THE WATER CURTAIN.

For many years the water curtain has been in use in Canada as a means for fire protection. Some years ago when a building next door to the T. Eaton Co., Toronto, was burned down the value of this device was most apparent, since unshuttered windows within a few feet of the flames were not even cracked by the intense heat, because of the sheet of water which fell from the roof and from the tops of the windows where perforated pipes had been arranged for the purpose. That this is looked upon as a great novelty is evidenced from the following paragraph, quoted from a recent issue of The Engineering News, New York:

"Another form of protection against exposure fires which has recently been employed is the outside fire sprinkler system. This has been applied on an elaborate scale to the costly new public library building for the city of Chicago. As many of our readers doubtless recall, water curtains have been frequently suggested as a means of fire protection, but this is, we believe, the first instance, in America at least, in which such a device has actually been constructed."

GREEN'S ECONOMIZER.

Editor CANADIAN ENGINEER:

Referring to the article in your June issue, entitled "A Dismissed Engineer," it would appear that the utility of the economizer was not what it was guaranteed to be to the city of Toronto. The question of the utility of the economizer to the city of Toronto, and of the sufficiency of the tests made, is to be thoroughly sifted in an action brought by us, and now pending, and we are fully prepared to show when the proper time comes that the economizer has done everything that it was warranted to do. We consider it a little unfair on the part of your paper in the meantime to publish extracts from Judge MacDougall's report, which is based upon an investigation entirely ex parte as far as our company is concerned.

THE GREEN FUEL ECONOMIZER CO.

Matteawan, N.Y., August 15th, 1899.

NEW CATALOGUES.

Cranes—The Northern Engineering Works, of Detroit, Mich., U.S.A., have sent out their first catalogue, consisting of twenty pages, which illustrate three motor electric travelling cranes, compressed air travelling cranes, portable pendant winch, hand chains, jib cranes of the cantilever and single braced types, air hoists. Tumblers of different styles suitable for foundry use are also shown. It is sent free to enquirers. G. A. True is general manager; the engineer is Ed. S. Reid, late of the Whiting Foundry Equipment Co., Chicago.

The Gutta Percha Co.'s pocket catalogue for 1899-1900 to hand, and it illustrates the various styles of rubber footwear made by this well-known concern, under their famous trade mark, "Maltese Cross." Almost every conceivable style of footwear is shown from children's rubbers to lumbermen's, sporting and firemen's gum boots.

SEPTIC TANK SYSTEM OF SEWAGE TREATMENT.

A great deal of interest is being taken in Ontario in the Septic tank system of sewage treatment. C. H. Rust, C.E., city engineer of Toronto, has recommended the Septic tank system for adoption in that city. The following description of two plants on this system now in operation in the United States is taken from a recent issue of The Engineering News, New York:

The largest Septic tank for the treatment of sewage thus far built in the United States is located at Verona, N.J., seven or eight miles from Newark. It receives the sewage of a branch of the Essex County Lunatic Asylum, and was designed and built by Jas. Owen, M.Am.Soc.C.E. The tank and supplementary filter beds were put in operation about November, 1898, and now receive the sewage from a large building containing some 300 patients and attendants. Quite a large roof area is connected with the sewerage system, the connection having been made before it was decided to treat the sewage. The amount of sewage treated daily is placed by Mr. Owen at 40,000 gallons. The tank is of concrete, and is 18 x 50 ft. by 10 ft. deep, giving a capacity of about 65,000 gallons. It has a trapped inlet, from a small grit chamber 4 feet square. There is a man-hole at about the center of the top of the concrete roof of the tank, but the cover of this is sealed up with cement. The tank effluent passes out through a 16-inch pipe, beneath the surface on to four filter beds. Each bed is 14 feet square, with concrete walls and bottom. At the intersection of the division walls of the bed is a sheet iron distributing pan, 3 to 4 feet in diameter, with a bottom curved upwards, and a notch in one side to allow the sewage to flow on to the bed. The pan was provided with a device designed to cause it to revolve automatically through one-fourth of its circumference whenever the bed receiving sewage became filled, but the device has not proved successful, and the pan is now revolved by hand. The filtering material was originally composed of sand at the top, then coke, then gravel, resting on a layer of large-sized stone, making a total depth of about 5 feet. This choked up in about three months' of operation, which was in winter weather, making it difficult to do any cleaning. All the material, except the large stone, has been replaced by 3½ feet of coke, with 6 inches of coarse sand at the top. The walls of the bed extend about 16 inches above the top of the sand. The tank has not been cleaned since it was put in use. The amount of sludge which has accumulated is unknown, as the tank is sealed. To the eye the tank effluent, as it flows over the distributing pan, has a cloudy or slightly milky appearance, but it seems to be pretty free from suspended matters. On the bed, however, a depth of 9 to 12 inches has a brownish or yellowish look, like water standing in a muddy pool. A silver coin, held between the thumb and finger, could scarcely be distinguished at a depth of 5 or 6 inches. The tank effluent flowing from the pipe or dipped up in the hand from over the bed, had a strong sewage smell. One of the filter beds, which was in need of being raked, showed a thin skin of dark, almost black, sludge, which had curled up in small patches, on partially drying out. This, too, had a strong sewage smell. The effluent from the filter beds is discharged into a ditch leading into a small stream. This effluent at a point where it issued from the beds also had a pretty strong odor, less decided than that directly from the tank. As the four beds have a combined area of only 784 square feet, they work at an average rate of more than 2,000,000 gallons per acre, per day, assuming a total daily flow of 40,000 gallons. This is very high. With the present relation between daily flow and tank capacity the sewage remains in the tank about 40 hours, assuming proper distribution through the tank, and making no allowance for sludge accumulation. Perhaps a shorter stay in the tank or a more thorough aeration, or both, would enable the filter beds to do better work. As it is now, there is reason to believe that the sewage reaches the beds in such a state that little or no nitrification could be expected, except at a very low rate of filtration. It is realized that the beds are overworked, and a supplementary filtering area is proposed. The present plant cost about $2,600.

In March, 1898, after careful study into the more recent English method of bacterial purification of sewage had been made for the city of Columbus, Ohio, and their trial then recommended, beginning on a small scale, an opportunity was afforded Alvard & Shields, engineers, Chicago, to install a plant of this character for a large Golf and Polo Club house near Chicago. The soil of this vicinity being a very heavy clay, was not adapted to intermittent subsoil irrigation, which had already been ineffectually tried, and the expense of procuring sand, which had to be hauled from a great distance, debarred the consideration of artificial sand filters to any considerable extent. No dilution was afforded for the effluent, as the stream which passed through the grounds became entirely dry during the entire season when sewage purification would be needed. The only available location was necessarily within full view of the club house, and within 100 feet of a teeing ground; so that it was important that the method adopted should be such as to enable the plant to be concealed from view.

Under these circumstances, nitrification on prepared coke beds was decided upon, and a first installation, based upon a sewage flow of 2,000 gallons per day, was installed in a little more than two weeks. The plant consisted of a large flushing tank, with a capacity of 850 gallons, into which the sewage from the main building discharged; a basket screen of wire of 1-inch mesh, removing the large matters such as waste paper, rags,