

are studied they are found to be peculiar and unlike those of any other joint now on the market. In any kind of angle bar, fish plate, or other similar joint, the stresses on the angle bar or fish plate are reversed when the load passes from one rail to the other, while in this trussed joint the stresses remain in the same direction. This seems to be the real reason this joint remains tight, while others loosen, and why no "working" of the part is possible. The constant spring tension tends to bend the ends of the rail upward, to bow the truss rail and also assist in holding everything tight.

Another peculiar feature is that the connecting member which bears the stresses, is attached to one part of the rail only—the bottom—and not to two

possible, to use other old fish plates, which are too small for the rail, or to provide plain flat bars of such width as to touch the web of the rail only. Such fish plates or bars are only required to hold the rails in line, as they carry none of the weight at all.

One very considerable advantage is that the same clips are used to make joints for any rail from 60 lbs. on up to 100 lb. and might be used on even heavier rail, although this has not been tried. The clip is so designed that the points will bend just enough to fit any angle the base of the rail may have, without weakening the yokes of the clip. They are used to make combination joints between rails of different sections, by shaping the shims and pillow blocks accordingly. This

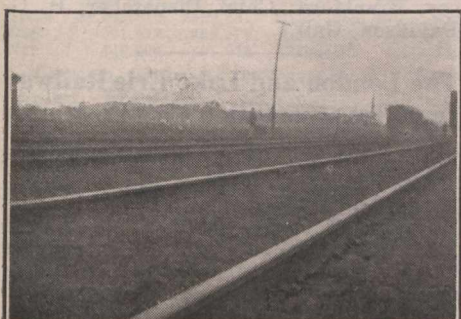
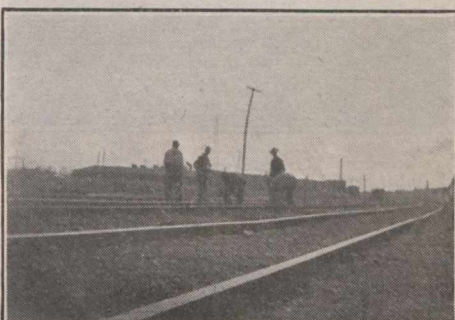
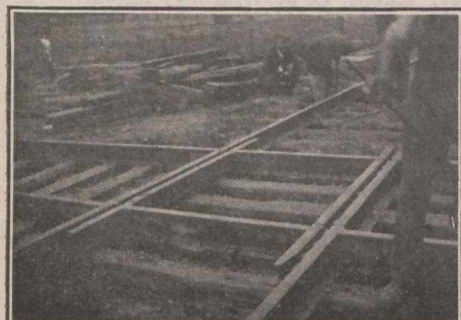
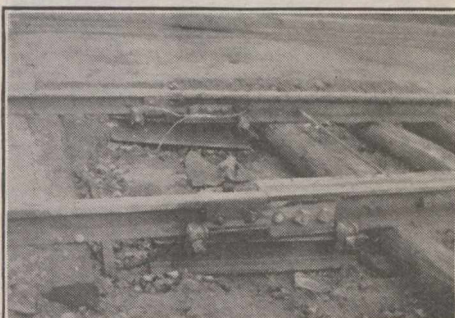
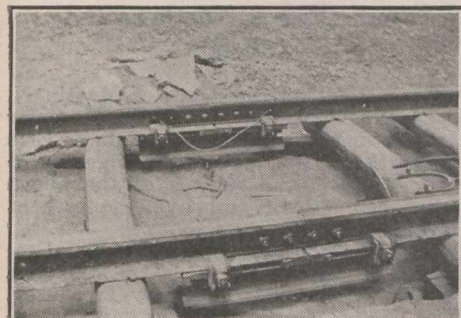
railway crossings. Truss rails from the scrap pile are put under the street railway rails, and between the ties of the railway long enough to extend under all the joints. The bases of the guard, and of the easier rails, are cut away with an acetylene torch, where it is desired to attach the clips to the base of the running rail. When the pillow blocks and the clip are placed so as to bind the several pieces of the running rail to the truss rail, the latter holds them as level and as rigid as in a new diamond. Two 60 lb. diamonds, crossing an industrial siding, were repaired in this way three years ago and then paved with brick. They have held so firmly that the bricks have not yet shaken loose, although single track street cars very frequently cross at full speed. Several new diamonds have been built by the London St. Ry. on this principal; two of them for crossing the G. T. R. main lines. In these two diamonds, 6 in. beam diamonds were made to take the place of the truss rail so that the steam railway rails would be held rigid, to prevent breaking where the street railway flangeways are cut. A feature of such diamonds is that when the steam railway rails become too badly pounded at these flangeways they may be readily replaced without having to renew the whole diamond.

When experimenting with these trussed joints some difficulty was found, due to breaking of the clips, but finally The William Kennedy & Sons, Ltd., Owen Sound, Ont., who make the clips for the London Street Ry., succeeded in getting such a steel mixture for them that they are now amply strong and reliable. Shop tests showed a pressure of 25 tons, necessary to have any effect upon such a joint, and successful test joints on 100 lb. rail under heavy steam railway freight traffic seemed sufficient proof of strength. Experimental joints put in three years ago showed no signs of loosening, so this method of repairing joints was adopted for this season's work, when over 5,000 clips have been used without any breakages.

The British Columbia Electric Railway's Position.

Geo. Kidd, General Manager, British Columbia Electric Ry., is reported to have said in a recent interview: "The company is in the peculiar position of having an increase in gross revenue, but a decrease in net revenue. Our traffic figures show that there are more people in the city. We carried 318,228 more persons in June this year on our city lines than in July, 1916, and 376,487 more persons in August than in the same month last year, over the same lines. This extra traffic increased our revenue, of course, but our expenses went up at even a higher rate."

Mr. Kidd pointed out that this anomalous condition, while existing for some time, has been especially noticeable since the recent strike, when the wages of all the company's street railway employees were increased materially. Together with wages, the increased cost of materials has made a much greater increase in operating expenses than the increased revenue which the company has received as a result of the slight betterment of conditions generally throughout the city. Unless some relief is afforded the company from the constantly accumulating deficit, as well as the continual increase in the cost of operating by the rise in the prices of labor and materials, has nothing but bankruptcy staring it in the face.



Trussed Rail Joint, London Street Railway.

Top row: No. 1. Straight or level trussed joint on new 80 lb. T rail. No. 2. Combination trussed joint, using 80 lb. T rail and 6 in. guard section.

Middle row. No. 3. New diamond, reinforced with truss rail and cast steel clips; 7 in. 80 lb. rail. No. 4. Loose and bent joint, 100 lb. T rail, in main line, and under heavy railway service.

Lower row. No. 5. Same joint as shown in photograph 4, after being lifted with a trussed joint. No. 6. Broken and loose 60 lb. diamonds, still good three years after being reinforced with truss rail and steel clips and paved.

parts, as in the case of a fish plate, where it is, in effect, attached to the top and to the bottom. Being attached to the bottom only, it is possible to raise the more severely worn rail any amount required. When this is done, the old fish plates are reversed from side to side, so that the notches worn in them will fit under the head of the rail that is not lifted. When being bolted on in such a case, the bolts are not drawn up as tight as possible, otherwise one of the rails might be lifted off the pillow block, and the whole value of the trussed joint would be lost. For this reason it would seem better, where

has been done effectively when 60 lb. 4½ in. rail was joined to 80 lb. 7 in. rail and is done in all cases where T rail is joined to the girder guard section of special work. No drilling is required for this joint, no special tools are necessary, and all the parts may be used over and over. This is quite an advantage, where it may be desired to effectively patch up an old track, which may have to be renewed in a few years on account of street paving.

One very effective use to which the same clip and mechanical principal have been put is in the reclaiming, for much continued service, of broken and worn