

**WATER-WORKS.** — The necessity for a more effective means of subduing fires than the town possesses in its present engines has long existed, and efforts made to supply the want. From the first we have advocated the idea of something similar to the rotary pump at Roots' factory, which has done such excellent work at several fires, but when we come to fully understand the system it is better than we had supposed. Mr. Jacob Newkirk has handed us a pamphlet giving a full description of "Holly's System of Fire Protection and

Water Supply," and we find that it is water works as well as fire engines. This week we have only room for the following as to the "Advantages of Holly's system;" next we will give a description of the success of works already in operation:

1. One of the advantages of these works is, the great *strength and power of the machinery*, as compared with the fire engines, for the suppression of fires. The latter are made as light as possible, in order that they may be moved with celerity in case of fire alarm. This sacrifice of strength to locomotion, often results in their giving way in some weak point at the critical moment which determines whether the fire shall be quelled or rage unchecked, until immense amounts of property are destroyed. The Holly Water Works, on the contrary, are permanently located, and iron and steel are freely used to make them massive, strong and durable. That they will not give way in time of fire, may be relied upon with great certainty. That they are constructed with superabundant amount of power, and in duplicate sets of machinery, is an additional guarantee of unfailing efficiency.

2. Another advantage of these works is, that they save and make available the precious time consumed by fire engines in reaching a fire, after the alarm is given. Fire engines wait for men to draw them, or are liable to be detained by a balky horse, or by overturning the engine, or by muddy streets, or a deep fall of snow, or some other difficulty, which keeps them from reaching the spot where their services are required, until too late to be of any service at all. The Holly Works, on the contrary, reach out by their under-ground pipes, throughout the entire town, and wherever a fire breaks out there will always be, near at hand, several hydrants—which, under this system, is but another name for most powerful fire engines—ever standing sentinel, and always ready without waiting to be moved, (upon the turning of a wrench, and the attaching of a section of hose,) for instant and successful action. The value of these works, in this feature, can not be over-estimated, for a few minutes gained in throwing water upon a fire at the outset, are more than the equivalent of hours at a later period, when the conflagration has spread, and is sweeping all before it in its devastating course.

3. Another advantage of these water works is, that they obviate a serious difficulty, with other systems, in regard to a supply of water for the extinguishment of fires. It too often happens that even when the fire engines are in good working order, and arrive promptly at the conflagration, they can not grapple with and master it, because of a partial supply of water. In marked contrast with this, by the Holly system, each and every hydrant—or fire engine—is also a never failing reservoir, which will yield its full supply, from the main source of supply, until the flames are subdued. The failure of this main source of supply can, in the construction of the works, be abundantly guarded against, and hence it is hardly a conceivable contingency that a lack of water will prevent the suppression of fires promptly, wherever they occur.

4. Still another advantage of these water works is, that the severity of winter weather does not in the least interfere with their efficient operation. Very different is it with the other modes of suppressing fires with either hand or steam fire engines. They may be in perfect working order, and the supply of water may be abundant, and yet, with the thermometer at or below zero—and it is then fires are most frequent—how often communities stand appalled at the spectacle of conflagrations, which frozen fire engines and frozen hose can not furnish a drop of water to repress and subdue. To this cause is attributable the destructiveness of the fire in Buffalo, which involved the American block in ruins, and for some time after the flames died out, the hose belonging to the fire department, lay in the streets of the city, frozen and totally unfit for use. Had another fire occurred, while the fire department was in this frozen condition, no one can guess the amount of the destruction of property, which would have been inevitable. Similar instances might be multiplied indefinitely. With the Holly system, it is noticeable that the suction is taken within a frost-proof building, the water is thence pumped into and through long stretches of pipes beneath the ground, and below the reach of frost, is thrown to the surface at the required point, with temperature considerably warmer than the open atmosphere, and thence, with great and unchecked velocity is showered in torrents upon the fire, through short stretches of hose, in which the water can not congeal in its rapid flow. This circumstance, alone, very strongly recommends these works above all others, in that the security they afford is not diminished when most needed in intensely cold weather.

5. Another consideration in favor of these water works, is their comparative economy of construction, in that they dispense with reservoirs. These involve a heavy outlay to construct them at the needful altitude, and often require another large amount to convey the water by pipes long distances to the town where it is used. Frequently, too, as a part of the reservoir plan, costly machinery is required to keep up the supply of water, and a large sum per year for operating this machinery. The folly of this plan of forcing water two or three times higher than the level to be supplied, has an apt illustration in a King of France, who,

"With twenty thousand men,  
Marched up the hill,—and then—  
Marched down again."

This folly and waste of power is avoided by the Holly system. Its ponderous machinery reaches after the water, lifts it through its under-ground pipes, to the required altitude, and then supplies it in uniform flow for ordinary water supply, or in increased volume and strength for extinguishing fires. When it is borne in mind that with reservoirs ordinarily, fire engines are required for fire protection, while the Holly system supercedes them as well as the reservoir, the great pre-eminence of the Holly plan is obvious and overwhelming.

6. Another weighty circumstance bearing upon the question of adopting this system of Mr. Holly's, is, that since it dispenses with fire engines, engine houses, etc., the sale of this property, no longer needed, will contribute largely to pay the cost of the Holly Works. In many cases the sale of the engines, engine houses, etc., would provide for nearly, or quite the entire cost of the Holly machinery.

7. Another circumstance in favor of these works, which commends them strongly, is the nominal sum it costs to superintend and keep them in repair. At Lockport, for three years after their construction, the care and superintendence was but \$150 per year, and recently the authorities have contracted with a practical mechanic to take the entire charge, and keep in repair the entire works, including thirty-two hydrants—equivalent to thirty-two fire engines—for the pittance of \$250 per year. Let the comparison be made between this and the annual cost of maintaining a single fire engine, whether hand or steam, and tax payers have an all powerful reason for immediately adopting the Holly system. Repeatedly, at Lockport, have ten good and effective streams, for fire purposes, been

thrown at the same time from that number of hydrants by the water works. When tax-payers ascertain and foot up the annual cost of maintaining existing fire departments, they will be startled at the amount, and will appreciate the importance of the Holly system, which reduces it to a trifling sum annually.

8. Yet another circumstance in favor of these works is, that it relieves communities of the expensive, controversies, and demoralizing influences of fire departments as now organized. By the Holly system, hose companies alone are required, and since, wherever laid, the water pipes to that extent take the place of hose, only a small amount, comparatively, is required. In Lockport, two hydrant hose companies have been organized, composed of citizens interested in the protection of property, and in other places the same classes, prompted by this motive, will readily perform the same trifling service.

9. Conclusive proof of the superiority of these works, is found in the fact that underwriters readily make large concessions in the rates of insurance, within districts covered and protected by them. It is pertinent to state that in Lockport, with a view of overcoming the incredulity of tax-payers, a prominent citizen, who had faith in the system, secured a large portion of signatures to the petition, asking the Common Council to authorize their construction, by the promise that he would obligate himself to pay the tax of each, for the amount of saving in insurance for the term of three years. He has not been called upon to make up any deficiency under his stipulation. In fact, in many cases, two years' saving has more than equaled the tax paid for construction.

10. It is also worth remembering, that the aggregate value of property which these works would save, if generally introduced, over and above any other system, would annually pay the interest on the debt of the United States, and provide a sinking fund for retiring the principal at no distant day.

11. These works, it is to be observed, also meet a public necessity, inasmuch as they combine fire protection and water supply, without the expense of constructing and maintaining reservoirs and fire engines, and thus place it within the reach and means of communities, to enjoy almost perfect immunity against fire, while at the same time a full supply of water is secured for household and other purposes.

The City of Binghamton, which has a contract with the Holly Company for the construction of the Holly Works, to be operated by steam, and to be completed in the summer of 1868, was slow to believe that any other mode than a reservoir would answer their wants, but upon a presentation of the case, and an examination of the works at Lockport and Auburn, yielded all objections, and will soon be protected and supplied by the Holly Works. Other communities, to be in like manner convinced, need only to be informed of the advantages of the Holly system.

12. In further explanation of the extraordinary and superior efficiency of the Holly system, reference may be made to the rotary principle upon which the pumps are constructed. Water is incompressible, and its momentum, when flowing through pipes, is the same as all other heavy bodies in motion. In all reciprocating pumps, the water comes to a stand-still twice in every revolution of the pump, and has to start back in the opposite direction in order to escape from the pump, on account of this reacting motion of the water. In marked and favorable contrast is the action of the Holly Rotary Pump. From the moment the water comes under the influence of the pump, there is no reaction, no cessation, but one steady and unremitting flow, and with velocity largely increased by this difference of the rotary, over the reciprocating or piston pump.