

ABATEMENT OF THE DUST NUISANCE*

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THE abatement of the dust nuisance is a subject concerning which much has been written and in connection with which a considerable amount of valuable experimental work has been performed. The result of this study has been the establishment of certain well-recognized, standard principles in the application of the methods to which I shall refer. It is not my intention to deal with the subject in a formal way, but merely to outline something of our local experience.

The dust nuisance may, in varying degrees of efficiency, be dealt with by the following methods:—

(1) By removing the dust and loose material on the surface by the use of mechanical methods such as horse sweepers, scrapers, etc.

(2) By the application of a dust-layer in the form of (a) water from the ordinary sprinkler; (b) a deliquescent salt, such as calcium chloride, applied by hand; (c) a bituminous material, either as an asphaltic petroleum or a tar product (this method being the subject of this paper).

(3) By the construction of what is known as a dustless permanent road surface of some one of the many standard types (this, however, being outside of the scope of this discussion).

The application of any one of the above methods, or the combination of parts of each, depends upon the condition of the surface and the character of the roadway to be treated.

Horse sweeping, hand brooming and the removal of the dust by teams and wagons, does much to keep the roads free from the material which blows, after which the road may be further treated if it is so desired.

The second method, that of applying a dust-layer of some kind, is to-day perhaps the most generally adopted for dust abatement and road preservation. As ordinarily applied, however, this method is far from perfect, and we await with interest the discovery of some more effective and some less troublesome cure for the dust nuisance.

We easily see that road oiling has become a very efficient operation for dust prevention, but while we have tried many methods of varying our work here in Hamilton, I am free to say that as yet it has not developed that perfect state which you might be led to believe. The year before last we were using what is known as a light road oil. We were getting very good results from it, and in many cases were getting a pretty fair cover, and it was with the desire of securing a heavier cover that last year we used a quantity of medium road oil. You know what the season was like. It was cold and wet, and in fact we had to give up some of our oiling altogether because of the weather conditions. The oil being somewhat heavier than the oil that had been used in the previous seasons, we had much complaint from the people on the streets. We usually put screenings from our quarries on the oil after it has been distributed, but we found it impracticable to close our streets in order to keep the traffic off them for a sufficient length of time for the oil to harden. If we were doing a street at a time here and there, that might be arranged, but where we are doing miles of streets, and we have many miles of improved macadam roads in the city, it is not a feasible method of handling the situation.

Continued experiment over the past ten years has practically established the fact that the application of some

kind of bituminous material to the surface of the road is the most efficacious method known to date. Salts, chiefly calcium chloride, have been used, but so far as I know these have never gone past the experimental stage or have been applicable only on small sections of road. Calcium chloride is obtained as a by-product in the manufacture of soda, and is distributed dry by sowing over the road surface or spreading by shovel.

Calcium chloride is used in England to quite a large extent, the atmospheric conditions there lending themselves to the use of this particular material to a great deal better advantage than in this country. In fact, where it has been used here, around Boston, it was necessary, after the application, to water the roads in order to secure sufficient moisture to keep down the dust.

The salt, by its faculty of absorbing moisture from the atmosphere, dampens the surrounding dust-layer, thereby reducing the tendency to blow.

An experiment of this character was carried out by the United States office of good roads, under the direction of Logan Walter Page, in Florida, by the application of 1½ pounds of chloride per square yard of surface. After



Holton Avenue, Hamilton, asphalt road oil on waterbound macadam. Photo at end of season, 1917

several weeks of wear, the surface was always moist. No costs are given in connection with this method, so that comparison is impossible.

Inquiry as to the present price of calcium chloride in fairly large quantities shows that it is four cents a pound, so that for dust preventive purposes, on the present market prices, it is hardly an economic consideration.

The application of a bituminous material to the road surface is generally recognized as the method producing the most satisfactory results at an economic cost. The kinds of material used, and the different kinds of the same material, vary considerably. Certain principles, however, for the proper efficient use of these materials are outstanding if the best results are to be obtained.

The character of the road and the condition of the road surface are important considerations in deciding upon the particular treatment to be used.

It is generally conceded and results have proved, that as much of the loose material as is economically practicable should be removed from the surface of the road. I have read that under certain circumstances, some engineers have gone so far as to lightly sprinkle the road before the application of the oil, with the idea of removing

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