end. A fair argument for this viewpoint is found in the following table:---

Table No.). 1.—7	yphoid	Fever	Death	Rates	and	Filtered
		Wate	r Popi	ilations			C. Barris

Year.	Bstimated Urban Population of the United States.	Total Population Supplied with Filtered Water.	Proportion of Filtered Water Population to Total Urban Population.	Typhoid Fever Death Rate per 100,000 Por ulation in Urban United States.
1890	 25,000,000	′ 310,000	I in 80	48
.1900	 34,000,000	1,860,000	1 in 18	• 40
1910	 44,000,000	10,805,000	ı in 4	27
1917	 51,000,000	18,293,000	ı in 3	13

The figures shown in Table No. 1 are very suggestive. When the ratio of filtered water population to total urban population in the United States increased from I in 80 to I in 18 in the decade 1890-1900 the urban typhoid fever death rate decreased 17 per cent. When this ratio again increased from 1 in 18 to 1 in 4 in the decade 1900-1910 the typhoid fever death rate showed a decrease of 32 per cent. in the same period; and when the ratio of filtered water population to total urban population again increased from 1 in 4 to 1 in 3 in the six-year period ending in 1917, the urban typhoid fever death rate fell 52 per cent. The relationship between the increasing number of people receiving filtered water and the decrease in the typhoid fever death rate is too positive to permit the dismissal of the phenomenon on the grounds of mere coincidence.

There is another feature in connection with disease reduction by water filtration to which attention must be called and that is, that where one death from typhoid fever has been avoided by the use of better water, a certain number of deaths, probably two or three, from other causes have been avoided. This is known as Hazen's theorem. The records from fifteen representative cities* bear out this assumption in a striking manner, as follows:—

Table No. 2.—Death Rates from All Causes and from Typhoid Fever in Cities Before and After Filtration

Per 100,000 population.	Before filtration.	After filtration.
Total death rate	1,870	1,730
Typhoid fever death rate	67	25
Typhoid lives saved	all trained an	42
Other lives saved		.98

These data show with much positiveness the soundness of the so-called Hazen's theorem, and prove in a striking manner that where one typhoid life was saved by the substitution of pure for impure water, at least two other lives were saved from causes of death less well defined.

Growth of Water Filtration in North America

The accompanying diagram shows the growth of filtration of municipal water supplies in the United States since the first filter was built at Poughkeepsie in 1874, some 43 years ago. One of the most striking features of this diagram is the positiveness with which rapid sand filtration has outgrown the older slow sand method. Of the 18,293,000 people now supplied with filtered water in the United States 74 per cent., or 13,411,000, are supplied

*"Present Day Water Filtration Practice," Journal American Water Works Association, Vol. 1, No. 3, Page 516, 1914. from 682 rapid sand filter plants, the remaining 26 per cent., or 4,882,000 people, being served from 54 slow sand filter plants.

Once the rapid sand process appeared in the field it assumed the lead, and has steadily forged still further ahead. The same thing is also true in Canada. In the Dominion there are now some 45 municipal filter plants

Filtration Plants in Canada

	Alberta.		Capacity	
City	Date Installed	Kind	M.G.D.	
Edmonton	-1911	Rapid sand	6.0	
Lethbridge	-1917	Rapid sand	4.0	
MacLeod		Rapid sand		
Medicine Hat	1914	Rapid sand	6.0	
and the second s	Manitoba.			
Brandon	Pred and the Article	Rapid sand	1.0	
Neepawa		Rapid sand	0.35	
Winnipeg Agric'l Coll.	1913	Rapid sand	1.0	
Nev	v Brunswick.			
Fredericton	-1912	Rapid sand	2.0	
	Ontario.			
Arnprior	1901	Rapid sand	0.5	
Chatham	1895-1913	Rapid sand	2.0	
Coburg		Rapid sand	1.4	
Deseronto	1896	Rapid sand	0.5	
Danville		Rapid sand	0.5	
Haileybury		Rapid sand	Ι.Ο	
Hamilton		Slow sand	12.0	
Kitchener		Rapid sand	0.4	
Orillia	1914	Rapid sand	2.07	
Owen Sound		Slow sand	2.0	
Perth		Slow sand	0.5	
Renfrew	1897-07	Rapid sand	0.7	
St. Thomas	1891-02	Rapid sand	2.0	
Sturgeon Falls	and and the fame	Rapid sand		
Thurso		Rapid sand	0.I	
Toronto		Slow sand	40.0	
Toronto		Rapid sand	50.0	
Wallaceburg	1914	Rapid sand	0.65	
Weston	. 1910	Rapid sand	0.29	
Whitby		Slow sand	0.3	
Welland	1914	Rapid sand	0.25	
ha and the state	Ouebec.			
Abuntsic	~ 1010	Rapid sand	0.5	
Avlmer	1910	Rapid sand	I.0	
Buckingham	1917	Rapid sand	1.5	
Cartierville	TOTE	Rapid sand	1.0	
Cowansville	1012	Rapid sand	0.25	
Fraserville	-9	Rapid sand	0.25	
Laval des Rapides	1015	Rapid sand	0.25	
Longue Pointe	1011	Rapid sand	0.75	
Longueuil	1805-1013	Rapid sand	1.7	
*Montreal		Rapid sand	30.0	
Point Autrembles	IOII	Rapid sand	0.25	
Ste. Hyacinthe	1917	Rapid sand	4.0	
Sault-au-Recollet		Slow sand	1.0	
Shawinigan Falls		Rapid sand	I.O.	
Ste. Rose	1915	Rapid sand	1.0	
Three Rivers	1909-11	Rapid sand	3.15	
Verdun	1908	Rapid sand	1.0	
Windsor Mills	Language marine	Rapid sand	a minute	
Saskatchewan				
Prince Albert	IOIO	Popid and	A PALAN	
Saskatoon	1910	Rapid sand	0.9	
Saskat0011			4.0	

*Supplies Maisonneuve, Outremont and Westmount.