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DRINKABLE SEWAGE.

Such is the title of a leading article which recently appeared in one of our prominent Canadian Medical Journals, the writer taking as his text an extract from the *Medical Press and Circular*, which stated that "the guardians" of the Newcastle West Union, in the County of Limerick, had been informed by Dr. Cameron, the County analyst of their district, that the water which is consumed by the population of Newcastle West, is nothing better than sewage, slightly diluted. Starting on the presumption that the water supplied to this city naturally falls under the same heading, the "city fathers" are berated upon their "apathy," and the potent, grave and reverend guardians who cultivate Limerick West Union sanitation in our Bœotian metropolis, are gently reminded that they have failed in their duty to the public. "It would be," says the writer, "a very interesting hydrostatic calculation to determine the degree of dilution which the sewage of this city * * * undergoes, in the big currentless pond, euphemistically styled 'the lovely bay of Toronto.' Who can imagine the multifarious chemical combinations and decompositions perpetually going on in our huge trough, into which are continually flowing saturated solutions of hydrosulphurets, chlorides, phosphurets, and the whole family of excretory abominations?"

We must presume, from these quotations, that, naturally the chemical combinations above alluded to, take place, and that their influence on the water contained in the "vast trough," is so appreciable as to be capable of measurement and of hydrostatic calculation. This we find to be the case, and from the varied reports issued from many centres by those who have made such matters a study, we can get a very good basis from which to judge of the comparative merits or demerits of our water supply, and of the relative purity of the article we have to drink as compared with that in use in other parts of this continent and elsewhere.

The solid matter in water is not to be regarded always as an impurity, although sometimes, to use an old adage, "we can have too much of a good thing," for the preponderance of solid matter, for example, in the city water supplied during the past week, has been the combined average of the proportion distributable over the space of twelve months or more. Those who have been compelled to use the same, are oftentimes in doubt as to the character of the liquid consumed, and as to whether it should be classed under the head of "scrip," or sour beer. There is no doubt that a certain proportion of solid matter in water is essential to the same as a beverage, their total absence, as in the case of distilled water, rendering it unfit for use.

Probably the purest known river water in the world is that of the river Laka in Sweden, which contains 1.25 of a grain of solid matter in a gallon. Now, taking this as a standard, let us compare the city water with it and with others. Mr. O. W. THOMAS, of Chicago, has collected together some information as regards the proportion of solids contained in some of the more prominent water supplies of the world, and I venture to make use of his facts as also of the various analyses of our city water, made by Professor HENRY H. CROFT and DR. W. H. ELLIS. Thus, from the following table we find that the proportion of solids in every gallon in the following waters named differ very materially:

Croton River, N.Y., contains	6.660	grains.
Schuykill,	4.261	"
Delaware,	3.535	"

River Clyde	7.860	"
River Dee	4.000	"
East London Water Co.	23.510	"
Lake Michigan at the crib.	7.232	"
Toronto bay water	9.000	"
" filtering basin, 1877.	13.000	"

An examination under the microscope of the sediment left to settle from our city water reveals the fact that it is largely made up of earthy matter, the organic being present in very small proportions. An examination of the lake water, when the supply was being taken from the lake-pipe through the basin, in the latter end of 1877, by Professor CROFT, showed the solid matter to consist of

Not earthy	8.21
organic . . . . .	.54
	8.75

There is no doubt that, if the scheme which is under the consideration of the City Council, namely, that of carrying out the pipe so that the supply shall be taken from the lake at a depth of 30 feet, meets with the approval of the ratepayers, and is adopted, as it should be, the analysis of the water then to be obtained will give as good a record, if not better, than that above quoted for Lake Michigan, and will prevent, to a great extent, our pipes being filled with muddy sediment and decomposing vegetable matter on the recurrence of every storm, to the intense dissatisfaction of those compelled to use the same.

Now, turning to the tests which show sewage contaminations in the water, namely, the presence of ammonia or chlorides, we find from the analysis made by the gentlemen already named and others quoted by them, that the following is the proportion in the following waters named:—Chlorine—

Toronto Filtering Basin, 1877, per gallon . . . . .	.05
Toronto city water, July, 1880 " . . . . .	.02
Michigan Lake water, " . . . . .	.02
London water supply, "	1.2
Thames Company, "	2.1
Kent Company, "	

parts in a million.

	Free Ammonia.	Albuminous Ammonia.
Toronto Filtering Basin, 1877	0.79	0.32
Toronto city water, July, 1880 . . . . .	.01	0.11
London water supply,—Thames Co. . . . .	.01	.06
Kent Co. . . . .	.01	.02

From the above figures it is quite clear that the city water appears to compare favorably with those already named, and hardly calls for the sweeping indictment laid against it in the article from which we have quoted. The chemical combinations are without doubt taking place. Sewage in large quantities is poured into the bay, but so far, at least, it does not seem to have affected the source of our water supply to any appreciable extent.

But it is quite evident that this state of things cannot long continue, that the time has arrived when, with pure water, and the very best at that, at our very doors, steps must be taken to supply the 'missing link' required to complete our water-works system, by extending our pipes into the lake in the manner suggested by the manager, Mr. BROUGH.

It would be beyond the scope of this short article to take up and discuss the reasons why this should be done, and the manner of the doing thereof, but it is a matter of vital interest to all con-