

CHICAGO'S OUTLET.

A Grand Water-Way from Lake Michigan to the Mississippi River.

An adjourned meeting of the Business Men's Association was held in the supervisors' room at the court house on Monday evening of this week, to discuss the question of the proposed outlet of Chicago sewerage through this region of country. The meeting, considering the meagreness of the notice, was well attended by the leading business men and prominent citizens generally. Mayor Allen, the president, after briefly mentioning the subject and its vast importance, introduced Mr. Wm. Thomas, the ex-superintendent of the Illinois and Michigan canal, who said in substance:

"By invitation of the citizens I am here to make a few remarks in explanation of the way by which Chicago is proposed to be relieved of sewage. This trouble has been an all important one in that city for a number of years. There have been a number of schemes resorted to to get rid of this mighty nuisance in several years and the city has outgrown them all, each in its turn, and now the old trouble has come again. The topography of the country around Chicago is most fortunate for that city, that is, its location is advantageous for the disposal of sewage. The idea prevalent in the country of the people outside, to a considerable extent, is that Chicago is imposing upon the people outside, along the canal; that she is filling the canal with rubbish and poisoning the water and filling the air with stenches from her sewers. I am not of this opinion. If it is so the question now is, shall Chicago be allowed to discharge any sort of water into the canal. But I can show that Chicago has a right to do so. The very act of congress granting the lands which were sold to procure money to build the canal specifies that it was 'to unite the waters of Lake Michigan with those of the Mississippi river.' The act of the state legislature on the same subject many years ago, gave the same declaration. The state failed, it is true, but the land grant did not, nor were any of the original plans of the canal changed to any important extent, so far as connecting the waters of the lakes and the great river was concerned. To say then that Chicago has not the right to let the waters of the lake into the canal is to go back upon the contract. But this right does not permit Chicago to commit a nuisance. She is liable for all damages her sewerage may occasion. The question is, shall Chicago be allowed to cut a new channel to Joliet, taking the Des Plaines river from Bridgeport to Lockport, large enough to carry from 150,000 to 200,000 cubic feet of water per minute? At this point there is a dead level for eighteen miles. From Summit to Bridgeport the original fall was 7 feet; then to Lemont there was no fall; then to Lockport a fall of 20 feet. The fall from Lockport to Joliet is 50 feet; to the mouth of Fox river 70 feet; to La Salle 21 3/10, making 141 3/10 feet from Lockport to La Salle. Chicago proposes to cut from the lake to Lockport in the bed of the Des Plaines river, thence down the Illinois river. Under the former scheme of building the canal, when the state broke down and abandoned the enterprise, it was then as it had been from the start demonstrated that there could be no other plan than to cut out from the lower end of the lake. But when the canal work was resumed it was on the 'summit level.' In 1865 a bill was passed authorizing the canal trustees to make arrangements with Chicago to carry out the original plan, and to authorize that city to expend two and a half millions of dollars to cut down the 'summit level.' The channel was 60 feet wide with a declivity of 1-10 of a foot to the mile. From Lockport to Joliet the fall is 50 feet in 5 miles; Joliet to Ottawa 70 feet in 53 or 54 miles; Ottawa to La Salle 20 feet in 15 miles. As we get 1 foot and 2-10 all the way down, so it is easy to see that lake water would flow abundantly and rapidly through this channel. What interest has Ottawa in this enterprise? If the legislature will pass a law with proper restrictions, so as to amply provide for all damages; if 200,000 cubic feet of flow per minute shall flow into this channel, it must be 100 feet wide and 10 feet deep. This 200,000 feet in the river might make a volume covering 1,000 feet wide here in places, but you would have a navigable stream, though in places it did overflow. The dam at Henry at the south side, borders on a field belonging to Mr. Green. The dam raised the water, but it did not overflow, yet the water set back under the soil and this farm has since become a willow swamp. Provision should be made for all such damages. The advantages to the people of a running stream of clear, cold water, the year around, for health alone, could not be properly estimated. The sewage of the great city of Chicago of course is a poison and must be carried off in some way which is the least hurtful to all. If the great cities of Europe which are far older than Chicago, were circumstanced as she is, they would undoubtedly relieve themselves of sewage in this way—by sending it to the nearest large river with a swift current. Of the vast sum of money heretofore expended for the building of the canal, more than one half was expended north of Lockport. It is of vast importance to the cities and towns along the banks of the river in La Salle county, that proper restrictions be put in the bill for this improvement to secure full indemnity for all damages that it may cause. These damages will occur in the low places only, above Marseilles and like points of situation. These lands belong to persons who would be great sufferers by any loss. It is of vast importance to Chicago with her 700,000 population. At the time of the great fire that city had 292,000, when the 'deep cut' was made. Then it only intended to relieve the south branch of the Chicago. The deep cut was intended to draw off 24,000 feet per minute, and at

first it worked to a charm." At Lockport the water was so clear that one could see a pin on the bottom at a depth of 19 feet. The lake sometimes varies in its height. It fell from a 10 foot line in 1871, to 6 feet 5 inches in 1872. When they first began pumping into the lake the sewage soiled the water as far out as the crib.

"The north branch was intended to be cleaned by the Fullerton Avenue conduit, by pumping water through it into the lake near Lincoln Park. This was found to interfere with the water works at the crib. The wheels were reversed and pumped the north branch into the south branch, thus forcing both branches together with the outflow of the south fork into the canal. Thus it may be seen that the deep cut which was originally intended to carry off the sewage of the south branch only is now burdened with the entire sewerage of the city, including the stock yards. The opening of the Ogden & Wenthworth ditch has added its volume to the canal. From the foregoing it may be seen that the deep cut was not a failure, as frequently stated, but that about four times more has been added than was originally intended.

"The flow was made out to the country by 45,000 gallons per minute of lake water. In my report to the canal commissioners in 1879, I suggested a plan of relief which the secretary of the state board approved of. He copied it. I thought it then a mistake to destroy the old hydraulic works at Bridgeport. These works should be restored. I recommended two dredges to work all the season. Heretofore I have favored the deep cut as the outlet for Chicago's sewerage, but it is insufficient. Five millions of dollars have been expended upon it.

"The work should be under only one board of management, and Chicago having the greater interest should control it. The two boards would disagree. When I was superintendent of the canal the Chicago board complained because I did not do more, and when they didn't pump enough we complained. The flow should be kept brisk and uniform so as to clear away the mud. No mud has been taken out of the canal on that level since July last. A flat was sunk 12 hours in that water some years ago, and when it came up everything about it was covered with a deposit of half an inch of mud. The channel is too narrow and level to increase the flow of water. There was a question once about raising the gates at Lockport between Mayor Colvin and myself. A public meeting was held at Joliet, and the subject debated. I suggested a committee to test whether an increased flow of water could be obtained on that level by raising the gates at Lockport. Col. R. B. Mason and E. S. Chasborough were selected, two distinguished men. They opened the gates and found I was right. The water came no faster, save for a little time—back towards the 'Sag.' In Mayor Harrison's time the same question came up and was settled in the same way. To increase the velocity you must raise the head. If Chicago proposes to raise the head to get a greater discharge of water, my advice is to abandon the canal for that purpose and use the bed of the Des Plaines river, but of course give us ample protection for our low lands. In regard to turning the sewage into the canal at Channahon, we have a great interest at stake. The abandonment of the Kankakee feeder is a serious matter, and we must protest against its being done."

In behalf of the audience the president thanked Mr. Thomas and then introduced C. E. Cooley, civil engineer of Chicago, who said substantially:

Gentlemen: I did not come here to talk but to attend to my duties. I have not had occasion to look up the sanitary features of this subject. I came to see about the damage this improvement would be to bottom lands and to ascertain the probable highest flow of the water. I have been pleased to hear Mr. Thomas' remarks, for he has ably covered many points I should have touched upon. Chicago has 900,000 people with its suburbs fifteen miles up and down the lake and for ten miles back. The sewage is intolerable. If it increases without relief as it has done, we shall die of its poisons. We expect in 30 years to have a population of 2,500,000. There are three ways of getting rid of the vast amount of sewage of our city: One is to dump it in the lake southward and get our water supply 20 or 30 miles northward; another is to drain it to the sand hills of Indiana; the third is to run it into the Illinois river. It is likely we may have to do both in 30 years. To get the sewage to Indiana will cost \$30,000,000. Our water supply from the north and dumping sewerage into the lake will cost \$40,000,000. To run down the Illinois river valley will cost \$20,000,000. This last is the best way of all. Today you get the sewage of seven hundred thousand people. You can smell it at Joliet, a little at Morris, faintly at Marseilles, and occasionally get a whiff of it here. Mr. Thomas spoke of the obligations of contract. As long as water will find its level, the water of Lake Michigan and with it some of Chicago's sewage will flow out this way. But Chicago cannot, must not, make a nuisance here. She does not propose to. The law will forbid it; moral as well as statutory law will forbid it. You can delude sewerage so that it will not stink; that it will not kill fish—and fish are always to be considered as unprejudiced observers of unpleasant water! We don't want to turn down here impure water and destroy your fish, but to give you pure, wholesome water, in which fish will thrive, and a little boy may sit on a log and catch 'em. It is necessary for Chicago to have pure water there if she can, so that fish can come out of the lake and float down to the gulf without fear of strangulation. The channel we talk of making is to flow at the rate of 600,000 cubic feet of water per minute. We propose to in-

crease the volume of the Illinois 200,000 cubic feet. We pump into the canal 40, to 50,000 cubic feet per minute and we will raise it to 60- or 70,000 per minute. In ordinary low water one-third of the water that passes Ottawa is Chicago sewage. You can judge if it is oxidized or not. We propose to give 24,000 feet per minute for every 100,000 people down along the canal. The channel we propose to make will afford this 24,000 cubic feet per minute for the full 2,500,000, our estimated future population. Your flow will be ten times as much as now and no offensive smell at your city. We have figured from the tables of old European cities where the sewage question has been a great problem, settled on the basis of ages of experience.

"At Chicago we have two rivers which at high water flow back into the lake, conveying all the sewerage of the city and blackening the water for miles. At the 'summit' the water divides, one-half coming this way and the other half towards Chicago. Heavy rains push all the sewage of the north and south branches into the lake. It is our purpose to protect ourselves against floods by surrounding the city to the west and north with a large channel 24 feet wide and 25 feet deep, into which these freshets will all be drained and carried to the lake. This channel is to be independent of the canal, but not to let the sewerage into it or the lake. The main channel may be 200 feet wide and will cost \$20,000,000 for everything. We shall need to spend one million to get through Joliet so as not to touch the canal. We virtually terminate at Lake Joliet; from that point we let her go. The effect of a flow of 600,000 cubic feet of water per minute at Morris will add 8 or 9 times to the flow; it will raise the river 5 feet and make it navigable to Kankakee without lock or dam. It will raise the river at Ottawa 5 feet and above to Marseilles 4 feet; at La Salle it will swell up to 8 or 9 feet above low water mark. The Illinois river at that point is a peculiar stream; it wanders about among the islands as if trying to find the old lake outlet.

"It will be raised 4 feet above the pond at Henry and the entire Illinois river from Ottawa to the Mississippi river will be a navigable stream—240 miles without locks or dams! There will be need of two locks above here, one of them at Marseilles. Chicago will pay the cost of this improvement. Her channel will allow lake vessels to go down to Joliet. This with the big river below will practically solve the problem of a ship canal.

"There will be 8,000 or 10,000 acres of land in the Morris bottoms that will be overflowed or damaged by high water. Twenty per cent. of these lands will be ruined and 20 per cent. damaged more or less, making 40 per cent. in all. From Morris to Marseilles and on to near La Salle but little damage will be done. Below that point I can't say, not having estimated it. Probably \$200,000 will cover the damage from Joliet to La Salle, and \$500,000 in the whole state, the entire length of the river. But another point: If this is not done, if this great opening to the lake is not made you will find your own sewage an intolerable burden. Joliet, Morris, Marseilles, Ottawa, La Salle, Peru and Peoria, all discharge their sewage into the river. Every town along the river does it. The percentage of sewage that each town adds to the waters would be surprising to you if you could estimate it. At the slow rate of the flow in the summer—120 feet a minute in the center of the current and the water at the banks stagnant and reeking with filth—your own and your up stream neighbors will soon become intolerable and you will want relief, too, so you will welcome this mighty flow of the pure current from the lake which has oxidized and consumed the poisonous deposits of your city sewers, and in their place supplied a swift moving volume of cool, sparkling and crystal waters from the lake." [Applause.]

Mayo said: "I am satisfied not to cross-examine the witness!" [Laughter.] I have looked into the question for information and have come to the conclusion that the opposition to this plan of solving this great question are in the wrong. If we now get two-thirds of the sewerage of Chicago with so small a dilution of water, then to greatly add to the volume of water must entirely destroy the offensive odors of the stream. That the water of the Illinois river at certain seasons of the year both summer and winter are not only highly nauseous and unhealthy, is not a matter of doubt. He had experienced the ill effects of this sewage polluted water. So for the health and pleasure of mankind, as that of the fish, he preferred pure water, and if by this proposed scheme they can give us a flow of 200,000 to 300,000 cubic feet per minute of clear, pure water, we shall certainly be greatly benefited. I think we should instruct our representatives in the legislature to vote for this plan.

Mike Hanifin wanted information. Our big floods often come within 4 or 5 feet of the bridge. What will be the effect with this 5 feet added? What will be the effect at Utica and places where bridge are low and short? What will be the effect of a 'set back' on the Fox river? With 5 feet added to our big spring flood, 400 or 500 poor families would be drowned out.

Mayo: The plan is to take all the flood water of the Des Plaines and the waters of the surface of that region into a big channel which will empty into the lake, so that we shall get none of this surplus water. Thomas bore out this statement fully. There is no need of fears as to a flood's increase by this new channel. The water of the eastern level for the first 7 miles invariably flows to the lake, and the next 17 miles west is a dead level, but the greater part flows towards Chicago. On the surface of this flow to wards the west there would be a raise of 18

inches. The overflow and surface water nearly all go into the lake. The proposed channel around the city will make the flow absolutely certain to go into the lake. But Mr. Hanifin's five feet of a raise commences at low water mark, in the narrowest bed of the stream, but the rise will spread the waters out and rise them only a trifle.

Cooley: The volume of 5 feet is only at low water mark. At 10 feet higher it would give but 2 feet of a raise; at high water if the banks continue straight up it would only raise a small fraction of a foot. If you had 600,000 cubic feet more than in ordinary stage of water you would scarcely notice it, yet if there were no water before and no leakage, it would raise five feet. In case of a flood it will simply take place of the regular flow from the lake.

Hanifin still doubted.

Tufts: It seems that besides the fresh water in the tide, the extra rapidly will more rapidly oxidize the air. The water of a fish tank is still, and if not freshened the fish perish for want of oxygen. In a swift current the water is rolled over and over, oxidized, and the conditions are proper for fish life. Sewage must have oxygen to be consumed and that is facilitated by motion. By rapid movement in this channel sewage would be deodorized and oxidized, and weeds and malarial fungi could not grow. The stream would be pure and clear.

Cooley: Sludge, the sediment of sewage, is deposited in the bottom of slow moving streams, those having a current of less than a mile an hour. That of the Chicago sewerage is left nearly within the city limits and caught or stirred up by the wheels of boats. It would hardly get far from its 'native heath.'

Mayo offered the following resolution, which was adopted:

Resolved, That the citizens of Ottawa favor the proposition of Chicago to cut a channel from Lake Michigan through to Lake Joliet, of sufficient capacity to admit not less than 400,000 cubic feet of water per minute, and that our representative be requested to cooperate with the Cook county members in the passage of a suitable law for that purpose, having reference to suitable safeguards against damage by overflow in Illinois, in case of the construction of the proposed work.

Copies were ordered sent to our representatives in the state legislature.

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