THE BARTLETT PROJECT FOR A WATER SUPPLY FOR LOWER NEW YORK.

This project contemplates bringing 50,000,000 gallons per day of pure water from the Passaic watershed to the lower or business portion of New York, and delivering it under a head of 300 feet. As already noted in this journal, this water will be sold to the city for $75 per million gallons, as stated in the formal proposition made to the Sinking Fund Commissioners on November 30.

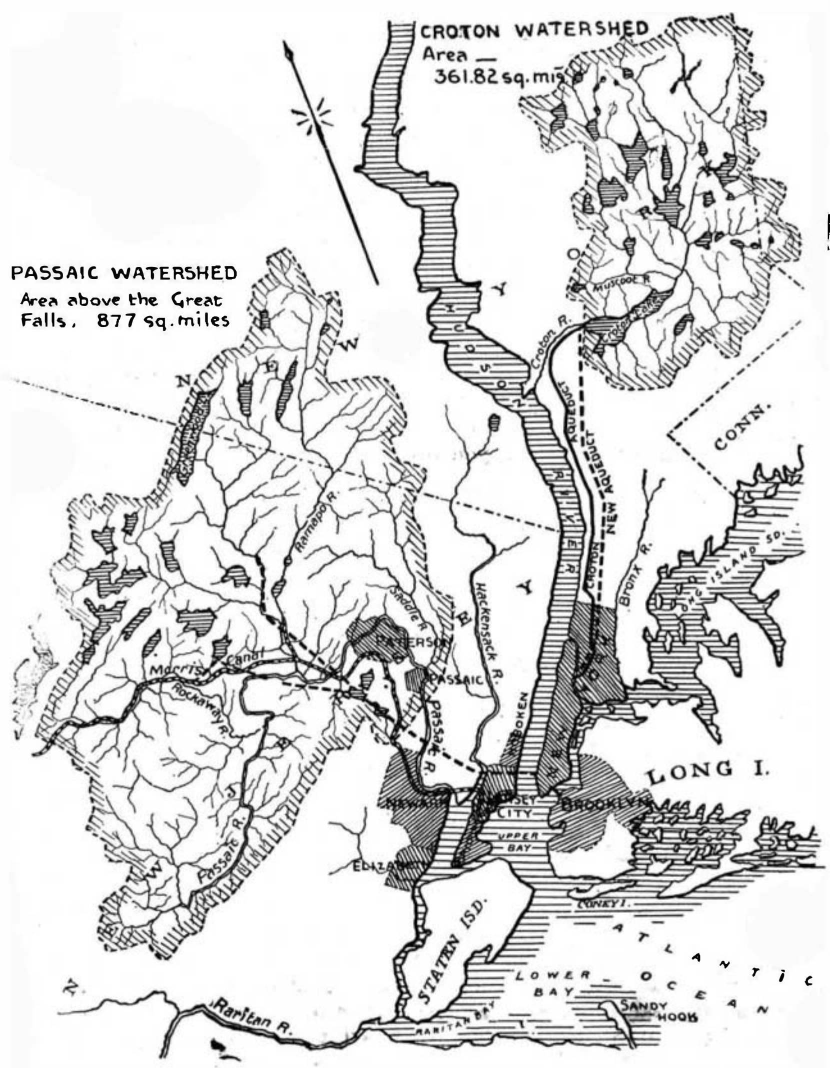
The accompanying map, for which we are indebted to our contemporary, *Engineering News*, outlines the scheme, and contrasts the relative position and areas of the Passaic and Croton watersheds, showing that the former is about two and a half times as large as the present source of supply, and that the storage center is much nearer to the City Hall. But while the Passaic is the largest, all of its water, above the Great Falls, is the property of the Society for Establishing Useful Manufactures, at Paterson. This right is well established by judicial authority and by nearly 100 years' uninterrupted use, and the water above that point cannot be diverted for a water supply without the consent of the society, or by the exercise of the right of eminent domain.

The syndicate then proceeded to locate and secure by purchase the available sites for storage reservoirs in the Passaic watershed. Among the property thus obtained, the pamphlet issued by Mr. Bartlett mentions the following: Lake Macopin, 2 by ½ mile in area; 50 feet to 60 feet deep; sandy bottom, clean shores, and at an elevation of 1,000 feet above tide; it is 40 miles from the city, and has a daily output of 9,000,000 gallons of the purest water. Dunker Pond now has 25 acres of water surface; but a dam 40 feet high would create a reservoir 4 miles long and ½ to ¾ mile wide, with 40 feet of water and an outflow of 16,000,000 gallons per day. Split Rock Lake contains about 250 acres in surface, and has a depth of 10 to 20 feet of pure water. The Montville reservoir is another secured, along with reservoir sites in other localities.

All of the above are gathering or feeding reservoirs, intended to supply water to the natural channel in the dry season. Distributing reservoirs were the next necessity, and the sites for two of these were purchased. The first is in the Garret Mountain, a spur of the Orange range, near Paterson. Here a dam would form a reservoir of about 300 acres, with 40 feet of water, at an elevation of 400 feet above tide, and distant only 15 miles from lower New York. South of Garret Mountain, and contiguous to it, lies the Great Notch, forming a natural site for a storage basin, with an elevation of 300 feet above tide. The first of these was set aside for the supply of New York, and the lower reservoir will afford an ample head for the cities of Montclair, Newark, Jersey City, and all surrounding towns if they so elect.

As this source of water supply, as far as New York is concerned, is in a neighboring State, with the broad and deep Hudson River intervening, the only serious engineering problem connected with the scheme is the crossing of this river. A number of plans were considered and rejected, and the final decision was arrived at to tunnel the river and carry the water through this tunnel in pipes. Mr. Bartlett and his associates practically tested the material under the river bed by furnishing the means for resuming work on the Hudson River tunnel. They had this tunnel pumped out, and actually built sufficient new tunnel to convince them that its completion was feasible. The expressed intention is to finish this tunnel for water carriage, and to afford facilities for telegraph and telephone wires. Its intended use as a railway tunnel would be abandoned.

To utilize water under 300 feet head, the Sinking Fund Commissioners would be called upon to exercise the right they now legally have to create an independent system of pipes for fire service exclusively. And for domestic or office purposes the pressure could be reduced to 40 or 50 pounds per square inch and the water used in the present pipe system.



PROPOSED PASSAIC WATER SUPPLY FOR LOWER NEW YORK, ETC.

Work Deliberately.

There are some things that must be done in a hurry, or not at all. Catching a flea is one of the best examples *apropos* to this. But as a rule, it is safe to say, the man or woman who works deliberately accomplishes the most. The deliberate worker is the thoughtful worker, with whom the habit of system has become second nature. Any one may cultivate it who will take the trouble to try; and the most unsystematic, spasmodic worker will realize with amazement how easy it is to get through an allotted task in half the time it formerly required, by planning it all out before entering the office, workshop, or kitchen.

The hurried worker is the one who fancies he is an uncommonly busy man. True, he is; so is the man who tries to bale out a leaky boat with a crownless hat; and in proportion to the energy expended, very often, the one accomplishes about as much as the other. The busiest men we have known were those who never seemed to be in a hurry, and they accomplished more in a given time, and were less worn out when their work was done, than many who accomplished half as much, and almost ruptured themselves in doing it.

Think about your work before beginning it, then go at it deliberately. It will save wear and tear of nerve and muscle, you will accomplish more, and what you do will be better done.—*The Manufacturer and Builder.*

AN IMPROVED CAN OPENER.

A simple and effective tool for use in cutting round pipe sections, or for opening cans, is shown herewith, and has been patented by Mr. David H. King, of No. 255 Fourth Avenue, New York City. To the head of a suitable handle is secured a plate formed with a slot on its under side, the inner edge of the outer section formed by the slot being sharpened to constitute a cutting edge. At the bottom of the rear end of the blade is a laterally projecting fixed fulcrum piece, making a secure rest for the thumb of the operator, and the forward end of the plate is a pointed blade or dagger, adapted to puncture the can or pipe for the insertion of the cutting blade. The puncturing dagger may also form a rest for the thumb of the operator, and, to prevent the thumb from slipping off, the tool is formed with serrations on its shoulder, this feature being especially desirable in operating on round pipe sections.

KING'S CAN OPENER.

An Old Yankee Steam Engine.

It has been claimed that to Rhode Island belongs the honor of using the first practical stationary steam engine in the United States. Without attempting to vouch for the historical accuracy of the statement, it is sufficient to know that the engine was at work in the town of Cranston more than a hundred years ago, and that, although of crude construction and ponderous movement, it did the work for which it was designed. The engine was built by Joseph Brown, of Providence, and cost upward of £1,000. It was founded upon the English type of engine known as the Newcomen, but contained some improvements and simplifications original with the builder. The engine was set up at the Cranston ore beds beyond Knightsville, and one of the most complete accounts of it is to be found in the biography and diary of Manasseh Cutler, LL.D., Ipswich, Mass. Dr. Cutler appears to have learned of this engine, and taken a chaise journey to New York to visit it. In the diary, under date June 27, 1787, he thus describes the mechanism:

To go to the furnace and engine was eight miles, nearly, out of my way, but my curiosity was so much excited by the description of so singular a scheme—the only one in America—that I could not deny myself the pleasure of viewing it. I arrived at the ore beds (iron ore) at twelve o'clock. The engine was at work raising water from a well 80 feet deep. The iron flue is 2½ feet wide by 6 feet long, with a square hearth at the mouth, secured from fire by large, thick iron plates. On the back part of the flue is a winding funnel, which passes into a chimney back of the building.

Above the flue is placed a wooden boiler, 6 feet in diameter, which is constantly kept full of water when the engine is in motion. The boiler rises above the first story of the building, much in the form of the large cisterns used in distilleries, where it receives, at the top, the condensing cylinder, 2½ feet in diameter, and made of plated iron. From this cylinder a large worm passes, with many windings, down the boiler. The valve that passes into this cylinder is more than two feet in diameter, and rises and descends by means of an iron rod made fast to one end of a large beam. Around the top of the boiler are numerous leaden pipes—some connected with the condenser and some not—furnished with stop cocks for admitting and excluding air or water, as necessary in working the machine; but they are too numerous and complicated to admit of any description from a mere view of the machine. A large reservoir of water is placed in the third loft of the house, constantly affording water to the works below, and is constantly supplied with a pump for the purpose, by the working of the machine.

The large beam is a massive piece of timber, near 4 feet in diameter and 20 feet long, being two very large oak timbers nicely forged together. It moves on a large iron bolt in the center, like the beam of scales, and has two arching timbers at each end forming the segments of a circle, along which two chains of a prodigious size play as the beam moves. One of these chains leads to a piston or valve of the condenser, and the other at the opposite end to the pumps in the well. There are four cold-water pipes, one feeding pipe, and one venting pipe. By the same motion of the beam which raises the water out of the well, all these pipes open or close by means of stop cocks and valves as the design of them requires. There are two large pumps in the well, which is 80 feet deep and 23 feet wide. The sides of the well are supported by large timbers laid horizontal so as to make the form of the well quintangular, and the ends of the timbers are let into one another. The engine raises seven hogsheads of water a minute, and the flue consumes two cords of wood in twenty-four hours.

The immense weight of the beam, the cast iron wheels, large chains, and other weighty parts of the works, occasion a most tremendous noise and trembling of the large building in which it is erected, when the machinery is in motion. By the sides of the well from which the water is drawn are two other wells, 70 feet deep. These are sunk down in the bed of ore, and in these are the workmen, ten or twelve in number, digging ore. The ore is raised in large buckets, which hold about one ton weight, let down and drawn up by large chains, carried from the well to a large capstan which is constantly turned by an ox. As one bucket arises, another goes down. These wells are kept dry by the water continually drawing off into the well where the pumps are fixed, and the pumps keep the water below the height where the men work.—*Providence Journal.*

Scientific Logs.

If a man had been requested to tow a lot of logs out to sea and set them adrift in mid-ocean in order to enable the government hydrostatic office to take notes on the directions of various ocean currents, as shown by the drifting logs, he would have asked to be well paid for the service. But when the Leary raft went to pieces the idea was carried out, and the scientific agents of Uncle Sam were not slow to see their opportunity, the result being the publication of a pilot chart showing the courses taken by the Leary logs. The department had wanted to undertake something of the kind for some time, but no feasible plan had been suggested. But as no serious disaster has occurred on account of the floating logs, science is the gainer at the expense of the raft builders.—*Lumberman.*

It is not yet too late for the raft man to present a claim for compensation to our generous and surplus-burdened Congress.