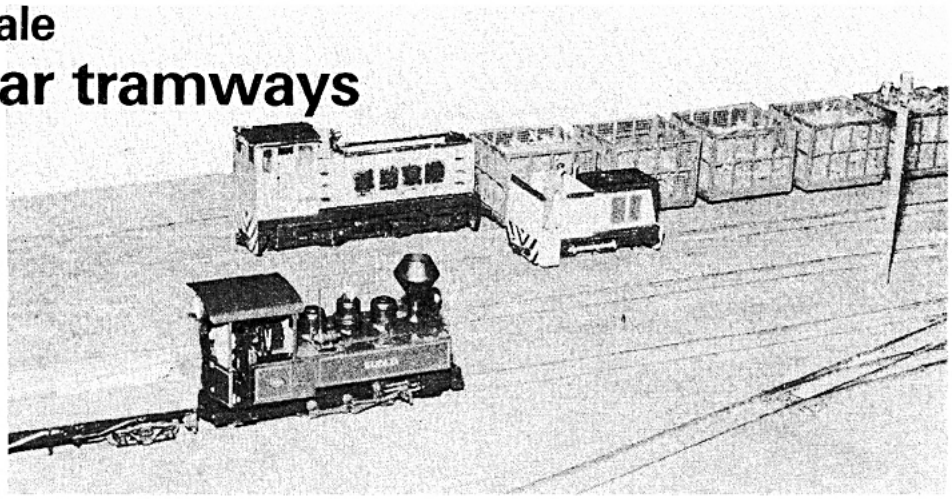
Modelling in 7mm scale
Queensland sugar tramways

by Chris Malone

Photos by S. Malone



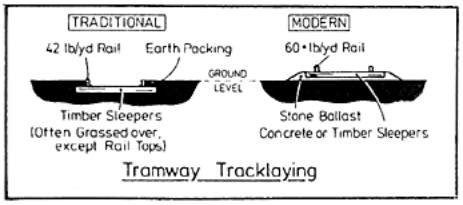
The mill yard: Fowler 0-6-0T 'Eudlo' waits in the loop while E. M. Baldwin Bo-Bo 'Oakwood' has arrived with a loaded cane train.

I HAVE chosen the scale of 7mm to the foot (1:43) to model the cane tramways of Queensland. Earlier attempts to model these tramways have been based on HO scale, 00-9 or HOn2½, but this does not allow the detail which is possible in 7mm scale or more importantly a large range of available locomotive mechanisms.

Layout Design

Many types of layout can be built to represent this prototype. A point-to-point design is however the most adaptable to modelling. Here a mill is located at one end of the layout with the furthest cane growing area at the other. Between these two extremities various scenes can be modelled and these can be further enhanced if the layout is built in around-the-wall fashion. As far as benchwork is concerned either modular or permanent arrangements work well. Owing to the large scale, modular layouts can be very successful if the trackwork is simple and one scene is modelled per module. The majority of my layout was built to a modular design and thus has seen service at exhibitions. Joints between modules can be a problem, however. Since re-building my layout last year, I have decided to turn it into a permanent layout, ignoring the joins as far as trackwork and scenery go. A backdrop would be the next consideration, with careful regard to viewing height etc. Skilful scenery planning can reduce the amount of painting needed on it. Turning to the baseboard, a flat shelf will usually do, as terrain is usually level. For river crossings and hilly areas, open frame methods can be used.

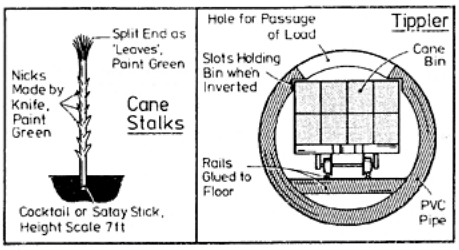
Unless you have a lot of room for a circular arrangement, the best type of mill layout to model is the straight line design. I was able to model this realistically in about 20 feet. This consists of a full yard and an empty bin yard separated by the tippler. Along the side of this you can add a loco shed, bin repair shed, industrial sidings and bulk sugar/molasses facilities. On my layout I also included a turntable but these are not found on the prototype.



Track can be either hand-laid or commercially bought (e.g. PECO 0-16.5). Both these methods can be used successfully to represent various tramway types, i.e. the traditional tramway with buried sleepers and only the rail showing in the grass or the modern look using stone ballast and resembling a standard gauge right of way. Both of these types can be modelled on the same layout. For reasons outlined in my first article, the second type is becoming more common.

Scenic features

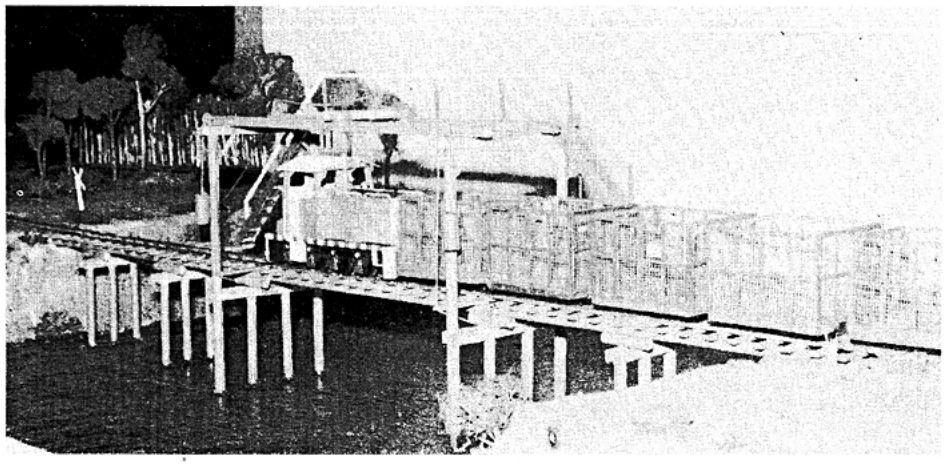
Crossings of large rivers and hilly ranges and even running down the centre of a street in a town are all features of the prototype which can be modelled. Some other ideas for scenes include outer depot facilities, road level crossings with flashing lights and a crossing of the Queensland Railways 3'6" gauge system. Centre lift bridges and shipping of bins across rivers by barge can also be modelled. One essential feature of such a layout is the mill tippler. This is made from a 90mm diameter thick PVC pipe the same length as a bin, with cutouts removed to allow the cane to fall out and a horizontal floor with rails added. This then sits on rollers mounted across a hole in the baseboard. The tippling is operated by a pulley arrangement, the bins' contents falling through the hole into a receptacle under the layout.



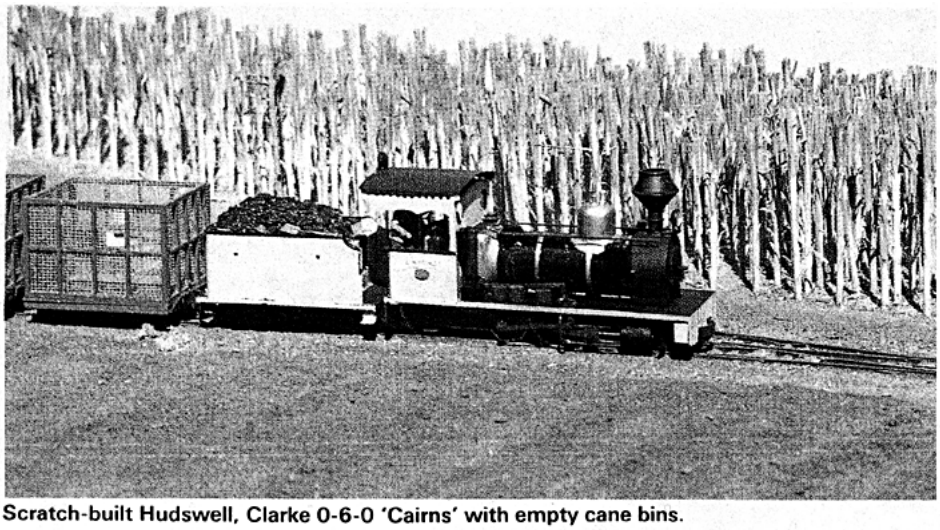
Scenery construction

Scenery construction on a layout of this type follows established modelling guidelines. There are however some new considerations, for example sugar cane fields. Although these can be modelled in HO scale using broom bristles, this is not good enough for 7mm scale. It is better that each cane stalk is individually modelled, and I have done this by crafting cocktail sticks, by knife. They are first cut into scale 7 foot lengths and then small peelings (leaves) are separated from the stalk. The top is then cut to represent the bushy peak. The end product is then detailed with green paint for the leafy areas. As this takes a bit of time it is best to apply production line methods, and to limit areas of cane on a layout. The 'trash' or weeds between the cane is represented by small leafy fragments of a 'casia' tree, which also provides the material I use to represent chopped cane. The small leaves do die and discolour, but can be replaced with more offcuts. The base of these cane fields is natural dirt, with the stalks 'planted' into holes drilled in the baseboard. Burnt cane is modelled along the same guidelines with a black instead of green appearance.

In this scale mill buildings can be very large and thus are better modelled by low relief methods. All structures on my layout are built from cardboard, extensively re-inforced by timber and then detailed. Corrugated-iron roofing is formed by passing aluminium foil through a specially built roller press, and guttering is also added. Interior detail can be featured in this scale, but in some cases it is not necessary. An interesting building to model when following this prototype is a Queensland high-set timber house. I have used one as a mill office, and they include features such as large verandahs, peaked corrugated iron roof and a battened enclosure underneath. Other things to build include locomotive water tanks (a long narrow tank horizontal to the ground on a high trestle stand), diesel fuelling facilities, and overhead light towers for night operation at the mill.



A Com-Eng 0-6-0DH crosses a centre litt bridge, based on a prototype near Nambour.



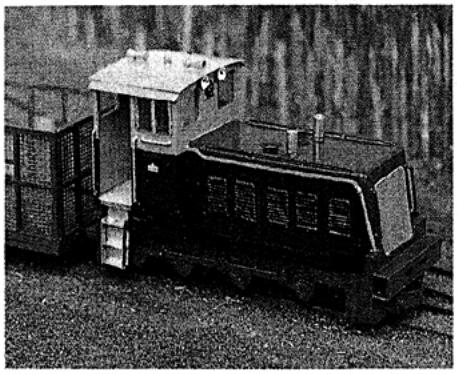
Scratch-built Hudswell, Clarke 0-6-0 'Cairns' with empty cane bins.

Locomotives

As no commercial models are available, all rolling stock must be scratchbuilt to some extent. When starting modelling, it is strongly suggested that you start with the easiest possible projects e.g. a simple diesel based on a commercial mechanism, and a few cane bins.

People wanting to model a modern version of this prototype will want examples of the main types of diesels running today. These would include a Baldwin B-B, a Clyde 0-6-0 and a Com-Eng 0-6-0, although there are many variations within these classes. The Baldwin could be built on the Athearn SW1500 mechanism and the 0-6-0s on the Lima BR 08 shunter. To take the former for example, the mechanism is modified by the addition of cast plasti-bond sideframes and other changes to fit the new body. A frame is then constructed from 3 and 6mm perspex sheet and onto this is built (in styrene) the engine housing and cabin. All locos should include interior detail, windows, handrails and sugar industry accessories. The 0-6-0s differ in the greater modifications needed to the mechanism. The cranks are enlarged by adding on brass extensions and extra rods and counterweights are added for the transmission jackshaft at one end. Once this is done the body is built using the same techniques as the Baldwin. Many four-wheel low cost mechanisms can be used under shunting locos as seen on the prototype. For example, a Malcolm Moore four-wheel petrol mechanical loco has been built on a Piko mechanism. There are still many other types of locos: E.M. Baldwin also has built 0-4-0s and 0-6-0s, and there are the early British Baguleys, Drewrys and Fowlers. There is also a huge range of secondary maintenance locomotives in use, for example Simplex's and Planets.

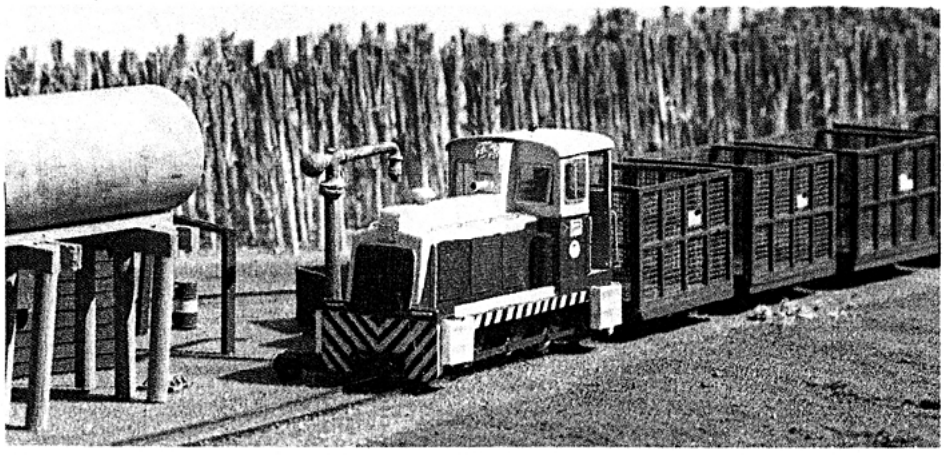
Steam locomotives are mainly scratchbuilders' territory, due to the lack of commercial outside frame loco mechanisms. Sugar tramways mostly used outside frame locos, with inside frame locos rare. One steam loco that has been built on a commercial mechanism is a 1900 Krauss 0-6-0T (inside frame) on a Rivarossi mechanism. A Shay loco, as used by one mill, has been built from a Roundhouse kit.



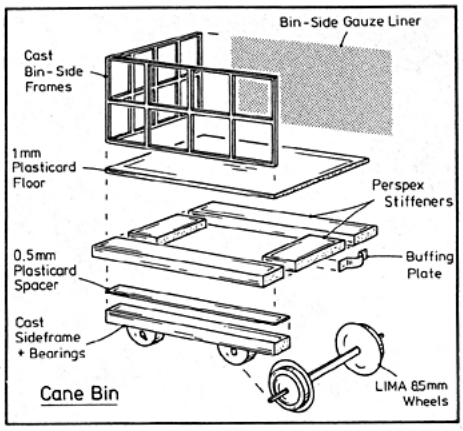
Pleystowe Mill Clyde 0-6-0DH 'Palms'.

Apart from these it is necessary to scratchbuild entire locomotives.

The only commercial parts used are wheels, axles, crankpins, gears (all Romford), and a good can motor. With a bit of experience and careful planning you can build a loco to the standard of expensive brass imports, with the main cost being time, not money. Also, as you have built the loco it will be easier for you to fix it if the need arises!



Clyde 0-6-0DH Proserpine Mill No. 7, built on a Lima 08 shunter mechanism.



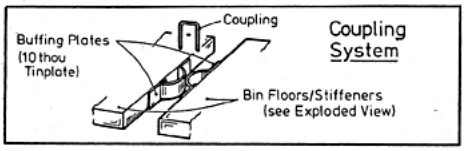
Rolling Stock

Cane bins are fairly simple to make and are best built using production line methods. I have built 50, using plasti-bond (body filler) castings for the side framework. To this is added flyscreen gauze to keep the cane in. All the sides are then stuck together on a piece of 1mm plasticard for the floor. Plasti-bond castings are also used for the sideframes, with brass bearings and 8.5mm Lima wheelsets added. This assembly is then glued to the underside of the floor with several pieces of 3mm thick perspex for strength. The end pieces serve as a mounting point for the buffers, a piece of shaped 4mm steel strip which is glued onto the bin with the top a standard 10mm above the rail. The bins are painted rust primer with black for the underside and buffing plates.

Other wagons and carriages will depend on the approach you take. Modern mills only have a small fleet of wagons for maintenance use, while historically many provided a common carrier service, with box cars, open wagons and passenger carriages. You may elect to do as I have done, to model a ficticious modern common carrier, thus allowing you to run cane, goods and passenger trains, even using preserved steam locos. Many types of wagons can be built, both bogie and four-wheel, to carry a wide range of commodities. Wagons can be built of either wood or plastic as well as by modifying commercial rolling stock: e.g. many OO open wagons are suitable.

Operation

Couplings—generally, the prototype uses a hook and chain method with large reinforced buffing plates. The problem was how to represent this in model form while still being practical to use. The solution was to use hollowed buffing plates and a U-shaped coupling between, placed with one leg inside each buffer. This system has been extremely successful and is cheap, strong, and resembles the prototype. A major advantage is that it allows, as in the prototype, the cane bins to be uncoupled and pushed through the bin tippler without



problems. Chopped cane is usually loaded into the bins on running sessions. This allows you to represent the tramway's part in the sugar cycle. After being tipped at the mill, the cane (made of small stalks from a 'casia' tree) is taken back to a loading point to fill empty bins. This operation is performed many times during a working session.