

REPORT
OF THE
WATER WORKS COMMITTEE
OF THE
COMMERCIAL BANK
OF
NEW-ORLEANS.

PRESENTED FEBRUARY 18, 1836, AND PUBLISHED

BY ORDER OF THE
BOARD OF DIRECTORS.

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REPORT ON THE WATER WORKS.

The Water Works Committee of the COMMERCIAL BANK OF NEW ORLEANS, agreeably to a resolution of the Board of Directors, beg leave to offer the following
REPORT :

THE Bank was organized by the election of the first Board of Directors, in May 1833. Immediately afterwards, a Water Works Committee was appointed, and the Board determined to commence the works as soon as possible.

The grand difficulty which first presented itself, was the entire absence of any eminence, upon which the reservoir could be placed, and the consequent necessity of raising one, or constructing an elevation of *some* kind. The great difference of opinion which existed, among those who were supposed to be well acquainted with the subject, as to the best mode to be adopted for obtaining the requisite height, early admonished the Board not to act hastily. It was all important that no error should be committed in the outset. It was therefore decided, that the first step should not be taken, until the services of an engineer of the highest character could be procured. This was the first duty of the Committee. In the mean time, various plans were submitted. One was to erect an immense cistern of iron, on a foundation of stone, 100 feet high;

the estimated cost of the whole work \$750,000. Another plan was, to have cast iron reservoirs supported either by arches or by iron columns. A third, was to force the water into pipes, which were to be carried along the sides of the streets, on a line with the curb stones, and at an elevation of 15 feet ; the pipes supported by iron columns.

The Bank was required by the Charter to deliver the water at the height of 15 feet, and the opinions of scientific men were asked, as to the requisite height of the reservoir to effect this object ; and they differed from 20 to 100 feet—some contending, that utter failure would be the consequence of attempting to furnish water at the required elevation with a head of less than 100 feet, which it was impossible to obtain with any chance of stability, and the cost of which would have been enormous.

As regarded the sizes of the pipes, the power of the steam engine, the manner of commencing the raising of the mound of earth, (should that plan be determined on) and indeed in almost every particular, a great diversity of opinion existed. Even now, when the work may be considered as nearly completed, much doubt exists on the part of distant stockholders, in regard to the stability of the mound. The Committee therefore, feel it incumbent on them, to give a statement of facts, so that each stockholder may form his own conclusions.

Doubts and difficulties existed until the autumn of 1833, when the Board was so fortunate as to secure the services of an engineer very eminent in his line, and whose entire success in works of the kind elsewhere, gave assurance of a similar result here. Mr.

Albert Stein had constructed water works at Richmond and Lynchburg, Va. and also at Nashville Tenn. From gentlemen of the highest respectability in those cities, we received accounts, that those works had been completed by Mr. Stein entirely to the satisfaction of the watering committees, and within the estimates at first made. That distinguished engineer, the late Mr. Telford of London, had given his opinion of his abilities, and the Board judging what Mr. Stein *could* do, by what he *had done*, authorized his engagement.

Immediately after his appointment, he furnished a plan of operations, with reasons for its adoption, so perfectly clear and satisfactory to the Committee, that the Board unanimously agreed to it.

The next duty of the Committee was the selection of a suitable site, which was advertised for, and a great number of lots were offered. In making this selection, the Committee devoted much time and attention. The size, price, and natural elevation of the ground—the distance from the river and from the city—proximity to other lots which might be had, should an extension of the work be required hereafter, and many other circumstances, had their deliberate consideration. Finally, a square for the mound was fixed on, which it is believed, was acknowledged by all, as the very best that could have been selected—being the highest land within a reasonable distance from the city, and only three squares from the river. A lot fronting on the river, has also been purchased for the engine and house, and other necessary buildings.—This having been done, and it being determined to raise a mound of earth 15 feet high, an estimate was made by the engineer of the whole cost of the works,

including land, mound, bricks, pipes, steam engine and all other materials, labor &c. amounting to \$400,000.

Proposals were asked for, by public notice, for raising the mound, that portion of the work considered the most difficult, and in regard to which, the greatest difference of opinion existed. A contract was concluded in May, and on 12th June 1834, the first load of earth was brought from the batture of the Mississippi, by the Committee, and deposited on the square by the Mayor of the city, in presence of the Governor of the State and other officers, and a very large assembly of citizens. From that time to this, the most lively interest has been shown by our fellow-citizens, in the progress of the work.

The Committee, consisting of the President of the Bank and two members of the Board, one of whom a Director on the part of the city, being satisfied that it had made the very best selection of an engineer, felt assured that they would best perform *their* duty, by permitting Mr. Stein to execute in every particular, as he might think best, the important work confided to him. The Committee have however watched its progress with the greatest interest, and their duties have been constant and various. The several contracts for raising the mound, for the steam engine, for pipes, bricks &c.—the frequent payments—the examination of all bills and of every item of expense—the settlement of disputes and difficulties—the examination and approval of all the suggestions of the engineer, and all the usual details of a superintendence of a great work of this nature, have occupied much time and caused much trouble. This, however, would have been ten-fold,

had it not been for the great exactness and economy of the engineer, in every branch of the business, and the unlimited confidence reposed in him.

Though by the Charter, the Bank was not bound to *commence* procuring materials until a year after the election of the first Board of Directors, say June 1834, and to expend but \$100,000 annually until the completion of the works, yet the *first* object which engaged its attention, was that which in the preamble to the Charter, was declared to be its *chief* object “the conveying of *water* from the river into the city of New Orleans and its Fauxburgs and into the houses of its inhabitants.” It was calculated that the whole work could not be completed in less than four years. It is now only about one year and eight months since the foundation of the mound was laid—nearly all operations have been suspended during two summers—but the time has been employed in procuring materials—the expenditures amount to \$378,527, and the Committee hope to have it in their power in June next, to report to the Board, that this undertaking, so important to the health and interests of the city, has been finished.

The mound on which the reservoir is constructed, is situated between Richard and Market streets, and about 820 feet from the river. It is 320 feet square at the base, and 20 feet high, and is surrounded by a wall of brick four feet six inches thick at the base, three feet at the top, and nine feet high. The reservoir is divided into four compartments, each 118 feet square in the clear, at the bottom. The depth is 12 feet, and the capacity *four million gallons*. It will not only keep the pipes through the city always filled

with water, but at the same time contain a sufficient store ready for use, in case of fire, or of accident to the machinery for raising the water. The thickness of the walls is five feet at the bottom, reduced to three feet at the top, and the height is 12 feet. They are constructed of brick, with mortar of lime and sand, except the first rows of bricks of all surfaces touched by the water, which are laid in hydraulic cement—and all the surfaces touched by the water are also plastered with hydraulic lime and sand. The bottom of the compartments is 20 feet 7 inches above the level of the square upon which the mound is raised, and is paved with brick, laid in hydraulic cement. In order to empty the compartments, for the purpose of clearing from them the sediment which is brought along with the water, or for repairs which may become necessary in the course of time, pipes of 18 inches bore, are laid below the bottom of each compartment, which communicate with a pipe of the same bore in Richard street extending from the reservoir to the river. The pipes have an opening in the interior of each compartment, which is closed by a conical valve, and which can be opened and shut by a screw. The bottom of each compartment has a moderate inclination towards the opening which receives the sediment. The opening of the ascending main, and those of the distribution pipe or main, in the interior of the compartment, are shut by stop-cocks, which are opened and shut by screws turned by a handle. The distributing pipe leading from the reservoir to Louisa street is 18 inches bore, and 3900 feet long. This pipe communicates with each of the compartments, and the supply can be taken from each of the compartments

separately. The impurities which pass along with the water from the reservoir, will partly settle to the bottom of the pipes, and must from time to time, be washed out, into the river. For this purpose, the pipes have been extended into the river, in the following streets, with a stop-cock attached to the end of each pipe, viz.

Louisa street, bore of the pipes 18 inches

Girod	"	"	"	"	8	"
Canal	"	"	"	"	16	"
St. Peters	"	"	"	"	8	"
Esplanade	"	"	"	"	10	"
D'Enghein	"	"	"	"	6	"

When either of the stop-cocks attached to the end of the above named pipes shall be opened, the water will issue with sufficient velocity to carry the deposit with it into the river.

The quantity of water, which can be raised into the reservoir in 24 hours, is estimated at *three million gallons*, equal to a supply for 75,000 inhabitants.

The quantity of water used in the city of Philadelphia and Districts in 1834, averaged 3,400,000 gallons per day, which was distributed to 14,395 tenants and to about 2500 families who received water from the public hydrant pumps in the city, being together equal to 16,895 tenants. From whence it appears, that the average daily consumption by each tenant is about 200 gallons, or 33 gallons by each inhabitant, calculating six persons as the average of a family.

The daily consumption for each house in London, is stated to be as follows:

From the New River works 197 gallons

"	"	East London	"	143	"
"	"	West Middlesex		150	"
"	"	Chelsea	"	143	"

The average being 158 gallons, or about 27 gallons for each inhabitant, calculating six persons to a house.

If we adopt 40 gallons for each inhabitant of the city of New Orleans, as the quantity required for every purpose, it will make it necessary, that for a population of 60,000 inhabitants, 2,400,000 gallons should be raised into the reservoir per 24 hours.

The greatest height to which the water has to be raised, from the Mississippi river at low water mark, into the reservoir, may be estimated at 42 feet. The surface of the water in the reservoir when full, will be 38 feet above Canal street near Royal street.

The engine and pump houses are situated on the N. E. corner of Tchaptoulas and Richard streets, and about 400 feet from the river. A condensing engine acting expansively, raises the water by means of pumps, from the Mississippi into the reservoir.

The length of cast iron pipes laid from 1st December 1834 to 13th February 1836, is as follows:

Of pipes of 18 inches bore 5835 feet				
"	"	16	"	6755 "
"	"	10	"	67 "
"	"	8	"	9430 "
"	"	6	"	9107 "
"	"	4	"	900 "

Total 32,094 feet.

Stop-cocks have been placed on the line of pipes, to shut off the water from the pipes, for repairs, making attachments, or clearing them from sediment. The following are the sizes of the pipes laid in the several streets:

From reservoir to Louisa street	18 inches bore		
In Louisa street	18	"	"
From Louisa to Canal in Magazine st.	16	"	"
" " " in Camp & Girod	8	"	"
" " " in Tchapitoulas			
" " " & Levee sts.	6	"	"
In Canal street	16	"	"
" Chartres, Bourbon and St. Peters	8	"	"
" Royal and Levee streets	6	"	"
" Esplanade street	10	"	"
" Moreau, Victory and D'Enghein	6	"	"

Pipes of 4 inches bore are laid from these pipes to the fire plugs. The number of fire plugs now up is 71. The suction pipe, leading from the pumps into the river, is 16 inches bore, and 650 feet long. The ascending main leading from the pumps to the reservoir, is 16 inches bore, and 600 feet long, branching off into the interior of each compartment. The whole extent of pipes embraced by the plan adopted, is about *twelve miles*.

The utmost exactness has been observed in regard to the expenditures. The bills are carried to appropriate accounts, so as to show the exact cost of each branch of the work. Each bill must be approved by the engineer and by the Water Works Committee, and a particular statement of the disbursements is made, once a week, to the Board of Directors. The accounts thus approved by the Board, are carried to "*Water Works Account*" which is balanced every six months with interest. The Charter allows rates to be charged, giving on the gross amount, a nett profit of 15 per cent per annum for five years, and of 10 per cent

per annum afterwards. The Company has the exclusive privilege for thirty-five years.

The Committee would here remark, that at the commencement of this undertaking, there was not a single member of the Board practically acquainted with the subject of Water Works—that we had not an engineer among us, who had constructed a work of the kind—that the difficulties in regard to raising a mound of earth, were considered by many intelligent persons as insuperable, and that this opinion led to the proposal of different plans, which were considered by others as being equally objectionable—that in this state of uncertainty there was great danger of committing errors, and perhaps wasting large sums of money. It is no small praise to say, that the Board at that time, avoided this danger, and acted with so much circumspection in the outset, that now, in the present advanced state of the works, it may be doubted whether a thousand dollars of the whole expenditure, could be saved, if the work were to be done over again. The original estimate of the whole cost of the work, agreeably to a plan previously adopted by the Board, was \$400,000. The actual expenditures *for items embraced in that plan and estimate* are

	\$295,500
To complete them will require	68,500
	<hr/>
Total	\$364,000

being \$36,000 less than the estimated cost.

Some alterations in the plan have, however, been made. The mound was raised 20 feet instead of 15 feet, at an additional expense of about \$15,000. An additional quantity of land has been secured, fronting on the river, which may hereafter be needed for ex^a

tension of the Works. This cost \$21,000. A dwelling house has been erected, for the superintendant. Sundry items not contemplated, have cost about \$6000. The interest on the sum expended and which is added to the cost, is at present about \$20,000. So that the whole cost of the works; including the additional land purchased, *interest*, &c. will be about \$450,000 when entirely finished.

We are not prepared to answer the frequent enquiry, "what will be the annual cost of water for a family" but believe, that the Bank will be able to furnish it clear and pure, at a much less expense than that to which the community are subjected, under the present system.

The Committee have reason to believe, that the whole work will be completed in about half the time required by the Charter—that the water will be delivered into the second stories of the houses, instead of at the stipulated elevation of 15 feet—that the number of hydrants to be placed opposite the squares, is not only far greater than in the same space in Philadelphia, but amply sufficient—and that a greater number would only unnecessarily encumber the side walks. The Bank has exceeded the requirements of the Charter, in other particulars of great importance and cost, which were deemed very advantageous to the city. If it should be obliged to conform exactly in a matter considered by the engineer not necessary, but on the contrary, injurious to the streets, it can be done hereafter.

Of the immense benefits to a city like ours, by the introduction of water into the streets and houses, and the free use of it for extinguishment of fires, and for

other public purposes, the Committee think it unnecessary to remark. The public is well aware of the advantages in every respect, and desire only to see the Works in operation.

The Committee would in conclusion observe, that though they have devoted much time and attention to the works, yet they claim no other merit, than that of having anxiously endeavored to avoid errors and useless expenditures—for having engaged an engineer of unquestioned qualifications, and permitted him, without interference on their part, to execute the work according to his own plan, and in his own way. That this plan is the best that could have been adopted, and indeed the only one likely to have succeeded, we have no doubts—that it is doubted by some, we do not deny; but the objections have been candidly examined, and the result has been, a more perfect conviction of the permanency of the mound, and the entire success of the *Water Works*.

Whatever may be the result, upon Mr. *Albert Stein* rests the responsibility, and should it answer the expectations of the Bank and of the public, the honor of having planned and executed in so short a time, a work of so much difficulty and importance, will be exclusively his.

WM. G. HEWES, Chairman

MAUNSEL WHITE, }
FELIX LABATUT, } Water Works Committee.

New-Orleans, 18th February, 1836.