenty-first	10,799.10	24,270.12	3,211.61	94.20	162.00	102.31	38,639.34	3.37	38,642.71
Twenty-second	7,829.93	18,360.50	1,173.71	635.72	13.25	27.56	28,040.67	26.11	28,066.78
Twenty-third	5,695.91	15,506.37	1,551.30	286.83	27.00	211.53	23,278.94	11.03	23,289.97
Twenty-fourth	5,454.51	14,400.25	1,336.84	218.27	328.00	210.13	21,948.00	2.84	21,950.84
Twenty-fifth	7,231.43	21,204.00	898.90	44.00	.....	25.38	29,403.71	.....	29,403.71
Twenty-sixth	6,624.93	14,157.25	1,457.48	858.51	821.88	220.45	24,140.50	71.51	24,212.01
Twenty-seventh	2,722.55	6,890.75	846.34	1,384.02	6,525.51	432.70	18,801.87	167.23	18,969.10
Twenty-eighth	5,901.02	12,593.50	1,774.64	1,815.01	468.75	119.67	22,672.59	93.63	22,766.22
Twenty-ninth	3,527.45	14,104.75	1,407.01	1,408.86	6,263.37	285.08	26,996.52	107.92	27,104.44
Thirtieth	8,578.70	15,966.06	2,076.86	1,317.89	4.00	89.03	28,032.54	44.74	28,077.28
Thirty-first	4,139.45	15,314.75	832.16	685.89	2,109.50	27.26	23,109.01	27.73	23,136.74
Thirty-second	6,354.83	16,951.50	1,759.17	1,073.37	1,260.50	95.58	27,494.95	136.06	27,631.01
Thirty-third	2,675.13	11,217.50	477.24	1,366.79	7,465.57	188.05	23,390.28	155.74	23,546.02
Thirty-fourth	3,605.20	7,115.25	2,148.14	2,363.35	2,155.48	452.49	17,839.91	115.26	17,955.17
Thirty-fifth	3,386.14	7,359.00	928.82	2,050.95	1,338.59	97.48	15,160.98	155.97	15,316.95
Total	$270,225.15	$546,550.69	$57,245.16	$35,619.08	$41,037.72	$7,476.28	$958,154.08	$2,075.75	$960,229.83

WATER FUND.

REVENUE FOR THE YEAR ENDED DECEMBER 31, 1902.

Assessed rates	$1,850,837.16
Miscellaneous water sales	7,183.28
Meter service	1,330,805.29
Permits	17,107.71
Meter Division, miscellaneous receipts	18,976.36
Rent of Rookery	35,000.04
Miscellaneous receipts	245,563.32
Total	$3,505,473.16

EXPENDITURES.

	Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance December 31, 1902.
COMMISSIONER OF PUBLIC WORKS.			
Office salaries—90 per cent	$ 16,974.00	$ 12,798.76	$ 4,175.24
Office expenses—90 per cent	4,050.00	2,731.51	1,318.49
BUREAU OF MAPS AND PLATS.			
Office salaries—75 per cent	13,063.50	11,759.30	1,304.20
Office expenses—75 per cent	750.00	528.16	221.84
PAYMASTER'S BUREAU.			
Salaries—80 per cent	3,990.00	3,729.05	260.95
Office expenses—80 per cent	900.00	511.85	388.15
One team of horses for pay-wagon—80 per cent	105.00	105.00	
Maintaining pay-wagon—80 per cent	37.50	30.91	6.59
One adding machine—80 per cent	112.50	112.50	
Telephone service—80 per cent	52.50	40.50	12.00
BUREAU OF WATER.			
Collection division, salaries $64,036.00			
Less transfer to office expenses, ordered by City Council 3,000.00			
	61,066.00	59,417.67	1,648.33
Assessor's division, salaries	19,560.00	18,032.07	1,527.93
Meter Rate division, salaries	32,525.00	31,300.15	1,224.85
Shut-off division, salaries $28,496 25			
By transfer from Permit division salaries, ordered by City Council. 1,000.00			
	29,496.25	29,391.75	104.50
Inspection division, salaries	37,500.00	36,780.76	719.24
Permit division, salaries $50,031.75			
Less transfer to Shut-off division salaries, ordered by City Council. 1,000.00			
	49,031.75	48,086.17	945.58
Meter Mechanical division, salaries	14,143.75	12,698.87	1,444.88
Meter Mechanical division, unpaid bills	34.40	34.40	
Postage	8,000.00	7,825.00	175.00
Carried forward	$ 291,392.15	$ 275,914.38	$ 15,477.77

WATER FUND — CONTINUED.

			Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance December 31, 1902.
Brought forward			$ 291,392.15	$ 275,914.38	$ 15,477.77
Office expenses	$12,500.00				
By transfer from Collection division salaries, ordered by City Council.	3,000.00				
			15,500.00	11,685.51	3,814.49
Street car and railroad tickets			4,000.00	3,974.95	25.05
Meter merchandise			25,000.00	8,848.45	16,151.55
Permit merchandise			7,500.00	4,320.39	3,179.61
Rent of space occupied by Bureau of Water.			11,845.00	11,845.00	
Reimbursing Bureau of Engineering for work done			4,702.10		4,702.10
Water tax refunds for overpayments, etc.			20,000.00	10,121.17	9,878.83
BUREAU OF ENGINEERING.					
Office salaries—90 per cent			15,552.00	14,933.26	618.74
Office expenses, etc.—90 per cent			2,250.00		
Expended as follows:					
Office supplies, printing, etc.	$ 889.77				
Rent of space for Water Pipe Extension office	1,120.00				
				2,009.77	240.23
Horse board			3,150.00	3,069.00	81.00
Street car, surface and railroad transportation			3,000.00	2,065.50	934.50
City Engineer's miscellaneous pay roll			2,200.00	1,099.98	1,100.02
Water Works shop, salaries			55,313.00	44,716.66	10,596.34
Water Works shop, material and supplies			15,000.00	14,275.25	724.75
Water Works cribs:					
Repairs and renewals			13,200.00		
Expended as follows:					
Two-mile crib	$ 841.62				
Four-mile crib	811.93				
Lake View crib	661.43				
Hyde Park crib	688.64				
Carter H. Harrison crib	1,195.10				
				4,198.72	9,001.28
Operation:					
Salaries	$31,140.00				
Fuel, supplies, etc	5,000.00				
			36,140.00		
Expended as follows:					
Two-mile crib, salaries	$10,985.32				
Four-mile crib, salaries	3,802.72				
Lake View crib, salaries	4,352.76				
Hyde Park crib, salaries	3,882.46				
Carter H. Harrison crib, salaries	4,244.01				
		$27,267.27			
Two-mile crib, fuel, supplies, etc.	$ 708.99				
Carried forward	$ 708.99	$27,267.27	$ 525,744.25	$ 413,077.99	$ 76,526.26

WATER FUND — CONTINUED.

			Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance December 31, 1902.
Brought forward....	$ 708.99	$27,267.27	$ 525,744.25	$ 413,077.99	$ 76,526.26
Four-mile crib, fuel, supplies, etc.....	433.13				
Lake View crib, fuel, supplies, etc.....	293.85				
Hyde Park crib, fuel, supplies, etc.....	435.99				
Carter H. Harrison crib, fuel, supplies, etc.....	765.32				
		$ 2,637.28			
				29,904.55	6,235.45
Tug service			20,800.00		
Two-mile crib.....		$11,102.37			
Four-mile crib		2,289.03			
Lake View crib.....		2,289.02			
Hyde Park crib.....		2,283.02			
Carter H. Harrison crib.....		2,283.02			
				20,246.46	553.54
Repairs and renewals of tunnels.....			3,000.00	1,254.91	1,745.09
Pumping stations:					
Repairs and renewals:					
Material.....		$52,200.00			
Labor.....		72,028.00			
Boiler repairs Fourteenth street pumping station.....		10,000.00			
			134,228.00		
Expenses as per detailed statement.....				110,543.41	23,684.59
Operation:					
Salaries.....		$276,132.00			
Fuel.....		350,000.00			
Supplies, etc.....		42,800.00			
			668,932.00		
Expenses as per detailed statement:					
Vouchered.....		$528,143.86			
15 per cent reserves on contracts.		39,294.31			
				567,438.17	101,493.83
Pumping stations. extraordinary expenses:					
Chicago avenue station, remodeling boiler rooms, existing contracts.....			6,000.00	3,199.57	2,800.43
Chicago avenue station, remodeling boiler rooms, new work			5,000.00	3,073.21	1,926.79
Chicago avenue station, new boiler plant, existing contracts			47,000.00	46,632.27	367.73
Chicago avenue station, new pumping engines and foundations, new work.....			75,000.00	1,534.58	73,465.42
New pumping stations, miscellaneous machinery.....			5,000.00		
Expended as follows:					
Springfield avenue station.....		$2,270.25			
Central Park avenue station		2,310.90			
				4,581.15	418.85
Carried forward			$1,490,704.25	$1,201,486.27	$ 289,217.98

WATER FUND — CONTINUED.

	Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance December 31, 1902.
Brought forward	$1,490,704.25	$1,201,486.27	$ 289,217.98
New pumping stations, pumping engines and appurtenances, existing contracts	125,000.00		
Expended as follows:			
Springfield avenue station $ 5,106.86			
Central Park avenue station 6,915.26			
$12,022.12			
15 per cent reserves on contract.. 109,683.75			
		121,705.87	3,294.13
Springfield avenue station, new work	5,000.00	1,864.10	3,135.90
Central Park avenue station, new work	2,000.00	1,700.58	299.42
Sixty-eighth street station, unpaid bills	1,654.80	1,654.80	
New Southwest land and lake tunnel, new Southwest pumping station, etc	100,000.00	57,530.95	42,469.05
Sixty eighth street land tunnel: Balance brought forward, January 1, 1902	23,096.33	23,096.33	
Operating baths at pumping stations:			
Fourteenth street station, salaries	720.00	720.00	
Twenty-second street station, salaries	780.00	780.00	
Supplies, labor, etc., for above baths	3,000.00		
Fourteenth street station $577.59			
Twenty-second street station 72.77			
		650.36	2,349.64
Chicago harbor: Harbor police and dredging inspectors, salaries	9,750.00	9,385.50	364.50
Sundry claims, unpaid bills	884.94	884.94	
Engineering and inspection new constructions salaries	3,363.00	54.44	3,308.56
Legal expenses and witness fees on account of Water Works	15,000.00		
Expended as follows:			
Section 2, new land tunnel $4,847.60			
Sundry expenses 2,922.71			
		7,770.31	7,229.69
WATER PIPE EXTENSION.			
Office salaries	16,856.00		
Expended as follows:			
Repairs and renewals $8,328.02			
New work 7,829.11			
		16,157.13	698.87
Labor, for repairs, maintenance and construction $245,372.00			
Labor, for construction.. $40,000.00			
Less transfer to miscellaneous material, ordered by City Council 10,000.00			
30,000.00			
	275,372.00		
Carried forward	$2,073,181.32	$1,445,441.58	$ 352,367.74

WATER FUND — CONTINUED.

		Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance December 31, 1902.
Brought forward		$2,073,181.32	$1,445,441.58	$ 352,367.74
Expended as follows:				
Labor for repairs and maintenance	$224,014.54			
Labor for construction	44,359.29			
			268,373.83	6,998.17
Horse board		4,104.00	4,054.15	49.85
Miscellaneous material for repairs, maintenance and construction	$33,000.00			
By transfer from labor, as above, ordered by City Council	10,000.00			
		43,000.00		
Expenses vouchered	$38,216.38			
A. L. Jones, unpaid bills	3,360.00			
			41,576.38	1,423.62
City pipe yards, salaries		31,768.00		
Expended as follows:				
Repairs and renewals	$19,304.10			
Construction	6,958.55			
			26,262.65	4,905.35
Teaming for Water Pipe Extension		35,000.00		
Expended as follows:				
Repairs and renewals, vouchered	$29,866.48			
15 per cent reserves on contracts	117.00			
	$29,983.48			
Construction, expenses vouchered	$ 4,856.63			
15 per cent reserves on contracts	117.09			
	4,973.72			
			34,957.20	42.80
Contract material:				
Special castings		5,500.00		
Expended as follows:				
Repairs and renewals	$ 883.58			
Construction, expenses vouchered	$ 2,021.83			
15 per cent reserves on contract	212.67			
	2,234.50			
			3,118.08	2,381.92
Lumber		3,500.00		
Expended as follows:				
Repairs and renewals, expenses vouchered	$ 3,067.31			
15 per cent reserves on contracts	357.53			
			3,424.84	75.16
Brass castings, construction		5,000.00	3,694.45	1,305.55
Carried forward		$2,200,453.32	$1,880,903.16	$ [illegible]

WATER FUND — CONTINUED.

	Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance December 31, 1902.
Brought forward	$2,200,453.32	$1,830,903.16	$ 360,550.16
Hydrants and stop valve castings	7,500.00		
Expended as follows:			
Construction, expenses vouchered $2,961.00			
15 per cent reserves on contract 1,133.05			
		4,094.05	3,405.95
Hydrant rings and covers	7,000.00		
Expended as follows:			
Repairs and renewals $ 662.00			
Construction 6,276.36			
		6,938.36	61.64
Cast iron water pipe	58,000.00		
Expended as follows:			
Repairs and renewals $ 366 50			
Construction 49,286.15			
		49,652.65	8,347.35
Extension of distribution system in south and southwestern portion of the City, labor and material	15,000.00	9,622.67	5,377.33
Water mains for Fire Department, to be used by fire boats, labor and material	130,000.00		
Expended as follows:			
Labor $ 7,585.36			
Material $60,301.16			
15 per cent reserves on contracts 1,318.40			
$61,619.56			
		69,154.92	60,845.08
Board of Local Improvements:			
Water supply pipe laid by special assessments, public benefits	17,637.82	17,249.33	388.49
Meter and private work and laying water pipe by deposits	50,000.00	28,890.13	21,109.87
Restoration of streets and alleys	8,000.00	3,726.94	4,273.06
Reimbursing Bureau of Streets for repairs of streets	5,000.00	3,268.62	1,731.38
Hydrant rentals:			
Rogers Park water works	11,000.00	9,780.60	1,219.40
Chicago Suburban Water and Light Co	5,133.33	5,133.33	
Chicago Suburban Water and Light Co., Council orders	7,186.67	7,186.67	
BUREAU OF SEWERS.			
Fullerton avenue pumping station:			
Salaries	10,140.00	10,116.49	23.51
Fuel $ 6,750.00			
By transfer from supplies, ordered by City Council 1,000.00			
	7,750.00		
Expenses vouchered $ 6,574.45			
15 per cent reserves on contracts 1,160.20			
		7,734.65	15.35
Carried forward	$2,539,801.14	$2,063,452.57	$ 476,348.57

WATER FUND — CONTINUED.

		Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance December 31, 1902.
Brought forward		$2,539,801.14	$2,063,452.57	$ 476,348.57
Repairs on engines, etc., and supplies	$ 3,000.00			
Less transfer to fuel, ordered by City Council	1,000.00	2,000.00	1,849.82	150.18
Intercepting sewers:				
Section "B," reconstruction outfall Twenty-first street		269.68	269.68	
Section "C," Thirty-ninth street conduit		572,616.24		
Expenses vouchered			471,555.63	101,060.61
Restoration of Thirty-ninth street (Star Construction work)		15,000.00		
Expenses vouchered			7,418.18	7,581.82
Pumping at Halsted street slip (Star Construction work)		15,900.00		
Expenses vouchered			14,988.93	911.07
Section "D," Lawrence ave conduit	$575,260.00			
Less transfer to "pumping at Lake Michigan," ordered by City Council	1,500.00	573,760.00	2,609.55	571,150.45
Restoration of Lawrence avenue (Farley & Green)		2,000.00		2,000.00
Pumping at Lake Michigan	$ 9,000.00			
By transfer from Section "D," ordered by City Council	1,500.00	10,500.00		
Expenses vouchered			10,149.56	350.44
Section "G," Thirty-ninth street to Fifty-sixth street	$320,595 00			
By transfer from Section "H," ordered by City Council	50,000.00	370,595.00		
Expenses Section "G," vouchered	$226,834.03			
Expenses Section "G 3," vouchered	137,833.56		364,667.59	5,927.41
Section "H," Fifty-sixth street to Seventieth street	$335,379.00			
Less transfer to Section "G," ordered by City Council	50,000.00	285,379.00		
Expenses vouchered			114,435.62	170,943.38
Section "I," Thirty-fifth street to Thirty-ninth street		31,800.00		31,800.00
Section "K," Seventieth street to Seventy-third street		68,518.40		68,518.40
Section "L," main conduit Thirty-ninth street produced		98,389.00		
Expenses vouchered			82,530.75	15,858.25
Section "M," intake, breakwater and protection pier at Thirty-ninth street produced		80,390.00		
Carried forward		$4,666,918.46	$3,133,927.88	$1,452,600.58

WATER FUND — CONTINUED.

	Appropriation, 1902.	Expenditures, 1902.	Unexpended Balance December 31, 1902.
Brought forward	$4,666,918.46	$3,133,927.88	$1,452,600.58
Expenses vouchered		46,067.07	84,322.93
Section "N," intake and breakwater at Lawrence avenue	93,280 00		93,280.00
Section "O," pumping station, Thirty-ninth street	125,000.00		
Expenses vouchered		3,326.10	121,673.90
Section "P," pumping station, Lawrence avenue	47,700.00		47,700.00
Section "S," pumping machinery, Thirty-ninth street conduit	159,000.00		
Expenses vouchered		166.67	158,833.33
Section "T," pumping machinery, Lawrence avenue	60,000.00		60,000.00
Section "Q," extension Lawrence avenue sewer from lot 56 to river	23,850.00		23,850.00
To reverse sewers, south shore	30,000.00		30,000.00
Maintenance	10,000.00		10,000.00
Section 2, connection of laterals retained, Nash & Dowdle's contract	250.00		250.00
Section 3, connection of laterals	250.00		250.00
Office expenses	11,080 00	10,445.17	634.83
Bill of South Park Commissioners	20.95	20.95	
Section 3:			
Balance brought forward January 1, 1903	1,012.50	1,012.50	
DEPARTMENT OF FINANCE.			
Redemption of bonds due April 8, 1902	15,000.00	15,000.00	
Redemption of bonds due July 1, 1902	332,000.00	332,000.00	
Redemption of water certificates, due June 1 and December 1, 1902	800,000.00	799,000.00	1,000.00
Interest on water loan bonds	151,241 50	151,241.50	
Interest on water certificates	68,500.00	68,482.50	17.20
Appropriation 1902 (including Council order for Chicago Suburban Water and Light Company, $7,186.67)	$6,595,108.41		
Interest on water loan bonds, not appropriated	7.29	7.29	
Interest on water certificates, not appropriated	100.00	100.00	
Total	$6,595,310.70	$4,560,797.63	$2,034,413.07
Classified as follows:			
ORDINARY EXPENSES:			
Operation, repairs and renewals		$1,568,093.84	
EXTRAORDINARY EXPENSES:			
Pumping stations, construction	$ 186,000.57		
Tunnels	85,474.88		
Water pipe extension	225,733.10		
Intercepting sewers	1,129,663.95		
Department of Finance:			
Redemption of bonds and certificates	1,146,000.00		
Interest on bonds and certificates	219,831.29		
		2,992,703.79	
Total as above		$4,560,797.63	

PUMPING STATIONS—OPERATION.

	Salaries.	Fuel.	Oil, Grease, etc.	Miscellaneous Supplies.	Total.	Fuel, 15 per cent Reserves on Contracts.	Total, including 15 per cent Reserves on Contracts.
Chicago avenue pumping station	$ 46,480.69	$ 39,441.87	$ 1,670.49	$ 4,998.51	$ 92,591.56	$ 6,966.92	$ 99,558.48
Fourteenth street pumping station	39,360.03	39,643.16	1,785.22	4,756.75	85,545.16	6,995.83	92,540.99
Harrison street pumping station	23,795.68	20,452.95	1,256.29	1,953.17	47,458.04	3,439.07	50,897.11
Lake View pumping station	27,710.49	16,639.74	1,805.23	2,448.52	48,103.98	2,936.42	51,040.40
Twenty-second street pumping station	32,846.65	33,267 37	872.52	2,723.93	69,710.47	5,870.71	75,581.18
Sixty-eighth street pumping station	42,524.49	30,396.13	1,790.08	4,004.69	78,715.39	5,864.61	84,580.00
Central Park avenue pumping station	26,083 80	18,757.15	1,382.15	1,790.66	48,013.76	3,310.09	51,323.85
Springfield avenue pumping station	25,061.68	20,063.31	1,109.47	1,243.25	47,477.71	3,540.58	51,018.29
Norwood Park pumping station	3,813.32	762.16	35.63	96.76	4,207.87	134.50	4,342.37
Washington Heights pumping station	4,753 32	1,334.95	102.61	129.04	6,319.92	235.58	6,555.50
Total	$271,930.10	$220,758.79	$11,309.69	$24,145.28	$528,148.86	$39,294.31	$567,438.17

PUMPING STATIONS—REPAIRS AND RENEWALS.

	Engines and Pumps.	Boilers.	Buildings.	Total.
Chicago avenue pumping station	$ 5,567.39	$ 4,474.38	$ 4,681.11	$ 14,722.88
Fourteenth street pumping station	6,378.67	11,052.75	4,979.09	22,410.51
Harrison street pumping station	2,713.40	825.88	1,785.09	5,324.32
Lake View pumping station	6,912.79	6,869.85	2,974.78	16,757.42
Twenty-second street pumping station	4,211.06	2,595.91	4,550.60	11,357.57
Sixty-eighth street pumping station	8,800.95	6,175.03	4,506.08	19,482.06
Central Park avenue pumping station	2,985.71	4,760.96	3,541.24	11,287.91
Springfield avenue pumping station	2,530 99	2,938.97	689.23	6,159.19
Norwood Park pumping station	200.65	12.00	524.25	736.90
Washington Heights pumping station	426.27	828.78	1,104.60	2,354.65
Total	$40,677.88	$40,539.46	$29,336.07	$110,543.41

WATER WORKS.

Since the purchase of the Water Works in 1854 from the Chicago Hydraulic Company the City has expended to December 31, 1902, including the cost of the said company's property:

Cost up to May 1, 1861, when the works were transferred from the Board of Commissioners to Board of Public Works	$ 1,020,160.21

EXPENDITURES SINCE 1861.

Cost of water pipe, including labor	$16,915,668.80
Mains for fire protection	79,587.41
Cost of works, annexed territory	1,160,164.24
Cost of North pumping works	1,086,777.60
Cost of South pumping works	673,370.79
Cost of Fourteenth street bath	4,495.34
Cost of Central pumping works	873,881.55
Cost of West pumping works	944,393.77
Cost of Twenty-second street bath	1,4[illegible]3.04
Cost of Sixty-eighth street pumping works	395,239.56
Cost of Lake View pumping works	194,708.48
Cost of Washington Heights pumping works	27,720.95
Cost of Norwood Park pumping works	9,681.72
Cost of canal pump for 1899	247.00
Cost of Springfield avenue pumping works	481,773.43
Cost of Central Park avenue pumping works	426,072.57
Reserves on contracts for Springfield avenue and Central Park avenue pumping works	109,683.75
Cost of real estate for sites for pumping stations, etc	364,099.51
Cost of new lake tunnel	1,104,744.12
Cost of Lake View tunnel	701,792.45
Cost of Sixty-eighth street tunnel extension	771,556.07
Cost of Chicago avenue tunnel extension	42,436.45
Cost of Ashland avenue tunnel	17,453.36
Cost of Kedzie avenue tunnel extension	35,561.75
Cost of first lake tunnel	464,866.05
Cost of second lake tunnel	415,709.36
Cost of land tunnel to West pumping works	542,912.68
Cost of new land tunnel	284,380.04
Cost of new land tunnel, 1895	2,121,525.02
Cost of Western avenue tunnel	29,614.58
Cost of Northeast lake tunnel, 1895	678,935.17
Cost of Jefferson street tunnel	15,968.17
Cost of new Southwest land and lake tunnel, new Southwest pumping station, etc	57,580.95
Cost of new lake shore inlet	132,345.84
Cost of new lake shore inlet extension	167,552.13
Cost of two-mile tunnel extension	87.50
Cost of North breakwater	41,780.11
Cost of two-mile crib	102,984.43
Cost of four-mile crib	469,574.88
Cost of Lake View crib	92,874.08
Cost of removal of Lake View inner crib	4,950.00
Cost of Sixty-eighth street crib	47,420.47
Cost of removal of intermediate crib	8,931.45
Carried forward	$32,567,586.23

Brought forward	$32,567,536.23	
Cost of Carter H. Harrison crib	53,327.86	
Cost of lake crib protection	149,431.63	
Cost of intercepting sewers	2,815,623.72	
Cost of Water Works shop	27,240.58	
Cost of Water Works stock	29,318.00	
Cost of water reservoir fence	1,702.87	
Cost of addition to stables	1,019.48	
Cost of new repair shops	42,749.11	
Total cost of entire works to December 31, 1902		$35,687,949.48

This sum was paid as follows:

From general taxes	$ 2,713,878.53	
From City of Chicago water loan bonds, 4 per cent	3,191,500.00	
From annexed territory	197,525.48	
From City of Chicago water loan bonds, 3½ per cent	328,500.00	
From bonds canceled	2,654,900.00	
From Hyde Park water loan bonds, 5 per cent	50,000.00	
From Lake View water loan bonds, 4 per cent	50,000.00	
From Lake View water loan bonds, 5 per cent	23,000.00	
From water certificates	1,000,000 00	
From water certificates canceled	5,166,000.00	
From water earnings	20,312,645.47	
Total		$35,687,949.48

BONDED DEBT OF WATER WORKS.

City of Chicago water loan bonds outstanding December 31, 1902, bearing 4 per cent interest and maturing as follows:

July 1, 1908	$ 150,000.00	
July 1, 1910	159,500.00	
July 1, 1912	821,000 00	
July 1, 1914	576 000.00	
July 1, 1915	1,485,000.00	
		$ 3,191,500.00
Bearing 3½ per cent interest, maturing:		
July 1, 1909	$ 225,000.00	
July 1, 1910	103,500.00	
		328,500.00

ANNEXED DISTRICTS.

Hyde Park:		
5 per cent bonds, due January 1, 1904		50,000.00
Lake View:		
5 per cent bonds, due July 1, 1904	$ 23.000.00	
4 per cent bonds, due July 1, 1907	50,000.00	
		73,000.00
Total bonded debt of Water Works		$ 3,643,000.00
Total interest paid on water loan to December 31, 1902.		$ 9,275,497.50

Respectfully submitted,

HUGO RASPER,

Bookkeeper.

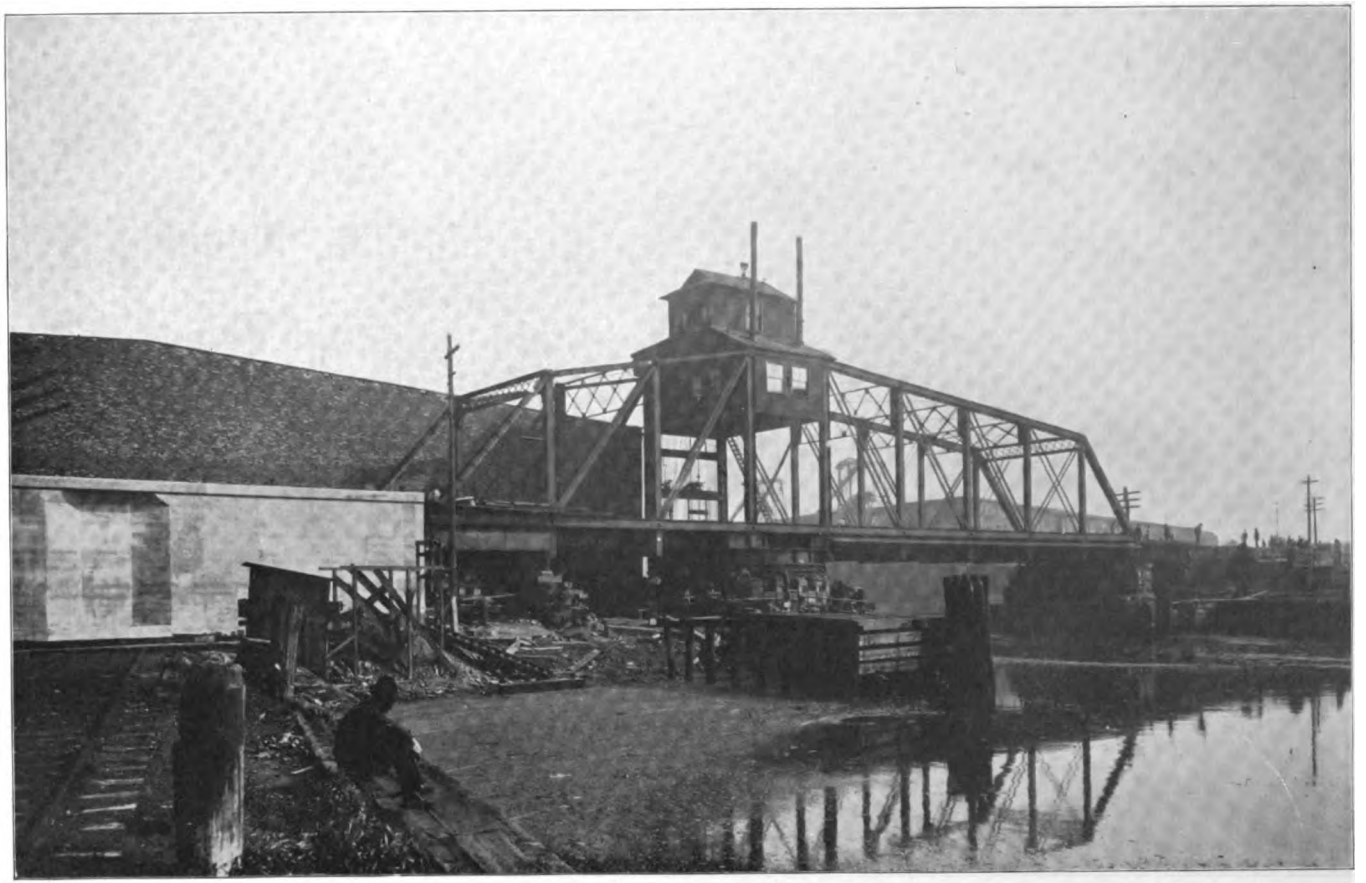
ANNUAL REPORT

Department of Track Elevation

CITY OF CHICAGO

1902

JOHN O'NEILL
Superintendent



EIGHTEENTH STREET TRACK ELEVATION—RAISING BRIDGEPORT DRAWBRIDGE—LOOKING SOUTHWEST.
A. T. & S. F., C. & A. AND C. M. & N. RYS.

DEPARTMENT OF

TRACK ELEVATION.

REPORT FOR THE YEAR 1902.

In this, our report for the year 1902, we are pleased and gratified to state that the number of ordinances passed by the City Council and accepted by the railroad companies, and the work that has been done under ordinances passed in the elevation of the roadbeds and tracks of the several railroad companies mentioned in this report, has been satisfactory as to the amount of elevation and the quality of workmanship and will compare favorably with that of any former year since the commencement of this great work.

January 13, 1902, an ordinance was passed and accepted for the elevation of the roadbeds and tracks of the Belt Railway Company of Chicago, the Chicago & North-Western Railway Company and the Chicago, Milwaukee & St. Paul Railway Company that calls for the elevation of about 7.75 miles of main tracks and about 25.31 miles of other tracks, eliminating twenty-five grade crossings by subways, as follows: West Chicago avenue, Augusta street, West Division street, Hirsch street, West North avenue, Grand avenue, Armitage avenue, Humboldt avenue, West Fullerton avenue, West Wrightwood avenue, West Diversey avenue, West Wellington avenue, West Belmont avenue, West Roscoe street, West Addison street, North Fortieth court, North Forty-first avenue, North Forty-first court, North Forty-second avenue, North Forty-second court, North Forty-third avenue, North Forty-fourth avenue, North Forty-eighth avenue, Grand avenue and North Fifty-first avenue. Five of these are joint subways: West Chicago avenue, Augusta street, West Division street, Hirsch street, and West North avenue, to be constructed by the Belt Railway Company of Chicago and the Chicago & North-Western Railway Company, at an estimated cost for the entire work, as follows:

Chicago & North-Western Railway Company.....	$1,125,000
Chicago, Milwaukee & St. Paul Railway Company.....	700,000
Belt Railway Company of Chicago.....	500,000
	$2,325,000

February 3, 1902, an ordinance was passed and accepted for the elevation of the roadbeds and tracks of the Grand Trunk Western Railway Company, the Chicago Junction Railway Company, the Terminal Railroad Company, the Michigan Central Railroad Company as lessee of said Terminal Railroad Company, the Pittsburgh, Cincinnati, Chicago & St. Louis Railway Company and the Chicago Terminal Transfer Railroad Company, elevating 7.25 miles of main tracks and about 30.04 miles of other tracks, eliminating thirty-one grade crossings by subways, as follows: Wallace street, Union avenue, South Halsted street, West Forty-seventh street, South Morgan street, South Aberdeen street, South Center avenue, South Throop street, South Loomis street, South Laflin street Justine street, South Ashland avenue, South Marshfield avenue, South Paulina street, South Hermitage avenue, South Wood street, Honore street, South Lincoln street, South Winchester avenue, South Robey street, South Seeley avenue, South Hoyne avenue, South Oakley avenue, Western avenue boulevard, South Western avenue, to be constructed by the Grand Trunk Western Railway Company, the Chicago Junction Railway Company and the Terminal Railroad Company, the Michigan Central Railroad Company as lessee of said Terminal Railroad Company, and six joint subways: West Forty-third street, West Forty-seventh street, West Forty-ninth street, West Fiftieth street, West Fiftieth place and West Fifty-first street to be constructed by the Pittsburgh, Cincinnati, Chicago & St. Louis Railway Company and the Chicago Terminal Transfer Railroad Company. The following three subways: Wallace street, Union avenue and South Halsted street, are to be constructed by the Grand Trunk Western Railway Company, and the subway in West Forty-seventh street to be constructed by the Chicago Junction Railway Company, at an estimated cost for the entire work, as follows:

Grand Trunk Western Railway Company	$ 600,000
Chicago Junction Railroad Company, The Terminal Railroad Company, the Michigan Central Railroad Company, as lessee of said Terminal Railroad Company	400,000
Chicago Junction Railway Company	150,000
Pittsburgh, Cincinnati, Chicago & St. Louis Railway Company	150,000
Chicago Terminal Transfer Railroad Company	150,000
Total cost	$1,450,000

July 7, 1902, an ordinance was passed and accepted for the elevation of the roadbeds and tracks of the Chicago, Burlington & Quincy Railroad Company, the Chicago and North-Western Railway Company and the Chicago Terminal Transfer Railroad Company, elevating eight miles of

main tracks and about 87.7 miles of other tracks, eliminating eighteen grade crossings by subways, as follows: South Robey street, South Lincoln street, South Wood street, South Paulina street, South Ashland avenue, South Laflin street, South Loomis street, Blue Island avenue and South Throop street, Center avenue, South Morgan street, South Sangamon street, Johnson street, Newberry avenue, South Halsted street, South Union street, Sixteenth street, and two subways in Rebecca street. Fifteen of these are joint subways: South Robey street, South Lincoln street, South Wood street, South Paulina street, South Ashland avenue, South Laflin street, South Loomis street, Blue Island avenue and Throop street, Center avenue, South Morgan street, South Sangamon street, Johnson street, Newberry avenue, South Halsted street, South Union street, to be constructed by all of the railroad companies mentioned above. The subway in Sixteenth street to be constructed by the Chicago, Burlington & Quincy Railroad Company and the two subways in Rebecca street to be constructed by the Chicago Terminal Transfer Railroad Company, at an estimated cost for the entire work, as follows:

Chicago, Burlington & Quincy Railroad Company....	$ 800,000
Chicago & North Western Railway Company.....	800,000
Chicago Terminal Transfer Railroad Company.....	900,000
Total cost	$2,500,000

September 29, 1902, an ordinance was passed and accepted for the elevation of the roadbeds and tracks of the Illinois Central Railroad Company, the South Chicago Railroad Company, the Baltimore & Ohio Railroad Company, the New York, Chicago & St. Louis Railway Company, the Lake Shore and Michigan Southern Railway Company and the Pittsburgh, Fort Wayne & Chicago Railway Company for the elevation of 5.65 miles of main tracks and about 22.35 miles of other tracks, eliminating sixteen grade crossings by subways, as follows: Seventieth street, Seventy-first street, Seventy-second street, Seventy-third street, Seventy-fifth street, South Chicago avenue, Seventy-sixth street and Seventy-ninth street; Seventy-third street, Greenwood avenue, Seventy-fifth street, Chauncey avenue, Adams avenue, Seventy-ninth street, StoneyIsland avenue, and Seventy-sixth street. Seven of these are joint subways: Seventy-third street, Greenwood avenue, Seventy-fifth street, Chauncey avenue, Adams avenue, Seventy-ninth street and Stoney Island avenue, to be constructed by the Lake Shore and Michigan Southern Railway Company and the Pittsburgh, Fort Wayne & Chicago Railway Company; and one joint subway, Seventy-ninth street, to be constructed by the Illinois Central Railroad Company and the New York, Chicago & St. Louis Railway Company. The subway at Seventy-sixth street to be constructed by the New York, Chicago & St. Louis Railway

Company; and seven subways: Seventieth street, Seventy-first street, Seventy-second street, Seventy-third street, Seventy-fifth street, South Chicago avenue and Seventy-sixth street to be constructed by the Illinois Central Railroad Company, at an estimated cost for the entire work, as follows:

Illinois Central Railroad Company	$ 711,000
New York, Chicago & St. Louis Railway Company	150,000
Lake Shore & Michigan Southern Railway Company	319,500
Pittsburgh, Fort Wayne & Chicago Railway Company	319,500
Total cost	$1,500,000

Under the ordinances passed May 22, 1899, there has been seven tracks elevated jointly by the Atchison, Topeka & Santa Fe Railway Company, the Chicago, Madison & Northern Railroad Company and the Chicago & Alton Railroad Company from Halsted street to Canal street, a distance of one-half (½) mile, and subways have been constructed at each of the following streets: Wallace street, Butler street, Grove street, and Archer avenue.

Under the same ordinance there has been elevated jointly the same number of tracks for a distance of one-half (½) mile from Lock street to two hundred feet west of Ashland avenue, and in this distance the railroad bridge across the South branch at Bridgeport has been elevated 11 feet. The engineering problem to be solved in the elevation of this bridge was to have the work so well under control that the bridge could be opened and closed at all times, so that there should be no obstruction to passing vessels and railroad trains. This was accomplished by Major George W. Vaughn, Local Engineer in charge of Joint Track Elevation, and the bridge was opened and closed from twelve to twenty-four times daily without any interference with the work, except the necessary delay occupied during the opening and closing of the bridge. A joint subway was constructed at Ashland avenue. From Ashland avenue the roadbed and tracks of the Atchison, Topeka & Santa Fe Railway Company and the Chicago, Madison & Northern Railroad Company diverge northwest to the east end of the span bridge across the Illinois and Michigan canal, a distance of one-half mile, under which joint elevation a subway has been constructed at Robinson avenue, thirty-three (33) feet wide. From Ashland avenue the Chicago & Alton Railroad Company's roadbed and tracks diverge to the southwest and have been elevated to Thirty-fourth street, a distance of 0.79 of a mile, and subways have been constructed by said company at the following streets: Wood street, Thirty-third street, Robey street and Thirty-fourth street. Thirty-fourth street has not been elevated at present to the height required by ordinance as it was impossible to proceed further

this season with the work of elevation but will be carried to the proper elevation in the spring of 1903, nevertheless the clearance at present is sufficient for traffic to pass underneath. These companies have elevated during this year 2.29 miles of main tracks and 14 miles of all other tracks, eliminating ten grade crossings by subways, at an estimated cost to each company as follows:

Atchison, Topeka & Santa Fe Railway Company	$250,000
Chicago, Madison & Northern Railroad Company	250,000
Chicago & Alton Railroad Company	400,000
Total cost	$900,000

Under the ordinance passed February 11, 1901, the Lake Shore & Michigan Southern Railway Company and the Chicago, Rock Island & Pacific Railway Company have elevated their roadbeds and eight main tracks from a point about 700 feet south of the Twelfth street viaduct to a point about two hundred feet south of Van Buren street, a distance of one-half mile. They have jointly elevated one-half mile of main tracks and 4.75 miles of other tracks, eliminating two grade crossings by the construction of two joint subways at Polk street and Harrison street. These companies have also completed the construction of the south approach from Taylor street bridge to a connection with the north approach from Twelfth street viaduct in Fifth avenue, at an estimated cost of $600,000 for the entire work.

The Chicago, Rock Island & Pacific Railway Company and the Lake Shore & Michigan Southern Railway Company are now engaged in the construction and erection of a new commodious and magnificent station and office building to take the place of the old Van Buren street station. The general dimensions will be a frontage of 215 feet on Van Buren street and an extension south to Harrison street, a distance of 795 feet, of which the station proper will occupy 157 feet. The main train-shed will be 580 feet in length connecting with the main building by a concourse 45 feet wide, both the train-shed and the concourse covering the entire width of the property.

The main building will be twelve stories in height; the two lower floors will be devoted to station purposes and the upper floors will be occupied with the offices of the Chicago, Rock Island & Pacific and Lake Shore & Michigan Southern Railway Companies.

The elevation of the eight main tracks of these companies from about two hundred feet south of Harrison street to a point about 160 feet south of Van Buren street made the erection and construction of this station and office building a necessity, and said eight tracks are carried and upheld by cross girders of steel, supported by steel columns.

Under the ordinance passed January 15, 1902, the Chicago & North-Western Railway Company has elevated 3.5 miles of main tracks and eight miles of other tracks from Milwaukee avenue on the north to North avenue on the south, eliminating ten grade crossings by subways, as follows: Addison avenue, Roscoe street, Belmont avenue, Wellington avenue, Diversey avenue, Humboldt avenue, Armitage avenue, Grand avenue and North avenue, at an estimated cost of $800,000.

Under the same ordinance the Chicago, Milwaukee & St. Paul Railway Company has elevated two miles of main tracks and four miles of other tracks, between North Fortieth avenue and North Fifty-second avenue, eliminating ten grade crossings by the construction of subways at each of the following streets: North Fortieth avenue, North Forty-first avenue, North Forty-first court, North Forty-second avenue, North Forty-second court, North Forty-third avenue, North Forty-fourth avenue, North Forty-eighth avenue, Grand avenue and North Fifty-first avenue, at an estimated cost of $700,000.

As stated above, this ordinance was passed January 13, 1902, and the work of elevation was commenced April 1, 1902. The Chicago & North-Western Railway Company elevated 3.5 miles by the first day of July, 1902; the Chicago, Milwaukee & St. Paul Railway Company commenced work at the same time and elevated two miles by the first day of July, 1902. Of course the work was not completed, but the roadbed and tracks were carried to the full elevation on both roads, with no depression of the streets, and the trains run on the elevation and the traffic of the City passed underneath. This beats the record of all track elevation in Chicago since the commencement of the work.

SUMMARY.

Ordinances have been passed and accepted by the railroad companies this year for the elevation of their roadbeds and tracks as follows:

Number miles of main tracks to be elevated	28.65
Number miles of other tracks to be elevated	165.40
Number of subways to be constructed	90
Total estimated cost of work	$7,775,000

There has been elevated under ordinances passed this year the following:

Number miles of main tracks elevated	7.77
Number miles of other tracks elevated	30.75
Number of subways constructed	32
Total estimated cost of the work	$3,000,000

GRAND SUMMARY.

Ordinances have been passed by the City Council and accepted by the railroad companies for the elevation of their roadbed and tracks from May 23, 1892, to December 31, 1902, covering the following amount of work:

Total number miles of main tracks to be elevated....	123.10
Total number miles of other tracks to be elevated....	683.27
Total number of subways to be constructed.....	493
Total estimated cost of entire work when completed..	$40,913,250

The amount of elevation that has been done from May 23, 1892, to December 31, 1902, is as follows:

Total number miles of main tracks elevated.....	70.17
Total number miles of other tracks elevated.....	329.11
Total number of subways constructed.....	310
Total estimated cost of work done.....	$22,255,000

Leaving work to be done under all ordinances that have been passed from May 23, 1892, to December 31, 1902, as follows:

Total number miles of main tracks yet to be elevated	52.93
Total number miles of other tracks yet to be elevated	351.94
Total number of subways yet to be constructed.....	182
Total estimated cost of work yet to be completed....	$18,658,250

The appropriation made by the City Council for the Department of Track Elevation for the year 1902 is as follows:

Appropriation for the year ending 1902.....	$6,000.00
Amount expended for salaries, miscellaneous, etc.....	5,450.97

Union Stock Yard & Transit Company of Chicago and Chicago Junction Railway Company; ordinance passed March 16, 1903:

Miles of main track to be elevated.....	3.5
Miles of other tracks to be elevated.....	19.0
Subways to be constructed.....	29
Estimated cost of work to be done.....	$1,200,000

Chicago & North-Western Railway Company; ordinance passed March 23, 1903:

Miles of main track to be elevated.....	2.5
Miles of other tracks to be elevated.....	7.5
Subways to be constructed	15
Estimated cost of work to be done.....	$1,200,000

THE FOLLOWING TABLE SHOWS THE TOTAL DEATHS BY RAILROAD ACCIDENTS, WITH THE PER CENT OF DEATHS BY RAILROAD ACCIDENTS TO ALL DEATHS BY VIOLENCE FROM JANUARY 1, 1891, TO JANUARY 1, 1902.

YEARS.	Total Deaths from All Causes.	Total Deaths from Violence.	Per cent of Deaths from Violence to Deaths from All Causes.	Total Deaths by Railroad Accidents.	Per cent of Deaths by Railroad Accidents to all Deaths by Accidents.
1891	27,754	1,457	5	301	21
1892	26,219	1,573	6	355	23
*1893	27,083	1,879	7	387	21
1894	23,892	1,537	6	256	17
1895	24,219	1,458	6	222	15
1896	23,257	1,363	6	198	14
1897	21,809	1,415	6	186	13
1898	22,793	1,536	7	221	14
1899	25,503	1,554	6	228	15
1900	24,941	1,577	6	258	16
1901	24,406	1,674	6	241	14
1902	26,455	1,880	7	287	15

*This was the year of the World's Fair and there was no track elevation before this year.

Respectfully submitted,

JOHN O'NEILL,

Superintendent Track Elevation.

REPORT OF

Special Park Commission

1902

EIGHTEENTH STREET TRACK ELEVATION—RAISING BRIDGEPORT DRAWBRIDGE—A. T. & S. F., C. & A. AND C. M. & N. RYS.

REPORT OF

SPECIAL PARK COMMISSION.

CITY OF CHICAGO, SPECIAL PARK COMMISSION,
Room 206, City Hall, December 31, 1902.

To the Honorable the Mayor and City Council of the City of Chicago:

Gentlemen—The Special Park Commission herewith submits its report for the year 1902:

SMALL PARKS—NORTH DIVISION.

In order to take advantage of the old law before the township officers of Chicago were abolished by vote of the people at the April election, the Commissioners of Lincoln Park adopted a resolution March 17th, requesting the Supervisor and Assessor of North Chicago to authorize the issue of $500,000 in bonds for the establishment of small parks and playgrounds. Mr. John E. Baynes, the Democratic Supervisor of that town, signed for the required authority. The Assessor, Frank Clarke, who was elected on the Prohibition ticket because no other party made a nomination for that obsolete office, refused to sign. All the arguments brought to bear by your Commission on him and his advisers were of no avail.

April 22, by request of your Commission, the Corporation Counsel submitted an opinion on the question whether the so-called "Town Consolidation Act" transferred to the successors of the township officers the power to authorize the issue of small park bonds upon the request of Boards of Park Commissioners. The conclusion of the law officer was that the power to authorize the issue of town bonds for park purposes, which was delegated in the small park act to the town assessor and supervisor, now rested with the successors of those officers—namely, the City Clerk and County Treasurer.

The Secretary of this Commission presented a copy of that opinion to the Lincoln Park Board and urged that authority to issue the bonds be asked from the City Clerk and County Treasurer. The Lincoln Park

Commissioners intimated that they were disposed to obtain an amendment to the act by the Legislature, specifically designating the City Clerk and County Treasurer as the proper officers to authorize the issue of bonds. However, no definite action was taken by that board.

October 1st the Secretary of your Commission again waited upon the Lincoln Park Board and requested that a resolution be adopted declaring in favor of the bond issue and a referendum on the proposition at the November election. Such a resolution was adopted. The popular vote in the Town of North Chicago was 13,766 for and 5,533 against.

Since the vote was taken the Lincoln Park Board has been advised by its attorney and by bond lawyers that the act needs no amendment. Your Commission is preparing its report on sites, needs and conditions for presentation to the Park Board. When that report is before them the Commissioners will be in a position to establish small parks and playgrounds between Fullerton avenue, the lake and the river without further delay.

SMALL PARKS—WEST DIVISION.

May 27th your Commission presented reports, maps and other data to the West Chicago Park Commission, dealing with conditions and needs on the West side and recommending nine sites for small parks and playgrounds, exclusively of alternate sites.

The West Park Board, September 23d, adopted the report of its Finance Committee, selecting three of the sites recommended by your Commission. These sites are as follows:

No. 1—Two blocks, bounded by Chicago avenue, Cornell, Noble and Chase streets. Area, 8.1 acres.

No. 2—Portion of block bounded by Halsted, Forquer and Ewing streets, and extending east to the Dante school property fronting on Desplaines street. Area, 4 acres.

No. 3—Block bounded by Fourteenth place, Barber, Union and Jefferson streets. Area, 3 acres.

Site No. 2 was selected in place of one in the Bohemian district recommended by your Commission, otherwise the decision of the West Park Board exactly follows the report of the Special Commission. The acquisition of these parks will add a little more than 15 acres to densely populated districts remote from breathing spaces. However, these three parks will satisfy less than half the urgent needs of the West side.

The West Park Board is now engaged in the task of purchasing the sites mentioned, either by contract or condemnation. Their bonds are ready for sale whenever money is needed to buy land. The reason given

by the board for not selecting more than three sites is that they first desire to ascertain what those sites will cost, and also that they do not believe a million-dollar bond issue can be redeemed from the special tax of one mill.

SMALL PARKS—SOUTH DIVISION.

June 11th the South Park Commissioners adopted a resolution, declaring that before any action was taken by them towards issuing small park bonds the question should be submitted to a vote of the people in the South Park District. All action on the subject of small parks was deferred by that Board to its December meeting.

Your Commission did not oppose this referendum, although a vote was not required under the act, and such action involved delay of at least six months. We decided to complete our report on sites, needs and conditions in the South Park district in time for presentation to that board prior to the November election. This report was sent to the Commissioners October 25th. Ten sites were recommended.

The popular vote on the question of issuing $1,000,000 of bonds was: 53,288 for, and 15,529 against.

At their meeting, November 19th, the South Park Commissioners, instead of proceeding under the act which had been ratified by the people, adopted a resolution contending that the section providing for a maintenance tax was "indefinite, ambiguous and uncertain." The board further resolved that they would do nothing in the matter of issuing bonds "until the Legislature made definite provision for revenue for maintenance."

Your Commission at once obtained opinions from the Corporation Counsel and two experts on park law, Mr. Harry S. Mecartney and Mr. E. T. Noonan, as to the merits of the objection raised. These lawyers agreed that while the provision for maintenance was broad it was neither indefinite nor ambiguous; that it was a legal and sufficient delegation of power by the Legislature to the Park Board to first ascertain the amount needed for maintenance and then levy the rate necessary to carry such purpose into effect.

These conclusions in defense of the act which was passed through the efforts of your Commission were submitted to the South Park Commissioners. The question of amendatory legislation by the General Assembly is a subject of conference between the two Commissions. We desire to state that when the various small park bills were drawn they were submitted to the attorneys of the three Park Boards. The only criticism made at that time, nearly two years ago, by the attorney for the South Park Board, was that the act made no provision for a referendum.

MUNICIPAL PLAYGROUNDS.

By authority of the Council, granted May 12th, a lease was executed between the City and Mr. George E. Adams, a member of your Commission, under which a new playground was established on the North side free of expense for use of the land. This playground, known as the Adams, is situated on Seminary avenue, south of Center street. Its area is 288 by 100 feet. Since September 1st, the opening day, the grounds have been filled with children on every pleasant day, the attendance and appreciative behavior of children and grown people fully justifying the establishment of this recreation ground. On the afternoon of September 20th opening exercises were held, children from other playgrounds participating. For the winter season nearly all the ground was prepared for skating. The construction and equipment of this playground cost $2,719.77.

Realizing the playground needs of a dense juvenile population, Mr. Clarence Buckingham obtained from the Northwestern El vated Railroad Company, of which he is President, the lease of an unused strip of land adjoining the Larrabee street station and proceeded to establish a playground thereon. Mr. Buckingham offered the free use of this site to the city, through Mr. Charles M. Walker, then Acting Mayor, and announced his intention of fitting up the grounds at his own expense. In the absence of His Honor, the Mayor, the gift was accepted by Mr. Walker on behalf of the City.

The erection of buildings and equipment of the grounds with apparatus were undertaken by your Commission at the request of Mr. Buckingham. About $2,000 was expended in addition to much ground work, fencing and painting, all of which was done by employes of the Elevated Railroad Company. The announcement of this gift was made August 1st and September 8th the gates were thrown open to hundreds of delighted children. The attendance was so large from the beginning that additional apparatus was installed.

This playground is 350 feet long and 72 feet wide, facing Alaska and Town streets and extending east to the railroad station. The ground is partly under and partly on each side of the elevated road. The superstructure affords the advantage not possessed by other playgrounds of providing hanging room for two dozen traveling rings without cost for overhead construction. As this playground is not adapted for skating purposes the gates were closed December 11th, to be reopened in the spring.

A director was placed in charge of this playground, the Commission finding the means to pay his salary out of the current appropriation. The total cost to the City for conducting this ground was $186.

In expressing our appreciation of this public-spirited gift on the part of Mr. Buckingham and the corporation which owns the land, your Com-

mission desires to call attention to the opportunities for making similar use of land along the rights of way of the West and North side elevated roads. With the free use of such land in densely populated districts it could be equipped for playground purposes at small cost.

By authority of the Council your Commission obtained leases of four lots adjoining the Holden playground, on Bonfield street near West Thirty-first street. Two of the lots were leased free of cost from the University of Chicago, and two, owned by a non-resident, were leased free for one year, after which rental of 5 per cent on a valuation of $750 a lot, with the option of purchase, was stipulated. This playground, situated in a congested district, was enlarged 96 by 102 feet, making the total dimensions 288 by 102 feet. With this extension a spacious skating pond was provided, and hundreds of children who were cramped for space in the summer time were given plenty of play room.

The lease of a barn and sheds, which were an unsightly feature of the Moseley playground on City property at Twenty-fourth street and Wabash avenue, expired May 1st. Your Commission at once had the land cleared and graded and the playground enlarged 85 by 110 feet. The dimensions of this ground are now 200 by 193 feet, affording space for a large skating pond in winter and an athletic field the remainder of the year.

At the Webster playground, Thirty-third street and Wentworth avenue, the cinder running track was completed in time for summer use. The total cost of constructing this track was $1,377.75, of which $827.75 was spent in 1902 for hauling, spreading and rolling cinders.

The delay in bridge construction over the canal and river on Division street made it undesirable to equip the Ogden Island playground with apparatus and electric lights or incur expense of a director. The gates were kept open for those who wished to play on the grounds. The pond formed by the unfilled land provided a bathing place in summer and skating rink in winter. A large amount of filling has been done on the athletic field free of cost to the City. With the completion of the bridge on the east side, your Commission hopes to be able to put this large ground in condition for general use.

On the request of Alderman Scully, sand was supplied for the equipment of a regulation baseball field at Lexington and Washtenaw avenues, free to all teams desiring to play there. Your Commission assumed no control over the field, which was not fenced.

With a little more money at its command than in the year preceding, your Commission was able to carry out some of its plans in playground management. In order to develop the idea of municipal supervision of athletics a director of athletics and gymnastics was engaged. He attended to the organization of each playground along athletic lines, forming teams

for track and field sports, laying down systematic work for each playground director to carry out, arranging and managing meets between playgrounds, school, club and association teams. In a general way, the boy from school or workshop, who knew nothing of competitive sports, was trained and turned out a promising amateur. In gymnastic and general apparatus work, the services of the athletic director were utilized for the benefit of all comers at all grounds.

Because it had the largest athletic field and the only running track, the bulk of the athletic work was done at the Webster grounds. The completion of the track provided several athletic organizations with the only outdoor training ground ever enjoyed by them. This was notably the case with the First Regiment Athletic Association, whose President, Dr. George K. Herman, wrote to the Commission: "We feel that a large amount of our success during the spring and summer has been due to our splendid training quarters, and every member of the association feels that he is under obligations to you in consequence."

Dr. Walter H. Liginger, of Milwaukee, President of the Central Association of the Amateur Athletic Union of the United States, wrote to the Commission: "It will be impossible for me to find words at this time to adequately express to you the amount of good these public playgrounds have done for the health, development and education of the young public that they are intended for. I beg to assure you that after your plans have been carried out for reasonable length of time you will be greatly pleased over the results of your efforts and will be highly enthusiastic to continue the good and worthy cause you have established."

An inexpensive stock of medical supplies was put in at each playground. Each director was instructed in first aid to the injured and in the use of the various remedies in case of emergency. By this method the effect of accidents, which are inevitable on a crowded playground, was reduced to a minimum.

Following a plan in successful operation on eastern playgrounds your Commission engaged assistant directors during July and August for each of the five playgrounds which were then open. These assistants were women who had either passed the civil service examination for directors or who had been recommended by kindergarten leaders. In both cases they were trained workers among small children, for whose special benefit the assistants were employed. At some grounds half day service was rendered and a whole day at others. The five assistants worked under the direction of a supervisor, also a woman.

This outdoor kindergarten feature cost $500 and the results obtained fully justified the expenditure. Festivals were held at each ground to demonstrate what little children, especially girls, could do and learn on a

playground. These exercises took place in the last ten days of August. The program consisted of various circle, ball and dance games, singing, pole climbing, gymnastic exhibitions, races, maypole dances, flag drill and marching. All the children were trained for these festivals under the leadership of the assistant directors and the capacity of each ground was taxed to hold the spectators. Band music, provided by donations, was a popular feature of these entertainments. Under the instruction of the assistants weaving with raffia was done by the girls during the vacation period.

General summer opening exercises were held at the Webster grounds June 7th, teams and individuals from all the grounds joining to make up a diversified program of sports, drills, games and gymnastic exhibitions. All the expenses of these exercises were paid by the Aldermen of the wards in which the grounds are located.

The first inter-playground track and field meet was held at the Webster grounds October 11th. It was originally scheduled for September 27th, but rain on two successive Saturdays compelled a postponement. This was the most ambitious athletic work undertaken during the year. Through the gift of $100 from the Merchants' Club, with which to buy medals and other prizes, the meet was made a most successful event. More than five hundred boys and girls from the seven playgrounds entered for the fourteen events. Trial heats were necessary, and in the afternoon came the final contests, which were witnessed by a large number of people. Thirty medals—gold, silver and bronze—were given the boy winners and a dozen prizes of various articles to girls and small boys. Besides long and short races, the events consisted of pole vault, hop-step-and-jump, broad and high jumps and putting the shot. Considering the little training which the boys had received, some excellent records were made, surprising to high-class athletes and athletic managers.

With a repetition of this gift for prizes it is proposed to hold a similar meet each autumn to stimulate the competitive spirit in amateur sports.

For the first time in the history of the Chicago public schools football teams were organized in some of the South side grammar schools and match games were played on the Webster field. During the summer a Webster track team was formed which scored victories in competition with well trained young athletes from various organizations. Working boys who had received their first training on the City playground easily won points from seasoned athletes. Every visiting team at the Webster field finished second during the season. Eleven meets were held, and the total number of points scored by the Webster team was 268 to 40 for the visiting teams. Some of the City boys, without training except that gained at the public grounds, are now members of leading athletic clubs.

A shower-bath house, a necessary adjunct to an athletic field, was provided for the Webster grounds by Mr. J. Ogden Armour. The Commission was not able to put in this equipment on account of insufficiency of funds, and welcomed this timely gift. The bath house is two stories high, an extension of the playground building, fitted with four showers, hot water plant, dressing and rubbing room and lockers. The total cost was $900. Athletic students from the Armour Institute, one block away, make good use of the field and bath house.

Your Commission hopes to see a swimming pool added to the equipment of this field next year by donations. There would be no expense for land, as a strip of vacant ground, formerly used as a school yard, situated on the south side of the Webster school, could be used for this purpose. This school has no further need of yard space, as the children have easy access to the City playground adjoining.

We take pleasure in noting that the Board of Education is preparing to recognize the principle laid down in our report to the City Council in January, 1901—that the public school and the public playground must be drawn together; that the School Board should go into the playground business. Answers received from two hundred and fifty-five school principals by a committee of that board only corroborates the information obtained by your Commission two years previously—that there is an almost unanimous demand for thorough, systematic, indoor and outdoor physical training of children. Among other sweeping improvements recommended in the teaching of physical culture is the following:

"That wherever there are playgrounds in connection with the schools these be fitted up with simple and inexpensive apparatus for outdoor exercises and games; these playgrounds also to be used whenever the weather permits, for the daily practice of gymnastics by the pupils."

It is the policy of your Commission not to acquire by purchase any new playgrounds in 1903, but to use its appropriation, as far as possible, in maintaining those now in operation and such as may be given by public-spirited and philanthropic donors; in completing those under its control, in making all of them more attractive by planting trees and shrubs inside and outside the grounds, setting out vines along the fences and adding to the equipment.

Following is a statement of expenditures in 1902:

Draughtsmen's work on maps and plats for parks reports and on playground plans; computing work on maps	$ 363.25
General office expenses, sundry supplies, street car and railroad transportation, expenses of Secretary and Playground Superintendent; playground emergency items	460.73
Carried forward	$ 823.98

Brought forward		$ 823.98
Director of Athletics and Gymnastics, from April 1		730.00
Supervisor of Assistant Directors, July and August		80.00
Secretary and Playground Superintendent		2,175.00
Sand for baseball field, Lexington and Washtenaw avenues		44.00
General supplies for all grounds		91.99
Ogden Island playground repairs		13.93
Larrabee street playground director, September 8th to 11th		186.00
Total		$ 4,144.90
Webster Playground, Thirty-third street and Wentworth avenue:		
Building of track, minor construction items and repairs	$1,003.70	
Apparatus, supplies, repairs, painting	242.10	
Playground Director	945.00	
Assistant Director, July and August	100.00	
		2,290.80
Holden Playground, Bonfield and West Thirty-first streets:		
Director's office and extension of grounds	$ 442.00	
Apparatus, supplies, repairs, painting	130.14	
Playground Director	970.00	
Assistant Director, July and August	100.00	
		1,642.14
Moseley Playground, Twenty-fourth street and Wabash avenue:		
Extension of grounds, minor construction, items	$ 275.00	
Apparatus, supplies, repairs, painting	135.07	
Playground Director	956.90	
Assistant Director	60.00	
		1,426.97
McLaren Playground, West Polk street and Lafiin street:		
Director's office, minor construction items	$ 167.00	
Apparatus, supplies, repairs, painting	132.66	
Playground Director	970.00	
Assistant Director, July and August	60.00	
		1,329.66
Jones Playground, Plymouth court and Polk street:		
Sand court and water supply	$ 94.00	
Apparatus, supplies, repairs, painting	161.72	
Playground Director	775.00	
Assistant Director, July and August	100.00	
		1,130.72
Adams Playground, Seminary avenue and Center street:		
Fencing, apparatus, supplies, minor construction items	$1,218.77	
Grading and filling	129.00	
Buildings	1,050.00	
Electric lighting	322.00	
Playground Director	315.00	
		3,034.77
Grand total		$14,999.96

In addition to the gifts acknowledged in the foregoing report the Commission takes this opportunity of thanking Mr. T. E. Donnelley for

the gift of $50 to provide an awning at the Jones ground, Mr. M. A. Donohue and Mr. F. Nasher for contributions to beautify and add to the comforts of the same ground; Mr. Charles L. Hutchinson, Mr. Fred M. Blount, the Daily News and the Aldermen from the wards in which playgrounds are located, for providing music at exercises and other items of expense; Mr. Fred A. Busse for donation of coal, and Mr. William Hale Thompson for gift of a silk banner.

We desire to express our appreciation of the uniform courtesy and co-operative spirit displayed by the three Park Boards and by each of their representatives on this Commission.

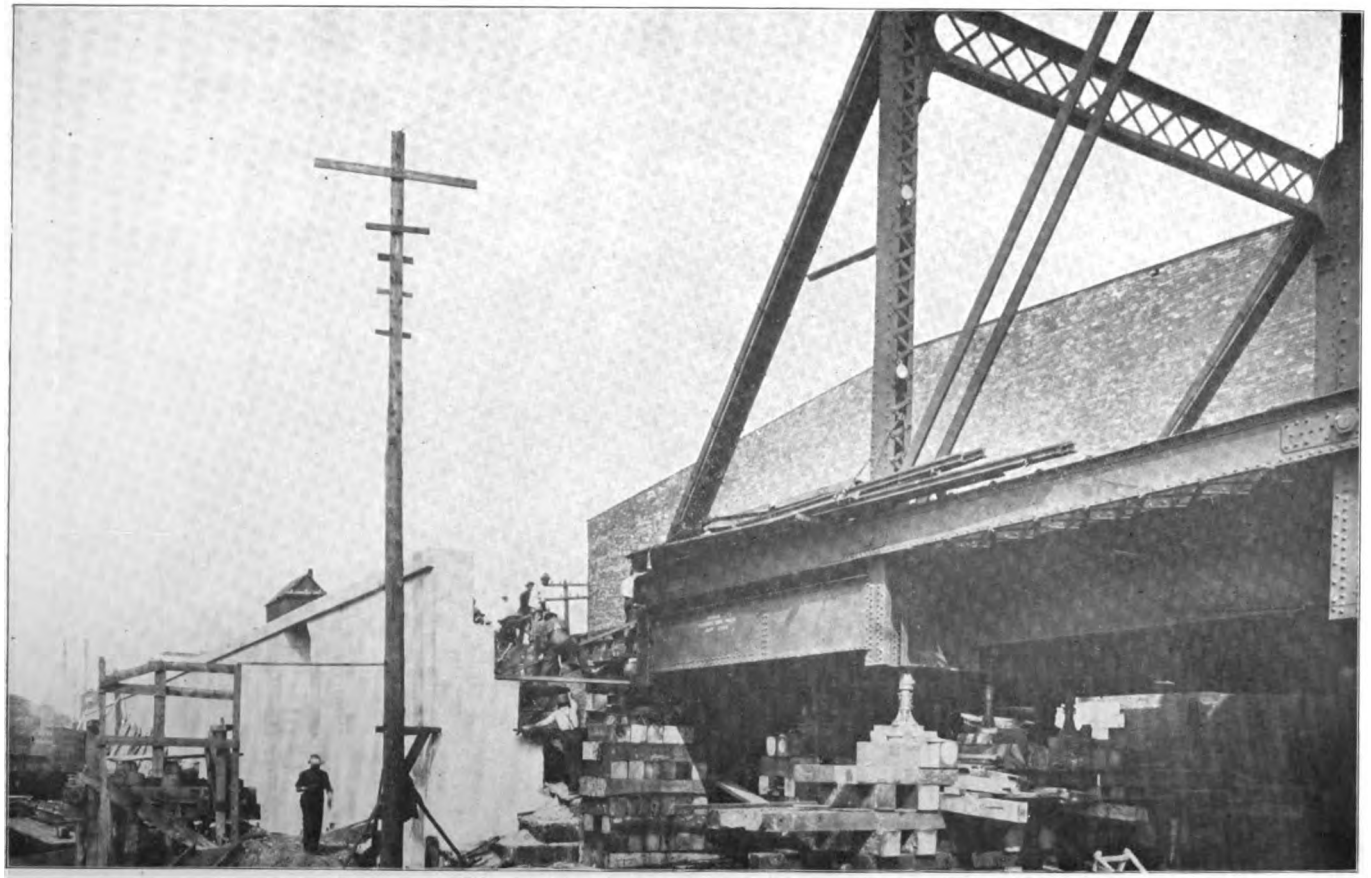
The thanks of the Commission are due to the City Homes Association for the contribution of $200, with which we were able to make a comprehensive investigation of conditions bearing on the establishment of parks and playgrounds, and to complete a set of illustrative maps for the information of the Park Boards.

At our request, the Board of Education appointed Dr. James F. Chvatal as its representative on this Commission. Prof. A. A. Stagg and Mr. W. R. Hunter were also elected members.

Respectfully submitted,

ERNST F. HERRMANN, *Chairman.*

A. W. O'NEILL, *Secretary and Superintendent.*



EIGHTEENTH STREET TRACK ELEVATION—RAISING BRIDGEPORT DRAWBRIDGE — LOOKING EAST.
A. T. & S. F., C. & A. AND C. M. & N. RYS.

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