

lake water into the well at the pumping house. The present pipe, which for over 4,000 feet is only three feet in diameter, cannot let as much water into the well as the present engines can pump out of it. The present pipe has often so badly leaked at some point that bay water has got in. To many it seems a mystery how a pipe under water, but full of water, can draw water into it out of the bay. The reason is that the present pipe supplying the well is so small that before enough water can be got to flow through it to supply the pumps running at their ordinary speed, the water level in the well is about 13 feet below the level of the water in the lake. Hence the water pressure inside the pipe is less than the outside of it, and any joint not absolutely tight will permit bay water to enter. The new pipe is considerably larger than the present one, and when it is in use the water level in the well will be much higher, and the danger of leakage will be greatly reduced. Even if the new pipe should

be found not absolutely tight, a very simple remedy could be found. By means of a centrifugal pump or a spiral pump, the water could be raised over on the island, and the well at the pumping house kept at a level a little above that of the bay. Any leakage then would be from the pipe into the bay. The water would be more easily lifted by the pumps, and they would work more satisfactorily and pump a larger quantity. The quality of the supply would then be of undoubted purity, and by running the centrifugal pump on the island at a higher speed the quantity could be indefinitely increased as the public demand became greater. After the gravitation scheme has been settled, as in all likelihood it will be, to be doubtful as to quality and too expensive as to quantity, then the question of additional pumping stations will be sure to be raised. From one point of view it is a wise and economical plan to have the machinery all at one point and under one management. From another point of view it is most unwise and positively dangerous.

What would Toronto do for water should a boiler explosion occur at the main pumping station as disastrous as that in Quebec last month? One boiler exploding might do in a moment damage enough to destroy the buildings and to disable the machinery to such an extent that no pumping could be done for two or three weeks? Where would we get water? In some towns water is sold on the streets as milk is here. Imagine bay water carted through the streets and sold at so much per

point! There should be at least two complete and independent pumping stations, each large enough to supply the city, and so far separate that an accident or fire at the one would not injure the other. Each station should then be kept running at half its pumping power, and should one become entirely disabled, the other would be in order to go on in full power at once.

The gravitation scheme advocate says: "Get our plan and there will be no boilers to burst and no engines to break down!" That may be, but the bursting of pipes and the breaking of water channels have led to as serious results and as long stoppage of supply as ever occurred by the break-down of a pump or the explosion of a boiler.

POLISHING WOOD WITH CHARCOAL.

The method of polishing wood with charcoal, now much used by French cabinet makers, is thus described in a Paris technical

journal: All the world now knows of those articles of furniture of a beautiful, dead black color, with sharp, clear-cut edges, and a smooth surface, the wood of which seems to have the density of ebony. Viewing them side by side with furniture rendered black by paint and varnish, the difference is so sensible that the considerable margin of price separating the two kinds explains itself. The operations are much longer and more minute in this mode of charcoal polishing, which respects every detail

in carving, while paint and varnish will clog up the holes and widen the ridges. In the first process they employ only carefully selected woods of a close and compact grain, then cover them with a coat of camphor dissolved in water, and almost immediately afterward with another coat, composed chiefly of sulphate of iron and nutgall. The two compositions, in blending, penetrate the wood and gives it an indelible tinge, and, at the same time, render it impervious to the attacks of insects. When these two coats are dry, they rub the surface of the wood first with a very hard brush of conch grass (*chien dent*), and then with charcoal of substances as light and friable as possible, because if a single hard grain remained in the charcoal, this alone would scratch the surface, which they wish, on the contrary, to render perfectly smooth. The flat parts are rubbed with natural stick charcoal; the indented portions and crevices with charcoal powder. Alternately with the charcoal the workman also rubs his piece of furniture with flannel soaked in linseed oil and the essence of turpentine.

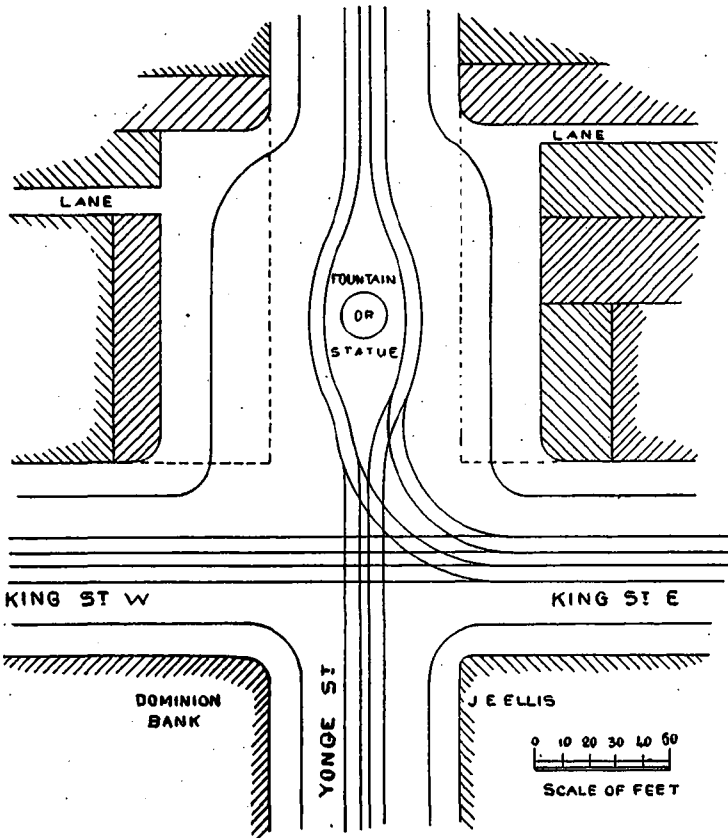


DIAGRAM SHOWING SCHEME FOR IMPROVEMENTS AT THE CORNER OF YONGE AND KING STREETS, TORONTO.