Crossed wires - and surviving the consequences : John Jesson is intrigued by some complex electrical engineering

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of the route the tramcar became derailed from the rack line due, it is suggested by local reports, to this being damaged – an obvious danger linked to it being mounted on the road surface. The vehicle could not be stopped on the gradient and ran downhill to come to a halt crashing into the base station. Fortunately the two crewmembers standing on the open front platform were only slightly injured, whilst the passengers seem to have escaped with just a fright. By this time the small company was struggling financially and lacked the means to fund the repairs to the tramcar, and the complete overhaul of the track that the Federal Authorities demanded before services could resume. Formal closure came in November 1912 when the concession was withdrawn. It is assumed that the free standing Riggenbach rack, that must always have been a problem to pedestrians as well as vehicles, was removed shortly after this, but local records show that the 25m long iron bridge that carried the tramway over the CFF main line remained in-situ until 1918.

The only photograph of the line and its tramcar that can be traced is in the Montreux Public Library reproduced here and this is linked to several local sources. The vehicle is shown at its upper terminus on the Avenue des Planches at the junction with the Avenue du Midi. Remove the tram and nothing else here has altered substantially for the buildings are still as shown, although some doors and windows have changed in 103 years! The car appears to be quite substantially built, probably why it was underpowered at the beginning. It is interesting to note that at least one of the many adverts that cover the bodywork was in English – for 'Macneil's Tea Rooms'.

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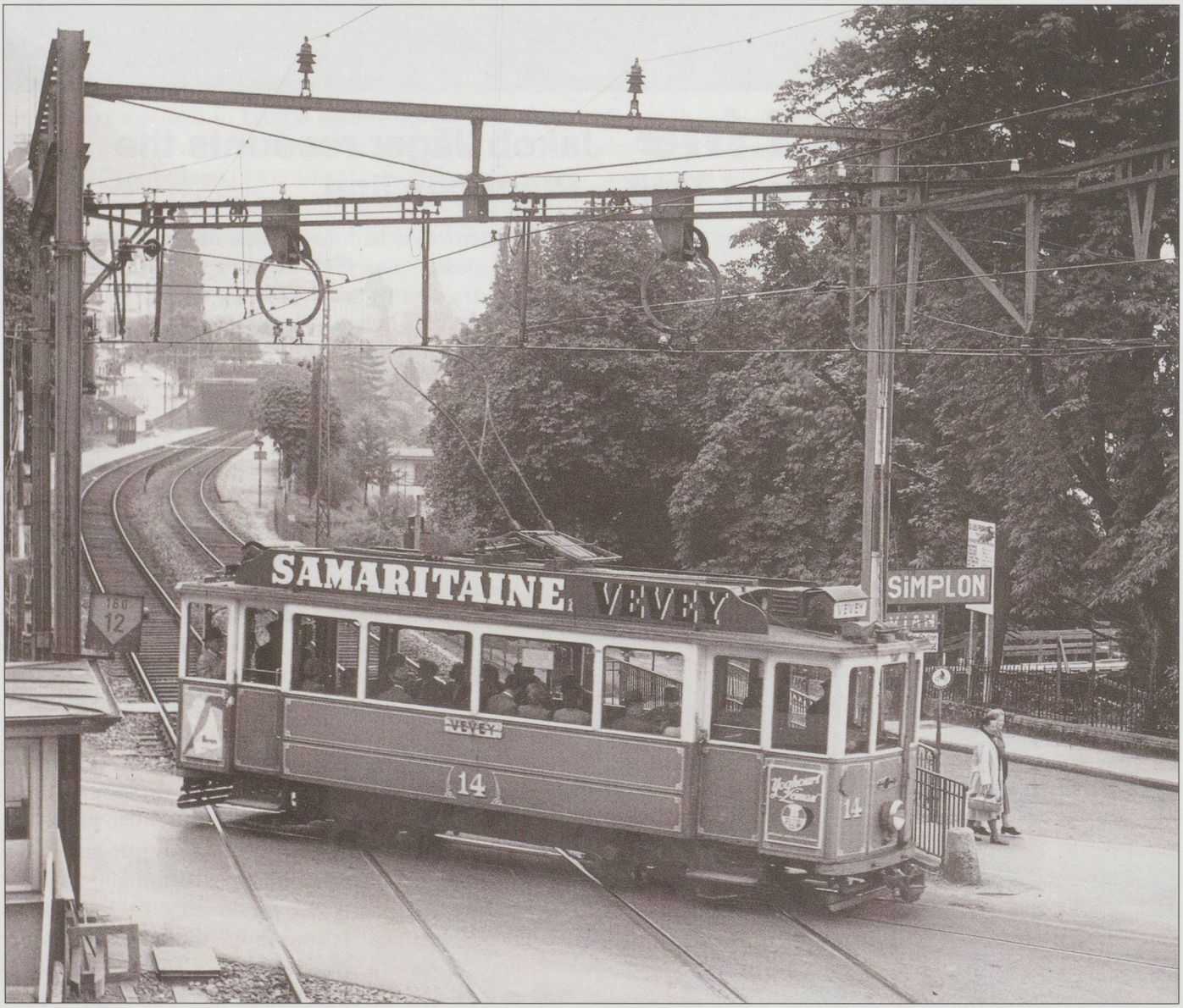

Tramways crossing railway lines are not particularly common, but this old photograph taken of a Vevey-Montreux-Chillon-Villeneuve (VMCV) tram at Territet, shows the problem that arises when the railway line is electrified. On the one hand, there is the CFF main line railway with 15,000V ac running through its wires, on the other the tram route that was electrified at 600V dc with its overhead providing the power. In this case some engineering ingenuity solved the problem by installing a moveable tram wire.

Across the level crossing, the tram overhead contact is not a wire, but four contact bars, each bent up at both ends to allow a smooth transition by the tram current collector. Two semi-circular hoops that are pivoted at their top ends surround each of the railway overhead contact wires. When the crossing is required for railway use, the hoops can be pivoted so that the tram contact bars are raised away from and above the railway contact wire. The four contact bars are each supported at one end by the semi-circular hoops and at the other by a long hanging support. From here on though the operation is less clear. The action of pivoting the hoop pushes one end of the contact bar away from the 15 kV contact wire and raises it above the level of the railway pantograph. The hanging support at the other end appears to be pivoted so that the bottom end (connected to the contact bar) is also pushed away from the 15 kV wire. However, as this hanging support is nearly twice as long as the depth of the hoop, the end result is that the end of the contact bar is dropped below its normal level. There seems to be some sort of operating mechanism connected to the hanging supports, but what this does is unclear. Although there is another known photograph of a tram using the crossing, it would be very helpful to see what the tram contact bars looked like when the crossing was set for trains. I have tried to show the complex layout on the accompanying diagram.

There is quite a lot of ironmongery involved in the whole set-up, something that would not please today's environmental lobby! The high-voltage lines for the railway are supported by a cross girder, itself carried by two masts on opposite sides of the road. There are two additional masts (one out of the picture) at the other two corners of the junction. These are connected to the other masts on the same side of the railway by other girders and these, in-turn, support a long diagonal girder, supported halfway by supports from the first cross-girder. There seems to be additional ironwork across the road at the left of the picture and this is probably for the operating mechanism. The small cabin on the left probably contains the controls.

The tramline at this point was re-electrified in 1913 to the system shown, when the complex original 1888 electrical system of the Vevey-Montreux-Chillon tramway was replaced at the time of its merger with the Chillon-Byron-Villeneuve tramway to form the VMCV. This was some eleven years before this section of the CFF main line through Montreux went under-the-wires in 1924, so this photograph must have been taken after this latter event.

The present day layout now has the main line running above the road, which dives under the railway with a short section of dual carriageway. Although increased road traffic flows were probably one reason for the grade separation of the crossing, no doubt maintaining the complex electrical arrangements added to the need for change. The trams ceased running in the 1950s but the VMCV's modern articulated trolleybuses still run under wires as they follow the old tram route. During the reconstruction the basic station seen behind the crossing disappeared, whilst today's Territet station is some 500m further east of the old crossing point.

It would be interesting to learn of any further electrified tram/train crossings similar to this layout. I am aware of the former crossing at Suhr where the metre-gauge Wynental-und Suhrentalbahn (WSB) crossed the SBB, but here the overhead wires were at the same height and were 'dead' for both operations, with trains 'coasting' through the short crossover with their pantographs lowered to prevent the potential for arcing. I believe that this is still the case at nearby Oberentfelden where both lines still cross on another WSB route.

I would like to thank the editor for his contribution to this article. The photo is in the Montreux Public Library Collection.