



The Mail Car

Issue no. 26 - November 2003

St. Lawrence Division web site: www.cyberus.ca/~g_knowles/sld/sld_main.htm

From the Superintendent's Desk

By Stanley Conley

On Saturday September 27 the St. Lawrence Division meet attracted 37 participants to a pleasant room in the Carleton Heights Community Centre and got the year off to a roaring start. Two clinics, a workshop introduction and sign-up, great display table, Railfair announcements and fine company.

The first clinic presented by Doug Cushman briefly covered the history, types, and construction of railway bridges. Doug then focused on the timber trestle bridge which is to be the focus of our workshops for the year. Doug made extensive use of photos he had recently taken of a relatively small timber pile trestle near Toronto used by the local commuter operation Go Transit. Doug took us through the details of the bridge, using pictures to illustrate the many subtle and not so subtle aspects of the construction of the bridge, its approaches and abutments.

This was followed by a few announcements and a short break to examine the models and prototype information on display, consume some caffeine and catch up on acquaintances not seen all summer. In the next session Grant Knowles laid out the plans for the SLD's trestle building workshops, and solicited participants. We then encouraged show and tell for the display table items, with exhibitors enlarging on the written material provided. Another short break while the video was set up and the group sat down to view the NMRA library item entitled 'Foamcore Buildings' presented by Robert Hubbard. We had two door prizes, a CN outside braced wooden boxcar,

provided by Peter McDonald Hobby in Kingston which was won by Peter McGuire, and a CPR covered hopper courtesy of Hobby House in Ottawa was won by Pierre Burgoyne.

The afternoon portion of this meet was a self guided tour of several local railway bridges which ran the gamut of a concrete pedestrian underpass to a 5 span deck girder bridge across the Rideau. Feedback received from this was generally positive with several remarking that the tour took them places they had never been although they had lived in Ottawa most of their lives.

The SLD was present at the annual Ottawa Railfair train show jointly sponsored by the Ottawa Valley Associated Railroaders (OVAR) and the British Railway Modellers of North America (BRMNA) held October 18th and 19th. Our switching module entertained several hundred children (and a few adults) who were encouraged to take a turn running the train, shunting cars around the timesaver like layout. This interaction with often very young participants can be nerve-racking but the engine, cars and couplers have survived, due in no small part to the soft foam bumpers at the edges of the layout! It was nice to have attendees comment on the progress on the module with several buildings and the operating crossing lights added since last year.

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Members of the SLD mingling at the September Meet doing exactly what the Division exists for, exchanging ideas, providing a forum for discussion and education, along with a health dose of congeniality.

Photo credit: Doug Cushman

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Special thanks to Diane Dodds for proof reading and general nit-picking

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I would like to thank all who assisted with the effort at Railfair which included, Grant Knowles, Bob Hobbs, Bill Meek, Mike Hamer, Gary Baillargon, Andrew Batchelor, Doug Cushman, Vic Dohar, Tom Badenoch, Alex Binkley, Don Leger and myself. A special pat on the back goes to Andrew, who volunteered for a shift and remained through the entire Saturday afternoon, returning Sunday to initiate his young daughter to Railfair's allure, and to Gary, who stepped in to provide on-site emergency medical aid when Railfair organizers learned that St. John's Ambulance Service had withdrawn coverage. If I have inadvertently left anyone out I apologize in advance.

The first group of 9 participants have completed the trestle building workshop and most are well on their way to producing a small trestle from scratch. A second workshop has been scheduled for members who signed up for the overflow session or who have not completed their project and would like some more encouragement.

In what may come as a relief to some we will hold our next three meetings in the same location, a large bright room with lots of space to mingle, and lots of display room. The location is Emmanuel United Church, 691 Smyth Road, Ottawa. This is on the north west corner of Smyth and Dauphin roads, just east of CHEO.

We are going to make a concerted effort to provide layout tours for the afternoons of each of the next three meetings and would be very interested in hearing from you if you would be interested in showing off your efforts and progress to fellow members.

Display Report Compiled by Alex Binkley

Not only did Doug Cushman entertain the September SLD meeting with an exhaustive presentation on trestles, he also filled up a large chunk of the display table with some of his reference material as well as some of work service cars. Almost a one man show. To pull his collection, Doug had a HO CNR E-10 Mogul made by PFM. The unit is set up to accompany Doug's Lidgerwood MOW winch car. It is powered by steam supplied by the loco. Doug says he scratchbuilt his winch for unloading Hart ballast cars. He used a Life Like caboose underframe with KD couplers and Walthers trucks to make the Lidgerwood car. The winch is made from old clock gears and the cars represents a unit built by Allis-Chalmers for Canadian Northern in 1918. He also had a boom car for a crane that he made from a Tichy kit and a couple of 40 foot flat cars that were upgraded from their original Train Minature condition and are on their way to becoming MOW cement cars. He also had a pair of Accurail 52 mill gons that were used to show in theory how the Lidgerwood would operate.

John LeBlanc brought a HO model of a shop that has a model railroad club upstairs. John said the models' the fate of too many clubs.

Grant Knowles displayed the proverbial work in progress; his HOn3 Como Roundhouse. There was a Diamond Scale turntable, walls from Model Masters for the Roundhouse, code 55 handlaid track, and piece by piece wood flooring. It would be great to see the model when it is complete, Grant.

Don Leger, who is preparing his pike for operating sessions, displayed Tony Koester's book *Operation of Your Model Railroad*. Looked like a good starting point for anyone who wants to move away from running trains in circles.

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NMRA Dates

SLD Meetings

November 29, 2003	Emmanuel United Church 691 Smyth Road, Ottawa
January 31, 2004	Emmanuel United Church 691 Smyth Road, Ottawa
March 27, 2004	Emmanuel United Church 691 Smyth Road, Ottawa
May 29, 2004	TBA

NFR Spring Convention *Traxx to London*

April 23-25 2004, London Ontario



The Lethbridge, Alberta viaduct as seen from underneath, looking way up to the underside of one of the through girder sections.

Photo Credit: Norm Levert

Modelling Tips

from the machine shops of the

Bonnechere & Braeside Railway Company

A continuation of the track theme from the last issue, although it may be helpful elsewhere. I use an erasable marker designed for use on a white board for marking rail to be cut or filed. The marker gives a more visible line than a pencil but wipes off very easily. These are quite different than the more common permanent markers but don't smell any better.

Peter Nesbitt
General Manager

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Brian Earl brought out the latest addition to his collection of O scale heritage freight cars from the NMRA. This was car #13 from Gordy Odegard's Platteville & Calamine.

Chris Butler displayed the On3 22-foot Carson & Colorado flat car that he has been writing about in the **Mail Car**. His articles contain a lot of good tips for anyone interested in trying scratchbuilding. The car is based on an 1875 prototype and is being built in brass and basswood and includes KD couplers, MacLeod Western T-3 Carter Bros trucks and FMW brake beams. Very nice work, Chris.

Alex Binkley displayed his S scale B&M Machine Shop structure that he constructed from a Banta Modelworks kit. It included cast stone walls and laser cut wood. The stones were individually painted.

Bill Meredith showed two painted versions of the brass steamers he has been making plus examples of the resin cast parts for SN3 narrow gauge freight cars he is working on. Bill provided the following details for his display items:

This past summer I produced kits for several resin On3 and Sn3 freight cars. These cars were all DSP&P prototypes and include 27' box, reefer, and coal cars. The masters were all carefully crafted from styrene and brass. From these masters RTV molds were produced and from the molds resin castings were made. On display I have the side castings for the On3 and Sn3 boxcar as well as the one piece casting for On3 coal car.

The National Narrow Gauge Convention was held the following week in Denver where we began the marketing of our kits. The show was a success and business was reaffirming. The icing on the cake came when Dave Steer, Bob Stears, George Sebastian-Coleman and I managed to arrange a cab ride on the Georgetown Loop RR. Few things can compare to coming down the mountain in the cab of that loco and then crossing that huge viaduct to unexpectedly find one Bill Scobie trackside doing some railfanning. (When Bill recognized those in the cab the expression on his face was truly priceless.) I brought out to the display a few pictures taken from the cab as we crossed the Georgetown Loop Bridge.

Back in February, I began to build 5 DSP&P Sn3 Mason Bogie 2-8-6s of which 2 are here on display. These locos were built up from the kits I manufactured some years back. As I was "between careers" I had some time to put into these things. The prototypes for this type of loco on the DSP&P numbered a staggering four and all were scrapped by 1888. I have sold these off but I have enough parts on hand to build two for my own layout (which I might add now has 80' + of handlaid code 55!). The #28 "Denver" has no less than 9 unique paint colours and required several weeks to paint. The lettering artwork was done using Corel Draw and AutoCAD on my PC and I had decals made. CDS will be producing a set for these later this year.

Rusty Metal and Weathered Wood; Scratch-building a Carson and Colorado Flat Car in On3

By Chris Butler
Photographs and Illustrations by the author

Part 2 – Let's Get Down To Work!

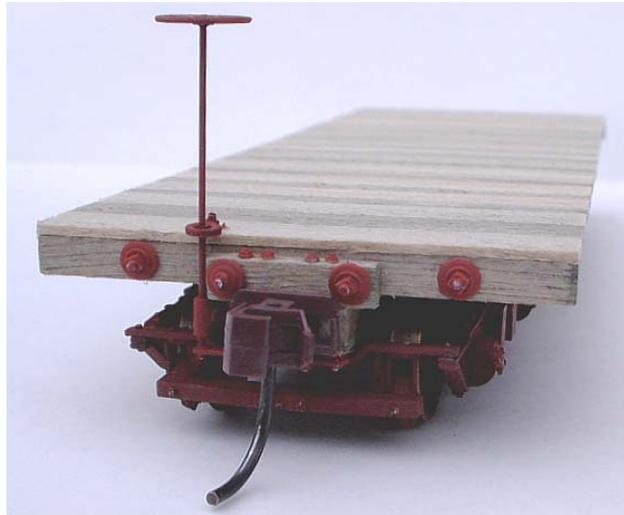


Fig. 1. "B" end view of the author's completed 22' On3 flat car.

In the previous edition of the **Mail Car**, we explored the basic design elements of a typical narrow gauge flat car. With that behind us now, let's get started and build an O-scale model of it!

Flat car jig and under frame construction

In order to ensure that I built a square and repeatable under frame for the flat car frame a simple styrene jig was constructed. After all, I might want to use the jig to build another under frame for say, a caboose or a boxcar. I used a piece of scrap 0.040" thick sheet and marked out the location of the sills and end beams. When this was done, I glued some square dimensional styrene rod to it to act as guides for the sills. I also used odd pieces of scrap styrene to ensure that the sills were correctly spaced. The end result didn't look pretty however, it was very functional and filled the bill nicely.

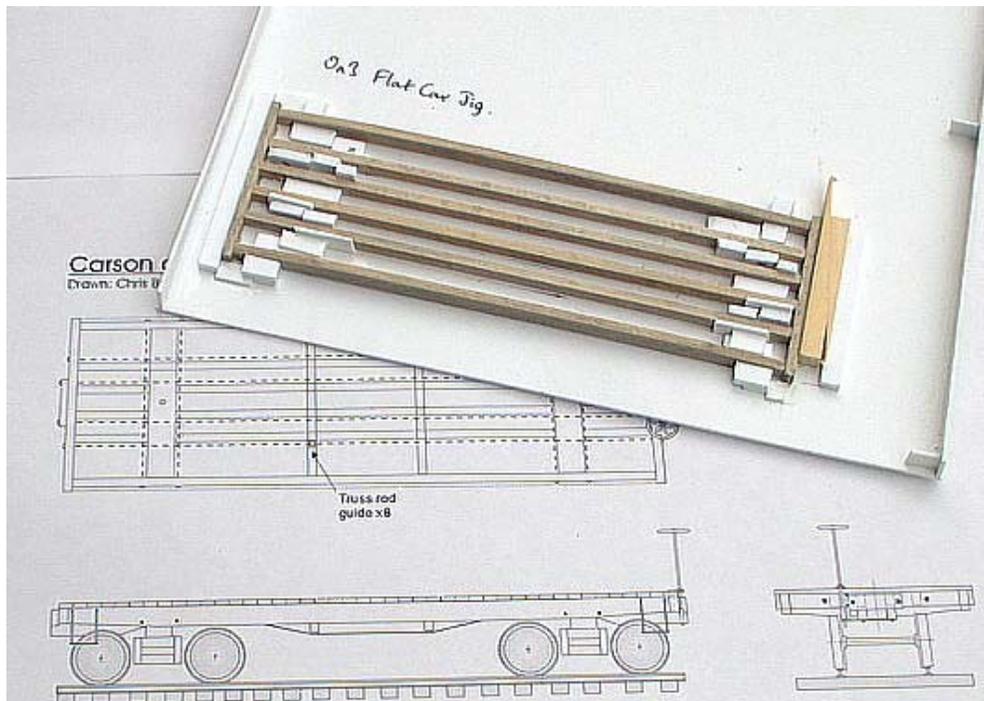


Fig. 2. The completed jig with the end beams and sills in place – note the wooden wedges at the right-hand end.

So much for the jig, the next problem was “Where can I obtain O-Scale basswood?” The answer was quite simple. In the past, I used to model in HO-Scale and as a consequence, I had lots of Northeastern dimensional stock on hand. The only thing I had to do was to ignore its equivalent HO size and think of it as regular dimensional stock. I also found that Hobby House in Vanier stocks reasonably large dimensional basswood in 2 foot lengths. I used both sources.

Sounds simple, right? Well, I built a basswood prototype and tore the jig apart and rebuilt it three times over (with freshly cut basswood and corresponding alterations to the drawings) before I was happy with it.

For the center sills, I cut 4 lengths of HO-Scale 8x12” stock (roughly 5x7” in O-Scale) and two lengths for the end beams. Next, I cut the side sills from 3/32” x 1/4” basswood stock and carefully sanded the angled tapers that go from the truck bolsters to the end beams.

All of the sills were “gang sanded” on my home made sanding jig to ensure that they all finished up square and the same length. I did the same with the end beams. Once I was happy with the final dimensions, I stained them with a light wash of black shoe dye and Isopropyl alcohol mix. When they were dry, I loaded the pieces into the jig, carefully applied some yellow glue and inserted the wedges. I remembered reading one time that yellow glue sets up stronger if it’s compressed while it’s drying. It must have something to do with the glued getting squeezed into the fibres of the wood. Anyway, hence the wooden wedges.

To make absolutely certain that everything was flat, I applied a heavy weight to the frame while it was setting.

Once the frame was dry, I made up two bolster sections for the trucks from 1/8” x 9/32” basswood stock, stained them and glued them in place. Note that I deviated here as the prototype used what appears to be, cast metal bolsters.

Needle beams and Buffer blocks

Next, I built the needle beams from the 8 x 12” HO scale basswood and glued them in place. I made up two buffer blocks for the end beams by cutting pieces of the HO basswood and sanding their thickness a little. I then followed the previously described sequences for staining and gluing.

Draft Timbers

The next step was to make up four identical draft timbers by carefully cutting and sanding some of the HO 8”x12” basswood. Note the notch for the buffer block clearance and the taper as it meets up with the bolster.

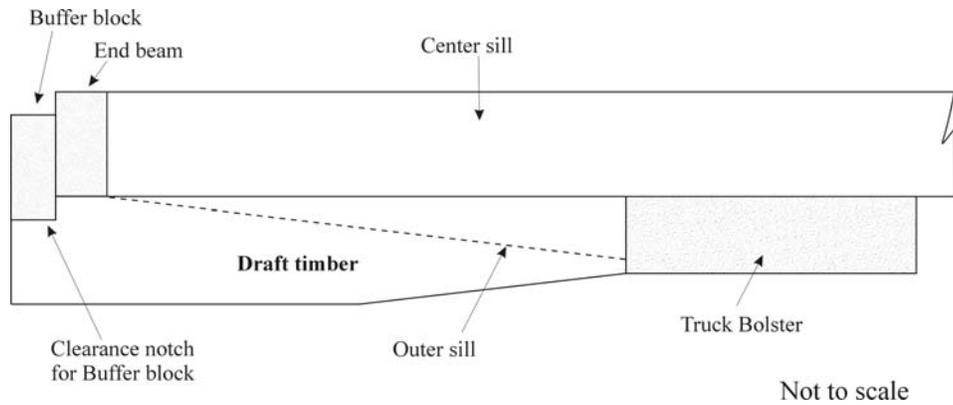


Fig. 3. Draft timber details – 4 required.

Once the timbers were ready, I stained them and when they were dry, I carefully glued them in place:

Couplers

I decided to use Kay Dee #807 On3 couplers. If you’ve used Kay Dee’s #5 HO couplers, these work on the same principle however, the coupler knuckle is made from a slippery Delrin plastic (moulded in a brown or black colour depending on the model) with a metal uncoupling trip pin. Using Delrin is a good idea because the colour is right and the couplers couple together very easily. The other big difference between these and the #5 HO couplers is the self-centering design and of course the overall size.

The coupler pockets were narrowed to roughly 9 scale inches as per Key Dee’s instructions so they’d fit between the center sill sections and then they were assembled and installed. Even after narrowing the pockets, I found it necessary to hollow out the draft timbers a little so the couplers would “swing” from side to side properly.

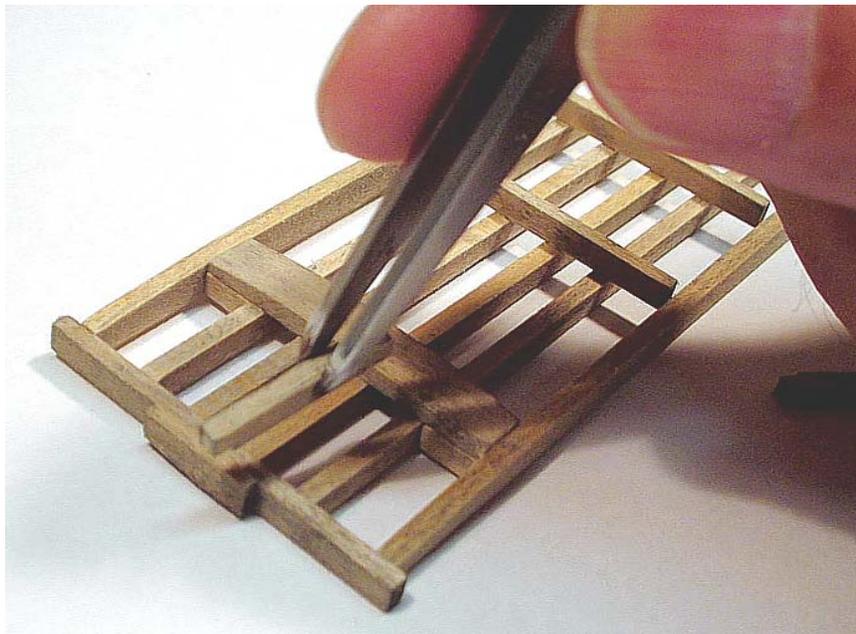


Fig. 4. Installing the completed draft timbers.

Truss Rods

I built my truss rods from 0.022" brass rod. The prototype appeared to have saddles where the truss rods touched up against the underside of the needle beams. I built my saddles (eight of them) from 1/64" x 1/32" brass rod and carefully soldered them to the brass rod.

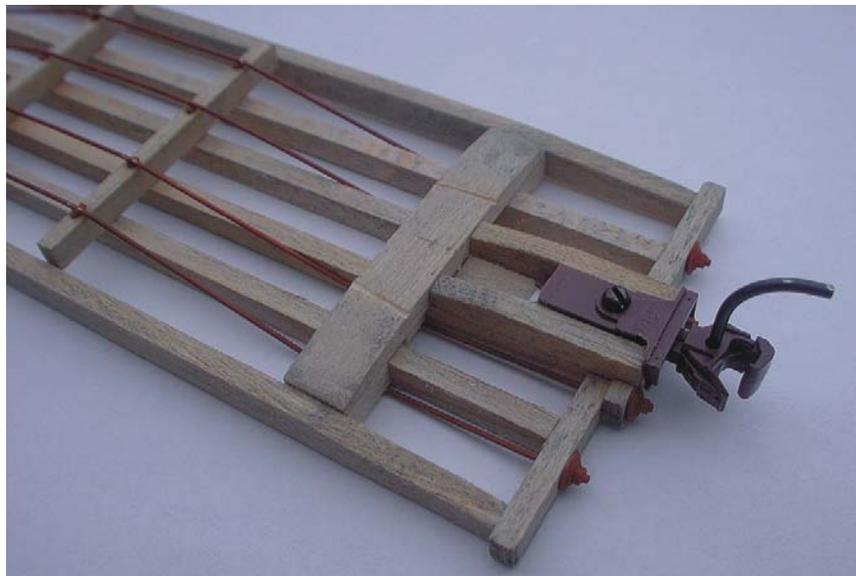


Fig. 5. The completed truss rods installed – note the saddles and NBW castings.

The truss rods were cleaned up with diluted dish washing detergent and airbrushed with my "old rust" mix – a blend of Floquil Rust and Zinc Chromate Primer. Once dry, they were carefully assembled onto the flat car. I then drilled 0.025" holes into the end beams and glued each truss rod saddle in place with ACC.

From what I could see on the photographs and drawings I had on hand, turnbuckles were not used on these cars.

Lastly, I installed eight pre-airbrushed Grandt Line #16 2½" NBW's onto the two end-beams to represent the end-to-end tensioning truss-rod system.

If you'd like to construct this flat car (or something similar), please send me an email at cjbutler@igs.net and I'll respond with scale drawings in CorelDraw 9 format and un-scaled drawings in hi-resolution JPEG format.

In the next edition of the **Mail Car**, I'll describe the brake rigging, trucks, decking and general finishing details. Until next time...

Another Foray into the Model Manufacturing World Or Just What Are the Economics of Production?

By Bill Meridith

Last fall after being laid off, I along with a good friend in Wyoming, started a model train manufacturing company called “The Cimarron Works”. The premise of the company is to manufacture On3 and Sn3 railroad equipment that came from the 1880-1920 period. The kits would be resin using high end processes which would be packed with fine injected plastic castings. Runs would be limited. We have found, as have others; that the model train industry is becoming polarized. On one end are the RTRs out of China; the other, limited run high end resin kits. The Cimarron Works was incorporated in the State of Wyoming.

Producing product in resin has several benefits and several pitfalls. Each has to be taken into consideration when planning projects.

One key benefit is that production runs can scale with demand. An RTV (room temperature vulcanizing rubber) mold can typically withstand 35 resin pours after which it will start self-destructing. This self-destruction is a result of the resin attacking the RTV itself. This is an unavoidable side affect of the process. The RTV also picks out **every** detail on the master. The RTV is also flexible and some under cutting is allowed. In essence, you can get a lot more detail in a resin model than is physically possible in injected molded styrene.

The down sides of resin and RTV products are also extensive. Mold deterioration (RTV is also very expensive) and tedious manual processes of mold filling are also noteworthy. It is a time consuming process that has a steep learning curve.

Every once in a while someone asks me “why not just do the kit in injected plastic?”. Yes, it can be done. I have done this kind of thing before and they were quite successful. The answer has to do with volume. Finding a cheap die cutter to make the equivalent of an HO standard gauge wood boxcar with trucks will still set you back \$20K for starters. So, how many of these things do you think you can sell? In Sn3 and On3 the market is limited. A popular car (that may or may not have been done already) will likely sell 1500 units total over a 4 year term. HO standard gauge you can multiply that number by ten, again assuming that the kit has not already been done. So, getting back to narrow gauge, the cost to get the dies done per car is ~\$14. The cost to fill the dies on a per car basis is ~\$1, maybe less. Using some fundamental product management skills your fixed cost on a per car basis (adding in the box, wire, lettering etc.) would approach \$20 a car. Then you will have to factor in dealer discounts (typically 40%). Your selling price now approaches \$40 per car. The up side of all this is that these numbers only apply for the first 1500 kits; fixed costs for any kits thereafter reduce to \$6 a kit and you would still be selling for \$40. Then you make money. Let’s hope you don’t have to eat in the meantime.



Several Castings from Bill's new product line on the display table at the September meet.

So therein lies the draw to resin. Smaller runs, and the capital investment tracks very closely with demand. As noted above, we can also pack in a lot more detail into resin that is not physically possible to do in injected styrene due to the cut steel nature of the dies.

The kits that we produce are made from styrene masters. Each project is carefully drafted using AutoCAD and from that, mathematically precise engineered patterns are produced. Building a pattern for a freight car requires a lot of planning and precision. Each part is fabricated to within 0.005" tolerance, as any mistake you make once will be copied onto every subsequent resin casting. Use of a Vernier caliper and a calculator is mandatory. I also use a milling machine to make the patterns. With a milling machine I was able to slot the frame members for ease of assembly and I was able to create highly effective shiplap for floors where the ends are visible.

The patterns also have to be functional. When building up the floor pattern you have to take into consideration that the model is functional. What couplers will be used? The infrastructure has to be engineered into the pattern to allow for trucks and couplers. Intermediate sills have to be positioned to enable free wheel movement. It is key to understand the subtle differences between a prototype and a functional model.

When a pattern is made you must also consider how the resin will fill the molds. For the kits that we did, we had to alter the pattern as the resin behaved non-characteristically in certain areas of the car sides. The thickness of the areas of each part has to be relatively consistent. Filling a large mold that has small pieces emanating from it will cause problems and the molds will not fill out.

I should mention that I don't actually make or fill the molds. I have this farmed out to an organization that does this full time. I made a conscious decision to avoid these aspects and to focus on the patterns and running the business. The patterns for the kits that we produced took me almost 10 weeks of solid effort. It is important to know that you get out whatever you put in.

The general market reaction to the kits has been generally positive. Bob (my partner) and I have a long list of prototypes itching to be modeled. While we will not be producing anything considered "main stream narrow gauge" we will be supplying kits of the lesser known, and more obscure prototypes that could not support the capital expense of injected dies. It is important to understand that this is a business that just so happens to be in the area of model trains. It requires a sizable amount of time and capital to get products out the door, and while I encourage folks to look into resin casting, it is not a simple or cheap process. You need to understand why you would want something cast and weigh the costs and benefits carefully. If you are only looking for a small handful of models you may be better off building all of them from scratch.

If anyone has any questions I would be happy to answer them...



Trestle Workshop

On Sunday October 26, 8 members of the SLD joined Grant Knowles in his rec room to take part in a wooden trestle building workshop.

Grant and Doug coordinated efforts to choose a standard trestle plan and reproduce scale drawings to use as patterns for the trestle components. Grant worked up material lists and accumulated kits of raw material to produce the bridge from. Although Grant started with the optimistic view that 4 hours was more than ample time to scratch build a small trestle, by the end of the afternoon, many trestles were well under way, although completion was not exactly at hand. Grant reported that there were many smiling faces at the end of the day and was sure that completion of many of the projects will be accomplished.

When the first list filled up a second was started and by the time you read this the second session will likely be complete with as many as 15 participants taking part in the project.

← *David Steer works on his trestle project during the first session of the workshop.*

Photo Credit: Grant Knowles



Next Division Meet

St Lawrence Division – NMRA

When:

Saturday, November 29th, 2003

Where:

Emmanuel United Church

691 Smyth Road,

Ottawa

East of CHEO at Dauphin Road

Doors open at 9:00am -- Admission \$5.00

What's on:

Morning:

Clinics

- NMRA Video, Weathering with Chalk
- At least one live presentation

Display

- Wooden Bridges

Door Prizes

- You never know what to expect!

Afternoon:

Tour

- Layout tours TBA

