Tar and Tar-painting.—Experience of recent years has led to the settling down of much preliminary clamor about "dust-layers" to the very general use of coal-tar. This new demand has brought about a very substantial increase in the price of tar, and, with the continued extension of bituminous methods of road construction, the demand appears likely to exceed the supply, and so set a limit on this form of road improvement unless competitive processes are adopted.

The specially prepared tar for road surface painting used by the writer weighs 12.95 lbs. per gallon, or 173 gallons to the ton. This is heavier than the weights recommended in the Road Board Specifications, but the tar is found to make very satisfactory work.

Tar-painting is not usually very successful on roads with damp clayey sub-soils, in shady situations, or under trees. A dry sandy or chalky sub-soil is the most favorable for the work, and in these areas operations can be started earlier in the season.

The heavy, complicated, costly tarring machines of early tar-painting days have almost disappeared in favor of much simpler plant, and hand work—the latter giving the best results in this class of work.

For town work granite chippings 3/8 in. to 5/8 in. gauge make the best class of "grit" for covering the tar. Sand, though usually much cheaper, produces an increased quantity of mud and causes the tar-painting to tear up more readily under heavy traffic.

In the author's experience the amount of money spent on road tarring is about equivalent to the saving obtained in ordinary maintenance and wear and tear on the roadways, so that no increase on the total cost of highways arises, whilst a greatly improved surface is obtained during the summer and autumn months. Tar-painting gives most economical results on secondary roads, *culs de sac*, and other thoroughfares with light traffic, as, in such cases, the tarred surface remains in good condition for several years without repair, and very little attention of any kind is needed.

Repairs.—Systematic inspection of the roadways, and regular and prompt patching of depressions and "pot-holes" is very desirable, especially on motor omnibus routes. For this work the writer uses a light roller of the convertible tractor type, which is well adapted for the purpose.

Under modern traffic conditions the highways require to be regularly patrolled and repaired, much in the same way as a railway track.

Old screened road metal, of small gauge, is well suited for patching, as it consolidates quickly.

Ordinary macadam surfaces should not be patched with tar-macadam as, after a little wear, a most unsightly and intolerably bumpy surface results, owing to want of uniformity in wear of the variegated surface.

When recoating a roadway, the thoroughfare should be closed wherever possible, and the whole width of road coated and rolled in one operation. Work of this class done in half-widths is seldom satisfactory, as rapid wear invariably occurs at the central joint. In cases where this system cannot be avoided it is best, if possible, to first treat about two-thirds of the width, so as to keep the joint out of the centre of the road; but many roadways are too narrow to permit of this being done.

Weather conditions are among the most powerful factors influencing the wear and tear and deterioration of roads. Prolonged rain, and heavy traffic following the break-up of frost immediately succeeding a wet period are particularly destructive.

In town streets where a macadam surface has to be renewed about every two years, and patched frequently, a wood-paved surface will probably be more advantageous. A maintenance cost of 20c. per sq. yd. per annum is about the economical limit for macadam, and, from the point of view of traffic weight, a load of some 250 tons per yd. of width per day is about the maximum for an ordinary macadam surface.

Steam Rollers.—In the opinion of the writer the usual so-called "10-ton" steam roller is much too heavy for the majority of surface recoating work. These rollers, when loaded ready for the road, often weigh nearer 13 to 14 tons than 10, and frequently cause much damage to the new metalling by crushing and weakening it during the process of consolidation. In some cases metal is put on the hard crust of the old road, without preliminary scarifying, and rolled down with a heavy steam roller, with the result that the stone, being severely crushed between hard surfaces, is permanently damaged at the outset, and the serviceable life of the new coat thus sadly reduced.

For much of his work the writer uses what is described by the makers as a 7-ton roller, of the convertible roller-tractor type already referred to. This machine is found to be of the greatest service for all classes of work as well as for haulage. The small tractor-roller can be moved quickly from job to job, and can be converted to a tractor in about a couple of hours. This roller, with awning, water, etc., fitted up ready for work on the roads actually weighs 9.42 tons.

Mechanical Haulage for Municipal Work.—Whatever may be the views held as to the desirability of public highway authorities employing steam, petrol, or other motor vehicles for haulage purposes, the writer has been practically compelled to do so, on account of the difficulty experienced, during the busy spring and summer seasons, in procuring sufficient suitable horses. It is usually impracticable to keep, during the relatively quieter winter months, a full stud of horses sufficient to cope with all work during the busier period of the year, and such work as street-watering and road tar-painting greatly accentuates the variation between winter and summer haulage demands. The hiring of the surplus summer requirements affords one way out where the horses can be got, but horse contractors are fast changing to mechanical haulage, thus greatly limiting the supply.

Slippery Road Surfaces.—In these days of improved road surfaces, tar-painting, tar-macadam and such like, complaints are perhaps a little more frequent in respect of slipperiness, and requests for "gritting" or sanding are often made. The best plan to overcome slipperiness is to keep the surface as *clean* as possible, by removing (and washing off if necessary) stiff pasty mud which is liable to accumulate during the foggy, damp weather of the winter months. Gritting and sanding greatly increases the production of this stiff slippery mud, as the material is speedily crushed by the traffic. The application of grit, therefore, should be done as sparingly as possible, and cleansing of the surface should take its place.

Road Signs.—Generally speaking, there is room for improvement in road direction signs. Frequently they are so placed that an approaching traveller cannot read the sign without stopping, and even sometimes dismounting. The direction arm should be at the most favorable angle, the letters not less than 3 in. in depth, and the mileage stated in bold block figures to the nearest quarter. Strangers motoring long distances often find it impossible to quickly gather the name of the place they are passing through, and it would be a great convenience to have the name of the village or town boldly erected on the through