Slate slab wagon build

by STEVE THORNHILL

These scratch-built wagons are based on prototypes which ran on the Corris Railway in Wales. They were used to transport large slabs of slate rather than the finished roofing slates seen in the wagons running on railways such as the Ffestiniog. **Photos by Steve Thornhill.**

So I obtained another book. Yes well things happen like that. This one happened to be the very excellent reprint of the Slate Quarry Album by Gordon & Ann Hatheral.

Within these pages can be found some fine drawings including some of the timber-framed slate slab carriers. I have found details of these distinctive little Corris vehicles to have been slightly elusive up until now and here before me were detailed drawings just asking to be used.

These wagons were used to carry worked slab material not roofing slates. Slab was used for everything from fireplaces to decorative mouldings and clean slab blocks were cut to customers' orders for further carving and so forth. So this found me once more rummaging around in my stack of timber sections, which quickly revealed that I had almost nothing that was of the correct proportions. Still, wanting to get on and not wanting to obtain yet more materials it seemed possible to compromise. Much measuring revealed that many of the required sections could be obtained by splitting some timber strip stock down and others by laminating.

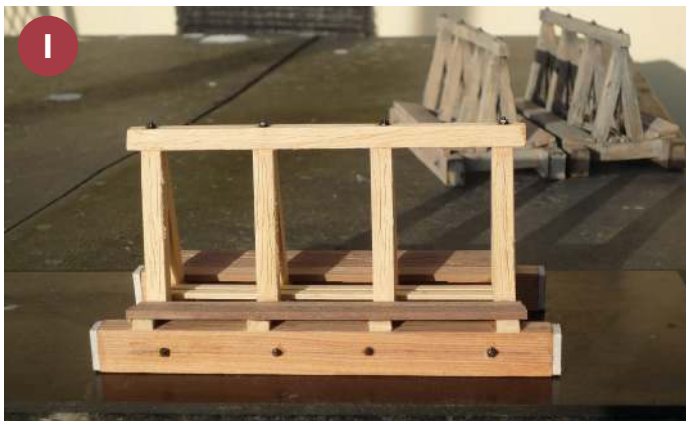
So began a slightly lengthy exercise of laminating up numerous lengths of timberwork in many varied proportions. The recipe for this required laying up the chosen timber section pieces along the front line of the bench top, running white woodworking adhesive along (I use aliphatic resin – good quality stuff this), clamping to the front of the workbench with a motley collection of small sash cramps and G-clamps and leaving them overnight. This was repeated for very many nights. In the end this generated sufficient materials for three wagons.

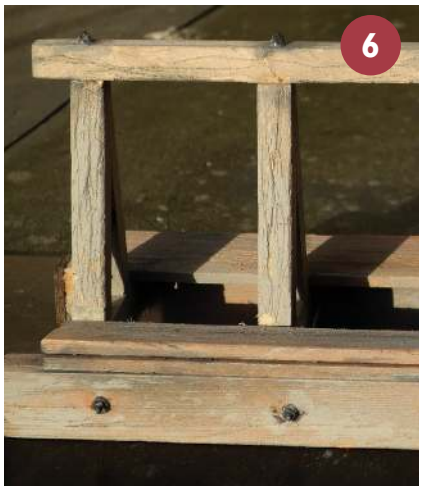
Starting out

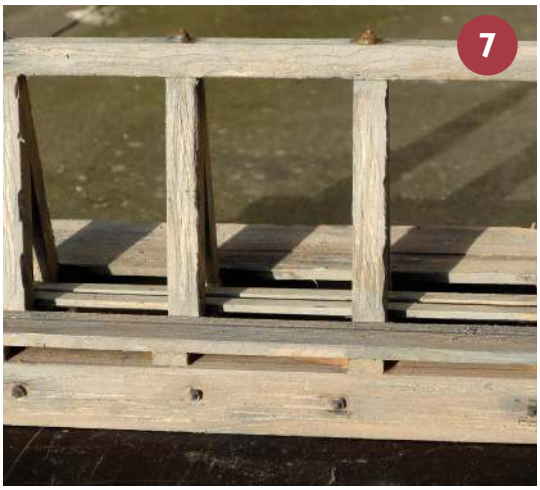
In principle these are straightforward wagons to build, being a fancy 'A frame' sat atop a longitudinal frame with cross members, a profiled top rail, cross struts and the like.

Solebars were cut to length and each required recessing all around each end to receive the iron strap work. This was achieved by setting up my small pillar drill with an end cutting tool. Each recess was cut by clamping the timber sections into a miniature machine vice and slowly passing across below the tool. It should perhaps mention that the vice is mounted to a miniature 'milling table bed' which moves in two directions via screw handles. This ensured the correct depth of cut and all pieces were cut one after another at the same time to ensure consistency.

Ironwork is plastruct strip stuck first halfway across the base then bent up and wrapped around with the final joint to the bottom. I heat it up a little and the corners roll round generally well enough. I developed a technique for this when







building a set of Welshpool vans which had no castings. Clamp an opened-up large paperclip in a vice with a good inch projecting. Hold a blowtorch to the far end and rest the plastic strip near to the vice. Distance depends on the thickness of material being used; just as it warms enough to sag, then quickly take off the heat and fold it down. This prevents the material from actually melting or distorting in the heat. It works really well. I have manufactured many dozens of brackets and other wagon parts this way.

The main visible item of these little vehicles is the central 'A' support frame. The triangular supports looked tricky and quite a number are required. Following the drawings I drew this at the correct scale. This paper template was then covered in a piece of stiff clear acetate – the type of plastic from display box packaging frontage. Then the whole is taped down to my workbench. The timber sections could now be laid over this and marked up.

Once cut to shape there ensued a tricky exercise to get the central very shallow angle correct. This was done by initially cutting with a fine toothed razor saw and as required, fine tuning by sanding.

Sanding is done by taping down a wide strip of 250 grit sandpaper onto a length of aluminium. The timber is then pulled along this surface which should result in clean flat surfaces. Each piece was then laid over the drawing again and checked.

Once each frame was satisfactory, all pieces were glued, overlaid on the template and left to dry. The wood glue will not stick to the plastic and this ensured a relatively simple job of peeling off when dry. Care is still required here to allow enough time – impatience will ensure that the pieces come apart with ease. This does take a fair bit of time...one could use superglue I imagine.

Fitting it all together

All other cross members and longitudinal sections were then cut to length from the dimensions shown on the drawing. ►

Photos facing page and this page:

***1** – Basic frame all together from timber section as described, scribing and edges done, recessed plastic strip strapping in place and small bolts fitted so far.*

***2** – End view showing the A frames and top tapered rail profile, you can clearly see the laminated solebars and the angle of the side planks.*

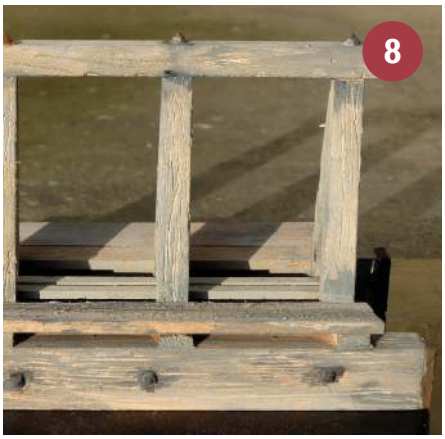
***3** – This view shows the slim centre planks running longitudinally across the stretchers.*

***4** – starting the paintwork washes, the different timbers also add to the colour*

***5** – Character forming...*

***6 to 8** – Painting the greys by adding the washes to the wagons.*

***9 & 10** – Rust and dry brushed earth browns going on.*



I had now achieved a fairly reasonable pile of prefabricated parts, wheels and bearings, effectively a small batch of kits to build!

These many 'A' shaped sections were then drilled up internally into the acute angle to accept the vertical rods of the stays. It would of course be perfectly feasible to construct these properly and bolt up all the sections in a prototypical manner. This sounds like a nice idea to try one day. But as I do not have suitable thread cutting equipment and it really seemed over the top to try go to that extent. So I am afraid that ironwork is dummy rather than working.

The timber cross stays are fitted simply to the timberwork. The iron ties are then installed, timber is drilled, brass rod threaded through and glued in place. The 'brace plate' washers are distinctive squares of steel plate in the photos. Small squares were cut from plastikard strip to act as these washers. All the bolt heads are Cambrian Models plastic or white metal mouldings and very good they are too. The bolt heads are different sizes and these are selected from the Cambrian Models fret and applied as required. In fact for anyone who has built a 'Perfect World' kit this chassis construction has turned out to be almost exactly the same procedure.

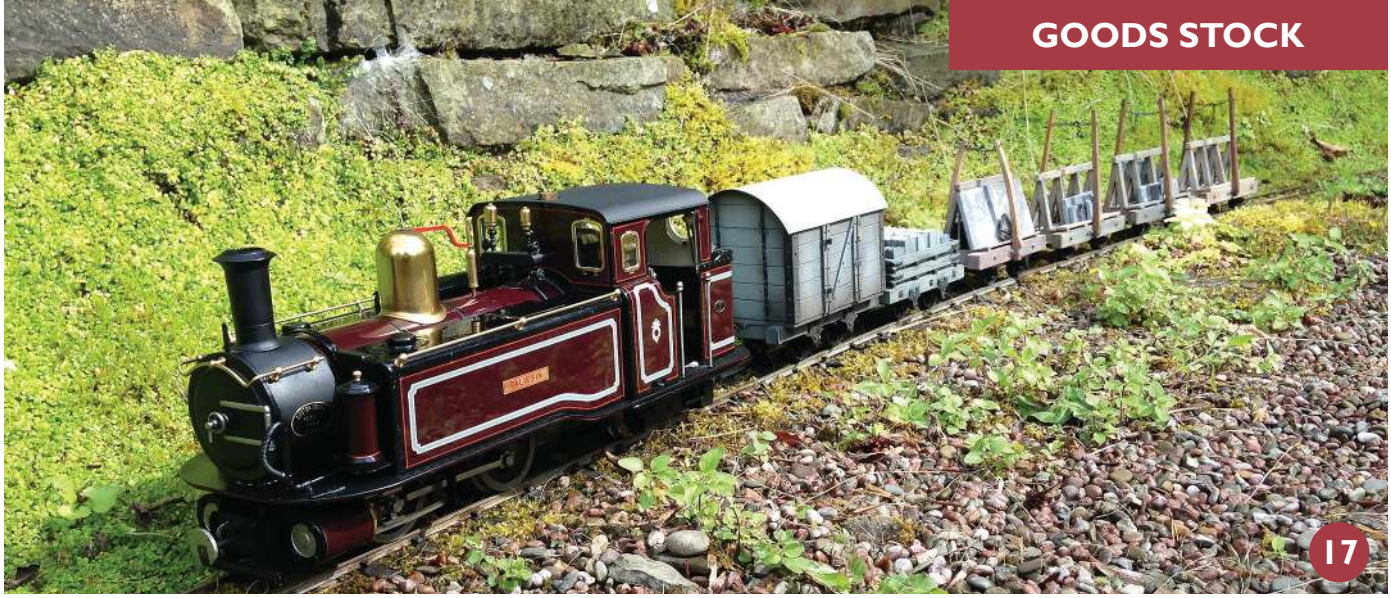
Adding the details

The side runner planks or slab support timberwork planks, are supported on wedges on the main solebars. This means the base support for the slab material is effectively square to the A frame side supports. This ensures the slabs are supported and naturally 'lean' onto the stays.

The maxim of never throwing anything away pays off for the next job. Those small off-cuts created from cutting the triangular frames are almost perfect as these shallow-angled wedge shaped side plank supports. Unfortunately due to the vagaries of the wood and the workman I did not generate sufficient for both sides of all the wagons. However further inspection of the photographs reveals that one particularly time worn vehicle did not match the design drawing.

These base planks are supported on what must have been a repair made from available materials. So I too decided that one wagon would have been 'repaired' and this support is mounted onto longitudinal timber rails, just like the photo, nice and easy.

During fitting, one particularly dry piece of head rail timber fractured. Straightening attempts resulted in



Photos facing page and this page:
***11 & 12** – Slating up.*
***13 & 14** – Out in the sidings.*
***15** – Close up view of the 'odd one'.*
***16** – Close up view of the clock chain link & bent wire hooks.*
***17** – Steam testing. Wait a minute we seem to have a visitor or have swapped railway.*
***18 & 19** – Close up view of the chain links to the head of the staves.*

further fractures. Not having sufficient material for a re-try I thought that this could well have been an elderly timber so it has been carefully glued with runny adhesive and allowed to remain bent. Character, that's what it is.

Painting the main frames

At this stage the timberwork is completed and all looks quite good. It really is a shame what happens to wagons in my workshop. So out comes the small implements, those blunt screwdrivers, an engineer's scribe and those odd things dentists use. The timberwork is worked on to form grain, damage and worn down corners. As those in the furniture trade specify - 'patinated, aged and distressed'. Bit like us all really.

The next bit is the metal brackets for the centre support stays. These are fitted to the solebars in the centres and are an important feature. These brackets were cut to width from brass strip and folded up with much muttering and throwing aside of the more badly deformed bits. Eventually it came to pass there were enough. These need to be fixed with epoxy or good quality thick cyanoacrylate for strength, as the high vertical support rods need to fit into these pockets and the forces act as levers just like the real thing. More bolt heads are fixed to each 'wing'.

Painting is carried out in stages. Timber work is first washed with white spirit then over washed with multiple thin layers of paint. Grays, dark & light are the order of the day. It is essential to use thin layers to retain the original wood showing through. This is followed by dry brushing with a spot of earth brown and even a little silver.

It is also essential to make sure no adhesive has been left on any timber surfaces. If it has, this will resist the wash effect leaving unrealistic blank spots.

Ironwork is lightly painted blackish and rusted by applying iron filings. Once the paint/filing mix is dry, mix up vinegar and a little water and dribble carefully over the filings. Leave overnight for the full effect. Repeat as required. The water I have found, helps to make a lighter tone.

All was then lightly spray painted with a little dirty finish. This brings together the finishes but do not be too heavy with this type of effect.

Slab supports staves

On these wagons the slab material was retained by the use of tall staves of timber slotted into side pockets. These are drawn together at the head with short lengths of chain held with hooks. The slate slabs ►

were retained by driving wedges of slate waste and /or timber between the stays and the slabs. All very simple really.

These stay posts are tapered in two directions on one side and looked a bit of a challenge. I started by drawing up the correct profile to scale and again laying this onto the bench under acetate for checking. Each piece was then sanded down by drawing over a strip of 240 grit cut from a roll. This is laid onto a flat strip of aluminium kept for such practices. Much checking is vital and much time taken. These should just sit down into the pockets like the real thing.

These are clearly a different timber and I used wood stain for these to make them stand out.

Small split pins were fitted to holes drilled through near the head and the excess cut off. Small chain is then fixed to these eyes about six or eight links should do it, dependant on the size of your chain. Hooks are fitted at the ends of both lengths. Once the staves are inserted these are hooked together just like the real thing and can be easily released. It all works very nicely but then they knew what they were doing in those days.

Slate slabs

I had obtained some bits of broken slate from an old roof job. These or whatever you fancy using need to be cut into scale slabs. Slate can be cut with a hacksaw easily enough although you will need a supply of old blades or just be prepared to sacrifice a few to your art. A spot of water can help as a lubricant.

I have made up small arrangements of differing slab sizes as loads.

Each group is then fixed together including the chocs, with 'thick cyno' and positioned to the side of a wagon. In this way although the groups are fixed they are held with the tall stave supports in the correct way and can be removed or rearranged as required. This may be of value in ensuring balance although the wagon design seems capable of being stable with a load to just one side.

A slight shortcoming is that these are made from material of all roughly the same thickness. This was not the case on the real thing and if I get some additional material I might have a go at an alternative few groups with more variation. Still, it works well enough for me at present.

I also kept these to be fairly small / low level arrangements. I was concerned that they might be top heavy in the garden environment as the wagon frames are not dense enough in proportion. We shall see.

These vehicles were all fitted with a central drawbar fitted longitudinally to the underside of the frames. This has been formed from brass strip and simply drilled through at the ends. I have found these holes are slightly 'far away' from the ends and custom hooks have been made which are a little 'open' in order to drop in.

Coupling-up

Couplings take the form of these 'long' hooks at the ends of short lengths of chain. You will again need to experiment with the lengths to ensure they can get around those slightly tight non-scale bends we all have. In addition they should be just long enough and just drop between the frames as the wagons buffer up in the sidings but not long enough to drag. I have some nice fine chain from an old clock. This is a good size for this kind of thing, has clean joints which open up nicely to take the hooks and is already rusty – perfect!

Wheels are those distinctive curly spoke type and obtained from Binnie Engineering. I am not going into the clockwise or anti clockwise spoke discussion here: I got what was available. These are also a little lightweight but run well mounted in bronze pedestal bearings and are low cost. You could unleash the wallet and use the rather splendid Slaters versions. I have made a loco 'runner wagon' with these and must say I was very impressed with them and their excellent running ability, but I digress.

Conclusion

So there we are, a fine set of little almost no-cost slab carrier wagons. Mine are old, battered and time worn just like me, I mean the photos. A simple, cheap project and I would like to say quick; but the truth is I have slotted this work in between bigger build projects and it has actually taken far too long to admit to here.

I think they look just fine, have bags of character and have been a bit of fun to make. By coincidence I have subsequently obtained second hand an extremely well built version. It is not to the drawings I have but has been made with all the ironwork threaded and fitted correctly, very nice indeed and a real lesson in what can be done. So this too has had some slate load fitted. I now have four wagons!

My good lady often requests a programme from me, "What are your plans this evening? Out in your workshop gluing sticks together?" Well yes, as it happens...

A recent track test revealed that they actually run well which has pleased me enormously but they are susceptible to derailment due to snagging on the many decorative grasses that we seem to like so much in our garden. I have subsequently cut back many of these, (note: do this in the early morning before SWMBO is abroad) so all should be well out on the line now. ■