

ROADS AND PAVEMENTS

HIGHWAY DUST REDUCTION IN THE URBAN DISTRICT OF ALTON.*

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In the pre-motor-car period surface watering was generally found all-sufficient to allay the dust upon the highways; as traffic increased in numbers and speed the old-fashioned box-spreader watering van was superseded by the rotary sprinkler and other forms of sprinklers, which in the larger towns were motor propelled and where electric tram-lines existed travelling along them.

It was soon found that watering was not the solution of the dust difficulty, and its excessive use tended to injure the road surfaces, in addition to being the cause in several instances of successful actions for damages against local authorities arising through accidents to cyclists. On the coast towns lesser quantities of water were required owing to the use of sea water; possibly from this, experiments were made in inland towns with solutions of common salt and soda, but the use of deliquescent salts did not come to the fore until the introduction of the proprietary palliatives, Westrumite, Akonia, and calcium chloride. The tarring of road surfaces was also successfully tried by several pioneers, including Mr. Cass, of Farnham, and the present perfection in the use of a tarred matrix due to the efforts of Mr. Gladwell. The use of tar in road construction dates back to the year 1837. It does not appear to have been generally adopted; possibly the tar was not of the quality of that now obtainable, and the introduction of railways with continual decrease of use of highways led to its being required until the present age of increased road traffic.

Finding that ordinary watering did not cope with the evil, the author first tried the only other means at that time at his disposal, and had the main thoroughfares under his charge thoroughly swept by a rotary broom, and this gave better results in subsequent surface watering, but left much to be desired. In the year 1907 trials were made with Akonia and calcium chloride; with both these palliatives the road was well swept before use, the solution being laid by two applications with one day's interval between. Both showed to great advantage over ordinary watering, and in the following year the principal streets were treated with calcium chloride to the great satisfaction of the frontagers. The season was not good for economic results, as intermittent heavy rains reduced the effectiveness of the salts. Given orthodox summer weather it was found that the road being fairly well swept and the solution sprayed from an ordinary watercart, using 3 cwt. of calcium chloride dissolved in 300 gallons of water (this covered about 800 yds. super.) letting a day lapse, and giving a similar treatment on the third day, no further solution or watering was required for ten or twelve days, when, should there have been no showers, it was found necessary to damp the surface by a slight sprinkling of water in the ordinary manner, and four days later a weak solution, using 2 cwt. of calcium chloride to 300 gallons of water, and subsequently best results were obtained by spraying a weak solution every seventh day, and damping it four days after. The road surface after this treatment was in better condition than one heavily watered, but had a greasy appearance in winter, especially during foggy weather, which gave rise to several complaints. Unlike tar, it does not save any wear upon the road, merely maintaining a damp surface.

The cost of this particular season exceeded ordinary watering by 25 per cent., the calcium chloride costing £2 9s. 3d. per ton at station, while a hired horse and man for street watering were paid 7s. 6d. per day, water supply being under the council's control, and charged 6d. per 1,000 gallons. Taking into consideration the extra benefits derived and the less wear upon the roads, the author has no hesitation in recommending either Akonia or calcium chloride as being more effective and economical than ordinary watering. He believes that both these palliatives are now sold in granular form for use, spread upon the surface from a shovel, or mixed with road metalling previous to rolling, but of the results he has no information. In concluding this part of the paper the author begs to point out that for good results it is imperative to sweep all dust off the road-surface before laying deliquescent salts, as otherwise these are washed away with the dust in the first rain that follows, while spread upon a clean macadam surface there is less possibility of this happening. It is interesting to note no complaint was received in respect to injury to fishing waters.

In the year 1909 the Hampshire County Council voted the sum of £1,000 for the purpose of making one-half contribution towards tar painting granite-coated main roads and this was distributed among the various district councils. In the rural districts difficulty was found upon the point whether surface-tarring was a question of maintenance, in which case their rate could not legally be used towards contributing the remaining half of cost; expert legal opinion, however, has now decided that the parish rate can be used for the purpose, and this procedure is now followed instead of obtaining the money by public subscription. The author's district being urban, the original difficulty did not occur, and a contract was made with the Taroads Syndicate to spray 20,000 yds. super. with distilled tar at 7½d. per yard, the preliminary sweeping and subsequent dusting or sanding being done by the council's men. The machine sent was too large for the purpose, an independent engine weighing quite 14 tons hauled the machine, which was capable of spraying three-quarters of a mile half width of road. This undoubtedly would be excellent for long stretches of country road, but the roads treated had no alternative routes, and although in some cases the width exceeded 30 ft., in other parts it was 17 ft., and in addition to local stopping carts a large amount of through traffic passed over. In consequence, the wet tar could not be fenced off, carts and cycles repeatedly passed over, causing side slips to at least two venturesome cyclists, with the usual results.

The cost of this was 1½d. per yard, including the 7½d. paid the syndicate; the remainder covered the cost of sweeping by horse-broom and hand, also dusting over with clean road dust and sand. In this experiment the tar was not brushed in, and, as far as possible, clean road dust was used upon the surface with successful results. Sand was used only when rain threatened, and, heated over rough sheets of galvanized iron, proved very beneficial in absorbing wet tar, and to a great extent causing it to set quickly and preventing its washing down street drains. The trouble caused by tar sprayed upon a moderately fine day which melted again upon a subsequent hot day, sticking to carriage wheels, was overcome by sprinkling damp sand over wet patches from previous day's spraying. The amount of tar used was five gallons per yard.

The depressions in roads were filled with small material previous to tarring; but the results were not good, possibly owing to the water used in binding not thoroughly drying out.

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