Portable Track for Agricultural and Industrial Tramways
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Animal, human and gravity powered tramways were very common in late nineteenth and early twentieth centuries. Enterprises generally had some permanent way, often with steam powered locomotives, and laid temporary track directly on the ground to collect materials from quarries and fields. This use of portable track continued into the trench railways of WWI and continues today in some of less developed plantation economies. This lightweight portable track forms the subject of this presentation, especially as it relates to cane railways.

Background

Bullocks working portable track laying into a Fijian cane field. Immediately in front of the bullocks is an incline laid on top of the permanent way which, coupled with a curved track section, will allow wagons to smoothly move in and out of the nearby field. The 4w trucks behind are loaded with portable track sections. It's quite possible that the permanent way is also constructed from portable track sections, bolted together and stabilised by the cane trash, etc.

Brad Peadon photographer.

Early catalogues indicate many sources of portable trackwork, either as complete tramways or components to be assembled on site. The agricultural plantations and mill systems of the late nineteenth century profited from developments arising from similar portable track use in the Welsh quarries and other European mining and light industrial use. They had similar needs and solved them by evolving from timber rails and gravity or human power to the use of animal power, more sophisticated track systems and eventually light steam power.

Thus by the time sugar cane, banana, pineapple and other agricultural enterprises started using tramways to simplify the collection and delivery of their products the manufacturers were able to supply both portable and permanent way track systems, rolling stock and small locomotives for use on the permanent way. Operating gauges varied from colony to colony, plantation to plantation, and sometimes even within the same enterprise.
Manufacturer's agents or import agencies travelled within the colonies promoting their products and expediting delivery, of systems generally sourced from the 'mother country'. Local blacksmiths and pioneer manufacturing enterprises soon copied the European or American track components, reducing transport costs and delivery time.

Portable railways are these, of which the rails and sleepers are fitted to ladder-like frames, the comparatively small weight and easy joints of which will permit their being laid down and taken up again at any time, quickly and without skilled labour (O&K General Export Catalogue Nr 600, c 1900, p 9).

Some of the more common suppliers included Robert Hudson Ltd (Leeds, UK) with Knox Schlapp (Q'land) Pty of Brisbane as a local agent, Decauville (France), Ferrostaal (French), Orenstein & Koppel (Germany), Krauss & Company (Germany) and the Gregg Company (USA).

**Historical Notes**

The Northern Star of 6 October 1883 describes a visit to the CSR's Homebush Mill and the Decauville supplied tramway system for collecting wholestick cane and delivering it to the mill.

Close to the mill, and conveniently situated so as to command easy access to the cane carrier, are a set of sidings on which about 500 trucks can be placed, so that if at any time it was desired to have a large supply of cane in readiness for the mill, space is provided for its storage. The sidings and all the lines in the vicinity of the works are permanent ones, the only apparent difference between them and the portable ones consisting in the fact that rather more care and trouble has been taken to level and prepare the ground for their reception, the materials of these lines being precisely similar to the portable portions.

The rails, which are steel, weighing 14 lbs. to the yard, are made in sections 16 ft. 4 in. long, and are securely bolted together to six sets of corrugated steel sleepers, thus each 16 ft. 4 in. length of line is one solid piece weighing about 3 cwt. The gauge is 2 ft.

Traversing the estate in various directions so as to tap the cane fields, are several miles of permanent way, and from these permanent lines branches of portable lines extend to the sides of the cane fields whence the supplies of cane for the mill are taken. In commencing operations on the cane fields, a line of rails is laid along one side of the field along the ends of the cane rows.

At present the plan adopted is to commence by sending sixteen cutters into the cane, each taking a row, and between the eighth and ninth rows the portable line is laid. Opposite the end of these two rows, a switch is laid down, and its short curve enables the portable line to be laid at right angles to the line which traverses the headland or end of the rows. In cutting the cane the cutters throw the cane from the outside rows towards the centre, so as to be convenient for loading the trucks.

When about a chain of the rows has been cut, a couple of men commences to lay the line—a process which is the essence of simplicity—the sections of the line being conveyed to the spot by the trucks. Two men take a section and place it between the rows, with the greatest of ease, making the end of it butt up against the switch or preceding section, and the ends of all the sections being fitted with very simple side and bottom clips or slots, the section is no sooner laid down that it fits its place; and, since it requires no bolt or fastening of any description, it is at once ready for traffic.

The artificially curved formation of the ground between the cane rows causes each section to bed itself firmly with a first-class bearing the whole length of the rails; the sleepers not so much being called into requisition as they would be on level ground.

As the cutting proceeds, the lines are pushed forward until the far end of the sixteen rows is reached. The cutters then return to the end at which they first began, and another switch being set sixteen rows from the first one, or the first switch being carried forward, and its place being supplied by an ordinary section, the work then proceeds; the men taking up the section of the
previously used line and carrying them to the new place a distance of from 60 to 80 feet, where the same process takes place again. In large fields it is common to see the work started at three or four places, the whole of the portable lines feeding the chief lines along the edge of the field, and all the trucks concentrating on one main or trunk line, whereon they are drawn to the sidings alongside the mill.

The Homebush Estate has 20 miles of the Decauville line, 500 trucks, and at present two locomotives, though we understand the number of engines will be increased shortly. The railway is, of course, utilised for bringing firewood to the mill, and the line runs along the edge of the boiler stoke hole. Another line runs into the sugar room, and takes bags direct from the scales, thereby avoiding a considerable amount of handling and thus saving time and money. Monsieur Decauville is to be congratulated upon the assured success of his line in Queensland, and we feel confident the use of the portable railways on sugar estates in this country is but in its infancy, and that planters who have means at their disposal will never have cause to regret investing in these lines for the better development of their properties.

Portable systems were used in other applications as well. A Rockhampton Morning Bulletin article of 14 January 1890 describes work on a West Melbourne dock extension using equipment supplied by the Bochum Union Iron Works of Germany:

The work must be greatly expedited through the aid of this portable railway. In such an undertaking as this dock extension it is necessary that the latest and best appliances should be used and in adopting this Bochum portable (miniature) railway the contractors have acted with forethought.

The plant which is assisting in this undertaking consists of the narrow 2 ft. gauge railway, with wrought iron rails rivetted to wooden sleepers. In the laying of these rails skilled labor is not required, …work in Germany having shown that three men can lay down a mile of rails in a single day.

Curves can be laid at a very sharp radius, and by the aid of a steam motor on a bogie frame a train can be brought completely round in a distance of 16 ft. The motor is light and handy, built to consume either wood or coal. The rate of travelling varies from five miles per hour, with a load of forty tons, to ten miles per hour, with empty trucks.

Portable systems evolved and eventually became important enough that a British Standard was developed by Robert Hudson Ltd. As Roy Link indicates:

[Portable systems] comprised pressed metal sleepering bolted to short lengths of rail. In its lightest form the panels of portable track were easily picked up by one man and relaid to suit. These light tracks were only suitable for wagons pushed by men or drawn by horses. Later, when small locomotives were introduced and loads became larger, a more robust form of semi-portable track was devised. This retained the fixed geometry and moveable nature of the earlier product but was stronger and heavier (Roy C Link, Industrial Narrow Gauge Catalogue and Handbook, c 1994, p T2).

**Track Types and Uses**

A BHP manufactured CSR portable straight section with 16’ 6” long rails riveted or welded to dished metal sleepers that barely extend beyond the rails. A sole plate is fixed on the end of diagonally opposite rails, with riveted fishplates and a packing strip on the other ends for a bolt connection. CSR standard 1/4, 1/2, 3/4 and full curved sections were similar with the outer rail 16’ 5” long and the inner 15’ 2 1/4” with six dished metal sleepers.
Other track components included inclines and point sets (switches) to permit the trucks to diverge from the permanent way or 'main' line, small turntables for turning trucks and wagons, various types and sizes of rail and sleeper profiles, alternative fastening types for securing rails to sleepers and between sections of track, right angle and diamond crossings, and portable level crossings.

Note the differences, particularly in the sleepers, between the two styles of portable track below.

Acknowledgements and Further Reading
My thanks to the various photographers, researchers and librarians who have provided images and information for this presentation. Further details may be found on the CaneSig web site (www.zelmeroz.com/canesig) and the accompanying Rail Heritage Image Collection, as well as my articles in Narrow Gauge Downunder and Light Railways.