LOW SERVICE SYSTEM

FOR THE

SUPPLY OF WATER,

APPLIED TO

CHICAGO,

BY

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I.

An *abundant* supply of *pure* water, at a *sufficient* head, is *absolutely necessary* for the well-being of every city. This proposition is self-evident; the deduction is equally plain, that any system which fails to meet these requirements is *entirely* inadequate.

It unfortunately needs no argument to prove that the present supply of water to Chicago is always and utterly insufficient. As the source of supply is boundless and accessible, it is evident that the means employed to distribute the water are inadequate, or imperfect in character.

We desire as briefly as possible to present a few plain facts and conclusions, which we trust may lead to a better understanding of this matter.

The water now supplied to Chicago is all furnished from the pumping works in the North Division, where powerful engines almost exhaust their efforts in attempting to give daily to upwards of twenty-five millions of gallons, a *head* equivalent to 138 feet. The *real* work falls far short of this, but we concede all that could be claimed. This head

is actually necessary to raise the water to the highest stories of large buildings, but is in ordinary cases entirely useless, for the large consumption of water is barely above the level of the street,—in basements, and ground floors,—as household use on the upper floors is but a trifling part of the consumption in any large city. It will be at once seen what an enormous waste of power or force there is in this unnecessary head. Does it add anything to the quality or value of water, which is to be used at the level of the street, that it has a head of 138 feet, obtained at a large expense?

If the present supply were adequate, or if it were necessary that this amount of head should be given in all cases, we would not have a word to say; but when this waste of force can be to a large extent avoided, which is the cause, we might almost say, of the present inadequate supply, *it is full time that this matter were duly considered.*

Our present water system starts on a false hypothesis, viz: *that every consumer wants the water for the same purpose.* Were the source of supply distant, this hypothesis might be conceded; but when it is at our very doors, there is no reason why the large consumer, at say, 16 feet of elevation, should be charged for a head of 138 feet, or the householder who desires a full head, made to pay for water which he never receives, except, perhaps, when he does not want it. In many cases the large consumers are enabled to supply their own head or elevation from stationary engines, and at a merely nominal cost; but still are taxed for what does not profit them the least. On the contrary, as all the water used in the

city is delivered with a *nominal* head of 138 feet, the supply is totally inadequate, and the consumer not only pays for *head* which he does *not* want, but for *water* which he has *never* used. The Board of Public Works, in their last Annual Report, admit the inadequacy of the present supply, and with gloomy forebodings look to the future.

It were more than idle to suggest evils which are painfully apparent, were we not prepared to suggest a remedy, which we consider will meet the present emergency.

It consists in a full realization of the difference between "High" and "Low Water Service." Our present system is "High Service," and furnishes water to all consumers alike, with the same elevation. What we require now is, in addition, the adaptation of a "Low Water" system, which shall supply water in *measureless quantity*, at a *moderate cost, convenient to the consumer.* How is this to be done? Artesian wells might, perhaps, inadequately fulfill these requirements. But, we have a source of supply, Lake Michigan, in our midst. Let pipes be laid slightly below the level of the lake along our principal avenues, with connecting pipes on the transverse streets, forming a network, filled with pure water, available by connecting pipes for use on the streets, or in buildings.

The expense of the pipes would in the first instance be very moderate; no expense would be incurred except the first cost; while the investment, to the municipality or to a private corporation, would be very remunerative. For those who required it, an exhaustless supply would be thus brought almost within their cellars, and at a cost, not a tithe of their present expense. The consumer could give to the water, thus furnished, such head as he might require.

The convenience of this water for use by fire engines is apparent, while the supply would be important in a sanitary view, for the convenient cleansing of sewers and streets, at a moderate expense. This water, too, would be *always available;* no accident to the pumping engines could affect this supply, which would be always at command.

More than this. Private enterprise, in view of the sad lesson of the past, is, in more than one instance, seeking an adequate supply of water by sinking artesian wells. This "Low Water" system would obviate all this, as the city would be underlaid with convenient streams, more accessible than any from artesian wells. The influence of such provision, on *rates of insurance*, on the *erection of new buildings*, the *investment of capital*, both in *mercantile enterprise* and in *loans*, can scarcely be over-estimated.

This, in brief, is what we would suggest, and to which we invite considerate attention and reflection. At this time, more than ever, we are in need of an unfailing supply of water. Our present system cannot furnish it to our city, as it is, without largely increased expense, and the supply thus secured will not meet future requirements. By withdrawing large consumers, the present water works will be adequate, as a "*High Service*" system, for years to come. Expense will be saved alike to the city and to the consumer. Chicago now is roundly charged with water rates and not as well supplied as New York, where the water is brought for miles by expensive aqueducts. The water rates for the year 1869, in Chicago, amounted to $476,968.24. This should not be the case. Water, as limitless in quantity, as it is good in quality, is at the threshold of our city: if the supply in our homes is inefficient and failing, it is our own fault, as we have the remedy in our own hands.

II.

The plates which accompany these suggestions have been prepared to show the amount of water which *is*, and which *should be*, supplied to the city of Chicago, and the waste of power or force due to the employment *alone* of the "High Service" system.

Figure 2, plate 1, represents the Water Tower, or stand pipe at the Water Works. Assuming that the water stands in this at the full height of 138 feet, it is evident that a force is then applied equivalent, in general terms, to that required to raise all the water used in the city to this elevation, whence it falls to the level, where it is required for consumption.

In figure 3 is shown a small one story cottage, which represents fully one-half of the consuming area of our city. For use in this dwelling, the water required, with a head of say, 15 feet, is given an elevation of 138 feet; an expenditure of force which adds nothing to the value of the water, or the convenience of the consumer, while it entails serious expense.

Figures 4, and 5, represent the Tribune Building and Pacific Hotel, respectively. The numbered parallelograms indicate the amount of water *required* on the various floors. The large shaded parallelogram, marked 64,200 gallons, represents the *aggregate* of water used in these buildings—types of classes—with the *elevation* at which it is *supposed to be furnished*. The contrast between this and the elevations at which the water is *required*, is sufficiently apparent and instructive. But the *reality* is not shown by the parallelograms, but by the curved dotted lines which indicate the line of *actual* supply.

Plate II is intended to illustrate the *necessary* and the *actual* supply of water. The curved line D, D^2, indicates the line of full supply; F, F the line of least required supply; the intervening space shows the area of "water famine."

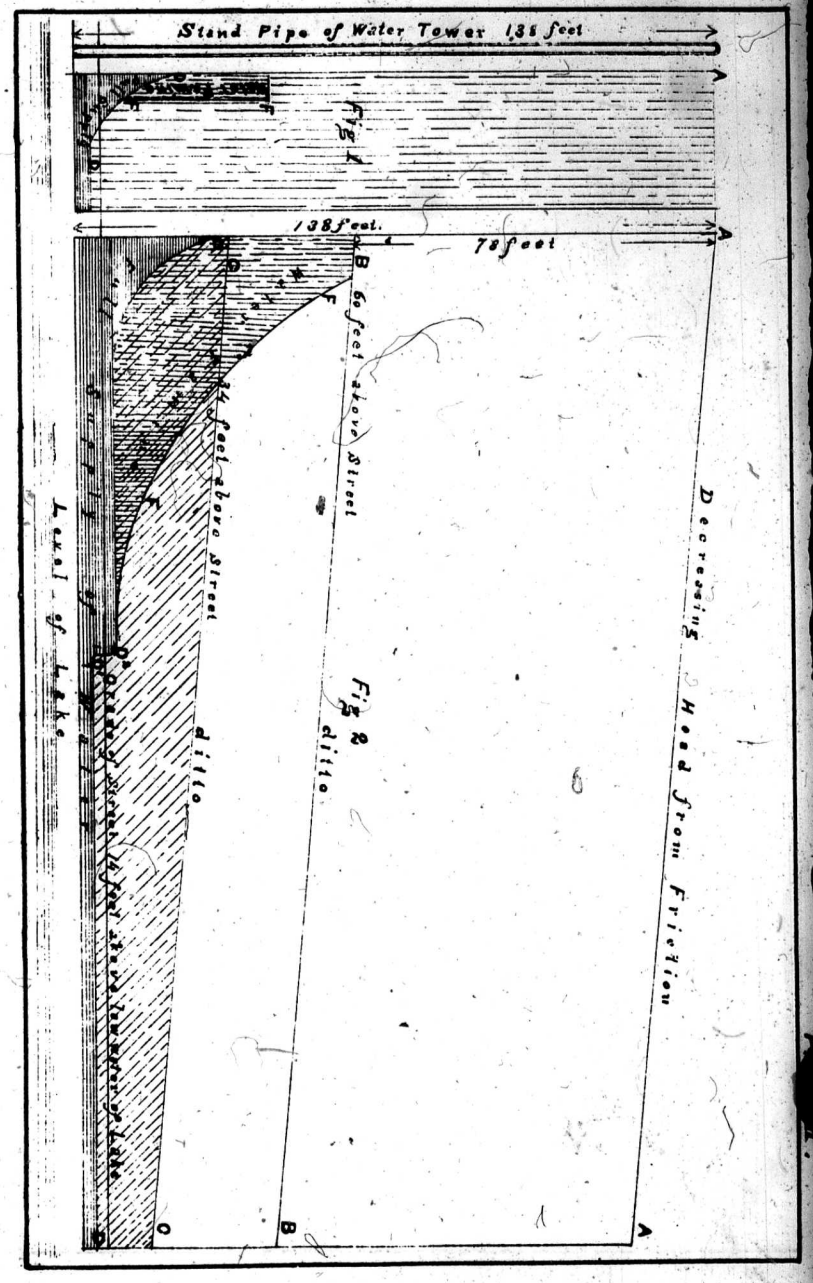
These illustrations, we think, plainly show the *actual head*, the amount of *wasted force*, the amount of water *really furnished*, and that *required* for the full supply of consumers.

The examination of these plates in connection with the text, will suggest other instructive facts.

III.

CONCLUSION.

It is scarcely necessary to add anything to what has been said, necessarily brief and cursory, in these pages, save to suggest that the sinking of artesian wells in various parts of the business centre of our city, affords an almost unanswerable argument for the introduction of a "Low Water" system. It is a proof that the present system is *inadequate*, and cannot be made *sufficient* for all times! The introduction of a "Low Water" system would meet the requirements claimed for artesian wells, and at the same time furnish *pure* water, and at a greatly reduced expense. Of course the adaptation of a "Low Service" system is available in all cities similarly located to Chicago.



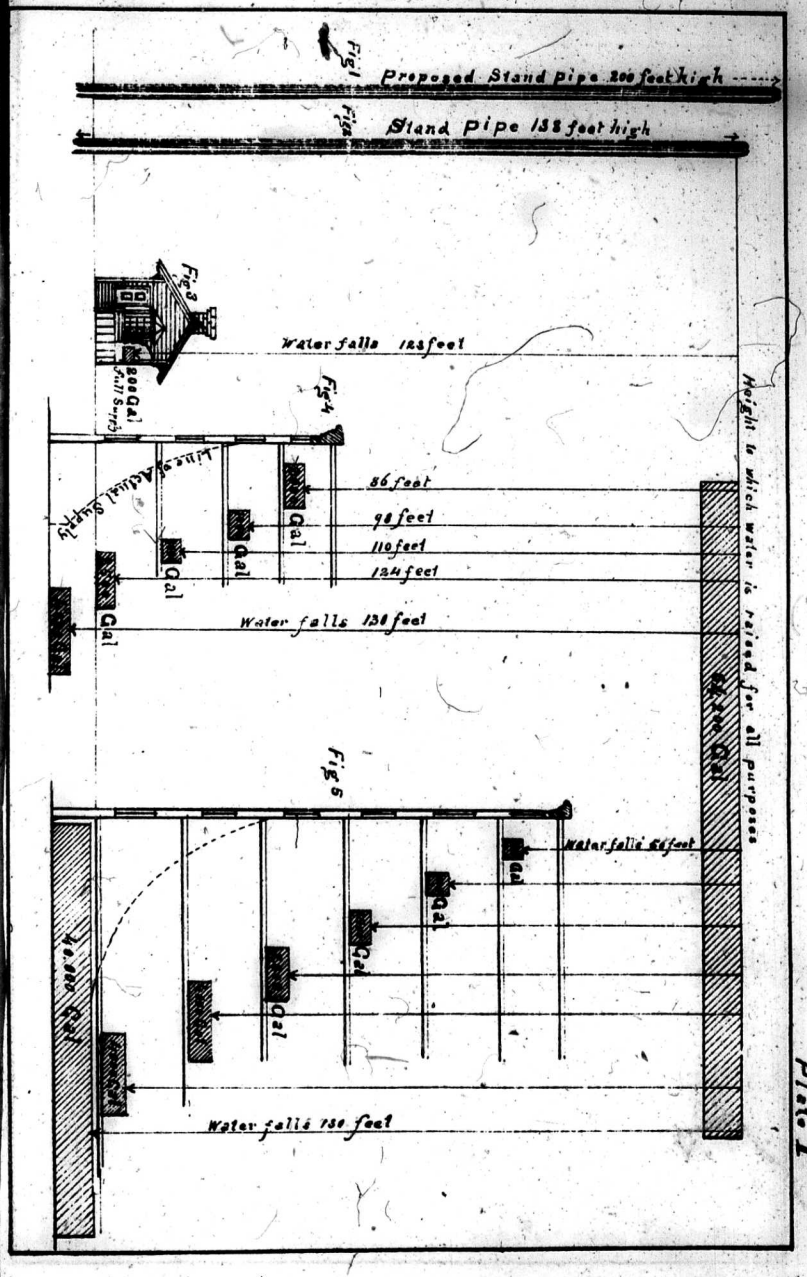


Plate I