

How New York State Cares for its Roads.

The upkeep of improved roads, especially waterbound macadam roads, is a question which is engaging the serious attention of highway engineers in general and is a subject to which the Highway Commission of the State of New York has given considerable attention and study.

"New York began the construction of improved roads, mainly macadam of the waterbound type, about 1888," Mr. Bishop says, "and up to June 1, 1910, about 2,200 miles of improved road had been constructed of which more than 2,000 were waterbound macadam. During 1909 the commission constructed more than 100 miles of asphalt macadam by the penetration method and a few miles of brick highway."

"In the work laid out for 1910 there are at least 400 or 500 miles of asphalt macadam to be constructed by the penetration method and several miles of brick pavement. Up to January 1, 1909, very little attention was paid in this State to the maintenance and repair of highways, which were improved under State aid. Appropriations made by the Legislature from year to year were entirely inadequate to keep in good condition the roads that had been constructed or to justify the organization of a bureau or force whose sole duty it should be to care for and maintain the road after completion."

"Under the traffic from horse drawn vehicles the question of maintenance was comparatively a simple one and consisted mainly in the prevention of travel, the elimination of ruts and other minor repairs. The advent of the swiftly moving motor vehicles has materially changed the proposition and we are now confronted with a more serious problem."

"In passing the present highway law the Legislature very wisely provided for the maintenance and repair of highways improved by State aid and gave the commission of Highways ample authority to establish an organization to do this work. The commission, immediately after assuming office early in the season of 1909, organized, under the direction of the writer, a Bureau of Maintenance and Repair. Briefly, the organization in this department, as laid out by the commission, is as follows:—The First Deputy has charge of the maintenance and repair of roads after completion, and his whole time an attention is given to this one subject."

"The State has been divided into six divisions. In charge of each of these divisions is a superintendent of repair. This superintendent of repair has charge of all the work of maintenance and repair in his division, except the work of resurfacing, which is superintended by the division engineer who has charge of that division under the construction department."

"Each division is divided into sections comprising one or two counties, according to the mileage of completed roads in those counties. A highway inspector, who is a practical man in so far as we have been able to obtain such men from the Civil Service list, is assigned to each section. The completed highways are divided into patrols of from three to five miles each. A patrolman is appointed to care for the work continually on the patrol to which he is assigned under the direction of the highway inspector."

"The patrolman furnishes a horse and wagon having a capacity of about three-quarters of a yard. These wagons are painted and marked with the number of the patrol and the words, 'Department of Highways, Bureau of Maintenance and Repair.' It is the duty of the patrolman, under the direction of the highway inspector, to work continually on his patrol, carting screenings or three-quarter inch stone, to prevent ravel, repairing ruts, trimming the shoulders, cutting grass, opening the ditches, repairing guard rail, etc."

"The work done under the patrol system is one of the most important features of the upkeep of all waterbound macadam highways. The constant attention and the stitch in time that saves nine not only keeps the roads in smoother and better condition, but materially prolongs the life and postpones the date of resurfacing. I think I may safely say that the money expended on the patrol system is the best investment that the commission has made in the repair work in the State of New York."

"At the time the commission took hold of the road work in his State through neglect mainly due to insufficient appropriations, many of the macadam highways of the State had reached a deplorable condition. The work of getting these highways into good condition has progressed rapidly, and when the present contracts for resurfacing are completed the improved highways of the State of New York will undoubtedly be in good condition."

"The prevention of dust and the preservation of the road surface, especially on those roads subject to heavy motor vehicle traffic, was one of the most important questions which the commission had to solve relative to the maintenance of the highways already improved and what to do with the 2,000 miles of waterbound macadam which had been constructed in previous years and which were rapidly deteriorating and going to pieces under the combined horse drawn and motor vehicle traffic."

Mr. Bishop then describes the asphaltic oil treatment. It consists of previous careful preparation of the roads, the tamping of small broken stone into ruts and depressions after the application of oil, and finally the covering with a top dressing of fine gravel or screenings to the depth of half an inch. This method, he says, costs approximately \$425 a mile, experience indicating that each application will last three years."

"The incorporation of a heavy asphalt binder, either of residuum produced or natural asphalt fixed, is being studied carefully by the construction department," Mr. Bishop continues, "and the greater majority of roads constructed during 1910 will contain such a binder. The heavy binder of this class, with the penetration method of applying it, to date has proven successful on the roads constructed during 1909, and would seem to indicate that it is the proper form of new construction to meet the changed conditions of traffic."

"Few people realize the cost of maintaining and keeping in good condition unimproved roads of the waterbound macadam type. Roughly, it may be stated that the cost of maintaining such roads is approximately \$400 to \$500 a mile per year. Besides this cost of maintenance there must be set aside each year approximately \$600 per mile to resurface the road at the end of the life of the top course, making a total yearly cost of maintaining one mile of waterbound macadam highway

of sixteen feet width from \$1,000 to \$1,100 every year. The above, of course, does not take into consideration the interest on the money invested or the amount which it is necessary to set aside each year for the sinking fund to retire the bonds at the end of their life.

"It remains to be seen what effect the incorporation of heavy asphalt oil with the road during its construction or the applying of an asphaltic oil or other dust preventive substance to a waterbound macadam road after its construction will have in prolonging the life of the roadway. Only time will tell the story."

The University of Cincinnati, through Dean Herman Schneider, has originated a plan of co-operative industrial education, whereby a student studies one week in the university and then works one week in the shop or factory.

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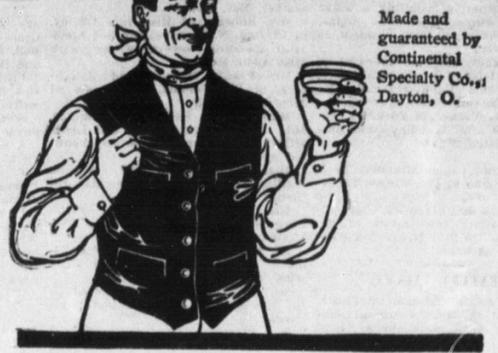
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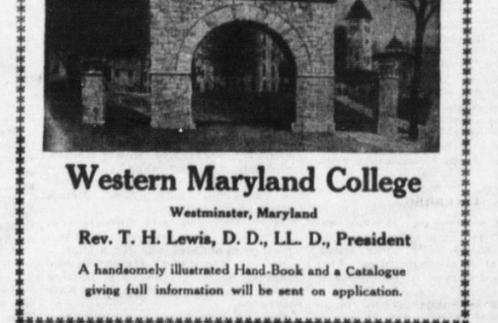
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