

MUNICIPAL DEPARTMENT

BRICK PAVEMENTS.

A paper on "Country Roads," which was prepared for the Engineers' Club, Cincinnati, by Mr. M. D. Burke, C. E., has been brought out in pamphlet form by Messrs. Robert Clarke & Co. The author before recommending the adoption of brick pavements in Avondale, obtained samples of the various paving bricks manufactured in the United States, and submitted them, as well as other materials, to severe tests. The results he obtained are remarkable, and are worth the attention of municipal engineers and road surveyors in this country. The following extract on pavements in general will suggest the author's method of treating his subject:—

The office of a street pavement is to provide a wearing surface, which shall fulfil the following conditions:—

1. It must present a secure and pleasant footing for animals.
2. It must have sufficient smoothness to render travelling in carriages agreeable and traction easy and as nearly noiseless as is practicable, for all descriptions of wheeled vehicles (excepting those provided with flanged wheels).
3. It must be of such form and material that liquids falling upon it will quickly flow from it into proper conduits, and must furnish no permanent lodgment for street filth of any kind.
4. It must be capable of sustaining without change of form any and all loads usually transported on public highways.
5. It must be reasonably durable, both as against the attrition of street traffic, and the destroying or dissolving action of the elements.
6. It must be economical, that is to say, sufficient comfortable use must be obtained from it to make it worth both the cost of construction and maintenance.
7. It must be capable of removal and replacement, or repair from failure at reasonable cost, and with materials and appliances within the control of the street repairing department.

A study of these conditions at once reveals the reason why the "paving problem" is of such an intricate nature that it has so long remained unsolved, as well as a cause for so many unhappy failures in its attempted solution.

For the first and second conditions, the dirt road in good repair stands without a rival, but it meets no other requirement, hence its use is restricted to race tracks, and country roads, which, like canals, are only navigable when the weather conditions are favourable.

For the second, third, and fourth conditions, the asphalt pavement on proper foundation appears to be better fitted than any other that has come into such general

use; but many persons say that it does not properly meet the first requirement, criticise it severely as to the fifth and sixth, and affirm that it utterly fails to meet the seventh.

Stone block pavements meet the first requirement, but indifferently; utterly fail in the second and third, when properly constructed; are better adapted to comply with the conditions of the fourth, fifth, and seventh than almost any other description of city street, but when a high charge for transportation is to be added to the cost of preparing the material they fail to meet the sixth condition.

Wooden block pavements meet the first, second, fourth and seventh conditions fairly well, when made of suitable materials well combined; but as they have been built in this country, have signally failed to meet the third condition, and have fulfilled the fifth and sixth but very indifferently.

The boulder or cobble-stone pavement has been with us so long, and has been treated so badly that familiarity with it has bred a species of contempt that is hard to overcome. It has become popular to consider it an all-round failure, yet it meets the first and seventh conditions fairly well, and so far as the material is concerned, it stands unrivalled in the fifth. In many of our cities where horse cars have been operated for the past twenty or thirty years, and the street railway companies are required to maintain the pavements within their tracks, the boulder pavements are still retained between the rails, while the residue of the streets have been paved with other materials, because in that position they are said to meet all of the conditions named, excepting possibly the second and third, better than any other substance yet offered for the wearing surface of roadways. This saying, however, does not appear to be anything more than an expression of opinion, which cannot be sustained by any process of reasoning. The cobble-stone can be given no definite bearing on any foundation; it cannot be held in position by any bond that can be given it in construction. It does not present a suitable surface for vehicular travel, or that can by any process be kept free from filth; yet it does not wear out, is easily restored if loosened from its place, and it does answer very well for street car horses to travel upon.

Broken stone or macadam as commonly used, of mingled limestone and shale, meets none of the requirements. If, however, it is clean refractory material, properly prepared and combined by rolling, it fulfils all the conditions except the third (and even that reasonably well), providing the traffic is moderate, and the repairing is promptly and efficiently done. It may be set down as an established fact, however, that when a macadamized street is dug into for any purpose that it is never properly replaced.

No one of these conditions can be entirely ignored, yet it is obvious that no pavement yet devised fully meets all of them. Could the first be ignored, it would be an easy matter to cover street surfaces with iron or steel plates that would fully

meet all the others, but plainly this cannot be done. The surroundings of the pavement and the extent and nature of the traffic to which it is to be subjected, must be considered in order to decide which of the conditions shall be allowed to determine its character. The first, that of furnishing a secure and reasonably comfortable footing for animals, can in no case be ignored, and in many instances must control all other considerations. Wherever the pavement is to be used as a thoroughfare for vehicular traffic at fair rates of speed, or when time, pleasure driving, or quietness become elements of importance, then the first and second conditions must be met, and other features may or may not be caused to yield to their requirements. But the preservation of life and health is the essential cause of business activity, hence the third condition, that of maintaining correct sanitary conditions, should never be neglected.

(To be Continued.)

The city which has not only the best water supply in proportion to its population, but also the largest water supply of any city in the world, is Rome. This is owing to the fact that the ancient Romans built enormous aqueducts which poured into the city, in the time of the emperors, 330,000,000 gallons daily, amounting to 160 gallons for each individual.

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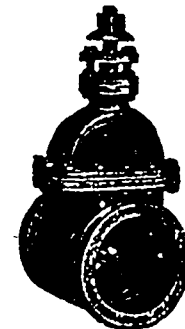
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