

## ENGINEERING DEPARTMENT.

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## Durability and Town Streets.

The system employed by most towns in the Province is most extravagant, and would not and could not be maintained by wealthy communities. Large sums of money are expended each year in what is called repairing streets, and this money is expended each year without any thought of producing durable work, but as a temporary means of tiding over one year, to be repeated the next. In any public work permanency is the dictation of true economy. If a work is to last for a number of years it should be built in the first instance with this object in view, and the economic worth judged from the service rendered, durability and ultimate cost. The streets of a town are among its most important features and the most necessary part of its equipment. Close them up and a town would be ruined, yet no branch of a town's affairs receive less serious thought or more abuse and maltreatment. Each yearly appropriation for their improvement is looked upon as an annual allowance established by custom, defended by precedent only and supported by loyalty. No anxiety occurs as to the results produced by the expenditure, except an anxiety to know that the requests of the greatest number of electors will be satisfied, regardless of the actual needs of the town or proper plans and principles of construction.

The energetic merchant in a town recognizes the necessity of a well-equipped and well-designed place of business. In its construction he carefully estimates every detail as to duration, class and extent of business, and the capacity and design of building required to accommodate it. He purchases the most durable material obtainable within reasonable cost, and the most serviceable but economical fittings. To this end he applies his available means, and if his credit is good, obtains the further capital needed. The interest on the investment may be greater than his annual outlay on temporary appliances would have been, but the additional ease, regularity and volume of trade, adds many times to his general profits. It is in a similar light that street improvements should be regarded. Their benefit to the community should be considered. The requirements of each street should be carefully weighed. The plans and methods the most suitable should be studied. The length of time these streets will be needed should be a portion of the problem. When these things have been argued to a definite conclusion the results should be judiciously balanced by business-like methods of expenditure to meet these ends.

It is not pretended that street improvements cost nothing. But we find towns annually spending money for which they

receive no permanent benefit. In the great majority of cases, even pursuing the present system of annual grants, much better results should be looked for. But towns should know that the public streets are a very pressing object of expenditure. They should be willing to draw sufficiently upon their resources and their credit to obtain a class of improvements that will be a source of profit, not loss, to the town. I have seen nearly two miles of streets converted into handsome park-like drives for \$5,000. This amount of money, raised by the issue of debentures, can be paid, interest and principle, in ten yearly instalments of about \$600. Five thousand dollars may seem a large amount of money, but no citizen has to pay for two miles of street, nor for one mile, but for a very small fraction of one mile, for there are other citizens to the right of him, to the left of him, in front of him. If he owns a 66 foot lot his annual payment will be about \$2 a year. For this he gets the street in front of his property placed in a condition in keeping with a well-kept lawn. Not only so, but the entire street on either side of him is a source of service and pleasure. As a means of increasing the value of private property alone the investment is profitable. A man's standing is measured largely by the house he lives in. The character of a town is criticized from the same standpoint, and no town can afford to advertise itself as a place of neglected streets.

To urge and increase taxation, in however slight a degree, is seldom a popular task. People do not stop to consider what these taxes are for. Take away your schools, take away your town hall, take away the electric light, gas and waterworks; take away sidewalks, and everything which you pay for as a corporate body, and the economy of the expenditure will be more apparent. An individual property owner will improve his own residence, his own private lawn, his own place of business. There are certain public improvements as necessary to him as an individual as is the character of his house, and yet as an individual he cannot procure them. This is the object a community has in organization as a corporation, and ordinarily we find them economically and wisely constructing systems of waterworks, sewers, etc. With streets, however, their importance to the community has been overlooked, and the methods and means of obtaining them are correspondingly immature.

A street properly constructed and paid for in ten years is not a worn out property. The boulevarding, the grading, the draining and foundation should be as good as when first constructed. It will remain to keep the surface in repair. The ultimate cost of a street designed and paid for on proper principles is a measure of economy, and will in the end decrease taxation.

The council of Peterborough county has recommended that several townships join together in the purchase of a stone crusher.

## Sewage Disposal.

A partial chemical purification, is the method now being generally selected where any purification is necessary. The attempt thereafter is to secure as great a dilution of the resulting matter as possible. It is the removal of the remaining impurities, which is difficult and expensive. The efforts of inventors are directed towards this latter portion of the problem, so far with but little success at a reasonable cost.

The city of Hamilton, Ontario, after a consideration of the advisability of collecting all the sewage from the numerous outlets, and discharging it into the bay at one point far removed from the city water front, has decided that the first cost was too great and the future nuisance too probable to warrant the adoption of the plan. It is therefore proposed to collect the sewage at two points of discharge and purify it by chemical process, carrying the effluent to the waters of the bay, where it will be comparatively unobjectionable if the purification is not complete. The works at one outlet are now nearing completion and consist of the usual precipitating tanks, power house and sludge press. The chemicals are applied in a receiving well from which the sewage is lifted by centrifugal pumps a height of eighteen feet to the tanks. The sewage is turned into the works by a dam in the outlet sewer over which excess of storm-water is discharged without going through the works. On the line to the receiving well is a "sand pit," in which is deposited heavy debris, and where floating matter is screened out. A by-pass is in use when the pit is being cleaned. The works will take care of 500,000 gallons a day and cost about \$35,000.

## Width of Roadway.

The width of driveways on the majority of roads has already been fixed by sharp, open ditches, and where the road has been coated with gravel it will usually be found impracticable to alter it now. A gravelled strip, however, of eight feet in the centre is sufficient to accommodate the traffic on the greater number of roads, and a greater width than twenty-four feet between ditches will generally be found needlessly expensive to maintain. If roads were properly underdrained so that the open drains could be very shallow, a less width than twenty-four feet would generally be not only cheaper but better. A less width than eighteen feet is rarely advisable.

The manner of expending money appropriated from the general funds to make roads is a sort of legitimate election fund. The people expect it and the council have no other course to pursue. The character of the work done, is only temporary patch-work, an effort to keep in repair roads that were never constructed.