

THE OHIO STATE EXPERIMENTAL ROAD.*

The State of Ohio has been exceptionally progressive in the matter of investigating new and improved methods of road construction, as well as in constructing by means of the "state aid" plan. Such roads are conceded to be equal to any to be found in the United States. Intelligent, honest effort to ascertain the best forms of construction has characterized the state highway department for a number of years.



Section 1. Glutrin.

Ohio State Experimental Road.

In accordance with this principle of investigation it was decided in 1909 to construct an experimental road, upon which were to be laid sections of the various kinds of preparations for preventing dust and binding sections of macadam roads. This work was undertaken through the efforts of James C. Wonders, at that time highway commissioner, and an appropriation was made by the legislature to carry on the work. A section of old macadam road was chosen for the experiment.

In preparing for the work, letters were addressed to the different firms advertising road-building materials, and they were advised of the intention to build this experimental road and of its scope and purpose, and the hope was expressed that all manufacturers would show their confidence in their product by participating in the work. With few exceptions the firms addressed complied with the request and applied their materials on the road. The highway department paid for all labor and materials required in the work, but stipulated that each firm should furnish an expert to superintend its particular section, in order that the work should be constructed exactly according to the manufacturer's ideas. In addition to the above-mentioned work, a few sections were constructed using Portland cement as a binder.

The surface of the road was carefully leveled, and it will be possible to ascertain the amount of wear by releveling at various times.

In 1910 an official inspection of the road was made and photographs were taken to show the progress of wear on the

different sections. Since that time no inspections have been made by the highway department, though D. W. Seitz, who has been connected with the experimental work since its start, states that an inspection will be made this fall and at succeeding intervals until the results are fully determined.

At the present time the road shows a marked differentiation between the classes of treatments used, though the distinction between the different kinds of the same class of materials is not evident. It is possible at this time to state that certain sections are showing evidences of deterioration and that others are "holding up" to a degree which indicates that it will be two or three years before they can be divided so as to say which is the best.

There are seventeen sections in this experimental road, each section being of sufficient length to give a fair trial. In the description and comment that follow, the sections are taken up in the order in which they occur, the first three being north of a little village, the fourth and fifth within it, and the other twelve being south and in the open country. A nine-ton road roller which passed during the inspection made notable depressions in some of the sections.

Experiment No. 1—Glutrin.

This material was applied on a well-constructed, two-course macadam road that had been thoroughly rolled and bonded. Glutrin is prepared from materials produced during the manufacture of cellulose. It is described by the manufacturers as a "calcium-magnesium-ligno-sulfonate, and at the specific gravity of 1.26 at which it is sold, contains probably about 18.00 per cent. of glucosides." It is a viscous liquid, soluble in water, and in addition to its binding qualities, it is said to form a chemical action upon the road material that increases the flow of the binder, which results from the action of water upon the road metal.

The surface of the macadam was sprinkled with water, and while it was still damp, glutrin was applied by sprinkling with an ordinary road sprinkler. Two applications were made, a day elapsing between the first and second applications. The road was ready for travel in four hours after each application.

Except for a somewhat dusty condition the road is compact and solid and has much the appearance of water-bound macadam, though it is brownish in appearance. The application of glutrin each year would no doubt alleviate the one objectionable feature of dust. Photograph 1 shows this section.

Experiment No. 2—Standard Macadam Asphalt Binder.

The section of the road on which this treatment was applied was first prepared in the usual manner of treatment for the lower course of a water-bound macadam road. Crushed limestone, ranging in size from three inches to one and one-half inches, was then spread to a depth of about three inches. This course was then rolled with a ten-ton roller until it presented a fairly smooth and uniform surface. The asphaltic binder, which had been heated in a small tank at the side of the road, was then applied by means of hand sprinkling cans. About one and one-half gallons of the binder was used for each square yard of surface treated. Screenings varying in size from one-half to three-fourths of an inch were then spread upon the road and the roller again brought into use. Additional screenings were added where the binder appeared on the surface, and this work of rolling and adding screenings continued until no more binder appeared on the surface. On a portion of this section a second coat of the

*From Municipal Engineering.