## Resources of Local Government Insufficient for Road Work.

With the passing of the toll road system the withdrawal of the general government from the field of actual road construction and the various state governments doing little or nothing, the only remaining active agent occupying the entire great field is the local government in each community and while these various local governments have done and are still doing the best they can under the circumstances, there is great need that their efforts should be supplemented, their revenues enlarged and their skill in the art as road construction increased.

The skill of the local supervisor was sufficient in primitive times, so long as his principal duties consisted in clearing the way of trees, logs, stumps and other obstructions, and shaping the earth of which the roadbed was composed into a litt'e better form than nature had left it : and the resources at his command were sufficient so long as he was authorized to call on every able bodied mal: citizen between twenty-one and forty-five years of age to do ten days' labor annually on the road, especially when the only labor expected was that of dealing with the material found on the spot. But with the changed conditions brought about by the more advanced state of civilization, after the rights of way have been cleared of their obstructions and the earth roads graded into the form of turnpikes, it became necessary to harden their surfaces with material which often must be brought from distant places. In order to accom-plish this, expert skill is required to pay for the cost of transportation, and machinery must be substituted for the hand processes and primitive methods heretofore employed in order to crush the rock and distribute it in the most economical manner on the roadbed. Skill and machinery are also required to roll and consolidate the material so as to form a smooth, hard surface and a homogeneous mass impervious to water .- Hon. Martin Dodge, Director of Public Road Enquiries at Washington.

# Sewage not a Source of Revenue.

Reference is sometimes made to the value of sewage as a fertilizer, and the suggestion is made that, instead of its disposal being a source of expense to municipalities, it should be a means of revenue. The matter has been a subject of experiment in a number of cases, but so far, we believe, without successful results. The difficulties to be overcome are better understood, when the composition of sewage is considered.

It is essential that sewage be removed from houses as quickly as possible, a d to this end a large amount of water is mixed with it, the removal being accomplished by water carriage. In any event, a large proportion of the sewage is itself made up of dirty water from kitchens, and factories.

The result of this intermixture of water is that the sewage as it reaches a sewer outlet is nearly all liquid, having only about 2 parts of solid matter in 1,000. Of these two parts of solids about one half is inorganic mineral matter, the other one half only being composed of animal or vegetable waste, such as is available for plant food, and even this is not immediately suitable. The great cost of machinery and equipment for separating the liquid from the solid matter, the cost of operation, and the comparatively low value of the product as a fertilizer, combine to made sewage disposal a matter of expense instead of revenue in spite of the thought and experiment which has been directed toward that end.

## Mortar in Brickwork.

Lime mortar is generally employed for brick masonry, particular y in architectural construction. Many of the leading railroads lay all brick masonry in cement mortar, and the practice should be followed more generally. The weakest part of a brick structure is the mortar. The primary purpose of the mortar is to form an adhesive substance between the bricks; the second is to form a cushion to distribute the pressure uniformly over the surface. If the mortar is weaker than the brick, the ability of the masonrp to resist direct compression is thereby considerably reduced.

If the strains upon a wal! were only those arising from a direct pressure, the strength of the mortar would in most cases be of comparatively little importance, for the crushing strength of average quality mortar is far higher than the dead load which under ordinary circumstances is put upon a wall; but, as a matter of fact in buildings the load is rarely that of a direct crushing weight, other and more important strains being developed by the system of construction. Thus the roof tends to throw the wills out, the rafters being generally so arranged as to produce a considerable outward thrust npon the walls; and for example, barrels piled against the sides of a warehouse produce an outward pressure against the walls.

In many brick constructions, the use of cement mortar is absolutely necessary, as for example, in tall chimneys, where the bearing is so small that great strength of the cementing material is required.

#### Electric Railways in Great Britain.

The policy of municipal ownership and operation of street railways is making rapid progress in the United Kingdom. Out of 213 undertakings, with a total mileage of 1,307, about 100, with a mileage of 689, belongs to the local authorities. The railways, owned by Birmingham, Edinburgh, Oldham and 24 other towns are leased, but the tendency is toward municipal operation. Birmingham is a good example of profitable leasing, but the corporation has decided to municipalize the service as the leases fall in. Edinburg, with total rentals of  $\pounds 57,660$  has a surplus profit of  $\pounds 5,230$ after sinking fund payments, but is having trouble with the companies.

Street railways are operated as well as owned by 41 municipalities and, as nearly all own their electric lighting supply, the introduction of electric traction is proceeding economically. The main objects of this policy are reduction of fares, symmetrical deve opment of suburbs, and the improvement of methods of traction, but when the investments required for equipment, construction account and the purchase of private companies have been liquidated by the operation of sinking funds, the railway service will be a large source of profit for the relief of taxpayers.

Glasg w had last year a balance of £117,388 from horse and electric traction, of which  $\pounds_{12,500}$  went to the common good, the remainder being required for interest, depreciation, general reserve and sinking fund. Live pool had a blance of £147,056, of which £16,045 was available for the relief of taxpayers. Leeds hat a gross profit of  $\pounds, 61, 797$ , and a surplus of £31,058, after payment of sinking fund and interest, £,21,058 being applied for the relief of rates. Sheffield had a working balance of £48,657, and  $\pounds$  10,000 was transferred from the surplus account in relief of rates. The gross rofits of other towns are :-- Bradford £6,989, Aberdeen £8.769, Blackburn £ 12,423, Dover £ 2,948, Halifax £ 9,076, Southampton £11,940 and Hull £23,000.

Manchester is in the transition stage, but will have in the course of a few years 150 miles of electric lines under municipal operation. London has a working balance of £102,861 from its northern and southern railways, but it is absorbed by interest and sinking fund payments. Huddersfield is the only town having a deficit for working expenses, although Dundee barely balances its account. About fifty new schemes for the municipalization of street railways are now in progress.

#### Electric Lighting in Paris,

A by-law to raise \$22,000 for municipal improvements in Paris, was voted upon and passed by a majority of 202 on Septemb r 36th. Of this amount, \$17,000 will be devoted to the remodelling of the electric light plant, described in a recent number of The Municipal World. The reason advanced in support of this step, one favorable to municipal ownership, is that the number of lights wired up has exceeded the capacity of the plant. In the town are 700 residences, only 13 of which are using electric light. The dynamo in use is of 1,000 light capacity, but over 1,400 lights are installed, chiefly in stores, offices and hotels. With this number of lights already in use, and the field of house lighting scarcely touched, there seems to be good cause for increasing the efficiency of the plant.