



THE NORTH STAR CHRONICLES – a newsletter primarily for the model railway fraternity

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Editor: David Cairns

e-mail: shares@iafrica.com

Website for back copies:

<https://sites.google.com/a/steamtrains.co.za/steam/garden-railways/the-north-star-chronicles>

Phone: +27 82 653 5642

Editorial

Now where were we? Ah yes ‘Training in Retirement’: this month’s topics – benchwork and track laying but first some spectacular footage of a train ploughing through deep snow in Arthurs Pass, New Zealand:

<http://safeshare.tv/w/DYEsPODBwX>

Benchwork

The seminal work on this subject is the late Linn Westcott’s book – “How to build Model Railroad Benchwork” first published by Kalmbach Books in 1979. This is the primary source for this article. Materials and tools (lightweight extruded foam baseboards, jigsaws, electric screwdrivers ‘posidrive’ screws and adhesives) have changed/improved since 1979 but the basic benchwork principles endure. Westcott (for 16 years

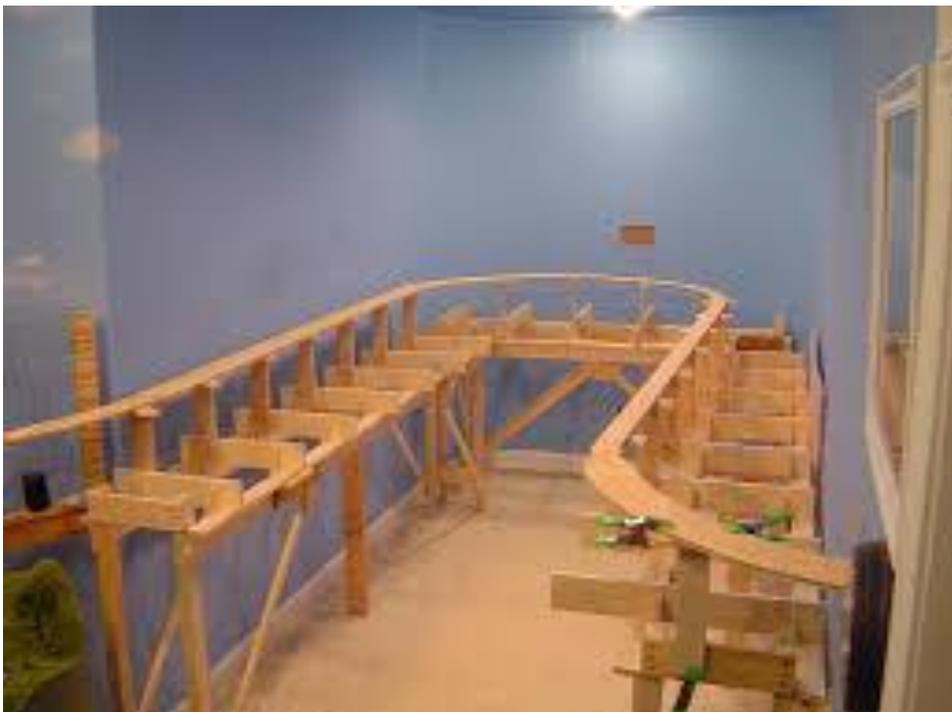
editor of Model Railroader) identified two ways to frame the railroad and three ways to support the track

Butt Joints

Probably the most common method of constructing the framework for a model railroad is the so called butt joint – normally a rectangular shape – 2 end joints, 2 longitudinal girders and a number of cross members. This is a single layer ('table') system which has advantages (mainly simplicity) but it also limits the layout design/shape.



Lattice Framework (with risers and cleats – see below)
(Source Model Railway Hobbyist)



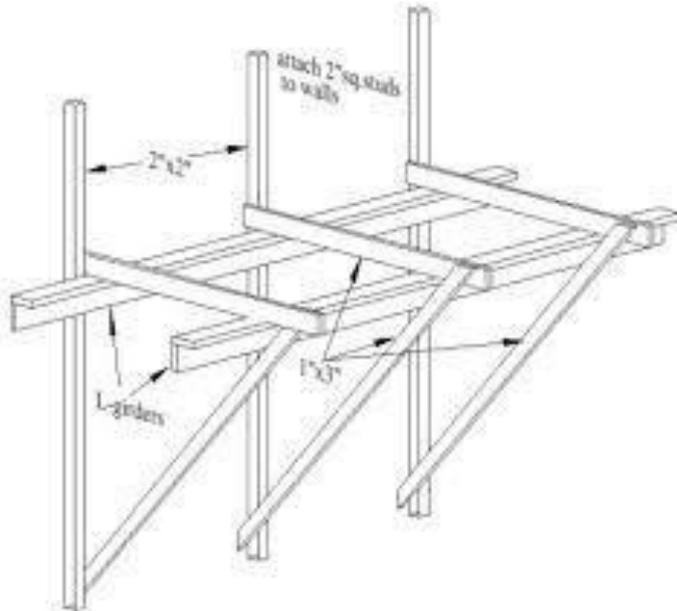
This system has considerable advantages over butt joints because it enables greater flexibility in the layout design and construction and is normally more cost efficient as less materials are used. Fewer legs are required which leaves more space under the layout. Girders are used for the framing and in contrast to the butt joint method where the cross members sit between the girders, with the lattice framework system the joists sit on top of the girders. As they are on a different level to the girders they thus do not butt up against anything. The sides of the layout therefore need not be straight but as Westcott says “can wander for better track, scenery and aisleway arrangements. Lattice framing is easier to assemble, easier to revise and easier to move to another home”.

L-Girders

Arguably Linn Westcott’s greatest contribution to benchwork design was the L-girder supported by wall brackets. The former are made by screwing two batons together, a horizontal one on top of a vertical one, one edge of the top one being flush with an edge of the vertical one. The dimensions of the wood (or plywood) depend on the size of the layout. 2x1 might be appropriate for a small layout whereas 3x1 would be better for a large one. The joists which can overhang their supports thus creating irregular layout shapes, sit on top of the L-girders and are attached by screwing through the top part of the latter into the former from underneath so screws are not inaccessible beneath track and scenery.

Any joist or riser can be moved at any time for example to adjust track elevation or alignment or to move a support which interferes with the position of a point motor.

L-girders are strong and create greater flexibility with layout design. The use of brackets attached to the wall (as against legs sitting on the floor) makes it easy to clean underneath the layout and reach wiring as there are no legs blocking access.



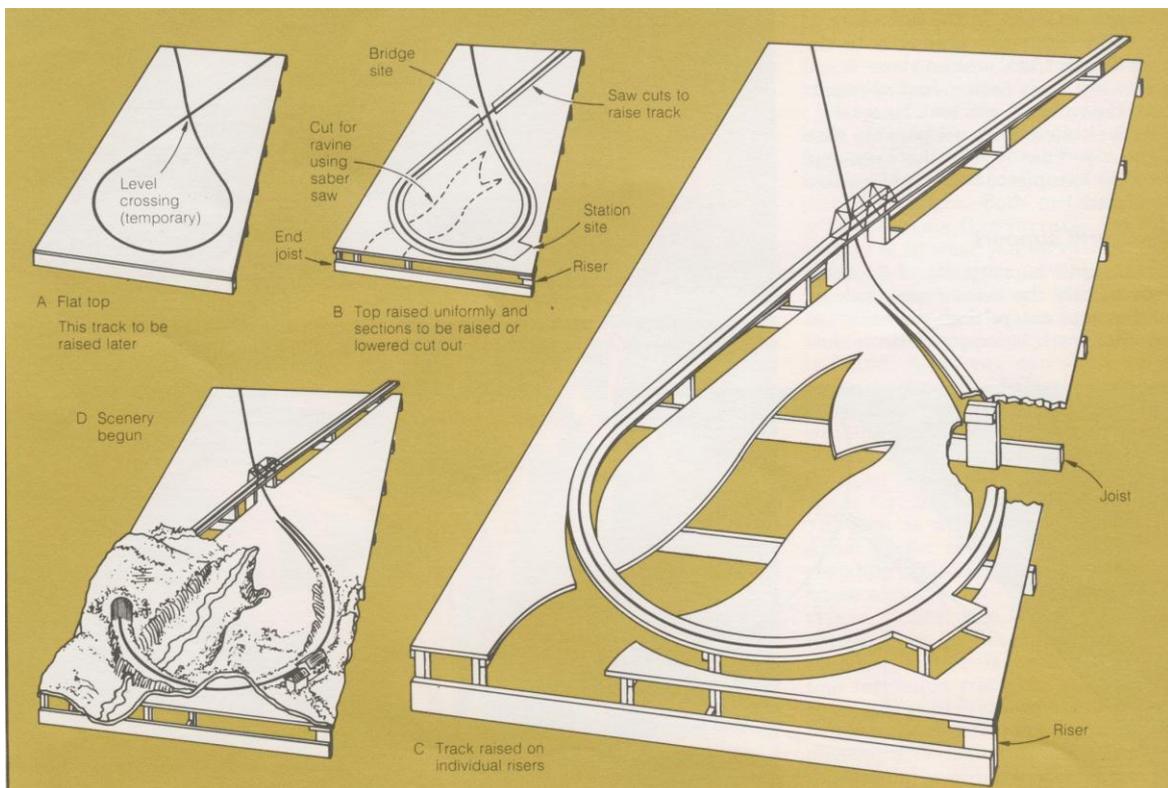
The adjacent diagram shows the use of L-girders and supporting wall brackets surmounted by integrated joists on which a track base can be attached directly or elevated using risers.

The Three Ways To Support The Track

1 Flat Top Or 'Table'

The way most of us start out: a flat top or 'table' on top of a butt joint framework.

2 'Cookie Cutter'



This is a modification of the 'table' approach. Both methods start off with same flat surface. With the 'table' approach the track is laid directly on to the (flat) table top. Disadvantages are

primarily aesthetic. According to Linn Westcott about 80% of terrain surrounding a real railroad is well below track elevation in valleys, ravines, ponds, and highway underpasses. And of course even in flat country the roadbed is normally a yard or so above the terrain to facilitate good drainage. Adding elevated trackwork is more complicated when the base is flat. Realism is therefore that much more difficult to achieve with the 'table' approach.

Cookie cutter benchwork overcomes many of these problems. Simply put, a jig-saw is used to cut away large portions of the 'table' that do not support track. The openings are then filled with scenic effects above and below the track. The use of risers beneath the track enables grades to be introduced.

3 Open Grid Support

This system can be based on almost any type of benchwork – butt joints, lattice, L-girder. Vertical risers to which are attached horizontal cleats support the material – normally plywood or chipboard to which the track is pinned. The risers attached to the joists determine the track elevation. As the track is elevated it is a simple process to add scenery for rivers, ponds, a harbour, wharf etc.

One of the major benefits of participating in National Model Railway Conventions is its educational value. Benchwork is frequently a “horses for courses” situation. For example butt joint frames may be more appropriate for a portable sectional layout or a module. Often when building a layout a combination of different types of benchwork is appropriate.

Two quite differently structured layouts will be on show at the 2015 Durban/Pietermaritzburg Convention (23rd – 27th September). The benchwork for John Everitt's Grand Funk Railroad is textbook LGirder/wall bracket construction whereas Frank Graham's benchwork is open grid with legs. Both layouts are well worth seeing.

Tracklaying

The most common materials used for the roadbed are chipboard, plywood and MDF (medium density fibreboard). Each has advantages and disadvantages. In order to deaden sound and to provide a profile for ballast, most layouts are built with the track sitting on top of a thin layer of cork.

It is not necessary to devote much space to this topic here (albeit good trackwork is essential to both the aesthetics and smooth operation of a model railroad) as there are several excellent books on the subject and of course the internet is a fertile source of information. However, some brief observations may be pertinent: make curves as wide as you possibly can; incorporate transition curves and super elevation if you can (it is the old story you get out what you put into track). Finally I have found "Tracksetta" templates (straight and curved) considerably simplified the process of tracklaying.

Rather than cover old ground again in detail, this month's NSC will approach the subject from a different perspective. The aspect of the hobby which appeals to me most is live steam. I have been accumulating 16mm and gauge 1 locos and rolling stock (mainly kits) for some 15 years and had a 45mm track for several years. A house move forced its lifting and a portable 32mm/45mm modular layout was built as an "interim" replacement. It would not have been fair to my wife who is a keen gardener to build a permanent raised track so nothing has been done. Well that is not quite accurate. About 80 yards of 45mm track was bought four years ago from a gentleman in Knysna. The rail concerned was code 200 bullhead brass (probably Bonds?) pinned to wooden sleepers via whitemetal chairs. The only way to lift the track was to pull up the rails and chairs from the sleepers. That did not concern me as my plan was to relay the track dual gauge 32mm and 45mm with plastic sleepers.

Two views of the 45mm gauge Knysna track



As we are not getting any younger my wife decided that it was time to landscape the garden with the intention of making it lower maintenance. Out came the roses to be replaced with aloes, euphorbias, vygies and indigenous groundcover. Here is where I spotted an opportunity. The one brick high retaining wall bordering the beds at the front of the house would just accommodate 45mm track and I liked the idea of a largely indigenous background bed so the suggestion was made to extend the bed along the wall and build phase 1 of the North Star Railway on top of the brick border. Suggestion well received, deal done. Bed and brick border extended.

An additional benefit of the landscaping was the release of a large quantity of paving bricks lifted to create the new bed. This will provide a base for phase 2 of the line.....

Now of course the result of this exercise is a compromise. A garden railway (my ultimate objective) it is not. It is a railway in a garden or more accurately in a driveway. But hey you have to do what you can with what you are given.

Before and after photos below.



So now I have a trackbed, what about the track? The first job was to 'top and tail' the rails i.e. remove the joiners so that the length of the rails could be properly measured. Next the rails had to be sorted into cut and uncut piles. As can be seen from the photo above the trackbed has plenty of curves. In order to preserve the value of the rail (I suspect it had been used before the gentleman in Knysna acquired it!) cuts should only be made to the rails which have already been shortened from their original length of 914.4mm – in other words the rails used for inside curves.

But before that stage is reached there is another major task ahead, namely to remove the whitemetal chairs from the rail – not an easy or pleasant task but model railroading is fun????

80 yards of rail awaiting the removal of the whitemetal chairs – brick trackbed immediately behind the rail



Anybody want to buy a large quantity of second hand whitemetal chairs?!?!?!?