When the tar is applied, the roadway surface should be bone dry. If the surface is damp, it will be difficult to secure a good bond. Distribution of the tar is accomplished by two methods, (1) flow by gravity, (2) mechanical pressure.

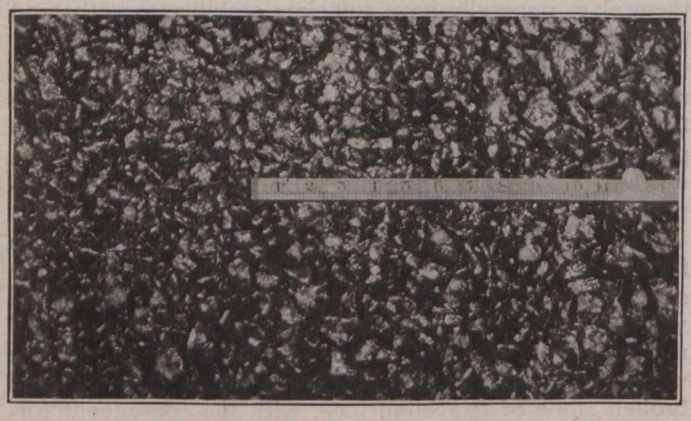
The use of gravity distributors has not been developed

Uneven Distribution of the Binder

to its fullest extent in America, in that the use of mechanical brushes, or the brushing of the material into the road by hand brooming, has never been adopted extensively. By brushing after gravity distribution, it is possible to distribute uniformly ¼ to 1/5 gallons of tar per square yard. In some cases, when the distribution is accomplished by hand brooming, the adhesion of the material to the road metal is as good as when the material is applied under pressure. The advantages claimed for pressure distributors are the following:—

Aid in cleaning the surface of the roadway; even application; distribution of small amounts per square yard; satisfactory adhesion obtained between the tar and the surface of a clean, dry roadway; and rapid, economical distribution.

As a general rule, from ¼ to ½ gallon per square yard is used for the first treatment, preferably in two applications. The amount applied per treatment depends upon the kind of tar, the character and condition of the surface, and the details of the method of application. For example, a smooth surface composed of large-sized, tough,



Surface of Tar Concrete, Class A, Before Application of Seal Coat

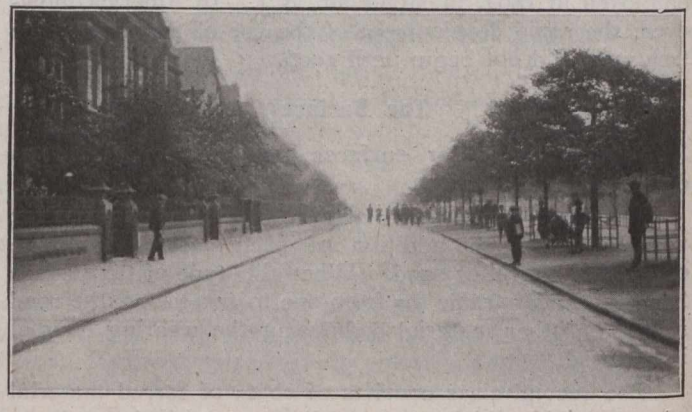
hard stone, well compacted by traffic, would require from 0.25 to 0.35 gallon; for a somewhat rough surface of stone having a medium toughness and hardness and recently resurfaced, it would be necessary to use from 0.35 to 0.5 gallon per square yard to form a satisfactory thin tar surface.

The superficial coat of tar is usually covered with either coarse sand, fine gravel or stone chips varying from ⅛ to ½ inch in longest dimension. Material containing clay should not be used, as disintegration may result by the emulsifying of the clay and water on the tar surface. The amount of sand, stone chips or gravel used per square yard depends upon the quantity and kind of the tar and the character of the surface of the roadway. From 5 to 20 pounds per square yard have been used satisfactorily for thin tar surfaces; 5 to 12 pounds for from 0.1 to 0.25 gallon of tar per square yard; 10 to 17 pounds for 0.25 to 0.35 gallon; and 15 to 20 pounds for from 0.35 to 0.5 gallon.

Cost Data—Under normal conditions, with labor and foreman at $2 and $4 respectively for an 8-hour day; teams, $5 per day; refined tar, applied, 7 to 9 cents per gallon; and top covering, $2 to $2.25 per ton, delivered; the cost of tar surfaces, using from 0.25 to 0.4 gallon of tar per square yard, will vary from four to eight cents.

Tar Macadam Pavements

Definition—A tar macadam pavement is one having a wearing course of macadam with the interstices filled by a penetration method with a tar cement.



Pitchmac on Princes Avenue, Liverpool

Foundations—Usually tar macadam pavements are constructed on broken-stone or gravel foundations. In cases where traffic conditions require rigid foundations, or where materials satisfactory for cement-concrete may be secured at a much lower cost than broken stone, cement-concrete foundations have been used and have been found to be satisfactory and economical. The more general use of cement-concrete foundations is advisable on trunk or other highways where traffic is likely to increase rapidly both in amount and weight. When it is necessary to construct a more durable type of wearing course than tar macadam, the cement-concrete foundation previously constructed proves a valuable asset and allows reconstruction to be accomplished economically.

Physical Properties of Road Metal—The weight to be given to toughness and resistance to abrasion depends primarily upon the traffic to which the pavement will be subjected and the details of the method of construction adopted. For example, for many highways serving as feeders to State trunk routes, a rock having a toughness of not less than six and an abrasion loss of not more than 6% would prove economical and satisfactory; but if used on State trunk highways subjected to horse-drawn or motor-trucks, rock having a toughness of not less than thirteen and an abrasion loss of not more than 3.5% should be employed. In cases where rock with suitable toughness and wearing quality is not locally available,