

# Broughton Vale Tramway

## Welcome

This HO<sub>n</sub>30 layout was built with the collective

talents of a small group of modelling friends, to encourage each other, and to demonstrate the possibilities of modelling narrow gauge railroads in a small space.

Broughton Vale Tramway was inspired by the small logging operations once so prevalent in Australia, Tasmania, and New Zealand between the late 1800s and mid-1900s. These small companies contributed much to the early development of many countries, and have an historic character all their own. It is this atmosphere, embodied in the homespun equipment and "make-do" attitude, that Broughton Vale Tramway seeks to recreate in miniature form.

## History

Australia has long had a history of small bush industries, and so it is with logging. From the early 1800s to the 1900s, much of the bush from Queensland down through to Tasmania echoed to the sounds of small sawmills and loggers supplying the timber required to build the country.

Near where I live, south of Sydney, New South Wales, there was once two sawmills nestled in the valley overlooked by Brogers Gorge. This area was, and still is, called Broughton Vale.

The nearby township of Berry played host to two, possibly three more sawmills. During their life, from the earliest sawmillers arriving in November 1825, through to the last mills closure in 1978, all of the mills in the area used bullock teams to get the lumber out of the trees and into the mill.

After being cut, the wood was then transported to either "Double Wharf" or "Hardwood Wharf", both of which were located on Broughton Creek, for the run by boat to Sydney to be sold. Around 5 miles south of Broughton Vale/Berry is the quiet



settlement of Kangaroo Valley.

Broughton Vale Tramway fits into this little part of history in the following manner. After years of land clearing for farms, and the constant operation of the mills, the supplies of cedar and hardwood in Broughton Vale were depleted.



The untouched timber in Kangaroo Valley was beckoning, but the then current method of hauling the timber by bullock team was not up to the task. Thus it was that one Thomas Edward Pogson, owner of the Broughton Creek Sawmill, built his Broughton Vale Tramway south along the side of the Great Dividing Range, from Broughton Vale to Kangaroo Valley.

Thanks to the staff at the Berry Museum for answering many questions about the local area during my search for a setting for Broughton Vale Tramway. Much of the information used and retold here is contained in the booklet "Historic Sites of Berry" by Mary L Lidbetter.

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## The Building of Broughton Vale Tramway

### The Inspiration

After 3 years of fun helping to build, operate, and exhibit my friend's logging layout, it was time to build a layout myself. This would serve as a testbed to try some facets of modelling I had previously avoided. Having also built a number of HOn30 models to run at exhibition, they really needed somewhere to "live" between shows.

### The Plan

HOn30 or HOn2.5 is HO scale, (87 times smaller than the real thing), Narrow Gauge which simulates track with the rails set 30 inches or 2' 6" apart. In HO scale, this distance comes out at close enough to 9mm, the same as N scale standard gauge track.

Bearing in mind that N scale is limited to a minimum radius of 9", an oval on track nicely fits in a 2' X 4' (600 X 1200mm) space. This is also a common size for sheet foam, which was used to form the subroadbed and layout base.

The advantages of this scale/gauge combination, when teamed up with the choice of a suitable prototype such as small time logging, are many. Prototypically short and small trains, tight curves and steep grades abound. Cheap access to good running mechanisms and track, suitable for easy kitbashing or scratchbuilding into narrow gauge items is another drawcard.

### Design Quirks

OK, that takes care of the mechanical and practical concerns. But isn't 2' X 4' mighty small, even for HOn30?

Not if care is taken in the planning of the scenic and visual aspects of the design. Much of this R&D benefited from the perspective and experience of the group including Bruce Parker, Mark Fry, and John Cheek.

Visually, the layout has been cut into three separate scenes by adding a viewblock down the centreline of the layout, and curving it around to form an end scene backdrop and alcove on one side.

Three scenes were then essentially built as completely separate dioramas, one depicting a small log camp, the other side showing the operations of two steam donkeys at a log loading site, and the end acting as a separator with a crowd pleasing curving trestle scene.



### Frame/Base/Subroadbed

With the plan and the design firmly in mind, it was time to start building.

First stop was the frame, base, and subroadbed. The frame consists of 1" X 1 1/2" (25mm X 40mm) pine which has been bolted together with 90 degree aluminum brackets. This frame is then laminated onto four layers of 2" thick 2' X 4' extruded polystyrene foam.

Experience on Swan's Crossing had demonstrated that this would provide a light yet solid, warp free base that was easy to carve away for below track level scenic areas. This foam surface also served as the sub-roadbed and roadbed for the Broughton Vale and Broughton Creek scenes.

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That's right, the track was laid right on top of the foam. To keep the layout off the ground, a pair of collapsible table legs were attached to a 11 1/2" X 3' 8" (290mm X 1150mm) long length of plywood.

This narrow "table" sits under the layout module in between locating blocks, to stop the layout from moving around. With just the legs attached the track height is around 3' 3 1/2" (1000mm), which is too low for most viewers.

On a small layout, the lower the layout is viewed, the easier it is to take in all in one go, and thus much of it's impact is lost. My eye level is at around 1550mm (5' 1"), so using PVC pipe, wood doweling, and T-nut leveling feet, leg extensions were built to raise the overall track level up. This technique has been used on many of Model Railroader magazines recent project layouts.

For exhibition work a second set of legs were also constructed to give a track height of 1350mm (4' 5"), which seems to suit both adults standing up, and children supported by their parents while standing on chairs/crowd barriers.

## Trackwork and Control

As mentioned above, one of the reasons Broughton Vale was built was to challenge the skills of our small modelling group. To this end PECO medium radius points were modified to closer represent narrow gauge units, and the track in between was handlaid, using code 80 rail stripped from PECO N scale flextrack.

The surface of the extruded foam baseboard was used as the roadbed on the Broughton Vale and Broughton Creek scenes. Raised roadbed wasn't a consideration because prototype tramways often did not worry about such extravagances as raised roadbed and drainage.

For the layout grades and elevated trackwork levels in the Woodhill Mountain scene, the current N scale modellers arsenal yielded a easy lightweight solution, Foamcore. This material is available at art stores for mounting photos and is essentially two stiff

layers of cardboard laminated to a layer of high density foam.

5mm thick sheets were cut to form several overlapping "cookie cutter" style layers, and hot glued onto the layout. In order to form the roadbed grades, the Foamcore roadbed sections were easily bent down to the surface of the base foam. Cavities were routed out of the foam with a hot soldering iron, and the Foamcore was hotglued in place, flush with the top surface of the base.

Care must be taken not to bend the Foamcore too severely, or it will "kink" and not form a smooth transition from level to grade.

For more details on Broughton Vale handlaid track, see the Dynamite Canyon notes.

The entire layout is wired as one electrical block, (it is only 2' X 4'), with all isolated spurs being taken care of by the power routing function of the PECO points.

All points are controlled by Caboose Hobbies N scale ground throws, some connected directly to the points, others linked by brass wire in tube buried just below the layout surface.

The throttle is a homemade unit on a walkaround tether. By using these systems, all need for any type of centralised control panel has been eliminated.

All of the control electronics for the smoke machine, lights, fire circuits, and sound system are mounted under the Broughton Vale scene.

Power for the entire layout is supplied by a 16 VAC powerpack.

## Locomotives

Tramway logging operations can usually be summed up in two words, Short and Small.

So it is with the Broughton Vale motive power roster. Geared locomotives and logging tend to go hand in hand, so at any time on Broughton Vale, you may see Class A Climaxes, or a Class A Shay, battling the grades and torturous curves with loads of logs bound for the mill.

Modelling in HOn30 allows use of the current crop of smooth running diesel and

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steam mechanisms for all manner of conversions, and at exhibitions Broughton Vale plays host to a wide variety of motive power built by Mark Fry, John Cheek, and myself. Many of these "lokiies" are scratchbuilt to depict examples of the typically indigenous prototype motive power conversions such as Steam traction engine based locos, Fordson tractor conversions, and even the failed "Harmon" loco from the Tyers Valley Tramway in Victoria.

### Rollingstock

As with the locos, the theme is Short and Small when it comes to the cars running on Broughton Vale Tramway.

My first ever scratchbuilt HOn30 cars were a set of flatcars that still see service hauling logs and skidders in the bush around the valley. Since then, a fleet of disconnected log cars has appeared, which are based on Micro Trains N scale Archbar trucks. These look good running in groups of three or four pairs, especially on an empty train being pushed across Broughton Creek towards the log loading area at Woodhill Mountain.

While Broughton Vale only owns a railcar for transporting the loggers to work each day, at exhibitions passenger service is supplied in the form of "Puffing Billy" prototype passenger cars, which have been ably scratchbuilt by John Cheek from styrene.

### Structures and Scenery

The majority of the structures on the layout are in the Broughton Vale scene, and around half of those were ably built from the ground up by Nicole.

This was her first ever attempt at structure modelling.

When shopping for kits to put on Broughton Vale I kept in mind the following principle. "Think not of what it is, but what it could be turned into".

When coupled with a general knowledge of a prototype you wish to replicate, useful bits and piece can show up in the most unlikely places. As an example, the Sawmill and Blacksmith's hut demonstrate two completely

different styles of model construction.

The sawmill started life as a Keystone Danby sawmill kit, but was heavily redesigned and scratchbashed from prototype photos when it was discovered to be a model of an enclosed mill. In the Australian bush, buildings like sawmills were rarely enclosed, and they were often only blessed with enough corrugated iron to cover the expensive machinery.

On the other hand, the blacksmiths was a European style plastic kit of a log drying deck that was rescued from the scrap box. With scale planks plating over the plastic walls, and some scale wood and corrugated iron replacing the "plastic trying to be thatching", it forms a eye catching little scene.

I owe much of the scenery work on this layout to Angela and Mark Fry. With Angela's eye, and Mark's alternative techniques, the layout was totally scened in the space of around three weeks prior to it's first show. This included a number of "workshop nights", (More coffee anyone?), and even a few days off work to complete. (Mark, I owe you much!).

Around 95% of the layout's scenery is natural materials, from dirt collected from around Broughton Vale itself, through to preserved lichens, mosses, and ferns.

Australian scenery has a completely different color spectrum to United States or European scenery, and many of the commercial products available just don't look right. By using natural materials from the local area, we were able to easily replicate the distinctive colors of Australia without having to mix up 15 different shades of green.

One of the major design goals of Broughton Vale was the elimination of any use of plaster in the scenery construction. It's messy, heavy, and fragile.

Through use of latex caulking, kitchen cloth type towels, and "Soft rocks", that challenge has been met.

### Broughton Creek Structures

There is really only one man made structure

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in the Broughton Creek scene, but it's a BIG one. The trestle across Broughton Creek (see photo on first page) was scratchbuilt to a general prototype design sketched in a exercise book. This was very much a case of building a bridge to fit a space.

Two quick tips from building structures, especially big ones like trestles or large buildings:

Tip 1: Make 3 copies of your plans. The original goes into your layout file for future reference, Copy 1 goes next to the work bench for visual reference, Copy 2 is on the workbench for direct measurement, and Copy 3 goes to Tip 2.

Tip 2: Build on glass. Obtain a sheet of glass, (offcuts from glaziers are cheap, but get the glazier to smooth ALL the edges, they can be SHARP!), and place the 3rd copy of your plan under it. Building on glass will ensure all of your assemblies are flat, and glue such as CA won't permanently stick your model to the smooth surface.

The deck was built first by laminating five strips of 12" X 12" wood together. The centre strip was not continuous, but consisted of scale 6' long sections on 14' centres. The 14' span length was chosen because:

- 1 It looked like a reasonable length for the proportions of the trestle and,
- 2 Prototype trestle designs were matched to the average length of the equipment they were to carry. Wooden trestles were designed so that at least two spans would support the weight of any one car or loco at any point. Broughton Vale's locos and cars average out at around 22' long, and this length would ensure that no one span would have to take the entire load of a loco or car on its own.

Due to the track geometry on the end of the layout, this trestle was built with a straight centre section, and curves at each end. To form this compound curve deck, the "straight deck" above was cut into sections with angles at each end of each 14' length.

Three 14' sections formed the Broughton Vale end, (nearest to the camera in this shot), two 14' sections formed the Woodhill Cutting end, and these two curves were linked with a 28' straight section in the centre.

The resulting deck was both strengthened and detailed by the addition of styrene "Joint plates" on either side of each joint. They are the rusted steel plates with bolts visible above each upright bent.

The slow task of gluing individual sleepers, cut from scale wood, to the bridge deck was then completed. This included installation of two extended sleepers to accommodate a track gang refuge on the inside of the curve about half way across.

The track for this section had already been temporarily laid with N scale flextrack to check the minimum curve radii and other such operational considerations. Before it was taken up to allow the creek to be carved out of the layouts foam base, the tops of the rails were soldered together with scraps of rail. This formed a sort of curved nickel silver "ladder". When the deck sleepers were all dry, the plastic sleepers were stripped from the flextrack "ladder", and the "ladder" was spiked and glued to the deck.

Once all was in place, the scrap rail was desoldered from the tops of the running rails, now safely mounted on the trestle deck.

Result? A compound curved trestle deck, with individually laid rail which is perfectly in gauge and in alignment.

With just about everything above the deck done, it was time to tackle the bottom bits.

From one full size plan of the tallest bent, five standard bents and one span bent were patterned. To get the varying heights, six "baselines" were drawn across the plan where the bottom of the bent had to end up. The bents were then built from the top down to the appropriate line.

The bents are constructed from 12" X 12" scale wood with 4" X 4" cross bracing. These sizes are not based on any particular prototype measurements, just approximations based on the overall proportion of the structure, and what was in the wood scrap box.

When all of the bents were completed, the major assembly began. This step was taken slowly, because the final appearance of the

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bridge was at stake.

Turning the deck assembly upside down, and working from the centre bent out, two engineer's squares were used to support each bent while they were glued in place. Placing the bents was easy, because each bent had to go directly above, (or below, depending on which way you look at it), each span joint.

Once finished, the trestle looked something like an oversized wooden hair comb. The bents were very fragile at this point, because they were only supported by the joint with the deck.

The final step was to start from the centre, both along the length and width of the trestle, and carefully glue each individual brace in between each bent. This step was time consuming and took a lot of patience, but the end results were worth the effort.

### Broughton Vale Structures

When your layout is as small as Broughton Vale Tramway, you quickly realise that space is at a premium. This can cut two

ways. If you let the lack of space hinder your planning, the frustration can be intense. (Many modellers have exercise books full of trackplans designed to fit in double garages, basements, and barns, that may never happen). On the flipside, If you accept the limitations and, instead of packing EVERYTHING in, try to model a few structures as well as you can, the results can be very rewarding.

Small space modelling offers the builder in all of us the chance to make every model an eyecatcher, because the time you DON'T spend building LOTS of general things can be put into modelling a few specific things to the best of your ability.

When it came time to fit a sawmill into this alcove, it was obvious even a small one was going to be a squeeze. The Keystone Danby mill is one of the smaller kits available, and fit right in. However, it did require extensive rebuilding to replicate the "open air" architecture of so many Australian Bush industries.



An extension, built from the remains of a junked European brewery structure, was also added to the rear, and acts as a drying area for the freshly sawn lumber. The breakdown of the sawmills construction ends up as follows:

Deck: Keystone Danby mill with additional styrene leg crossbracing and scratchbuilt underfloor winch for log transfer table.

Roof: Individual trusses scratchbuilt from 12" X 12" scale wood.

Trusses assembled into roof with stripwood battens.

Additional Nut/Bolt/Washer and wire truss rod detail added.

Overhead pulley drive system scratchbuilt from wire and small HO horse drawn farm cart wheels.

Log carriage/saw: White metal Keystone parts from kit.

Boiler: cardboard tube with Light Emitting Diodes (L.E.D.s) in firebox for fire circuit.

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Seuthe Smoke generator in top of cardboard tube simulating chimney. Styrene boiler bands and rivet detail.

Donkey Engine: Styrene scraps with HO<sub>n</sub>3 wheels as drive output pulley and HO whitmetal steam locomotive driver as flywheel.

People are Preiser figures painted by Nicole.

By the way, the limbed tree supporting the end of the sawmills centre beam was a "happy accident", some prototype examples of which were recorded in period photos.

The Blacksmith's, on the other hand, was a case of, "I've got the details, where can I put them?". Trying to "see in my mind's eye" what a Australian bush machine shop/blacksmiths would look like always

resulted in a caricatured version of reality.

Then, one day, out of one of the scrap buckets came this log drying deck. With a little imagination, it's stepped roofline and overhead framing suggested a small shed and lean-to combination.

So, off came the plastic roofing, to be replaced with some scale 12" roof beams, and some scale corrugated iron. Over the plastic molded planking walls I glued scale 1" X 12" planks. Then to finish the whole thing off, a general wash of India Ink/Isopropyl alcohol mix was applied to weather the wood, and a mixture of "Oil Wash" and chalk was applied to simulate the rust on the iron roof .



The bunkhouses in Broughton Vale were all kitbashed from kits by Master Creations and John Rendall. They were reasonably easy to build and look good. Tissue paper was applied to the roof panels to simulate tarpaper, and the roofs were modified to be removable for future detailing.

One of the bunk houses in this scene already has full interior detailing, including double bunks, clothing and storage chests, and a pot belly stove. The other two are awaiting these details.

The centre bunkhouse is equipped with a potbelly stove built from a plastic 44 gallon drum. This contains two L.E.D.s connected to a fire circuit.

The left bunkhouse is equipped with a small yellow L.E.D. shaped to represent a hurricane lantern.

Surrounding the bunkhouses are details such

as woodpiles and wood stacked in 44 gallon drums, buckets, and other tools. There is also the two loggers enjoying a beverage after a hard days work, and four of the camp children playing around the tree to the left.

The Loco water tank in the foreground was scratchbuilt from O scale plans of the Los Pinos/Cosumnes Lumber Co water tank in a copy of the *Narrow Gauge & Shortline Gazette*. It features a positionable water spout, and detailing down to the water level indicator and associated pulleys on the end of the tank.

The coal stage was scratchbuilt from the cab sides of the Bushmill Climax after a particularly nasty accident at an exhibition.

The camp dining room, water tank, and kitchen (see next page) were ably scratchbuilt by Nicole from wood left over from the John Rendall kit. Believe it or not,

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these structures represent her first ever efforts at scratchbuilding.

Again, with such a small scene, opportunities to add detail abound. Exhibition goers never get tired of finding Sadie, the mill foreman's dog, trying to scam some food from the camp cook. The menu board on the kitchen wall is removable, and gets changed regularly during the course of an exhibition, just to keep the viewers on their toes.

Check some of the other photos of this structure on this site, and you may see some

of the other menu boards.

Basic weathering on these building was achieved by treating the wood with Oil Wash prior to assembly. Plastic and metal window frames and detail parts were painted a basic grey or black as was appropriate, and then colored with various combinations of Humbrol Wine Red, Tamiya Sky Grey, Dark Earth, or Buff, pencils, and rust colored chalk powders. All of these were mixed with Oil wash.



### Woodhill Mountain Structures

While Woodhill Mountain appears devoid of recognizable structures such as buildings, it took just as much time to plan as the Broughton Vale logging camp scene on the other side of the viewblock.

See that tall tree trunk front and centre (bottom picture above)? It is called a spar

tree and was set up by loggers with overhead pulley systems powered by a steam winch. Fitting such a large item into a small scene takes a lot of planning.

On the first plan of Broughton Vale, the spar tree was to be located just out of shot, to the left on an outcropping. The theory was that this would disguise the "sneak off" track between the Woodhill Mountain and



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Broughton Vale scenes by making it a log loading spur. Thankfully I was given some good advice by Mark Fry, to the effect of, "It would be such a waste to not put the spar tree in the centre of the scene, thus enabling it to be modelled fully rigged and guyed".

The scene above demonstrates the wisdom of this advice. The spar tree as modelled scales out at around 80' tall, and dominates the loading scene as did the real thing. Mark also encouraged me to drop the front edge of the



These two yarders make an interesting pair sitting on the Woodhill Mountain scene. The smaller unit sitting on the flatcar is based on plans published in an issue of *Timberbeast* of Washington Iron Works 9" X 10" wideface yarder #A765. This machine was scratchbuilt to represent it as depicted in the plans, derelict in Garibaldi, Oregon, USA around 1985. The photos in the article show the yarder missing it's gypsy drum, spark arrestor, lubricating system, and gauges.

The boiler on this yarder is cardboard, with a stack formed from a straw from McDonalds. (They are of a larger diameter than most straws available here, and it happened to be the right size). Each of the winch drums are formed by two small wheels from a trashed audio cassette, a disk of cardboard for the blank end, and a plastic wheel from an Airfix plastic "Rocket" locomotive kit. Notched styrene strip represents the gear teeth around the drums. The yarder frame was built up from pieces of styrene, and the wooden sled is Mt Albert scale lumber stained with Oil Wash. Locally produced whitmetal D

scene.

Visual artists are taught that focal points on a display need low front edges. This encourages the viewer to look "up" from the front edge into the target scene. Conversely, a tall front edge visually blocks off view and forces the viewer to look elsewhere. This techniques was also used in the Broughton Creek scene, where the deep cutting forces the viewer to look at the trestle and to move to the right to see "into" the cutting.

shackles and rigging details add to the scene.

The flatcar is sitting on a equipment spur, so it appears this yarder has been retrieved from the bush, and is due to be shipped to the Blacksmiths for a rebuild before being returned to active service. During exhibitions this spur is used as a showcase for some of the logging machinery that either doesn't run, or are just personal favorite models.

The other yarder is the first steam winch I ever built. It was built from scratch from the memories of pictures of small skidders, and thus it follows no definite prototype. The lines to the spar tree pass by the two winch drums, through the frame of the yarder, and hook onto a loop of wire half buried in the scenery base. This allows the yarder to appear fully rigged, yet permits it to be removable for transport.

When planning this scene, the desire was to replicate some photos showing yarders going about their work while sitting on weird angles, usually on top of fallen and half rotten tree trunks, large rocks, and the like.

On the other side of the Spar tree is a steam

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powered A frame loader which swings logs from the log deck onto the tiny disconnect cars (top photo below). This single drum beast was scratchbuilt around the same time as the WIW yarder, and features many similar construction methods and materials. It was built as a mixture of a few plans, and thus follows NKP, (No Known Prototype). This unit is also removable for transport, and it alternates with another loader at exhibitions.

Note the activity in this scene, the two loggers moving logs with peaveys and turners, and the two track workers passing each other on the footbridge. Details such as these help to tell the story of a small tramway, and really grab people's attention. The log deck and footbridge were both very simple models, formed as they would have

been on the prototype. Obtain twigs (or branches) of appropriate diameter, split the straightest sections into half round "flitches", and build the structures then and there on-site.

This shot (bottom photo below) is a bit of an anomaly, in the sense that very few people will actually ever get to see it. This shot required aiming the camera over the "Blunt" or blank end of the layout, and it is this side which is usually backed up against a wall at exhibitions. The Climax and loaded disconnect log cars snaking their way through the log loading area at Woodhill Mountain downgrade towards Broughton Vale echoes the ambience of the Australian bush logging industry we originally set out to capture. Small machines, on small tracks, hauling big timber.



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## Alternative Scenery Techniques

Concepts by Mark and Angela Fry: First and foremost, I have to say that I owe much of the following to Mark and Angela Fry.

All of these techniques have been developed by them, I just took them and ran with it.

Mark & Ang, Thank You! Prof K

Through their modelling life, most modellers will find areas in which they enjoy, and others where they feel they lack. One of these areas for me was scenery. With the guidance of my close modelling friends Mark and Angela, I took on the challenge. First step in scenery is planning, so that's where we began.

## Planning

Often when planning our miniature empires, the first things we think about are trackplans, operation schemes, and favorite equipment to run (see track plan, pg 2).

For Broughton Vale, operational aspects had to be balanced with the ability to sit back and enjoy watching the trains pass through picturesque, realistic scenes. With only 8 square feet to play with, any scenic area had to be well thought out, or the layout could very easily be overwhelmed.

The end result of many hours consultation and "armchair modelling" between John Cheek, Mark Fry, Bruce Parker and myself, was the following idea. Build two scenes with both operational and scenic interest, and one scene that will fulfill the "Railfan" requirement.

Curving trestles and deep cuttings have long been crowd pleasers, both on model layouts, and in real life. [Check out the Cumbres & Toltec Scenic RR, the Durango & Silverton, the Georgetown Loop RR, or even our own Australian "Puffing Billy" and Zig Zag narrow gauge preserved railways. All of these full size operations boast small trains on big bridges as scenic drawcards.]

Using the turnback curve at the end of the oval as a standalone scene also broke up the "round and round" feeling typical of many

small layouts.

So, in total, Broughton Vale had three scenes planned. One 3' X 1' depicting Broughton Vale Sawmill, and log camp, one 3' X 1' covering the log loading action at Woodhill Mountain, and the Trestle over Broughton Creek in between.

## Basic Landforms

The base of the layout is formed by four sheets of 2" thick extruded polystyrene. This not only provides a solid warp free base on which to lay track, it also make carving out below track level very easy.

For all vertical scenery and landforms, fruit box foam was cut down into sheets and placed to form a profile outline of the required landform. They were then hotglued into position. Cardboard webbing was interleaved over the top of these scenery formers and secured with hotglue.

The final landform surface was achieved by placing two layers of kitchen towel material over the cardboard formers, and "painting" it with a layer of brown latex caulking. This style of landform is much more flexible than plaster, and much lighter, which is always a consideration on portable layouts.

## "Soft Rocks"

When it came time to do the rockwork behind the trestle scene at Broughton Creek, Mark stepped up with another plaster saving idea, "Soft Rocks".

Soft Rocks are simply foam rubber blocks which are shaped, coated with a thin skin of acrylic latex caulking, and covered in dirt, scatter material, and just about anything else that looks to be about the right color and texture for sandstone.

## "Pickling" Natural Materials

Having spent a little time building "Soft Rocks", it was time to get back to layout scenery, via the great outdoors.

Australian scenery differs in it's color spectrum from US or European scenery, it seems to have an overall duller, almost brown base hue. Thus when it came time to select materials to use as scenery, it made

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sense to Mark and myself to go straight to the source.

Mosses, lichens, and ferns were all obtained through local nurseries and preserved using another technique from Mark's scenery toolkit, "pickling".

Using a radiator glycol/water mix as a preserving agent allows the plants to retain all of their natural colors and flexibility, and thus makes them perfect for scenery materials.

The only thing to be careful of, (apart from not swallowing the glycol, and thoroughly washing your hands after handling it), is to keep the resulting scenery out of direct sun or Ultra Violet light. This is not just for glycol preserved plants, but any natural scenery materials. UV light will uniformly fade any plant colors.

### "Layer on Layer" Scenery

Look carefully at any real bush setting, and you will realise that the scenery consists of many layers.

From the dirt base, there is an understorey of

leaf litter and deteriorating plant matter, a mid storey layer of fallen objects such as downed logs and half buried junk, and a surface layer of grasses and fallen objects.

The latex caulking again came into play as the adhesive to keep the scenery materials where they were put on vertical and steep surfaces, such as in the cutting between Broughton Creek and Woodhill Mountain.

On the flatter surfaces the various layers were laid down as they would have been in life. A base of medium and fine dirt was poured onto the scenic surface, followed by a layer including larger rocks and downed logs. The final layer contained fine dirt, some ground up leaves to represent bark and wood litter, and homemade ground foam.

Once all of this was positioned, the entire scene was saturated with isopropyl or rubbing alcohol, (many modellers use water with a few drops of detergent in, known as "Wet Water"!?!), and 50/50 dilute PVA glue. The PVA is broken down by the isopropyl alcohol, and glued the entire stack of scenery materials together to the layout.



### Easy Photo Backdrops

With most of the scenes on Broughton Vale being no more than 12" deep, backdrops are

critical to the visual appearance of the apparent depth of the scene.

By strange coincidence, this area of construction happened to take place around

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early June, when most of the stationary and cards & gift shops were selling their "current year" calendars for \$1 apiece. \$3 worth of "Australian Scenes" themed calendars, plus one of "Ultimate Golf Courses of the World" provided enough fodder to cut and splice backdrops for all three scenes on Broughton Vale.

With a little patience, and the freedom to mix and match different pictures, a photo realistic backdrop is available for very little effort.

Check out the backdrop on the Woodhill Mountain scene above. It is composed of three separate sections, with some olive and candy apple green paint and some specially selected bushes disguising the joints. The centre section is from one of the "Australian" calendars, and the two end sections are from one picture in the "Golf" calendar.

All calendar photos to be used in the backdrops were sprayed outside with a healthy dose of matte fixative to dull the shine of the calendar paper. Once they were dry, the sky and any unusable sections were cut away. Some "jigsaw puzzle" style work was then engaged upon to determine the best combination of images.

Once the final locations were established, their positions were marked with a pencil, and a very thin layer of PVA was used to attach the whole collage to the backdrop. To merge the bottom joint between the photos and the 3D modelled scenery, the lower backdrop was painted with an appropriately mottled mixture of green paints, and glued over the top with a solid mass of foliage, ferns, lichens, and any spare foliage netting that was on hand.

For more information on Angela and Mark Fry's layout, "Swan Crossing", and their Alternative Scenery techniques, check out the articles in the June and August 1998 issues of *Australian Model Railway Magazine*, and the July 2000 *Continental Modeller*.

A "How-to" on Soft Rocks can be found in the October '99 issue of *Australian Model Railway Magazine*.

### Tour

We start our layout tour at the layouts namesake area, Broughton Vale. This logging camp was built completely on site by the lumber company. Although small in size, the camp boasts three bunkhouses, a camp kitchen and dining room.



From right to left, the three bunkhouses are from Master Creations and John Rendall kits. The Dining Room, Kitchen Water Tank, and Camp Kitchen were scratchbuilt from wood by my best friend Nicole. Nicole's scratchbuilt Kitchen supply tank is the first structure she had ever made. Details such as an interchangeable menu board, ladies hanging washing out to dry, and four of the camp children playing, are just a few of the eye catchers in these scenes.

As we head out of town, our empty log train passes the Broughton Vale Sawmill and Blacksmiths. The sawmill started life as a Keystone Danby Sawmill, but was heavily modified to better represent typical "bush architecture" and designs.



Small Australian bush sawmills were rarely enclosed, most getting by their entire working life with just enough corrugated iron

## Broughton Vale Tramway

to cover the expensive boiler, donkey engine, and saw carriage machinery. The sawmill is the centrepiece of the camp, so almost everything above the deck is scratchbuilt. This included the boiler, (equipped with fire circuit in the firebox and Sauter smoke machine in the chimney), donkey engine, and the roof, which sports individual trusses, NBW detail, and all appropriate overhead drive shafts and pulleys.

In contrast with the sawmill, the Blacksmiths shop had very humble beginnings. What started out as a Kibri European lumber drying shed from the scrap box, had its sides plated over with scale wood planks and its "plastic trying to be thatching" roof replaced with some scale wood roof beams, and scale corrugated iron. Once weathered and surrounded with "junk", it fits the bill perfectly.

The tools and machinery inside are metal and plastic castings, and the hearth was fabricated out of



leftover sections of plaster culvert. The hearth is equipped with a fire circuit which simulates the smoldering ashes used by the blacksmith to heat metal parts for bending.

Out the back of the shop lies the remains of a vertical boilered skidder that has suffered a boiler explosion. The basis of the model is a white metal sled from a small Keystone skidder, while weathered aluminium foil and wire simulates the rended boiler plate and boiler tubes.

A 1/2 mile or so down the tramway, we come to the picturesque crossing over Broughton Creek. The trestle here was scratchbuilt from scale stripwood, and detailed with NBW castings and styrene.

Around 95% of the scenery you see in this photo is natural materials, as is the rest of the layout. This use of lichens, ferns, and other

small plants, combined with a foam base, and "soft rocks", makes for an easy, economical, and light weight way to build scenery.

In this scene there are many details, such as a fisherman and his dog, two koalas, and a Thylacine or Tasmanian Tiger. At the top of the falls, there is a mirror which bends the scene around to the left.



After around another 1/2 mile, we come to one of the log loading areas perched on the wall of the Great Dividing Range, known as Woodhill Mountain. Hard at work are two scratchbuilt steam donkeys, one yarder running the high lead, and the loader swinging those big logs from the log deck onto the tiny disconnect cars.

The Spar tree is rigged with white metal Rio Grande pulleys and treated



and weathered cotton thread.

The horses in this scene are Clydesdales produced in metal by Kerroby Models.

All of the track on the layout is PECO code 80 N scale. The switches are medium radius N scale units, while all other track is handlaid with rail stripped from lengths of flextrack.

### Who Is Broughton Vale?

Broughton Vale as a layout owes its design, construction, and inspiration to a number of people. The most important person on the "Crew" however, is covered on another page

## Broughton Vale Tramway

on this site (see Mission below).

I owe a great deal of thanks to my circle of modelling friends here on the South Coast of NSW. Mark and Angela Fry, Bruce Parker, John Cheek, and Wayne Weatherstone have all contributed much to the design, building, and crewing of Broughton Vale. Many late nights and workdays were shared with this crew in order to get Broughton Vale from "concept" to ready for it's first exhibition at Liverpool NSW in October 1999.

Broughton Vale Tramway stands as a tribute to this team.

At Right, from left to right: Wayne Weatherstone, Angela and Mark Fry.



When the first tentative plans for a small HOn30 layout were sketched on a page from an exercise book, it was my best friend, Nicole Mitchell, that first signed up for the challenge ahead.



We have known each other since we were young and I feel privileged to have been able to share this journey with her. Indeed, while I envisaged

Broughton Vale as a place where I could exercise some new found modelling skills, Nicole took to scenery making and structure construction like a duck to water. I hope you enjoy her work in the photos on this site.

As for me, my name is Professor Klyzlr, (think Climax and Heisler and you'll get it), and I'm a 29 year old (c 1999) from the South Coast of NSW, Australia.



I hope you have enjoyed your visit to Broughton Vale Tramway. Broughton Vale is no longer active on the exhibition circuit in NSW, Australia. However, a new Aussie Logging layout is in the advanced build stages, so if you see an Aussie layout with a BVT-style

logo at a show, stop by and say "Hi". If not, I'd love to hear from you by e-mail.

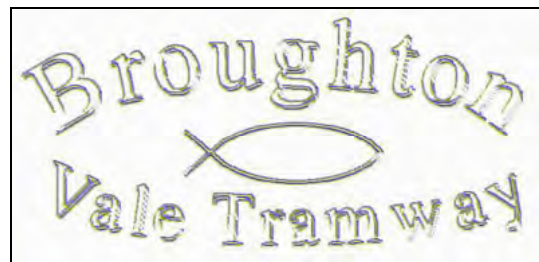
Special Thanks go out to Lyndal Bailey for the use of the digital camera, Jorgen, Big Al, Gerry H, and all at the HOn30 Mailcar for their advice on this site, and the staff at Wollongong City Employment Training Co, for encouraging me to get something done, and lending me the tools to do it.

Shout out to Darren (President of the Fluffy Fan Club, "Dude, I'm HUGE!"), Shannon (Mr Sarah Michelle Gellar), and Jesse (Mistress of Hyperspeed HTML code and Dimensional Mallets, and all around Creative Free Spirit. Fox Lee, you Rock!). Professor Klyzlr salutes you!

### What is The Mission?

Broughton Vale Tramway was originally built for a number of reasons. I wanted to try new things in my modelling, I wanted a project that my best friend Nicole and I could share, and I needed a place to run the HOn30 models I had built. But in all of this, there was something missing.

Throughout this site [Ed: the original Geocities web site], you may have noted the watermarked logo, and the logo on the front page, both of which feature a fish emblem.



For a number of years now I have been part of a small group of Christian modellers who operate an exhibition layout called Swan's Crossing here in Australia.

The Mission of this layout is, and has been, to encourage fellow modellers in their endeavors, share modelling techniques and info, and most importantly, to spread the Gospel of Jesus to the model railway community at large.

At it's first exhibition at Liverpool in 1999, Broughton Vale Tramway continued this

## Broughton Vale Tramway

Mission. Both layouts bear similar plaques identifying this aim.

As a modeller, I aim in my modelling to recreate the wonderful world my Lord created, and to celebrate the machinery that He gave us the ingenuity to invent.

In my life I find that there are many things that, in all honesty, are not as He would want them to be. He gave mankind a perfect world, and an intelligence and freewill to enjoy it. It is us as humans that choose not to acknowledge our Creator and the plan He has for our lives.

I hope that you enjoy the modelling on this site, and pray that this gives you something more to think about..

*Professor Klyzlr*

[Editor's Note: This file, along with the related Dynamite Canyon Tramway and Camp 4 layout files, contains the images and text from the 'Prof's' Geocities web sites c 1999-2000. The materials have been preserved for historical purposes and accurately reflect the contents of the web sites except for some editing to correct gross spelling errors and the like.

The pdf format was selected for convenience in downloading and to avoid having to reformat the materials to current html standards.]