

**ENGINEERING DEPARTMENT.**

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**Wide Tires.**

At a recent meeting of the London City Council, a petition was presented by the ratepayers of several streets lately macamized, asking that a bylaw be passed providing for the use of tires at least four inches in width, upon all wagons, carts and vehicles used in conveying heavy loads of builders' material, coal, railway freight, etc., along macadamized streets. This by-law was not, however, to operate against wagons carrying farm produce.

Within the last few years a great improvement has been made on the streets of London. Richmond and Dundas streets, the principal business thoroughfares, have been paved with asphalt, and form possibly as good a sample of this class of work as there is in Ontario. About three years ago, a complete outfit of roadmaking machinery, including a rock crusher and a steam roller, was purchased, and the work of constructing macadam roads was commenced. A number of streets have thus been macadamized, and, with broad, well-made and nicely-kept boulevards, present a distinct improvement in the streets of the Forest City.

The request of the ratepayers with respect to wide tires is certainly along the right line, and should be granted by the council. It should not require the evidence of experts to convince the aldermen that a bylaw providing for the use of tires proportioned in width to the weight of the load, would be in the interest of the city. It is impossible to construct a macadam roadway which will withstand the wear of narrow tires under heavy loads. The injury is not only occasioned by the sharp, cutting, vibrating, jolting wheel, but also by the bursting and distorting effect of the much greater pressure brought upon the square inch of road. This pressure of these excessively heavy loads is greater than can possibly be produced by the weight of the heaviest roller used in the construction of such streets. They not only tend to make ruts, but form a line of traffic, bringing the wear constantly on a small portion of the road, instead of allowing it to be distributed over the entire surface. These ruts or wheel tracks hold water, which in itself is more injurious than the traffic, and, when combined with it, take away from the road every chance of existence.

The effect of rolling, in the construction of streets, is now well understood, and any who have watched its operation must be convinced of the importance of bringing a large weight to bear upon the materials, but so distributed as to create a bond between the particles of stone. This weight, distributed as it is, is easily carried by the structure without showing

any signs of wear, distortion or any form of destruction. But undue contraction in the width of the rolls under the same weight, would increase the burden to a point where, owing to the narrowness of the bearing, the materials would be displaced and the road injured. Wide tires roll and preserve the roads, but narrow tires are road destroyers.

Many of the loads referred to are from three to five tons in weight and should not be permitted on any roadway, not even asphalt, except on tires of at least six inches in width. If a change is to be made, the proper widths should be adopted. By doing so an object lesson in the beneficial effect of wide tires would be set in western Ontario. The property of the ratepayers who have shown such a praiseworthy desire to advance the interests of the city by undertaking such an expensive outlay, should be protected.

On the other hand, such a by-law would be a benefit to those against whom it would operate, for, on the average street of London, wide tires would be of easier draft than would narrow. It is true that on some rough and rutted roadways, narrow tires draw more easily than do wide tires, but with the long train of improved streets to be found in our cities, the traffic is along these, to which the narrow tire is a menace. The users of such vehicles are the ones most largely benefitted by the improvement of streets, but, unfortunately, as a general thing they offer little assistance towards securing them, evidenced by their opposition to changing their vehicles so as to preserve, as much as possible, roads after they are constructed. It would be encouraging to see the users of such vehicles in London join in the request of the property owners to have such a by-law passed; and to see further, when the change is being made, that the width of tire specified is ample.

In this it might be well to consult the experience of European countries where this problem has been carefully studied, and where the cost of maintaining streets and roads has been reduced to a minimum by the use of tires ranging in width from four to ten inches according to the use for which the vehicle is intended; and where axles are of different lengths so as to more perfectly distribute the weight over the road.

In Ottawa a movement to this effect was made and the results were satisfactory to the ratepayers and more satisfactory to the vehicle owners. Other towns and cities in Ontario will watch with interest the action of the London council in this matter, and those which are now contemplating a change will undoubtedly be influenced thereby.

Three by-laws were last month passed by a popular vote of the citizens of Galt; one to abolish the ward system, another to erect a new fire hall at a cost of \$12,000, and a third to purchase the electric lighting plant and operate it under municipal control.

**Cost and Profit.**

There is a most important feature of roadmaking which must not be overlooked. The road must not merely be a good road with respect to actual construction, but it must be good in view of the service it will render and the cost. A road must be looked at in the same way as any other investment—with a view to the profits. It was in this respect that the Romans failed. Some of their roads are still in use, after nearly two thousand years of service. They were strong and durable, but built at such a prodigal expenditure as no nation could afford—a prodigality which became characteristic, and eventually resulted in the decay of the empire. If we are to receive the greatest benefit from good roads, we must carefully weigh the service they will render with the cost, keeping the balance as much in favor of the former as possible. In England, in France, in Germany, in some sections of Canada and the United States where population is concentrated and largely urban, the limit of expenditure on the best of telford and macadam roads can be reached. The greater part of this continent, however, is sparsely settled, and there is as great, perhaps greater, need of farm roads adapted to simple requirements and circumstances, and costing \$1,000 or less per mile, as there is for roads costing \$10,000 per mile. In the building of the cheaper class of roads there is need of the greatest skill, for if the expenditure available is small there is the more need to carefully apply it.

**A Permanent Basis.**

By proper attention and repairs the life of a broken stone pavement can be made continuous. The surface can be frequently rolled, improving it greatly. It can be scraped and swept as are other pavements. When it begins to lose shape the surface can be loosened up by means of teeth attached to the roller, a light coating of new metal applied, and then rolled down as well as when new. It is by such means as these that broken stone roadways can be made more economical and satisfactory than any other for streets generally. This ease of renewal and repair is a property peculiar to macadam, which renders it most suitable for general purposes—that is, for residence streets. While the cost in the first instance may nearly equal that of cedar block, yet at the termination of the period when cedar block is decayed and has to be torn up and renewed, the macadam, if properly treated, is still in good condition. It forms a permanent basis, and its perpetuation is merely a matter of repair to be met by the general funds. Except under excessive wear or where in business sections a high-grade pavement is necessary, broken stone pavements, by the aid of a steam roller, are beyond doubt the most serviceable, economical, and give the greatest satisfaction to the taxpayer.