

**MAIN SEWERAGE AND SEWAGE DISPOSAL.****T. Aird Murray, C.E.**

The term "sewerage" as used applies to the process of the removal of sewage by water carriage by means of pipes or other conduits.

The term "sewage disposal" applies only to some process by means of which the sewage delivered by the "sewerage system is dealt with in order to render it innocuous to human beings."

Although a sewerage system in every town is recognized as an early necessity, the application of some system of sewage disposal is only very tardily recognized. The practical application of sewage disposal is in fact a new subject in Canada.

The author's chief aim will be to lay stress on the necessity of some method of sewage disposal. To describe as simply as possible the leading features appertaining to an up-to-date disposal plant, the evolved result of the experience of both Europe and America. In order to obtain satisfactory results from sewage disposal it is necessary to broadly consider the subject of main sewerage.

**Haphazard Sewerage Systems.**

Much money is at present being thrown away in Canada by laying out sewerage systems without any consideration of how such systems will meet certain requirements, if at any time sewage disposal is found necessary. The City of Toronto is very much to the point. Here the sewers have been laid in any haphazard manner, each discharging locally at the nearest point to the lake from which the city's water supply is obtained. No care has been taken to separate storm and subsoil water from the sewage proper, hence it is now found that a large sum of money must be expended to first collect and arrange the general outfall of the system and provide storm overflows before any scheme of sewage purification can be adopted. While there may be some excuse for lack of forethought in the case of older towns such as Toronto. There can be no excuse for towns, which are at present springing, as it were, into municipal existence, adopting haphazard sewerage systems. It is now quite apparent to those who have watched the progress of city hygiene that sooner or later every community will be called upon to deal with the question of sewage disposal.

**Canada as at Present.**

Throughout Canada generally there has been up to the present no attempt of a serious nature to deal with the question of sewage purification. Throughout the Province of Ontario it is the common practice to discharge the raw sewage from towns into rivers and lakes, otherwise of a pure water character, which form the only source from which drinking water can be obtained.

Town after town on the banks of the St. Lawrence pours its raw sewage into the river, while these towns pump back the river water and use it for drinking purposes without any attempt even at filtration.

At the head of Rainy River the town of Fort Frances contaminates the water, and the various towns below drink the diluted sewage.

Niagara-by-the-Lake drinks the unfiltered water from the river, receiving the whole of the sewage of Buffalo and other towns on both sides of the river.

The Grand River, The Thames, and in fact all the rivers on which towns are situated, are sewage contaminated and totally unfit as water supplies for domestic purposes. The serious aspect of such a state of things is being brought more and more before the people every day. As populations along the river banks increase, and as people become more educated to the fact that the health of a community depends to a great extent upon a pure and unadulterated water supply, so we are beginning to understand that the problem of sewage purification is very much with us, and is a problem which must be faced by every community in the near future.

[This series of articles when completed will be bound in book form and may be ordered from The Canadian Engineer. Price, 25 cents per copy.—Ed.]

**Legislative Power.**

The Ontario Provincial Board of Health, with Dr. Hodgett's as the secretary, is doing a good work in bringing before communities this serious and disgusting state of matters. In several of the most glaring cases they have been able to bring sufficient pressure to bear to cause the authorities to act. But it is generally admitted that the laws on the subject require strengthening and more rigidly put in force. The Provincial Board of Health is ridiculously understaffed. Sewerage works and other works of a like character over which the Provincial Board have certain powers of administration are carried out practically without their knowledge and in many cases entirely against the principles of good hygiene recognized by that authority.

Some administrative system such as that adopted in Great Britain, where the Local Government Board are empowered to hold public enquiries into questions relating to sewerage, sewage disposal, and water supply, and insist on communities adopting certain standards is much required in Canada. Again, in Great Britain the powers granted to River Boards are extremely useful in preventing river pollution. They have the power to obtain in the law courts an injunction against any municipality or private person, who contaminates a water course, and inflict a fine sometimes amounting to \$1,000 a month until such time as the pollution complained of ceases.

The addition to the staff of the Board of Health of an engineer expert in public works problems with a staff of competent inspectors would tend to make the Board of Health more of a power for useful work in advising authorities, and keeping some check upon the work done. A systematic report upon the rivers of Ontario and the amount and degree of pollution from the various towns would be useful to the Board as a basis upon which much good work of a propagandist character could be effected.

**The Excuse for Neglect.**

Some will here say, "You cannot expect Canada to be on a line with Great Britain, Canada is a new country." We may ask the question, When is Canada going to cease to be a new country? Or because it is a new country, is that any reason why it should not be a clean country? Canada at some time or another will have to toe the line of civilization. Canada is no longer represented by isolated wood cabins. It has huge cities, prosperous and modern built towns, fed with electricity and every scientific improvement of a utilitarian character. Canada must also recognize that it has duties to perform in fathering its population, in providing every care for its good health, physical development and consequent happiness. This is where the principles of hygiene come in.

**Sewage Disposal an Essential Duty.**

It has been held in Great Britain, in Germany, in France and in other civilized communities that it is the duty of every community who borrows water for domestic purposes to return it in as pure a condition as it is possible to do so. In fact that no town has the right, simply because it exists on a river bank, to pollute that river with sewage to the detriment of its own inhabitants, and especially to the inhabitants below who in turn receive the water at their doorsteps.

**The Results of Neglect.**

The acknowledgment of this duty sixty years ago in Great Britain, brought the community face to face with a great expenditure of money. The rivers once clear and full of fish, even at such towns as Leeds, Huddersfield and Sheffield had become stygian ferments. fruitful beds of disease, most objectionable and nauseous. The evil had been done slowly and gradually. Rivers once beautiful turned into hideous sewers, their banks impossible to walk along, places to be shunned. Now the experience of other countries is writ large before us. The Rhine, the Danube, the Rhone, the Thames at London, the Clyde at Glasgow, the Forth above Edinburgh, the Tyne at Newcastle, the Mersey at Liverpool all turned into objectionable sewers costing millions of gold to re-purify.

**Where Canada May Profit.**

Is Canada going to profit by this knowledge? And, at the commencement, even granting the new country excuse,