

Collins said that during the winter months the ice accumulates to such an extent over the sand-bed of the filter as at times to threaten the cutting off of the supply from the pumps.

Hon. John O. Hall, of Quincy, Mass., contributed a paper on "The Reciprocal Obligation of the Management of a Water Supply and the Community." He said all now recognized that water was not a free article, at least not in places where any degree of civilization was attained. In his opinion water was as much an article of sale as gas, or coal, or merchandise. He treated the complicated problem from its various standpoints, both from the point of view of the community and for the management, when the two were not identical, and when they were, and from the attitude of the individual as opposed to the community. This subject of fair assessment elicited much discussion at the end of the paper.

The report of the committee on "Uniform Statistics" was read by Mr. George Chase, who gave a list of the exhibitions and their contribution to the exhibition now on view.

Leonard Metcalf, C.E., Boston, Mass., read a very instructive paper on "A Glimpse of Porto Rico."

Under the title, "The folly of reckoning by gallons which differ widely in Canada and the United States, while both countries have identical liters and cubic meters" Frederick Brooks, C.E., of Boston, made a strong statement of the advantages of the metric system of weights and measures, applying this argument to the sphere of water measurements. Mr. Brooks exhibited the chart of the metric system published by the Canadian Engineer, and presented the following table of approximate English and metrical equivalents, which he had prepared originally for the Engineers' club of Philadelphia:

APPROXIMATE METRIC EQUIVALENTS.

By Fred. Brooks, Civil Engineer.

This table shows the comparative size of the principal metric and old units, arranged so that approximate equivalents may easily be absorbed by the memory. Three leading units, of length, weight and bulk, are made conspicuous each as nine-tenths of its metric analogue; and the true relations among the old units are adhered to as far as prac-

result in additions to the membership from Canadian cities. Among Canadians who are already members are: Dr. J. A. Amyot, bacteriologist to the provincial board of health, Toronto; W. L. Bishop, superintendent waterworks, Dartmouth, N.S.; M. A. Connell, superintendent waterworks, St. Hyacinthe, Q.; J. O. A. Laforest, engineer LaFontaine Water & Power Co., Montreal; R. S. Lea, assistant professor of civil engineering, McGill University; B. D. McConnell, C.E., Montreal; Wm. Murdoch, superintendent waterworks, St. John, N.B.; F. H. Pitcher, engineer, Montreal Water & Power Co.; Geo. H. Robertson, superintendent waterworks, Yarmouth, N.S.; W. M. Scott, Charlottetown, P.E.I.; W. G. Yarston, town engineer, Sydney, N.S.; Montreal Pipe Foundry Co., Londonderry, N.S.

SOUNDING IN A RAPID.

We here give an ingenious method of taking soundings in the rapids of a river. It was devised and carried out by William Larocque, a courageous French-Canadian, in the employ of Battle Bros., of Thorold, one of the contracting firms working on the Ontario Power Co.'s new wing dam, at the head of the White Horse Rapids, above Niagara Falls. The method by which Larocque carried out his ideas is thus graphically described by the Niagara Falls Gazette: This dam is being thrust out into the deep, swift-running water at the head of the rapids for a distance of 260 feet, and then down stream 700 feet, involving a work of almost incredible difficulty. The first section is now completed, and 400 feet of the second have been built. A few days ago the contractors decided to obtain, if possible, soundings of that part of the river in which the rest of the dam is to be built. At first they were at a loss for a method of doing

ticable in the approximate equivalents, so that one equivalent may be associated in the mind with another. For example, the quart being 0.9 of a cubic decimeter, the cubic foot, or 30 quarts, is 30×0.9 , or 27 cubic decimeters; again, the ounce, or weight of $\frac{1}{160}$ cubic foot of water, is the weight of 27 cubic centimeters of water, or 27 grams. The approximations that are grouped together generally contain the same percentage of inaccuracy. Values sufficiently accurate for business purposes are added in parentheses.

LENGTH.				AREA.				BULK.			
1 inch	and	2½ centimeters	(2.54)	1 sq. inch	and	6¼ sq. centim's	(6.451)	1 cu. inch	and	15¾ cu. centimeters	(16.387)
1 foot	"	0.3 of meter	(.3048)	1 sq. foot	"	0.09 of sq. meter	(.0929)	1 cu. foot	"	0.027 of cu. meter	(.028316)
1 Yard	"	0.9 "Meter	(.9144)	1 sq. yard	"	0.81 " "	(.8361)	1 cu. yard	"	0.729 " "	(.7645)
1 rod	"	5. meters	(5.029)	1 sq. rod	"	25. sq. meters	(25.29)	100 cu. feet	"	2.7 cu. meters	(2.8316)
1 chain	"	20. " "	(20.117)	1 rood	"	1000. " "	(1011.7)	(The unit of ship's measurement for register.)			
1 furlong	"	200. " "	(201.17)	1 acre	"	0.4 of hektar	(.4047)	1 M board meas. and 24	"	cu. meters	(2.36)
1 mile	"	1600. " "	(1609.3)	1 sq. mile	"	256. hektars	(258.99)	1 cord	"	3.6 " "	(3.624)
WEIGHT.											
1 grain	and	.06¼ of gram	(.0648)	1 pound	and	0.45 of kilo	(.4536)	1 U.S. liq. pint	"	0.45 of liter	(.473)
1 troy ounce	"	30. grams	(31.103)	60 lbs. (wheat bu.)	"	27. kilos	(27.216)	1 " " Quart	"	0.9 " Liter	(.946)
				80 lbs. (coal bu.)	"	36. " "	(36.287)	1 " " gallon	"	3.6 liters	(3.785)
				1 cental	"	45. " "	(45.36)	1 peck	"	9. " (U.S. 8.81; Br. 9.08)	
				112 lbs. (cwt.)	"	50. " "	(50.8)	1 bushel	"	36. " (U.S. 35.24; Br. 36.35)	
				1 Net Ton	"	0.9 Met. Ton	(.9072)	1 ton of ship's displacement	"	1 cu. meter.	
1 avoird.	"	27. grams	(28.35)	1 gross ton	"	1. " "	(1.016)				
COMBINATIONS.			1 foot-ton (net)	and	0.27 of (metric) ton-meter	(.2765)	} WEIGHT & LENGTH.				
			1 foot-pound	"	0.13½ " kilogrameter	(.13825)					
			1 pound per running yard	"	½ kilo per running meter	(.4961)	} WEIGHT PER LENGTH.				
			1 " " " foot	"	1½ kilos " "	(1.4882)					
			1 pound per sq. foot	"	5. kilos per square meter	(4.883)	} WEIGHT PER AREA.				
			1 net ton " " "	"	1 kilo per sq. centimeter.	(.9765)					
			15 lbs. " " inch	"	1 " " " "	(1.0545)					
			1 pound " " "	"	0.07 " " " "	(.07031)					
			1 net ton " " "	"	0.14 metric ton per sq. centimeter	(.14062)					
			1 pound per cubic foot	"	16. kilos. per cu. meter	(16.019)	} WEIGHT PER BULK.				

The convention closed with some trips around the city, some of the members going to Quebec. A number of local civil engineers and waterworks men attended the sessions, and the holding of the convention in Canada, will, no doubt,

this, but the matter was referred to William Larocque, their French-Canadian foreman from below Montreal, and in a few hours the problem was solved. Larocque first built a sort of float, 32 feet long and 14 feet wide. The up-stream