

TRACKWORK.

People of to-day have taken so much to travel that many times a year the whole population trusts itself to the mercies of the railway train. For the travellers' safety good track is necessary, and trackmen must be, like soldiers, ever on the alert, watching for loose joints, sunken ties, washouts and obstructions. The trackman's tools are his arms, and, like the successful soldier, he must have the most modern and reliable equipment to meet present-day conditions.

The autumn months are the most important for trackwork, and a roadbed in good condition in the autumn will give splendid service throughout the winter and come through the spring thaws and freshets in fine shape.

The ditches and drains and watercourses must be opened and cleared of grass and weeds to allow of quick run-off of the fall rains. Switches and switch fixtures must be trued up and adjusted and frequently re-spiked to be in condition for the heavy traffic of the autumn and to go into the winter in good alignment and adjustment.

Through the summer months new ties have been laid, and, in some sections the renewal of rails has been an important feature of the season's work. Usually, the re-laying has meant the replacing of 30-foot rails by 33-foot rails, thus eliminating every tenth joint. Not only do the new rails make a saving in angle-bars, bolts and nut-locks, but they give a better roadway and a safer track. Some are advocating a 50-foot rail, it being claimed that the expansion will not be more than can be taken care of, and that when the rail manufacturers have altered their equipment to suit the new length, it will mean a better rail for the road, and likewise a less expensive one.

In the laying of new track, the proper expansion joint to leave has hitherto been too much a matter of chance. Since so many of our accidents have been caused by the spread rail, the allowance for proper expansion is important. The difficulty in leaving the right space between the rails has been to secure foremen with the right kind of judgment in the matter. In addition to being provided with thermometers, the foreman must recognize that while at times the thermometer may register a certain temperature in the shade, the rail exposed to the sun may show a much higher temperature. He must study the weather conditions and notice carefully the variations in the temperature throughout the day. But absolute exactness is impossible. Much will depend on the foremen's good judgment.

Good trackwork means a saving in maintenance and in re-laying stock, and contributes more than anything else to the comfort of the travelling public.

INTERURBAN RAILWAY SERVICE.

The interurban railway lines have become such an important link between the merchant and the country purchaser, between the city office man and his opportunity for country quiet and country freedom, that we are surprised more attention is not given to the pushing of interurban lines in all directions from centres of population to farming and gardening areas and rest resorts.

The recent strike on one of the large steam roads of Canada created a situation which presented favorable opportunities to the interurban road for developing freight traffic, and as a result we find one of our electric roads hauling freight fifty miles from lake to lake, tran-

shipping it and delivering it at a railway division point at the same charges as the steam road ordinarily collected. Inland towns have delivered to them by standard gauge interurban roads such heavy freight as coal and lumber, and the merchant and the transportation man should not be slow to widen their trade horizon, but be alert enough to grasp the opportunities that interurban roads offer.

We hear a great deal to-day about the high cost of living, of the necessity for better markets. The interurban roads have one of the quickest and most satisfactory solutions. They bring districts twenty or thirty miles from the city within an hour of the city market. They make the market for quantities of perishable goods, which teaming over rough roads or delay in delivery make unsuitable for use. In this way they find a market for produce, and bring to the consumer, at a reasonable cost, his supplies. The frequency of interurban service makes it possible for the people of country districts to enjoy the entertainment provided where the population is denser, and they provide for the city dwellers quick and frequent service away from the dust and noise of city streets.

TRACK BALLAST.

In the past the question of the proper amount of ballast required on railroad work has been settled by the consideration of convenience and first cost. Theory has had but little to do with the proper design of railway tracks in connection with ballast.

The American Railway Engineering and Maintenance of Way Association have a special committee on ballasting, and one of the questions they are now considering is the proper thickness of ballast to ensure uniform distribution of loads on the roadbed. Two theories have been advanced as to the distribution of the load. One assumes the load to be distributed in pyramidal form, the sides of the pyramid forming an angle of sixty degrees to the base. Others hold that this distribution does not follow a straight line, but is along a curve. On either of these assumptions, if we consider the bearing of the load alone, it is a waste to add ballast beyond a certain depth when the spacing of the ties is decided upon. On the other hand, leaving out of consideration the rails, the unit load on the road can be reduced by increasing the thickness of the ballast under the ties and spacing the ties so that compression areas just touch and do not overlap.

In North America railroads have adopted the method of close tie-spacing, the minimum spacing being eliminated by the amount of room required for tamping. The introduction of a hundred-pound rail has led to the wider spacing because of the stiffer girder heavy rails furnish.

In connection with Canadian railroads it has been frequently remarked that the maintenance charges do not vary with the per train-mile, and that the per train-mile charges for maintenance vary somewhat with the character of the track and with the volume of traffic.

In consideration of this question of ballasting there are so many questions other than the bearing power that have to be considered that the question becomes complicated. Ballasting is frequently carried on as much for drainage as for the bedding of the ties, and the various materials, varying from fine sand to crushed stone, each have different bedding qualities.

Railway operation is becoming more a matter of plan and purpose than heretofore, and the increased attention which is being given to track work will develop more scientific methods of handling this problem.