

Goods Traffic on Cane & Shire Tramways 2

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from clinic notes provided by Greg Stephenson

Sugar Industry

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Sugar Industry

Sugar mills are self-contained factories situated close to the farms that supply them with sugar cane. Cane railways have long been used to deliver the cane to the sugar mill. The longevity of cane railways is in no small part due to their being an economical solution to the combined functions of collection, transport and storage of a relatively low value, low density bulk commodity.

Raw sugar is produced from milling and processing the sugar cane. Tramways have been used in the transport of raw sugar to the ports. Whilst this function has largely been superseded by QGR and trucks, the Hebert River region still sees the transport of raw sugar on the cane railway system.

Cane Trucks and Cane Bins: Traditionally, the cane was cut manually by gangs of canecutters using long handled broad blade knives. The cane stalks were cut at ground level and the leafy tops trimmed. The resulting wholesticks were loaded transversely across the wagons. Some of the earlier mechanical harvesters replicated the wholestick method of cutting. However the chopper-type has proved superior and is now used exclusively.

Mechanical harvesting commenced around 1960 - 5.3% of the 9.4 million ton cane crop was mechanically harvested in 1961. By 1974, 98.5% of a total crop of 20.4 million tons was harvested mechanically and, of that, only 1% was by wholestick harvesters. A few more statistics before we progress. In 1961, there were 44,810 rail trucks in use in the sugar industry, with the majority being of the wholestick type. By 1974, this had increased to 50,000 with nearly all of them being bulk bins.

Wholestick wagons are small, low, unbraked 4 wheeled wagons. They have small wheels - typically 1'3" diameter. The cut sugar cane is loaded transversely across the wagon. It is held in place by vertical stanchions on the wagon ends. A steel rope or chain was placed over the cane and tightened by a ratchet type winch.

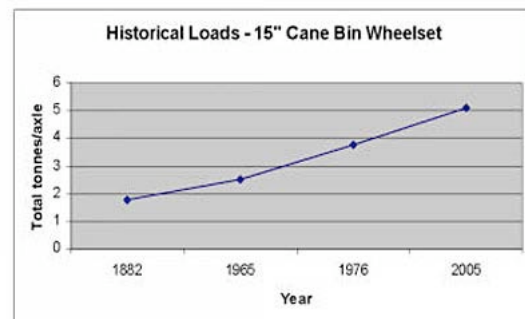
Given that there were over 40,000 wholestick wagons in use, there is considerable variation; not only from mill to mill but within the fleet of each mill. The wagons were made from either steel or wood. John Fowler marketed a steel version with curved angle iron ends. These typically appear at the CSR owned mills. Many were fabricated at the mills using

hardwood timber. Bundaberg Foundry also supplied quantities of cane trucks. Generally, they were undecked. However, some did have open transverse decking in the Bundaberg and Mossman areas.

Some of the first generation cane bins used the wholestick wagons as their underframes. The occasional wholestick wagon can still be seen in navy use where they are typically used for carrying sleepers. However, these have been largely replaced by cut down cane bins.

Over time, there has been an increase in the capacity of cane wagons due to a number of reasons including harvesting methods, locomotive capacity, bearing types, track standards, milling methods etc. This trend for loads to increase with time is shown in the following graph.

15" WHEELSET LOAD TREND



Source: Robert Johnson & Lino Santarossa, 'Way Forward' for Rolling Stock in the Sugar Industry

Recent figures from CSR show that across their 7 Queensland mills, they have 20,141 cane bins with an estimated replacement value of \$96M and an annual maintenance cost of \$7M. The table below gives a break-up of types of bins in use by CSR.

Bin Size	Typical Build Cost	No. of Bins
4 tonne	\$4,500	10,835
5 tonne	\$4,500	4,098
6 tonne	\$4,700	4,809
11 tonne	\$13,500	399
Total		20,141

Source: Robert Johnson & Lino Santarossa, 'Way Forward' for Rolling Stock in the Sugar Industry

The major introductions of diesel locomotives commenced in the mid-1950's with the 0-6-0 diesel mechanicals and diesel hydraulics. E M Baldwin and Sons of Castle Hill in Sydney introduced their bogie design around 1972 however these were not in regular use until the mid-1970's. CSR retired their fleet of Hudswell Clarke 0-6-0 steam tender locomotives at the end of the 1976 season. The last steam locomotives were withdrawn from active cane haulage at QUNABA and Millaquin Mills, Bundaberg in 1979.

The development of cane trains can be seen from the following information on trains operated by CSR.

Standard Train: 40t loco + 166 x 6t cane wagons + 30t brake wagon = 1,360t; Train Length = 655m

Slave Train: 40t loco + 120t x 4t cane wagons + 40t loco + 180 x 4 tonne cane wagons + 28t brake wagon = 1,620t; Train Length = 1,050m

So what does this mean to a railway modeller?

For a layout set in a period prior to 1960, cane bins would not have existed. If the period is set after the mid-1970's then only cane bins would be in use. Between these two periods, both wholestick wagons and cane bins would be in use. By the late 1960's, the mix could be about 50% of each. Steam locomotives would be used to haul either wholestick wagons or cane bins as would the smaller 0-6-0 diesel locomotives. It is unlikely that bogie diesel locomotives hauled wholestick wagons in any great quantity. Wholestick wagons were a thing of the past by the time remote controlled brake wagons were introduced.

During the transition period, a mixture of wholestick wagons and cane bins might appear on the one train. However, they would be marshalled with all the cane bins together and the wholestick wagons

together. It is unlikely that the one farmer would require a mixture of wagon types. The mill may have different methods of handling and unloading the two types of loads.

Raw Sugar Wagons: Raw sugar is the principal product of the sugar manufacturing process. Originally sugar was packed in jute bags. Where the sugar mill was located on the QGR, it was the major method for transport of raw sugar. However, at a number of mills, the sugar bags were manually loaded onto tramway wagons for transport to a convenient waterway where they were transferred to lighters for transport to major ports served by larger ships.

At some mills, wholestick cane trucks fulfilled this role early in the life of the mill. In the bagged sugar era, the Douglas Shire Tramway fulfilled this role for the Mossman Central Mill between Mossman and Port Douglas using largely 4 wheel open wagons. Mourilyan and South Johnstone Mill's sugar was delivered to Mourilyan Harbour by the Innisfail Tramway in 8 wheel bogie open wagons. CSR used 8 wheel bogie flat wagons between Victoria and Macknade Mills and Lucinda Point. Fairymead Mill purchased a number of 10tonne and 15tonne capacity 8 wheel bogie wagons that had previously been used in the construction of the Bunninjack Dam in NSW. It is believed these arrived in Bundaberg about 1929 along with the Krauss locomotive "JACK".

With the conversion to bulk handling of raw sugar, sugar "boxes" were added to the 8 wheel bogie flat wagons between Victoria and Macknade Mills. Later, underframes were purpose-built for sugar wagons. These mills are the only ones where raw sugar is currently undertaken by narrow gauge railway.



Ex Bunninjack Dam 15 tonne flat wagon at Fairymead Mill. Greg Stephenson, photographer.



Innisfail Tramway “H” wagon used for carting bagged sugar from South Johnstone and Mourilyan Mills to Mourilyan Harbour. D Sheehan, photographer.



New bulk sugar wagon underframe at Victoria Mill in 2000. Greg Stephenson, photographer.

On the Innisfail Tramway, 40 open “H” wagons had their sides and ends removed and were fitted with a steel frame and sugar box in 1960. At the time of the sale of the Innisfail Tramway to Mourilyan mill in 1977, there were a total of 68 “H” wagons with 12’6” sugar boxes, 30 “HH” wagons with 19’ sugar boxes and 12 “HHB” fitted with large sugar boxes and air brakes (See photo next page). Road transport has now taken over and most of these wagons were scrapped.

Ration Wagons: In the era before good roads and widespread use of motor cars, the mill tramways were also used to carry other supplies. CSR Victoria Mill (Ingham) operated a small 4 wheel enclosed wagon for delivering provisions, mainly meat, to the various cane cutters barracks in the district. This has been preserved by ILRMS since 1973.

The Mossman Central Mill provided a ration train to Saltwater, north of Mossman. It ran for free until 1911, when a charge of £1 was made for each trip, shared by those making use of it, but later the charge was dropped. From 1915, the ration train was run in the off season, on the Friday nearest the

full moon. In 1925, the ration runs were limited to the off season.



CSR Victoria Mill “Meat Wagon” preserved at ILRMS, Albion Park, NSW. Greg Stephenson, photographer.

W.A. Frost took over running the Saltwater ration train from 1927 using a converted motor truck to

haul a few cane trucks. Following failure of the motor, he used a series of small second-hand steam

locomotives, taking on contract cane haulage from 1931 to 1950.



In 2000, the ex-Innisfail Tramway bulk sugar wagons were stored at the former Goondi Mill site where they were later scrapped. Greg Stephenson, photographer.



Small rail mounted tank wagon (left) near South Johnstone, North Qld. Greg Stephenson, photographer.

Molasses: Molasses is the second product of sugar manufacture. It was transported in either 4 wheel or

8 wheel bogie track wagons. The 4 wheel wagons were similar to cane trucks and many were converted from cane trucks. Older tanks are more likely to have been of riveted construction and more recent tanks fully welded.

A principal use of molasses is as stock feed. At North Eton Mill, the farmers' rail mounted tank wagons were collected from their sidings on Friday afternoons and taken to the mill. An employee, working on overtime, filled the wagons on Sunday and they were returned to the farmers' siding on Monday morning.

Molasses is no longer carted by tramway.

Other Products: Mossman Central Mill due to its remote location used timber to fire the mill boiler and locomotives. Wholestick cane trucks were collect the cordwood from the cutting areas. Timber was also used to fire the mill boilers in a number of other locations.

A by-product of sugar-manufacture is the "mill mud" left of the mills' large rotary rollers. This is used as a fertiliser and was carted away in a variety of wagons with the typical "V" dump wagons being common.

"Trash" – the extraneous material in the cane – was collected and carted away in a variety of small 4 wheel open wagons typically of timber construction.

Acknowledgements

This series of articles was originally published for *Modelling the Railways of Queensland Convention 2006* as 'Goods Traffic on the Narrow Gauge Cane and Shire Tramways' by Greg Stephenson. Reproduced and edited with permission. Additional photos and some plans are available on the CaneSIG web site (www.zelmeroz.com/CaneSIG).