From this table it will be seen that the great majority of railways are using a tie plate with some form of a flange, corrugation or claw which penetrate the wood of the tie, in preference to the smooth bottom plate. It has been claimed that a plate with a flange tends to break and check the tie, but the common experience seems to be rather to the contrary provided the plate is properly seated to the tie. There have been a great many cases put on record where ties with flanged plates have been removed from the track in a state of decay, but the

has a shoulder in order to relieve the spikes of the lateral pressure of the rail. At the other end of the plate the top slopes down slightly in order to drain any water off its surface; to give the plate a grip on the ties it has corrugations running diagonally across its bottom surface. They are of moderate depth, as shown in Fig. 7, with the idea of enabling them to compress and grip the wood fibres without splitting open the tie, and admitting water and dirt. The plate takes sufficient hold on the



Portion under the plate has been no worse than the rest of the tie, and in many cases it has been found to be in ever better condition. Advocates of the transverse flange claim that the longitudinal flange does not give the necessary resistance to lateral displacement of the plate, whereas the transverse flange will give a big resistance to lateral displacement and at the same time the flanges do not need to be deep enough to damage the tie. On the other hand, it is claimed that the longitudinal flange

wood surface to keep the track to gauge without pressure on the spikes.

In considering the relative merits of different tie plates the financial side of the question must not be overlooked. It stands to reason that the cost of the tie plate itself must not be so great as to negative any saving on the cost of the tie. It is difficult to put an actual value in dollars and cents on the services of the tie plate in keeping the track to line and gauge, but at the same



Fig. 7.-Top and Bottom Views of Sellers' Patent Tie Plate.

causes less damage to the ties, adds greatly to the buckling strength of the plate, and at the same time keeps the plate seated to the tie well enough to provide the necessary lateral resistance. It will be noticed that the Sellers patent tie plate is mentioned frequently in Table V. This plate is rolled from wrought iron, the top

time the plate should increase the life of the tie to such an extent as to pay for its own cost, provided it is properly designed and applied.

[The question of the preservation of ties by chemical treatment and the use of ties of other materials than wood will be dealt with in subsequent articles.—Editor.]