And The Winner is...Layout Contest Results

July/Aug 2003 • Issue #9 • US $8.00
Precisely Handcrafted Brass Models!

O Scale CB&Q M-4a 2-10-4s

Prototype photo courtesy of W. Raia Collection. Similar to PSC #17403-1

#17403 CB&Q M-4a 2-10-4 as rebuilt with square cab, Elesco FWH, Mars light, disc main drivers and roller bearings. No paint. (Separate standard smoke box without Mars light supplied.)
#17403-1 Same, painted black and graphite #6310 and #6315.
#17405 CB&Q M-4a 2-10-4 as rebuilt with sport cab, Worthington FWH, Mars light, disc main drivers and roller bearings. No paint. (Separate standard smoke box without Mars light supplied.)
#17405-1 Same, painted black and graphite #6323 and #6327.
#17407 CB&Q M-4a 2-10-4 as rebuilt with square cab, Worthington FWH, disc main driver and roller bearings. No paint.
#17407-1 Same, painted black and graphite #6318.

Do not hesitate to reserve. Our last O scale project was a sell out! A result of PSC high standards and specifications!

O Scale CB&Q BE-1 Express Boxcars

Prototype photo courtesy of Colorado Historical Society. Similar to PSC #17373-1.

#17373 CB&Q BE-1 Express car, (ex-troop kitchen car) with Allied trucks, open windows, diaphragms, late 1940s. No paint.
#17373-1 Same, painted Pullman green with bronze gold lettering (railroad roman).
#17375 CB&Q BE-1 Express car, (ex-troop kitchen car) with A-3 ride control trucks, plated over side windows, no diaphragms. No paint.
#17375-1 Same, painted Pullman green, modern lettering in Dulux gold.
#17377 CB&Q BE-1 Express car, converted for freight service, with roof walk and end ladders. No paint.
#17377-1 Same, painted Pullman green, modern lettering in Dulux gold.

See Your Local Hobby Shop and Reserve Yours Today!
Features

4 Design-A-Layout Contest Winners
Ron Gribler’s and Steve Sansome’s winning entries.

11 Scratch Build A Pickle Car
Tom Houle resurrects an oldie, but a goodie. You gotta have one.

23 The Secrets of Lost Wax Castings
Roland Marx covers the process in broad strokes but with enough detail that you’d be tempted to try it yourself.

34 Scale Command – Part 2
Can TMCC™ handle reverse loops? DC power? Don Woodwell has the answers in Part 2 of this 3 part series.

38 Casting Your Own Parts
A perfect companion piece to the Lost Wax article, Gary Woodard shows us how he makes “cold cast” parts in polyurethane.

52 Converting An MTH Schnabel Car
They said it couldn’t be done, but Norman Hills shows how he converted this massive car from 3 rail to 2 rail.

55 Modeler’s Tricks
Bill Becker shows us how to divide any line into any number of equal parts and Stuart Ramsey makes a simple deck plate to go between a steam loco and tender.

Departments

8 Easements for the Learning Curve – Brian Scace

18 Narrow Minded – Bobber Gibbs

20 Traction Action – Roger Jenkins

49 The Workshop – Neville Rossiter

26 Product News & Reviews

43 Crapola From The Cupola – John C. Smith

44 Proto48 – Gene Deimling

46 Reader Feedback – Letters to the Editor

48 O Scale DCC – Ted Byrne

59 Buy, Sell, Trade Ads

60 Events Listing

60 Ad index

61 OST Dealers List

62 Observations – Joe Giannovario

Modeler’s Shelf – pages 36, 37, 50, 56, 57, 58 & 59
Design-A-Layout Contest

And The Winner Is...

The Dayton & Union Branch of the Baltimore & Ohio
as submitted by
Ron Gribler of Lebanon, Ohio
The Dayton and Union Branch of the Baltimore and Ohio RR
Greenville, Ohio
Lower Level
12” grid

Workbench (30”)

Dodson Depot
Storage Cabinets

Bookshelves
Storage Cabinets

Storage Cabinets

Rolling Stock Storage Cubicles

Bookshelves

East Dayton - South Staging
-Fiddle Yard-
(36”)

Union City

Drop-Down Section Storage Area

Workbench
And the winner is...

Well, it wasn't easy picking the winner of our first layout contest. We received many fine layout designs. Every person who sent a design is receiving an OST tee-shirt as a thank you for participating. But, I digress. Let's talk about the winners.

The Category 1 Winner

Each Category 1 entry was submitted to three judges. We looked at each entry and took into account practicality of construction, operation (i.e., play value) and best use of space. We had nailed down a winner when we realized the design had a major problem, a custom turnout. The rules state all switches must be AtlasO #5 or #7 1/2. So, our first choice was disqualified and the Grand Prize was awarded to Ron Gribler of Lebanon, Ohio, for his Dayton & Union Branch of the Baltimore & Ohio, loosely based on the Dayton & Union branch of the B&O between Dayton, Ohio, and Union City, Indiana. The D & U's largest source of traffic, Greenville, Ohio, is the area being modeled.

In the early 1950's, the prototype had weed-covered light rail, some street running, and enough business to keep its only daily train busy all day setting out loads and picking up empties. The assigned 2-8-0 would leave Dayton in the morning and eventually arrive in Union City. It would usually return by running tender-first back to Dayton in late afternoon.

The layout is a point-to-point design. East Dayton yard is a hidden staging yard/fiddle yard built over a set of shelves with cubicles to store rolling stock. The line runs around the room behind a built-in 30" high workbench and emerges from the lower level across a drop-down/duck-under. There are six customers on the line at Greenville that require boxcars, covered and open hopper cars, tank cars, reefers and stock cars. The facing siding and switch-backs offer a lot of operating interest. The line winds northward to the visual staging yard at Union City. The Union City Body Works (a truck body manufacturer) generates both inbound and out-bound loads for flats and boxcars. The yard has a crossover that allows the loco to run around the train for its return trip.

The lowest layout height is 36" at Dayton and continually climbs to 56" at Union City.

The design assumes this room is the only area available for the O Scaler. The layout is built above shelves, drawer units and cabinets allowing plenty of storage for rolling stock, books & magazines, materials, tools and the typical pile of unfinished O scale kits.

The layout was designed using Atlas Right Track Freeware version 5.0. Autocad was used to draw the room elevations.

The Category 2 Winner

This was much easier to pick as we had only 3 submissions. The OST staff choose Stephen Sansome's Birch Falls On3 layout. It was simple, offered continuous operation as well as switching, and fit the space perfectly.

The layout features a continuous run by using a lift out section. The aisleway permits access to the only window in the room (something other designs neglected). There are many scenic possibilities using a small branchline theme. The long parallel trackage allows for multiple train exchanges or meets. A peddler freight could work the S-curve sidings while an express rolls by on the mainline. Industries could be anything from an ice house with platform to a produce packing plant.
Next time...

Over time we will share with you some of the other designs submitted. However, one thing is clear. You do not need a huge space to build a first class O scale layout if you scale down your expectations. Thanks to everyone who participated. Next time, we'll give you a larger space to work in. Keep your eyes and ears tuned for the next contest announcement.

The Category 2 Winner
The Birch Falls Railway
as submitted by
Stephen Sansome of Ontario, Canada
As he ascends the pulpit this day, the clamor of the congregation is heard: “Oh Withered One, how high should benchwork be?” With a smile (no doubt the influence of strong drink) and nod... Behold! Scace the Oracle Speaks!

I like high benchwork in O for several reasons, but we’ll look at several advantages of both high and low construction. You get to choose what works best for you, so I’m only going to provoke thought before you jump into that pile of lumber.

O scale is massive, so the best vantage point for my money is the same one that I have while watching the real thing. You don’t have to close one eye and squint with this stuff, so take advantage of it! It’s hard to beat the view of a Berk majestically going by with the wheels and rods at eye level. If you build at eye level, this is already done for you. If you choose lower benchwork, allow room for a good comfortable chair in the aisle for hormone enhancing viewing.

Let’s assume we don’t have enough room for our tastes (and who does?). You can get away with multitudes of sinful curvatures in your trackage if you always see it from the side. Don’t believe me? Just grab one of those old Atlas switches from your junk box and look at it. It’s hideously sharp from the top. The side view isn’t all that bad, though, is it? The overhang of equipment is also not nearly as apparent when viewed from the side as it is from above. That means you can build a nice industrial switching area using small Diesels and 40 foot cars at eye level without offending your sensibilities nearly so much as when you are looking down on the same design. Not only that, now you can see all that brake detail you paid for! Buildings look bigger viewed from street level, because you have to look up and down as well as from side to side. You have to move your eyes around a lot to take in a scene. Besides, whose first view of a building is the roof (No letters from all you helicopter pilots!)? Scenery looks better from the O Scale figure’s perspective, too. In real life, you look up to see those purple mountain’s majesty, not down.

Wives like all the storage space you can build under your railroad, so do everything you can to exploit this. It’s just good politics, especially when it comes time to negotiate a new “land grab”! You’ll need some storage space for yourself, too. In O Scale, it’s immoral to build a car kit just after you buy it, so plenty of room under the railroad allows you to store the required quantity (the law says at least fifty!) while they season for, say, twenty years.

When choosing an average height, think about your audience a bit. If you or some of your friends are of an age when the elasticity of youth has fled, consider any “duck-unders” you may have. Remember Scace’s Third Law of Model Railroading, the pain induced equals the age of the person over the height of the “duck-under” (P=A/H). Plan your “duck-unders” high, or design them to be hinged or liftable.

On the opposite side of the spectrum are those inscrutable creatures known as “children”. If your offspring are to be participants in your basement world, set your average height lower so they can see and appreciate the trains. If, however, you live in mortal fear of a pair of little lunch-hooks snagging the Century (accompanied by that evil giggling noise), then height is your friend! I was impressed by the genius of one gentleman whose empire I visited, recently. The benchwork height was quite high, maybe 60’. Underneath, at kid-level, was a repeat of the same benchwork design. At 60” we had the roar of the Broadway, and at 30” we had the same quality railroad, but with the familiar snap and burrrrr of Lionel. What a great way to interest them when they’re young without incurring gastric hyperperistalsis, and rubis of the gastric mucosa!

If you like pulling wire lying on your back, build low and buy a garage creeper. Build it higher and you can use a stool with wheels or crawl around without bashing your skull or doing your back a mischief (Anyone have a good hospital gurney so I can still wire on my back with high benchwork?). Access to wiring, switch motors, and all that other mysterious stuff under the layout is a major reason for reflection when choosing height, or you’ll never wire it. By the way, get some safety glasses or goggles before trying to solder wire feeders under the railroad. Do it now, then come back and finish reading this. Yes, you!

You’re back? Good. Now consider, if you’re my age, getting a pair of glasses made only with your reading prescription. Nothing looks sillier than someone wearing bi-focals and standing on their head under the railroad trying to hook up a switch motor. My wife thought it was hilarious.

Let’s get back on track, here. You still have to reach across the benchwork to get that pesky brass car that shorted out...
in the back forty. Scace’s Fifth Law of Model Railroading states that the likelihood of derailments/shorts/anti-social behavior of any component increases exponentially with the distance from the front of the benchwork. Higher benchwork will reduce your reach, unless a good stool or stepladder is handy. You may also want to rethink putting that scratchbuilt curved double-slip switch with the closing frogs to the rear of the benchwork, by the way.

Although not really a height issue, width of aisles is an important consideration, both for the laterally enhanced among us as well as for high-density areas such as at yards, engine facilities, and wherever the “supervisory” types like to congregate. Plan for people passing each other in the aisles, especially if you want to show your railroad to the masses at the next O Scale Convention, which is in Washington, DC in 2004 (Ha! You didn’t think I could slip that one in, did you?).

Conclusion:

Height is a personal and somewhat imperfect choice. I still like my benchwork higher than lower, especially with small railroads. The bit about the comfy chair in the aisle from which trains are observed sounds strangely appealing, though. Maybe with a little table upon which to set my lunch without knocking the bottle over …or better yet, one of those little refrigerators to keep more tonic water in…Ah, Civility!

Let’s go Exploring!

---

**T-BONE MODELS**

“O” Scale

CUSTOM PAINTING & REPAIR

Dealer for Pacific Limited

Sunset & Weaver

T-Bone Models  James Christensen

32254 Cleveland

Cottage Grove, OR 97424-9381

e-mail tbone@epud.net

541-942-5237

Send SASE for information

---

**Stevenson Preservation Lines**

O Gauge Kits and Parts from past Master Modelers

Catalog 2002-1  Price: $1.00

Baldwin Model Locomotive Works

Lobaugh

Adams & Sons

Lenoir

Kansas City Kit

Hines Lines

Alexander

Pearce Tool Co.

Bob Stevenson, 2326 230th St. Boone, IA 50036

---

**O Scale Realty**

Realistic Weathered Structures in O Scale Scratchbuilt From Your Photos, Plans or Ideas!

(Will also build & weather your kits)

Reed Artim

973-472-7456 • mickman777@yahoo.com

75 Woodridge Rd, Clifton NJ 07012

---

**Look at what’s up in a future issue of O Scale Trains magazine...**

- Superdetailed Track
- Funaro & Carmalingo Buildup
- Scale Command III
- 3 rail conversions

... and lots more,

Plus all our regular features. Issue #10 on sale at newsstands, bookstores and hobby shops August 2003.
Built by LIMA and Baldwin, over 120 “Big Sixes” hauled coal and freight for the B&O. They were so successful they kept articulateds off the Pittsburgh division. Often seen double headed with the EM-1, the Big Six is a must for any collector or operator.

Sunset Models is bringing the Big Six to you in stunning brass detail and in very limited quantities (75 2R, 175 3R). The B&O S-1a comes complete with directional lighting, lighted markers and classification lamps, 9000 series Pittman motor with coasting flywheel, sprung drivers with carbon steel tires. If you model B&O, you cannot be without the S-1a from Sunset Models.

Call your dealer or 408-866-1727 today!

Coming December 2003, under $1100!
Background

First, I have to admit an affinity for kosher dills. Perhaps that was the subliminal motivation that drove me to research and construct such a unique car. I also have to admit that in all my years of rail-fanning I’ve never seen a real pickle car. Nonetheless, ever since I first read Eric Steven’s Dollar Series HO pickle car article in the November 1956 issue of Model Railroader, I knew that someday I’d build this car. Incidentally, that same article also ran some years ago in Kalmbach’s Easy-To-Build Model Railroad Freight Cars book. Copies of the article should still be available from Kalmbach. See a current issue of Model Railroader magazine or visit Kalmbach’s www.Trains.com website for ordering information.

Considering the popularity and distribution by rail of pickles from farms to wholesale grocer firms, pickle cars must have roamed the country at one time. In a model railroad context, the low profile of the car distinctly contrasts with the usual assemblage of boxes, hoppers, gons, and tanks we tend to run in our freight consists. Pickle cars had varying capacities. This article (as does the Stevens article) covers the construction of 900 and 1300-bushel cars.

According to Stevens, these wooden open-framed cars used either wood (early) or steel (later) pickle tubs. The original diagonal truss rod side-braces eventually gave way to right-angle steel diagonal bracing. Steel bracing and steel tubs will simplify the construction of this car, but at the same time take away from some of the original’s rugged timber charm. Eventually, these cars were built completely in steel. Even then, some of these cars had exposed tubs. I had always thought the H. J. Heinz Company used all-wood pickle cars to transport their famous product. Alas, this is not the case. In spite of Athearn’s best intentions, the NEB&W Guide to Athearn Tank Cars quotes Byron Rose—reportedly an expert on prototype pickle cars—as saying the H. J. Heinz Company never used open frame wood pickle cars.

I have it first hand from Jerry Roy, my good friend and O scale mentor, that pickle cars were typically unloaded with netted scoops. The unloading crew dropped the scoops through hatches in the car roof. The nets allowed the brine to strain back into the tubs. Jerry recalls seeing these cars in northern Michigan being unloaded into wheelbarrows. The wheelbarrows were trundled to storage tanks and dumped. Eric Steven’s article shows a worker dumping a wheelbarrow load through a roof hatch. The shallow roof pitch and recessed roof walk are there for a reason. They allowed the worker to easily wheel a load across the roof without running into a roof walk.

It seems likely that pickle plants would have used elevated platforms to allow direct access to the car roofs. What plants did to handle the varying car roof heights, I don’t know. (Can anyone shed some light on pickle car loading/unloading practices? It’d sure help me, because my next project is going to be a small pickle processing and canning plant.)

Some Planning

I was drawn to this project because of its all-wood construction. I like building with basswood. I cut my scratch building teeth on basswood and have been using it ever since. If you cut your own lumber, you can use clear pine, redwood, or cedar. Northeastern Scale Lumber has an incredible array of basswood strips, milled sidings, and plain sheets. All items should be available through Walthers and your local hobby shop. I think it would be an excellent starter project for someone who wants to try scratch building their first car. For the same reason, it would also make a great first car in styrene. Styrene might be a better medium for this car than basswood because there won’t be any of the basswood fuzzies that show up after the wood has been painted. Eric Stevens measured an actual wood pickle car and used the prototype dimensions to build his two cars. All lumber dimensions in this article are to scale, which unfortunately are not available in standard basswood or styrene sizes. I cut my lumber to the required dimensions on my Dremel table saw. All lumber dimensions are given on the drawings. Its not difficult to saw the lumber on a miniature table saw. It took me an hour or two—sorta like rollin’ yer own. Gave me the feel of working in a car shop. Let’s get started.

Erecting the Underframe

Ever built a stick and tissue model airplane? That’s how this project feels as it goes together. The car is nothing more than a pile of lumber, a bit of styrene, and four wooden tubs. Do take your time. Expect to spend a week or two building this car. It won’t fall together but it will offer you a lot of old fashioned scratch building fun that you can’t get from a plastic “shake the box” kit.

The underframe is shown in Figure 1.
Scratch Build A Pickle Car

The frame is erected upside down on a 6” x 12” piece of ceiling tile. Before actual construction began, I cut the basswood fish belly, side sills and all the frame cross-members on my Dremel table saw. See the Bill of Materials for a cutting list.

A Dremel saw or similar miniature table saw is very handy if you do much scratch building. It is inexpensive, only a foot square, and is easily stored when not in use. I installed a new fine-tooth blade to cut my wood. Even so, my lumber tended to come off the saw table with a case of the fuzzies. I cut extra lengths of each lumber size and threw the extra scale timbers into my wood box. You never know when you’ll need a few more 4x7s.

Note the frame crossmembers in Figure 1 are lettered A through E to designate the five different lumber sizes. All five can be ripped from 3/32”, 1/8”, and 5/32” thick basswood sheet. You only have to rip each lumber size once instead of having to go back and cut the other two faces. When you’re finished ripping your lumber, crosscut everything but the side sills into 2¼” lengths. As they came off the saw I dumped the crossmembers by size into five plastic cups lettered A – E. Believe me, the crossmembers are hard to tell apart once they are ripped. Got that lumber sawn and sorted? Good. Let your sawyer out of the woodshed for a while. Buy him a couple of cold ones before moving on to the underframe construction.

You’ll need a copy of Figure 1 - top view of the frame - to begin assembly. Make sure your frame outline is 2¼” by 9¾”. Photocopiars can be off. Pin Figure 1 to a nice flat ceiling tile remnant. Cover the drawing with clear kitchen shrinkwrap. Cyanoacrylate, yellow, and white glues will not stick to this wrap. It prevents the wood frame from getting glued to the plan (just like we used to do when we built those stick and tissue Comet airplane kits). Pin down the A and B crossmembers only. C - E will be added after the frame is removed from the plan. When you have the A and B crossmembers pinned in place, add the 1/8” x 3/16” side sills. I used gap-filling cyanoacrylate glue to attach the sills. A tiny dab at each crossmember should do it.

Using a narrow steel rule, I lightly drew a centerline the length of the car on the under side of the frame. The line spots the fish belly center sill (Figure 2) and coupler locations. I skinned the fish belly with .015” styrene. The bottom styrene skin extends 1/16” on both sides of the sill to represent a flange. I didn’t rivet the styrene as it is nearly hidden when the car is on the tracks. The fish belly length shown is for Kadee 804 or 805 couplers. These coupler boxes attach with no shimming required. The truck bolster heights are for Athearn, Intermountain, and Weaver trucks.

When the cyanoacrylate had cured, I removed the car from the plan and added the centersill. In the area of the coupler mounting screws, I filled in the crossmember gaps with 3/32” sheet basswood. I also spotted the truck locations on the center sills. On such a light frame, the fish belly is truly functional. It adds strength and rigidity to the open frame. At this time, I added crossmembers C, D, and E. As shown in Figure 3, crossmembers E do not rest on the side sills. These are located flush with the top of D. Crossmembers C, D, and E steady and retain the tubs during switching moves and transit. Crossmembers C and D are cut away later to clear the tub outlines. Hold off on this step until the tubs are finished, painted, and ready to install.
Building the Tubs

As shown in Figure 4, the scale outside diameter of each tub on the Eric Stevens car is 8’ 6” (2¼" in O scale). The closest tubing I could find was a 2” diameter PVC pipe coupling available at The Home Depot. These couplings are dirt-cheap, have ⅛" walls and add a lot of weight to the underframe. I purchased several. I cut the tubs to rough length on my band saw. The tub height for a 900-bushel capacity car is 3’ 10” (29⁄32" in O scale). For a 1300 bushel car, the height is 5’ 6” (1¾" in O scale). Feed your work slowly. This is very dense plastic. If you don’t have a band saw, a hacksaw would work if you have some way to hold the coupling while you cut. When I had all of my tubs rough cut, I squared them up on a belt sander.

To simulate the wooden tub staves of the prototype, I cut four strips of #2067 Evergreen 020” styrene (⅛" vertically scribed car siding) to match the tub height. I then wrapped each tub with a single layer of the siding. To attach the styrene to the PVC tube, I used Plastruct Plastic Bond, a relatively slow-setting liquid plastic glue. This glue gave me plenty of time to position the styrene to ensure the stave lines were vertical. It seemed to work well with both plastics. I held the styrene skins in place with rubber bands while the welds hardened. The .020” styrene wrapper yields a finished diameter close to 2⅛". If you want a scale diameter, wrap two layers of the .020” styrene around each tub. You could also try wrapping the tubs with water-softened ⅛” thick ⅛” scribed basswood car siding. The tub tops and bottoms are left open. They are conveniently hidden by the underframe and roof.

To simulate the prototype tub’s ¼” iron wire banding, I used 30-gauge soft brass wire (available at most hardware stores). I wrapped three bands around each tub and twisted the wire tight. The bands should run straight and be correctly spaced before you glue the bands. On the 900-bushel car, there are three tub bands spaced ⅛” apart. On the 1300 bushel car, there are four bands with just under ¼” spacing. To secure the wire bands, I applied minute amounts of cyanoacrylate glue with the point of a pin at the wire ties and then 180 degrees opposite. Don’t worry about the glue dots and wire ends showing. Both will be completely hidden by the supporting timbers yet to be installed.

Return To The Underframe

With the tubs done and ready for paint, I turned my attention back to the unfinished underframes. I laid the tubs into the underframe and marked the outlines of the tub bases where they interfered with crossmembers C and D. I carefully cut arcs into these beams until the tubs rested directly on crossmembers A and B. Don’t glue the tubs in place just yet. The tubs are the last items to install before the roof goes on. Its time to assemble and attach the vertical timbers located between the tubs.

These bracing timber assemblies are shown in Figure 5. Two sets are required, end and middle. Cut and assemble the timbers, then attach them to the car as shown in Figure 2. Ensure the your timbers are vertical and centered when you attach them to the car. With the timbers in place, I check for tub clearance. There may be a bit of trimming required to fit your tubs onto the deck.

The car ends come next. Figure 6, an isometric view of the end, will help to visualize the construction.

I cut two scribed end panels from ⅛” thick ¼” scribed basswood. Next, I cut two sets of three ⅛” x ⅛” upper crossmembers. Arrange these members into a pair of U-shapes and...
cyanoacrylate glue them together, checking that they are square. Notch out the two longest crossmembers \( \frac{1}{16}" \) deep to accept the end panels and then glue the end panels flush into the notched out crossmembers. Carefully glue the bottom edges of the end panels to crossmember C at each end of the frame. Make sure the end panels are recessed \( \frac{1}{32}" \) from the outer edges of beam C and centered as shown in Figure 6. Gap-filling cyanoacrylate glue makes this job go easier.

The \( \frac{1}{16}" \) square upright corner posts are added next. And then it’s on to the poling pockets. I cut four plates from .015” styrene to the dimensions shown in Figure 6. The poling pockets themselves were cut from \( \frac{1}{16}" \) styrene tube and liquid plastic glued to the plates. To simulate the rounded contours of a stamped steel shape, I loaded a sable brush with plastic glue and gently brushed the pockets until the combination of brushing and liquid glue had softened and rounded the edges of the tubing. When painted, these faux poling pockets really look like the real thing. Repeat at the opposite end of the car and then let’s move on to the roof.

**Building a Roof To Protect Those Pickles**

I built my roof just like Eric Stevens built his 45 years ago. As shown in Figure 7, I began by cutting a sub-roof from \( \frac{1}{16}" \) thick sheet basswood. I glued a \( \frac{1}{16}" \times \frac{1}{16}" \) basswood strip roof support down the centerline of the sub-roof. The three \( \frac{1}{16}" \times \frac{1}{32}" \) basswood roof walk boards were glued to the 7/16" center strip. I used a 10" strip of .015” styrene placed between adjacent roof walk boards to ensure consistent roof walk spacing the length of the car. The roof itself is made up of edge-glued \( \frac{1}{16}" \) thick \( \frac{1}{16}" \) scribed basswood panels. The edge-glued panels were cut a bit over-width to allow final trimming of the roof over-hang. To glue the roof pieces together, align the roof pieces edge-to-edge with the scribed sides up. Hold two adjoining pieces tightly together while you apply a strip of masking tape to the scribed side seam. Repeat until your roof panel is the required length. Open the seams on the smooth side and apply gap-filling cyanoacrylate glue into the V. Lay the panel scribed side down and weight the panel until the glue has cured. Repeat for the opposite roof panel.

I block sanded both long edges of the assembled roof panels to align snugly with the roof walk and extend \( \frac{1}{16}" \) beyond the sub-roof edges. Do not glue the roof to the sub-roof yet. That happens after we add the loading hatches. The hatch layout is shown in Figure 8.

I cut my hatch openings with a fresh #11 X-Acto blade. To ensure straight cuts, I use a cork-backed steel straight edge and make repeated light cuts. When the hatch openings were cut away for both roof halves, I cut matching \( \frac{1}{16}" \) thick \( \times \frac{1}{16}" \) scribed hatch covers to fit snugly into the hatch openings. I lightly glued the hatch covers in place from the smooth underside of the roof, being careful no glue seeped through onto the roof. The hatch cover scribing runs at right angles to the roof boards—a nice wood car detail we don’t often see today. To reinforce the hatches, I added an .020” \( \times \frac{1}{16}" \) styrene backing strip to the undersides of the roof halves. Its time to glue the roof halves to the sub-roof. When you do, make sure you maintain a \( \frac{1}{32}" \) overhang along the sides of the car and a \( \frac{1}{16}" \) overhang at the sub-roof ends.

I used Keil-Line’s #397 reefer door hinges for the cars I was building. According to Eric Stevens, you could also use simple leather or strap iron hinges. I liked the look of the reefer hinges. Eric didn’t mention lifting handles for the hatches so I didn’t add any. Perhaps the loaders used crowbars to pop open the hatches. I also added right angle grabs to the four corners of the roof. These grabs came from an Intermountain #ODBRO100 Body Details kit. Sand the ends of your roof so they are squared up and ready to receive the roof ends shown in Figure 7. I cut my roof ends from \( \frac{1}{16}" \) basswood sheet, but you could also use styrene. Before you attach the roof ends, dry fit the roof to the car. The sub-roof ends should be flush with the \( \frac{1}{16}" \times \frac{1}{16}" \) top crossmembers. The roof ends should drop snugly over the top crossmembers after being attached to the roof. Glue on the roof ends, but don’t glue on that roof yet. We still have to add the truss rods, hardware, and paint the entire underframe and roof.
The truss rods add a lot of character to this car. I made mine by cutting 16 2 1/2" lengths of .015" brass wire. The wire lengths are paired and slipped into the ends of eight Grandt Line # 54 turnbuckles. The truss rods are retained in the turnbuckles with cyanoacrylate glue. The eight angle iron brackets that retain the lower ends of the truss rods are cut from Evergreen #268 U-channel. Lay out four bracket lengths on the channel. Split the channel web in two and then cut the eight 3/16" x 3/16" right angle brackets from the channel. The angle bracket locations and truss rod connection points are shown back in Figure 2. I drilled a .020" hole through each of the brackets to accept the truss rods. I also drilled angular .020" holes through the outer ends of the upper crossmembers above crossmember E and at the ends of the car. This done, I slipped the .015" wire truss rod ends through the upper beams and the corresponding brackets below. Drops of cyanoacrylate glue at the attach points secured the truss rods.

I added Intermountain stirrup steps at the corners of the car along with under body brake components. Due to the deep side sills, the brake components are barely visible. For that reason I left off brake rigging and piping. I also added Intermountain grabs and a brake wheel platform at the B end of the car. Cut down Intermountain ladders were attached to the corners. The brake wheel and staff were added after the car was painted and the roof installed. At this point, the frame and roof were ready for the paint shop.

Painting and Final Assembly

Jerry Roy and I got together one rainy Saturday afternoon for the painting session. While we waited for a fresh-brewed pot of rich Columbian, we kicked around car colors and lettering schemes. By the time we’d finished our second cup, we’d agreed to paint both pickle cars in the same color scheme - a "might have been" H. J. Heinz color scheme. The colors would be a golden yellow for the tubs and one of the many boxcar red hues for the rest of the car. We studied a bunch of brush painted samples of Floquil yellows, golds, red, and browns.

We finally settled on Floquil ATSF Yellow and Floquil DT110 Caboose Red.

Jerry did the airbrush work. He began by spraying the styrene clad tubs and the basswood underframes and roofs with two light coats of Floquil gray primer. I’d never tried applying a prime coat to basswood before the color coat. I like the effect. It gave the basswood the crisp look of styrene. Jerry then shot the tubs with the ATSF Yellow. It took two coats of the yellow to adequately cover the primer. After that he shot the underframes and roofs with Floquil Caboose Red. This turned out to be a tedious task, steering the paint into all those nooks and crannies without getting runs. Patience is a must here.

A couple of days later when the paint had cured, I loaded the tubs into the cars. I didn’t glue them in place, fearing glue might seep out onto the painted underframes. Glue isn’t necessary, anyway, as the roof and frame hold the tubs in place. I attached the roofs with 30-minute epoxy sparingly applied to the tops of the crossbeams and car ends. A .015" brake staff, Grandt Line brake wheel, Kadee 804 couplers, and Athearn arch bar trucks completed the car.

While Jerry is going to decorate his car with an H. J. Heinz could-have-been lettering scheme, I decided to decorate my car as a privately owned could-have-been Vlasic’s Pickle Company car. Using Microsoft Word, I made up a pair of Vlasic’s Pickles signs on my computer. My ink-jet printer printed the two-color signs onto glossy paper. The paper signs were glued to .015" styrene backing, cut out, and applied to the corners of the car. They’re credible looking signs but a laser printer might have done a better job. Car data decals from an old Champ Decals boxcar set rounded out the markings. Eric Stevens provided no information about the car’s empty or loaded weight. I checked in at the Yahoo’s O trains website where I was advised that the car lading info would typically have read as follows.

| CAPY | 80000 |
| LD LMT | 92000 |
| LTWT. | 44000 |

That’s how I lettered my car and I added a 1927 build date as well.

Conclusion

Now that my car is ready for service, its bright colors and low profile are sure to become a real eye catcher. If you’re looking for an easy-to-build scratch building project, then this car could be just the ticket. Reminds me of what Jerry Roy said when he first saw his finished car, “Now that’s a real dill-ey, Tom.” (All together now, one big collective groan.) I do agree it really was a neat project and is a great looking vintage car. So, what are you waiting for? Go build one for yourself. ◆
Photo 1: Copy Figure 1 and build the frame of the car right over the plan. Figure 1 is full size for O scale.

Photo 2: Frame looking from the top side. The fishbelly has already been added.

Photo 3: Frame looking from the bottom side.

Photo 4: Pickle tubs are made from styrene pipe purchased at a home improvement store.

Photo 5: styrene pickle tubs wrapped with scribed siding and simulated iron strapping.

Photo 6 (right): Tubs installed in frame to mark off the tub relief in upper crossmembers.
Photos 7 & 8: Tubs installed in nearly completed frame to check fit before final detailing.

Photo 9: The sub-roof assembly
Photo 10: The finished roof

Photo 11: Finished car frame without trucks or couplers. Completed roof lies at the back. All the car needs now is paint and lettering.

Photo 12: Finished car. Very nice.

Drawings by Fred Karl of KOR Concepts
www.korconcepts.com
from sketches by Tom Houle.
Narrow Minded

Bobber Gibbs

On30 and why....

Many readers of O Scale Trains have visited at least a few narrow gauge layouts that, until recently, were probably either three foot gauge like one of the Colorado mountain railroads or two foot gauge like one of several prominent two-footers that operated in Maine.

It is very impressive to watch a K28 Mikado haul a string of 30-foot long boxcars around a tight mountain curve and across a trestle, especially if that Mike is equipped with sound. O scale locomotives usually have sufficient size to accommodate large speakers that provide great sound quality and an operator who can make a sound system function properly becomes no less than an artist at the controls. A steam whistle reverberating through a valley still brings shivers to my spine, even in 1:48 scale. On the east coast, a Forney on the front of a freight or passenger train is equally impressive. I am very fortunate that one of my best friends owns one of the finest On3 layouts in the world and for many years I enjoyed On3 modeling with my friends in the Maple Leaf Mafia.

Like most O scale standard gaugers, most narrow gaugers dream about the ultimate layout with miles of track and gorgeous floor-to-ceiling scenery, sweeping curves and long freight trains or speeding passenger trains. However, most model railroaders will finally accept the fact that they are going to have to settle for something that takes up a lot less space. So, here comes On30 and here comes a different attitude and a lot more fun.

Those who model Colorado or Maine narrow gauge trains are pretty much restricted to trying to duplicate certain well-known features, scenery or locations and the locomotives and rolling stock for On3 and On2 can be as expensive as the same equipment in standard gauge. That Mikado in On3 could cost you $2,000 and a brass coach can cost $300-400. Many of us who own some expensive On3 or On2 equipment have traded or sold one brass locomotive and financed our complete On30 railroads. Along the way, we threw off the burden of adherence to common practice and rediscovered the joy and fun of running tiny O scale trains on the uncommon gauge of 30 inches. There were a number of railroads in North America that ran on 30” gauge. In Cuba, Mexico and many other countries, 30” is still the rule rather than the exception. For many old HO modelers and new narrow gaugers, the simple concept of On30 modeling is overwhelming.

On the Internet a few years ago, I created the popular “Otrains” mailing list and we currently have 628 members who share information about standard gauge modeling in 1:48 scale, including many readers of this magazine. A short while later, I created “The On30 Conspiracy” to promote model railroading in On30 scale. We now have 1,143 members who are mostly recent converts to O scale and narrow gauge. At “The Conspiracy,” the emphasis is not on rivet counting and precise modeling so much as it is on creating equipment that looks good and operates perfectly for a tiny fraction of the cost of On3 or On2 and provides the same satisfaction.

On30 modelers shamelessly pursue the freelance railroad theme and their motto seems to be “It’s my railroad and whatever I do is prototypical.” So, they are not restricted by convention or common practice and the need to get it “just right.” If they feel like running steam, diesel, electrics, old equipment and new equipment together, they don’t even bother to explain it. “It’s my railroad…” and they buy, invent, modify or kitbash whatever suits their fancy and enjoy the sheer joy of running trains. The enthusiasm that exudes when a few “conspirators” get together is infectious and quite uplifting and the term “standards” is avoided except for scale, track gauge and coupler compatibility. At the last National Narrow Gauge Convention, when the On3 fans were studying Colorado history in one room and the On2 fans were discussing coastal railways in another, the largest group of On30 fans started and ended their session by standing and howling at the moon which is considered a (round) symbol for O scale. Imagine 50 grown men at a convention howling to the sky in joyful exuberance and you might start to get a feel for On30.

So, what is the great attraction of On30? The scenery, structures, vehicles and figures are the same for all O scalers, but the biggest feature might be the simple satisfaction of creating unique and credible narrow gauge railroad equipment with your bare hands and sharing the results and information with other kindred spirits who are not about to point out your deficiencies or inaccuracies. As you might imagine, nitpickers are not welcome or tolerated on the “Conspiracy list.” The level of modeling is as good as any other scale and photos of great modeling are shared via the Internet, raising the level of expectation for every member. Anyone can spend money for expensive models but the member who builds a simple, inexpensive model in On30 and explains how he did it is praised and appreciated by his contemporaries.

A few pictures of excellent On30 models can express the feeling better than I can.
For more information about Otrains go to:
http://groups.yahoo.com/group/Otrains/
For information about the On30 Conspiracy, go to:
http://groups.yahoo.com/group/on30conspiracy

Expand your O.

O Scale's largest selection:
- Turnouts/Crossings/Double Slips/Single + Double-Crossovers
- 135 different Turnouts + Crossings in stock,
  Code 100/125/148 Nickel Silver Rail
- Also Flextrack, NS Rail, Ties, Spikes, etc.
Available direct only.

OLD PULLMAN
Model Railroads, Inc.
646 34th Terrace, Dept O, Vero Beach, FL 32968
(772) 562-1480  Fax (772) 770-0759
oldpullmanbeat@nevero.net secure email
oldpullmanmodelrailroads.com

CABIN CREEK
COAL COMPANY

Limited Edition Kit
- Precise Laser-Cut
- Engineered for Easy Assembly
- 50+ Detail Castings
- Flexible Positioning
- Positionable Doors & Windows

Master Creations’ O kit #18105 contains the tippie, headhouse, power house, storage shed, retaining walls, and a ton of character for $549.95! The tippie is approximately 45 x 90 scale feet with the overall diorama shown being about 24" x 48". Not all details are shown in the photo!

B.T.S.
Celebrating over 20 Years of Service since 1979

PO Box 561
Seffner, FL 33583
Phone: 813-643-1105
Fax: 813-681-7526

Web: www.bter.com
www.master-creations.com
E-Mail: bill@bter.com
S.A.S.E. for price list
$6.00 each on all US orders
Full Catalog - $5.00
This month I will cover the track your trolleys will run on. Most trolley operations used light weight rails in 50 lb. to 85 lb. per yard. This would be on private right-of-way, however within cities or towns, girder rail with a cast in flangeway would sometimes be mandated. If freight was carried or standard steam road boxcars were pulled, the rail weights would necessarily be heavier, from 85 lb. to 95 lb. Most of the time girder rail was not used when this was done due to the larger flange on these freight cars. T-rail was common on Illinois Terminal RR and others.

In O scale model use, this light rail would be code 100 to code 125 and the heavier rail would be code 148. In city streets I have fabricated girder rail from code 125 up-right and code 100 on its side, soldered to the base of the up-right rail. Later I went to code 148 up-right rail and code 125 on its side. The wheel treads on most trolley power trucks just fit on this rail whereas the 125 rail head is somewhat narrower so the truck overhangs onto the paving material. This sometimes causes a dirt build-up and the cars don’t run as well. Brass strips laid across the base of this is used as a strengthener every 1” and ½”. These are long enough to extend beyond the base of the up-right rail so it can be soldered along the outside edges. (A sample is seen in photo #1)

I used a piece of Homosote or similar board with soft texture to make 3 foot long sections of girder rail as the San Diego Model RR Museum layout was constructed with a plywood top. This is hard stuff to spike into. Pine might be easier but is still hard to construct girder track on it. The 3 ft sections then were screwed down after using rail joiners to join the sections together. This is the time to determine where you want the control sections to be. Leaving gaps between sections now is easier than cutting them later, especially after the plaster is laid for the streets. Be sure to put jumper wires in between sections too, using the brass strips to solder these to.

Girder track is very hard to make for curves as the rail on its side does not want to be bent against the base of the up-right rail. I just use parallel up-right rail as a guard rail on both sides. Switches made by Right-Of-Way have the single point trolley type switch casting as well as the mate casting that is used on the other side. You have to make the frog, a simple process. All these switches are made to match up with the code 125 rail. I cheated and raised the switches up on brass strips to make it even with the 148 rail head. (Photo #2 is an example) After paving is applied, you don’t see any difference. On private right of way you can use Old Pullman double point switches as they are made in code 100 and code 125.

I used patching plaster as a paving material, painted with Floquil paint in a sort of medium grey to match worn macadam paving, or use engine black to duplicate new paving. You can get stone paving material from B J Traction, P O BOX 56 Thornton IL 60476 or Scenic Express, 1001 Lowry Ave, Jeanette PA 15644. Both make stone paving that can be cut up and fit around the rails. Or you can scribe your own pavers into the plaster, a tedious job at best, but I have seen some layouts with nice brick work done this way.

Of course when making streets, the sidewalk has to be considered (trolley modelers have to do it all) and I use ¼” wood strips painted concrete color, with sections scribed into it with a knife. The wood comes in all kinds of widths at your local hobby store so you have to determine which is best for you.

The overhead is next and the poles to attach it to. I make my poles along the street with 3 sections of brass tubing soldered together with a torch. Each section is telescoped into the next one in a smaller receding size as you go upward (Photo 3). Start with a brass rod ½” in diameter and 3 ½” long. Thread the bottom inch of the rod and run a nut onto the rod to the end of the threads. Slip a 3 inch section of ⅛” tube over the rod. Now slide a 3 inch section of ⅜” tube about 1 inch into the first tube. Do the same for a 3 inch section of ⅝” tube into the second. (I find that drilling a hole into a board and starting with the rod sticking out horizontally helps.) The length of the pole should now be 7 inches, 28 scale feet. Now solder the pole together using soldering paste and a torch (or your favorite soldering tool). Make sure the poles are washed in soap and water to get rid of the flux before you proceed.

The next step is to drill a hole where the pole is located in the sidewalk and
sub-roadbed. Then countersink the hole to clear the nut. Then install the poles and slide the sidewalk on top of the pole so it covers the nut. Run a nut up from the bottom to snug it down. (Photo 4)

You can drill a small size hole near the top before you install the pole to put the span wire in. Wire height is approximately 20 feet for most companies, some higher, some lower by maybe a foot. Make sure you measure the placement of this so all the poles are the same height from the bottom. Otherwise the running wire will look like a roller coaster.

A round head screw with the slot filled in will duplicate your usual pole top on most street railways. Q Car Company used to make these but I'm not sure they still do.

We will cover the job of stringing wire next time. Rivers Traction and Trolleys, 540 County Line Rd., Gates Mills, Ohio 44040 has a catalog with overhead parts listed and a section on stringing overhead wire for $2.00 (specify O scale or HO).
In 1930, PRR ordered 100 M1a 4-8-2s from Baldwin...

Now famous for their beauty and performance, Sunset Models is bringing you the M1a and the modernized M1b. You can still see the M1b in the Strasburg, PA Railroad Museum. Less than 50 of each version to be produced in O Scale.

Details abound with opening cab vents and water hatches, “Quiet Drive” mechanism with sprung drivers and ball bearing gearbox. Designed to operate on 56” radius or larger O Scale track.

What goes best behind your brass passenger locomotive?

...PRR PENNSY CARS (P70 · B60 · R50)

The PRR Cars are coming Fall 2003. Quantities will be made to reservations. Overhead CV lighting, interior w/seats, opening doors and hatches, sprung brass trucks and unbelievable underbody detail...

CALL YOUR DEALER OR 408-866-1727 TODAY!

SUNSET MODELS INC.
37 South Fourth Street · Campbell, CA 95008 · 408-866-1727 · fax to 408-866-5674 · www.3rdrail.com
Every model railroader has read the words “lost wax castings.” You can find these on any well detailed brass locomotive and in countless numbers in the super detailing catalogs from different manufacturers. This article will try to explain the process of making these magic parts. But, I’m sorry to say, after reading this article you will not be able to make parts in your wife’s baking oven. The expensive machines which are necessary and the high melting temperatures will prevent this.

The advantage of the lost wax castings are:
✓ Precise copy of the pattern
✓ Any size and shape is possible
✓ Countless copies are possible
✓ Durable and solderable

The disadvantages are:
✖ Extensive technical equipment necessary
✖ Expensive, because many working steps are required

These are the main working steps to get a finished casting: pattern-rubber mold-wax casting-plaster mold-brass casting

Now I will describe the single steps, starting with the pattern. The pattern can be made from wood, plastic or metal (photo 1). If you want a part with exact dimensions you have to calculate the shrinkage, which means that the pattern has to be 2 to 2.5% oversized depending on the metal alloy used. Why? Because hot material needs more space than a cold metal. My experience is that for most O scale parts like plows, coupler pockets and other “add on” parts you can ignore the shrinkage, but if you need large and/or long parts, like side rods or a smoke box front for a steam engine, you must consider shrinkage. The pattern has to be built precisely because any error will be transferred later to the brass casting. Many foundries calculate the price of the casting by its weight, so when building the pattern it is important to save material and that means thin walls or a hollow hidden on the back side.

Photo 2 shows a “tree” of patterns sitting in a box on a wax stand which becomes a part of the pouring channel. The next step is pouring the box with clear RTV (room temperature vulcanizing) silicone rubber. The silicone is a two part high quality rubber with shrinkage less than 0.1% which allows making many wax copies. Before pouring, the rubber is deaerated under a vacuum jar to eliminate all the little air bubbles that get trapped during the mixing process. This is necessary for high quality castings with a perfect surface. This step takes lot of practical experience and practice with a particular manufacturer’s product. (Photo 3 shows a locomotive driver center pattern ready for RTV.

After curing (Photo 4) the RTV is split with a scalpel, the fine cut makes it possible to get a seamless wax casting. The pattern can now be removed and the rubber mold is prepared for its first wax shot.

With the help of a machine the hot liquid wax (167°F) is forced with pressure into the mold cavities. (Photo 5) The wax is usually colored, in this case blue. The shot in Photo 6 was successful and is just cooling in the rubber mold. Photo 7 shows the complex and fragile parts possible, in this case an O scale German freight car ladder, and is also evidence of the excellent craftsmanship of the pattern builder and of the foundry. By the way, if you are thinking this wax is comparable to candle wax you would be wrong. The wax for these castings is durable like the soft plastic from which cheap plastic figures are made.
The canister just before evacuating the poured plaster (simulated)

Wax shot, just cooling

Fragile and complex wax part (freight car ladder)

The “tree” (German O scale coupler parts)

The canister prepared for heating

Canister prepared for heating

The tree now made of brass (HO scale bridge girders)

Melting the brass pellets

Setting the hot canister into the vacuum chamber

Finished castings: Truck side frame and steps of the Dash 8, a KCS style plow, coupler box with ditch lights, an EMD SW1500 front, the master (Artista figure) is checking the quality
After all the needed parts are cast from wax, the parts are assembled into a “tree” sitting on the rubber base of a casting canister. (Photo 8) The size of the tree is limited by the capacity of the melting oven. A canister is now placed over the tree; the canister is wrapped with a plastic foil to close the holes, and poured with a special plaster. During the next few minutes the plaster gets deaerated with a vacuum jar (Photo 9) removing all the air bubbles. (All the following steps with the canister are simulated because of the lack of finished parts during my visit to the manufacturer and for safety reasons. The hot temperatures and the narrow work space made it dangerous to work with a camera.)

Now the hot phase starts. The canister with all the wax castings is placed in a heating oven (Photo 10) and during the next 6 hours it becomes heated up to 1100°F. In the first step, heating to 167°F, the wax melts and is “steamed” out, remember the name “lost wax castings.” This leaves cavities in the plaster. In the second step the plaster mold is heated to the final temperature. Preheating the canister to a high temperature allows a better flow of the molten brass later.

After reaching the final temperature, the canister is carried with the help of a tong (Photo 11), and set into the vacuum chamber. This is a special oven which is micro-porous, just enough that the air can pass but holding the plaster in place. The vacuum removes the air when the cavities are filled with the molten brass. Larger manufacturers often use a centrifugal machine for this work. Little pellets (Photo 12) of a brass alloy are melted and it is impressive to see how the red glowing, liquid metal flows into the canister/mold.

After cooling, the plaster can be removed with some whacks with a hammer and the last remnants of plaster which may be stuck between fine structures can be washed away with a jet of water, a characteristic of the special plaster. If all the previous steps are successful the result is a perfect tree with all the fine structures visible (Photo 13).

Cutting the parts from the tree and sometimes a cleaning by sandblasting is necessary. This was the final step from the foundry and the parts are now ready for the modelers (Photo 14).

If someone needs a few small parts, visit your local dental technician. They have all the machines and are familiar with lost wax castings. False Teeth and gold tooth fittings are made by the lost wax technique. Or contact a manufacturer like Precision Scale Co., K&D Casting, or Stevenson Preservation Lines and tell them what you want.

*My special thanks to Michael Schnellenkamp of “Schnellenkamp Modellbau” Germany (www.Schnellenkamp.com) for his support and advice for this article.*

**Tips from Neville Rossiter**  
Perth, Australia

**Using Tamiya military miniatures 1/35 scale brick wall set.**

This idea first came to light when I was reading Frary and Hayden’s book *303 Tips for Detailing Scenery and Structures*. They described Tamiya 1:35 scale interlocking brick wall sections for military modelers. Their friend Pete Laier was using them for concrete block foundations for buildings in HO.

I have found them ideal to use in O scale. In addition to making foundations for buildings, I use them for a number of other things.

1. Retaining walls. Join a number of the B sections together.
2. Using the C sections, combine two of them with some narrow styrene and you have a neat set of steps.
3. Obtain a piece of balsa about 1 inch square. Glue the B pieces on one edge and the ends, cover the top with some Evergreen board pattern and you have a nice looking platform for a factory or freight shed.

The photos show you how I have used these parts on my layout.
I thought I would pass on some info on new releases of Lionel O scale cars. Lionel is coming out with two more great cars, a 52 foot flat and a steel reefer, both in their latest catalogue, plus second releases on the milk car and PS-2 hopper. Lionel also showed a two bay hopper in their previous catalogue and if they do the gondola again it is a must as you will see in the shots that are attached of my layout.

New releases of scale cars from Lionel

<table>
<thead>
<tr>
<th>Lionell #</th>
<th>RR Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS-5 Gondola 52' 6&quot;</td>
<td>$44.99</td>
<td></td>
</tr>
<tr>
<td>6-17439</td>
<td>Union Pacific</td>
<td></td>
</tr>
<tr>
<td>6-17440</td>
<td>Algoma Central</td>
<td></td>
</tr>
<tr>
<td>6-17457</td>
<td>Great Northern</td>
<td></td>
</tr>
<tr>
<td>6-17458</td>
<td>Reading</td>
<td></td>
</tr>
<tr>
<td>PS-4 Flatcar 52' 6&quot;</td>
<td>$44.99</td>
<td></td>
</tr>
<tr>
<td>6-17574</td>
<td>Western Maryland</td>
<td></td>
</tr>
<tr>
<td>6-17574</td>
<td>Santa Fe</td>
<td></td>
</tr>
<tr>
<td>6-17575</td>
<td>New York Central</td>
<td></td>
</tr>
<tr>
<td>6-17576</td>
<td>Ontario Northland</td>
<td></td>
</tr>
</tbody>
</table>

These cars will have real wood decks.

Steel Sided Refrigerator Car $54.99
| 6-17336 | Pacific Fruit Express |
| 6-17337 | Canadian National     |
| 6-17338 | Merchants Despatch Transit |
| 6-17339 | Burlington Refrigerator Express |

General American Milk Car $59.99
| 6-17340 | White Brothers        |
| 6-17341 | Dairymen's League     |
| 6-17349 | New York Central      |
| 6-17350 | Hood's                |

PS-CD 4427 Hoppers $59.99
| 6-17191 | Burlington Northern   |
| 6-17192 | Lehigh Valley         |
| 6-17193 | Chessie System        |
| 6-17194 | Missouri - Kansas-Texas |

All info came from the Lionel Volume 1, 2003 Catalogue.

These cars will be released between mid Summer and late Fall.

With about half an hour’s work these cars can be changed over to two rail with new trucks and couplers. A little weathering and little paint touch ups, to paint out the “Built by Lionel” and painting the brake chains you will have a great looking car. I recommend that my fellow O scalers get their reservations in early for these cars, because they sell out fast. I have eight of these cars on my layout now and have put in reserves for six more of them.

News: 1:48 scale automobiles

Herb Deeks Models
1516 E Santa Ana St
Anaheim CA 92805
714-774-7326, fx 714-774-9631

Herb Deeks is well know in the SciFi field for his resin models of 50's style spaceships. But, few know that Mr Deeks also makes resin automobiles and trans-kits in O scale. A recent listing included a lakester speeder, a '56 Ford 2 ton cabin and chassis, a '56 Chevy 2 ton cabin and chassis, a small fuel delivery barrel with step platform for the above chassis or a fire pumper body. Also listed was a White 300 two-axle tanker truck. One of his trans-kits is a Servi-car 3 wheel conversion for the motorcycle that came with Revell's '55 Ford pickup. Deeks also sent along a photo of a Model T pickup he is working on and his catalog says more stuff is coming, like a 50's era ice cream truck. Prices range from $5 for the lakester to $35 for the White tanker.

News: BTS
PO Box 561
Seffner FL 33583
www.btsrr.com 813-643-1105

Bill Wade says that several people have asked that he make the Slatyfork Sawmill in O scale. It's a large structure at almost 29 x 16 inches and the cost would be close to $1000 with basic interior machinery. Because of these factors Bill had not planned to offer the mill in O scale. But he says that if you really want one, send a $200 deposit (refundable). If he gets 35 people with deposits, he'll do the kit. Bill says his next kits in O scale will be the McCabe Tranway & Storage Yard followed by the McCabe Planing Shed. Get your orders in now. The McCabe Company Office is still available at $129.95.

News: Accurate O Scale
O scale trucks
38623 Orchard St
Cherry Valley CA 92223
909-845-5237
accoscale@earthlink.net

Jerry Snow of Accurate O Scale sent along samples of his superb O scale trucks. Several varieties are available: friction bearing caboose 33" wheels ($19.95), roller bearing caboose 33" or 36" wheels ($19.95), 70 ton roller bearing 33" or 36" wheels ($15.95), 100 ton roller bearing 33" or 36" wheels
($15.95), 5 foot archbar with 33” wheels ($14.95), and a 5’6” Bettendorf with 33” wheels ($14.95). All trucks have plastic sideframes and bolsters. Wheels and axles are steel. All roller bearing trucks feature rotating bearing caps.

NEWS: Canter Rail Service
1203 Rotherham Lane
Beech Grove IN 46107
317-782-3322 jcanternkp@aol.com

Jim Canter is offering Proto48 tie strips. These are black plastic tie strips that are a scale 4’ 8¾” between rail heads. Each tie also has a detailed tie plate. The strip will accept code 125 or 138 rail. Each strip is nine inches long and strips come 12 to a pack for a total of nine feet. A package of track is $29.95 plus $5 shipping. (Indiana residents must add 6% tax). Jim is also producing right and left #8 turnouts at $28.95 each.

REVIEW: N&W Y3 2-8-8-2
Sunset3rd Rail
37 S. Fourth St
Campbell CA 95008
800-373-7245 www.3rdrail.com
reviewed by Joe Giannovario
Cost: $1600 list price

A Little History
Once I discovered the Norfolk & Western Railway, I immediately fell in love with its steam engines. The N&W, it seemed, knew how to squeeze every last bit of horsepower out of steam and do it in style. Their home-grown super power could run with the best the major manufacturers had to offer. Imagine a 70-inch driven 4-8-4 whipping by at 100 mph. So much for the rule of thumb about top speed (1.1 x driver diameter).

But the A, J, and Y6b (N&W’s triumvirate of steam) didn’t spring fully formed from the Engineering Department so much as they were grown from sound engineering principles and hard earned experience. Much of that experience was earned at the throttle of the N&W’s 2-8-8-2s.

It’s always good to start at the beginning and that’s where the N&W started—with five 2-8-8-2s designated class Y1 built by Baldwin in 1910. These were troublesome locomotives but N&W felt the wheel arrangement had merit and tried again with a better design. These were the Y2s and the road liked them.

Because of World War I restrictions, the next 2-8-8-2s to arrive on the property were 45 engines of USRA design. These were classed Y3 and numbered from 2000 to 2044. These Y3s were built by both Alco and Baldwin in 1919. In actuality, the USRA 2-8-8-2 was nothing more than an improved N&W Y2. The Y3 design was so successful that the N&W kept refining it over the years until eventually all Y3 and Y3a classes were modernized in the 1930’s and it became impossible to tell them apart except by road number. The modernization program involved moving the twin air pumps from the smokebox to the engineer’s side of the locomotive to balance the Worthington BL feedwater heater on the fireman’s side and many other not so obvious upgrades. Even larger tenders were added to boost water capacity to 22,000 gallon and coal to 30 tons.

The Model
Sunset3rd Rail has produced the Alco version of the Y3 as modernized. The model matches the drawing in the Classic Power book USRA 2-8-8-2. The models dimensions coincide nearly perfectly with prototype dimensions (see table) allowing for the fact the model needs to be wider due to O scale track gauge and the need to traverse curves much sharper than the real locomotive.

The drive mechanism is the standard we’ve come to expect from Sunset3rd Rail, a Pittman 9000 series motor with a timing belt down to the gearboxes. This is a single motor driving both gearboxes. I tested the locomotive on Gordon Whit-
roof ventilator pops up. The tender water hatch opens, but in one piece rather than three as in the prototype. Both headlights work directionally on the loco and tender and the class lamps light up, too, but they don’t come on until there is at least 5 volts across the track. The loco was moving well before that voltage was reached.

The model is finished in a flawless satin black with graphite smokebox. I prefer the satin finish over too glossy. My loco is numbered 2008. Road number 2034 is also available in N&W livery.

One reason for producing this particular locomotive is the class was sold to other railroads during World War II. Engines went to the UP (5), PRR (6), and AT&SF (8). Later, seven of the AT&SF engines found their way back East to the Virginian. Sunset 3rd Rail has available two road numbers for each of these roads and each model is detailed to match “in service” condition.

How does this model compare to other similar models? Well, it’s not in the same league, in detail, as a Kohs & Co. Y6b, but then it’s one-third the cost. It is a far superior model to a Max Gray Y6b which still commands prices in the $2000 range. I used to own an Overland Y3a (imported about 10 years ago) which I sold to purchase this model and I’d say the Sunset model isn’t as detailed. But it also isn’t as fussy mechanically which is why I made the switch. Overall, this is a fine piece of motive power at a reasonable price. Many HO scale models cost more than this.

I could only find one really major flaw in the model. The builder drilled a hole in the front center steam pipe for the pivot screw... from the top, rather from below as is typical in model articulateds. D’oh! But it’s really not that noticeable until someone points it out.

The locomotive used for this review is my personal property. However, I ordered it blind through a dealer so I trust that its operation, detailing and finish are typical of the entire run.

References:
• Norfolk & Western Steam (the Last 25 Years), Rosenberg and Archer, Quadrant Press, 1973.
• Norfolk & Western Railway, R Prince, published by R E Prince 1980.
Northern Pacific ordered a single expansion 2-8-8-4 locomotive from Alco. The goal was to have a single locomotive capable of pulling 4000 tons on the Mandan-Glendive run of some 216 miles. It was also designed to run on the NP’s own Rosebud coal, which required a larger firebox then other types of coal. It was to be called the Yellowstone type, after the division it was designed to work.

The locomotive was completed in December of 1929 and was at the time and for some years to come, along with its sisters, the world’s largest steam locomotive. Numbered 5000 this original locomotive proved somewhat of a challenge and was not immediately liked by the people that had to operate it. It was, after all, a monster. The firebox was some 266 inches long and 114 inches wide at the bottom with a total grate area of 182 square feet. This is what drove the wheel arrangement. That firebox required the large four wheel trailing truck.

A single expansion articulated with four cylinders 26” x 32” in diameter was a design departure on the NP, but it allowed a higher average speed than the traditional Mallets. The Z5 was delivered with 63” drivers and operated at 250 pounds of steam pressure. It stood 16’ 4 1/2” from railhead to smokestack top. The engine and tender weighed 1,118,000 pounds. It also came with an Alco type G reverse gear, Nicholson thermic siphons, a Franklin type C2 booster, a Simplex stoker, two Coffin feedwater heaters, an Elesco type E superheater and Walschaerts valve gear. On paper it had 140,000 pounds of tractive effort with an extra 13,400 pounds from the booster.

The locomotive alone was 80’ 5 5/8” long. The tender 44’ 6” long and was designed for 21,200 gallons of water and 27 tons of coal. It was equipped with a mechanical coal pusher. Imagine trying to hand fire this guy. Not possible!

The NP and Alco once even staged a banquet for 12 people in the firebox to publicize the size. In 1930, after numerous shake down rides and engineering changes to improve the firebox performance the NP put out a bid for 11 more Z5’s. Baldwin came in at $7,000 less for each copy. They also stood taller at the stack top at 17’ 2”

The Z5’s were designed to produce a horsepower rating of 6,079. In reality, with that extremely large firebox, it measured out at 4,922 horses at 27 MPH at the drawbar. Eventually they determined that the firebox was too large.

This was the ultimate design for NP Steam for freight. After these, the only new designs NP took delivery of were diesel units dedicated to freight.

As a comparison, the UP did not put their first Big Boy into service until 1941. It was a more modern design, and had a higher speed capability, but other-
wise compared nicely. The Big Boy, came in at 1,208,000 pounds, and had a tractive effort rating of 135,375 pounds with 69” drivers. It also sustained 300 pounds of boiler pressure.

The Model

The Sunset Z5 is a terrific model. It is an accurate representation of the Baldwin versions, down to the correct builders plates, and runs like a Swiss watch! I have had mine running around a friends layout for hours, quietly pulling a nice string of cars. The layout has 96” curves, so I cannot say what the model is limited to. The booklet that came with the model says it needs just 60” radius, although I have not tested this.

A non-scientific judgment tells me that it has a scale top speed of about 45 MPH, and it seems to roll along at about 35 MPH effortlessly and quietly. This, by the way was the recommended speed limit for this engine. It pulls only one amp at about 12 volts.

I did take a ruler and caliper out, and here are the results I have found. I used an NP erection card found in the book Northern Pacific Railway Super steam Era 1925 to 1945, by Robert L Frey and Lorenz P. Schrenk

As you can see from the table, it is a very accurate representation of the prototype. I would also like to make note of the following observations.

I had to really nit pick to find any real problems. The builder photos show white tires, and a gray boiler. The back head, while the most complete, and very close to accurate I have seen is missing some gauges. The overly large firebox had a clean out grate on the side for the front of the box, as does the model. The only difference here is that the step is in the wrong place. The plumbing looks to be very accurate on the engineer’s side, but the fireman's side seems to be missing some of the pipes under the walkway.

The most telling issue is a big plus for Sunset. They employ a style of packaging for these heavy models that secures the individual engine and tender upright to a board that is sandwiched by foam so that it effectively keeps the model from moving during shipping and as such avoiding shipping damage. The painting is terrific quality. The lettering is superb, down to including the classification numbers on the side of the tender, as does the prototype.

I did have a problem with the delivered model that was unrelated to the packaging design. The lead weight was installed, as it should be in a model like this because of the complicated assembly of the steam chest, and steam lines. Unfortunately the weight came loose in transit, and the design has the circuit board for the directional lighting mounted directly to the weight. So when the weight moved, it tore up the wiring.

Sunset stands by their advertising and their products. They took the model in and corrected the problem with a smile and attention to detail that is second to none. It is through such actions that the true worth of a product shines.
Last issue I introduced Lionel's TMCC™, described its functions, features for the 2-rail operator, and listed several locomotive manufacturers who include 2-rail TMCC™ in their product lines. In Part II, I'll go into more depth about power requirements and switch and reverse loop control applications. Train America Studios pioneered TMCC™ in a 2-rail environment and they call this technology Scale Command.

**Two-Rail TMCC Power Requirements**

Now that you understand how the TMCC™ components communicate we need to discuss how the system is powered. DC (Direct Current) is the preferred power source in scale model railroading. In order for TMCC™ to perform reliably in a DC environment we have to synchronize the power signal with a Train America Studios' Inverter. This power signal synchronization is required to allow the onboard command receiver in the locomotive to synchronize itself to the command base signal that is transmitted 60 times a second. The TAS Inverter allows this synchronization to occur when used with a standard DC transformer.

The TAS Inverter is placed between your DC power pack and the track, and restores the missing “sync” thereby allowing the TMCC signal to work reliably with DC power. The Inverter connects to the AC accessory output of your DC power source and samples the AC power. It sets the zero cross point that is the sync signal. The Inverter leaks AC current onto the track along with the DC current. The Inverter also connects the Lionel TMCC™ Command Base to the tracks. The Command Base injects the radio signal into both rails without creating a short circuit, and this signal is received by the locomotive’s antenna. The hand held Lionel CAB-1 Remote Controller® transmits commands to the Command Base on a different frequency.

Once the Inverter is installed, you can select between conventional DC operation and Scale Command operation with the flip of the inverter's selector switch. In conventional DC train control, the amount of voltage applied to the track determines the speed of the locomotive, but in the TMCC™ environment the track power is set for constant voltage between 14 and 18 volts.

Locomotives equipped with Scale Command (2-rail TMCC™) lie dormant until a command is sent to them from the CAB-1, but their lights are constantly bright due to the fixed track voltage. For the same reason, passenger car and caboose lights will always be on even when the train is sitting still. Flickering engine and car lights as they roll down the track are now a thing of the past.

**Creating "Power Districts"**

This following diagram shows how to create power districts between two or more loops of track. Creating power districts lets you maximize the amount of amperage in each loop of track in order to simultaneously run more locomotives on each loop. For instance, if you have 2 power packs and 2 loops of track, it makes sense to connect one power pack to one loop and one to the other loop. The scheme works by isolating each loop with track gaps located wherever switches connect the two loops of tracks. When the locomotives cross over the gaps between each power district no hesitation will occur if loop 1 and loop 2 are at the same voltage. The locomotives just glide through the switches onto the other loop and into the next power district.
DC Power Packs vs AC Transformers

In order to keep the cost of using Scale Command as low as possible, the TAS Inverter was designed to keep operators from selling their DC power packs and buying new AC power packs. But most DC power packs are designed to run only 1 or 2 locomotives. This means that the power rating of DC power packs is much inferior to that of AC transformers.

For example, an AC transformer like the Lionel 180 watt, 10 amp, Power-House that retails for $89.95 is capable of running up to 5 trains under heavy loads. When you purchase an additional power supply in the future, Train America Studios recommends an AC transformer. If you decide to purchase an AC transformer you must use a TAStudios' Signal Enhancer to infuse the command signal into both rails without creating a short circuit.

On the other hand, a robust Bridgewerks' DC power pack, rated at 15 amps will effectively handle several locomotives under a heavy load, but it retails for upwards of $400.00. It makes more financial sense to buy a low cost AC transformer and Signal Enhancer for Scale Command operations than it does to buy a more powerful yet costly DC power pack and still need an Inverter.

Controlling Switches

How do I control my switches?

The Trainmaster Command Control system uses stationary switch controllers to control various switch machines and accessories on your layout. These switch controllers fall under what we refer to as stationary TMCC components. There are 2 types of controllers from which to choose:

Lionel's SC-2 and ASC.

1. The SC-2 controls up to 6 remote switch machines with AC loads up to 15 amps. The SC-2 is powered by an external wall pack and fused for maximum durability and circuit protection. Its outputs can be used to control twin coil and solenoid type switch machines like those produced by Tenshodo, PFM, NJ International, etc.

Pictured below is a Lionel SC-2 that comes with a wall pack and thorough installation instructions.

2. A Lionel Accessory Switch Controller (ASC) operates up to four switch machines or eight accessories such as lights. It allows control of twin coil and solenoid type switch machines like those produced by Tenshodo, PFM, NJ International, etc. The ASC is the recommended controller for the new Atlas O 2-rail remote switch motors.

The ASC is also ideal for DC switch motors such as Tortoise, Switchmaster, Torquemaster, Rotor Motors, etc. The ASC can be programmed for constant power or momentary power. Each ASC comes with detailed and illustrated wiring instructions.

Pictured below is a Lionel ASC that requires an external power source and a data communication cable to connect the ASC to the Lionel Command base.

**Reverse Loops**

Reverse loops and crossovers are always a challenge on a 2-rail layout, but for Scale Command the solution is very simple. Both rails are gapped on both sides of the switch (straight and diverging). TAStudios Auto Reversing Booster (ARB) reverses the polarity automatically. An ARB is connected with 2 pairs of wires connect to both rails on the mainline (orange) and both end-gapped rails in the reverse loop (yellow).

When a train enters the reverse loop and creates a short between the gaps in the rail caused by mismatched polarity, the ARB detects the short and immediately reverses the polarity in the reverse loop. This reversal occurs so rapidly that the train does not even detect it. When the engine reaches the other end of the reverse loop, the reversal sequence repeats. One ARB is required for a single reverse loop or crossover section.

The following schematic shows just how simple it is to wire an ARB into a reverse loop.

**Summary**

Scale Command is an operational alternative to DCC and Train America Studios makes it easy to connect to a 2-rail DC track system. Their Inverter connects directly to the track with input from both the DC power pack's variable and a fixed voltage posts, and the Lionel Command Base that injects the radio signal into the rails. DC switch control is enabled with either of two Lionel controllers. Reverse loop polarity problems are solved with the TAS ARB.

In Part III, I'll discuss how to get started with Scale Command by describing typical component configurations and pricing. ✉️
The finest models available in ¼" Scale
Accurately reproduced from over 250 original PRR tracings
Uniquely detailed for each major subclass
Ten distinct brake system and hopper variations
H25, H21A, H21B, H21E
Choice of draft gear – a KMW exclusive
‘S’ Series – Full Operating Draft Gear with Scale Couplers
‘K’ Series – Modified Striker for use with Kadee® Couplers

Visit our website for more information on how Scale Command can benefit you.

Train America Studios • 4137 Boardman–Canfield Rd., Ste LL02 • Canfield, Ohio 44406
Hours: Mon-Fri, 10AM -6PM • Voice: 330-533-7181 • Fax: 330-533-7208 • email: info@scalecommand.com • web: www.scalecommand.com

Are you ready for everything you could ever dream of in a wireless remote operating system and then some? Then 2-rail Scale Command is your dream come true! Look at these features: independent control of up to 99 locomotives; wireless control of switches; realistic on-board digital sounds; 100% Kadee-compatible operating scale couplers; and more! Scale Command can be added to any 2-rail O scale locomotive. Scale Command is the most affordable command/control system ever offered for O scale.

Pennsylvania Railroad Quad Hoppers

The finest models available in ¼" Scale
Accurately reproduced from over 250 original PRR tracings
Uniquely detailed for each major subclass
Ten distinct brake system and hopper variations
H25, H21A, H21B, H21E
Choice of draft gear – a KMW exclusive
‘S’ Series – Full Operating Draft Gear with Scale Couplers
‘K’ Series – Modified Striker for use with Kadee® Couplers

Pennsylvania Railroad Quad Hoppers

H21a H21b, H21e arriving August 2003
H25 arriving May 2003

Keystone Model Works

Museum Quality Models for Discriminating Collectors

Pennsylvania Railroad Quad Hoppers

The finest models available in ¼" Scale
Accurately reproduced from over 250 original PRR tracings
Uniquely detailed for each major subclass
Ten distinct brake system and hopper variations
H25, H21A, H21B, H21E
Choice of draft gear – a KMW exclusive
‘S’ Series – Full Operating Draft Gear with Scale Couplers
‘K’ Series – Modified Striker for use with Kadee® Couplers

Keystone Model Works

PO Box 143, New Cumberland PA 17070
www.keystonemodelworks.com
717-766-6680
Authorized Dealers: Al’s Rails • Brass Round House • House of Duddy
Central’s Latest Releases

GP38-2, GP40-2, SD40-2, SD40T-2 & SD45T-2

Central Locomotive Works
17525 Alder St Ste 46 • Hesperia CA 92345
ph 760-244-9222 • fax 760-244-9322
e-mail clw2000@earthlink.net
www.centrallocomotiveworks.com

620 Wright Loop Williamstown, N.J. 08094 — 2-RAIL

SS PRR J1 2-10-10 Original Unpainted (SHORT TDR.) $1,120
SS PRR Q2 4-4-4-4 FP $1,180
SS PRR F1 4-4-4-4 FP Shrouded/Unshrouded $1,350 each
SS PRR P5a FP BOX CAB $800
SS PRR F2 FP $850
SS PRR P5a FP MODIFIED (baby GG1) $750
SS PRR B-1 FP $750
SS PRR E6 4-4-2 Original UP $725
SS PRR N-1 2-10-2 FP $1,150
SS BA0 2-8-0 FP $750
SS PRR J1 2-10-4 FP $1,275
SS PRR HH1 2-8-8-2 $1,150
SS PRR N-1 2-10-2 UP $1,650
SS PRR G1 4-6-0 UP $1,380
SS PRR M1a 4-8-2 UP extra detail, by H. Hieke $1,500
OMI UP 2-8-8-2 EX N&W Y3 $2,300
ALC PRR T-1 4-4-4-4 CP Light weathering $3,500
W&M PRR J1 2-10-4 CP Light weathering $1,750
W&M PRR Q2 4-4-4-4 UP $2,500
W&M PRR M1a 4-8-2 UP Cub detail (NCB) $1,380
USH PRR M1a 4-8-2 CP extra detail, by H. Hieke $1,500
OMI UP M1a 4-8-2 UP $3,300
OMI UP 2-8-8-2 EX NW Y3 $2,550
AFC PRR K-4 4-6-2 UP Broadway Limited streamlined $1,400
W&L PRR T-1 4-4-4-4 UP 2 Railed by Trackside $1,100
W&L PRR L-1 2-8-2 2 Railed by Trackside $750
Call 856-629-9702 Between 6 and 10 PM EST
Casting Your Own Parts

By Gary Woodard

I guess I brag too much when I do something. Recently, I mentioned in passing on an email list that I was doing some resin repros of the motorcycle that came with the Revell ’56 Ford pickup truck kit. Well that generated some email, offlist of course, so I guess I have to respond by telling everyone how it’s done. It’s really a very simple process. It just takes forever to explain how it.

The key to successful model building is detail. While another railroader visiting your layout might not notice all of the detail (simply because they are paying more attention to the trains) their spouse or friend might be very impressed by all the extras. Women, for instance, are always impressed by miniatures, not necessarily the trains. In many cases, they would be the ones to notice the garbage cans in the alley or the tools in the garage.

So here’s the secret to getting tons of detail parts... cold casting. You use rubber molds and polyurethane. As long as your molds and resin supplies hold out, you don’t even have to leave the comfort of your own home.

Some of you might be questioning the legality of copying detail parts. It isn’t illegal. What is illegal is making parts that you didn’t design and selling them.

In this article, I will show you how to make two piece molds and discuss a one piece mold. The two part, or multi part mold, is used to cast all sides of one part at the same time. These would include things like trash cans, fifty five gallon drums and other small parts. It can also be used to cast automobile bodies and other parts. I know that finding true O scale (1:48) automobiles is difficult and by knowing how to do the casting process, someone might just be able to cast some really nice vehicles.

If you want to do some casting, first read this article, then go to Micro Mark*, and order their resin casting starter set, #82698, usually on sale for $69.95. This set includes RTV rubber mold compound, casting resin, mold release for making molds, a spray can of mold release for casting, a box of Kleen Klay, a small package of measuring cups, some brushes and stirring sticks. And for those that are wondering, no, I don’t work for Micro Mark.

Two Part Molds

You will need what is called a master pattern. This pattern can be one you design and make yourself, or it can be anything you want to copy. As you see in the photographs, I’m using some trash cans out of the Berkshire Valley Drugstore kit. These are really nice pieces, and will provide some really nice castings providing, of course, that the mold is made correctly.

These parts are made in such a way that all sides are cast as a unit. That requires a two piece mold. The first thing you need is clay. Kleen Klay is a good, non drying clay that holds the parts in place while the first half of the mold is cast. For the few small parts being copied here, all you will need is one of the four squares of clay out of the package.

You start by kneading the clay and making it wide and flat. Don’t worry about there being too much, as you will cut some back. You’re just making a seat for the items to be copied at this point and this will be the first half of the two part mold.

Form the clay into a ¼” pancake. It doesn’t have to be perfectly round; it can be square. If you need it, use more clay. There is enough in the package that came with your basic casting kit.

There is another way of making a two piece mold and that would be to suspend the parts inside a mold box (See Roland Marx’s article in this issue). I’m not going to show that here because that wouldn’t work well for the multiple castings we are

Clay base that will be used to hold the parts as the first half of the mold is being made.
Push the parts in until they are halfway submerged into the clay.

Putting into one mold. As we go along I will refer to the suspension type of mold making at certain points.

Next, line up the castings in a logical manner. Make sure they are at least 1” from each other if they have small details. If they are larger, make the space between the masters bigger. You will need to locate the gates, not only to pour the resin in the mold, but also to get it from cavity to cavity. You will also need room for a gate that comes out the top of the mold, allowing air to escape while the mold is being filled. All these gates allow you to make several castings at once.

Now push the detail parts into the clay about halfway, covering each detail in all areas. Avoid undercuts. Undercuts are areas where the mold compound could flow under the master. This would make getting the master out of the mold nearly impossible and will damage the mold. At the price of mold making compound, you don’t want too many mistakes. If your master is going to create undercuts, then it might be better to make a three piece mold.

After the detail parts are in the clay, the next thing to do is make the gates. Any material can be used for this. I used a bamboo shish-kabob stick for this. It’s just about the right size to make a good flowing gate. I have used styrene strip and even used old plastic kit sprue to make the gates. I have also just cast the mold without gates and cut the gates in after the mold is made. That is best when you we are making a two piece mold for just one part, such as a mold that where you don’t want clay, but actually suspend the part. Do whatever works best for each individual mold.

There are two places where the gates are most important. You never fill a mold cavity from the top. It fills from the bottom, so there must be a gate going into each cavity from the bottom. In order for the air to escape, there must be another gate that leads from the top of each mold cavity. With the set up you see here, it will insure consistently good castings. Each gate used to allow air to escape the mold must come off the highest point of each cavity. This insures that the casting cavity will fill fully with resin. Without those gates, you might pour the resin in but it won’t fill the cavity.

You will also notice that I didn’t create a funnel at the pour point. I can do that after the mold has been made since it isn’t needed while actually making the mold. I don’t have anything handy that would create a funnel at this time, so I will cut one into the mold when it is completely set. I will also be doing all the trimming at that point. You will find that when you cast your first mold there will be quite a bit of flash and it will require clean up.

Okay, on to making the mold. Now that we have the basic setup of the casting system for the mold, it’s time to cut the clay around the pattern. This makes it easier to build up styrene sides around the pattern. You will notice in the photographs that I started by putting the clay onto a base of styrene sheet. This makes it much easier to build the box around the pattern and will hold the RTV rubber in place over the pattern.

You will also notice that I’m using a mold release compound here. It is designed to keep the new mold from sticking to the clay and the rest of the pattern, and it becomes especially important when you go to make the second half of the mold. I know, I made the mistake of forgetting it once, and only once. While RTV doesn’t really stick too hard to many of the patterns you might be using, it sticks to itself like crazy. So, I can’t stress this enough, when you make the second half of the mold, USE THE MOLD RELEASE.

If you’re using the stuff from Micro Mark, their RTV mold compound is designed to be a 50/50 mix. You use two different measuring cups. For this mold you won’t need more than about one ounce of each and that will be a two ounce total for each half of the mold. So, one ounce each of part A, and one ounce of part B, use a third cup to mix the two parts in. Mix well and blow on it to get as many bubbles out as you possibly can, then pour into the mold box. This should cover everything. If
When sufficient time has elapsed, break the mold out by breaking the mold box apart, and then carefully remove the mold from on top of the clay base.

Sit back and play on the computer for about four hours. Go take a nap. Go to dinner... anything. Setup and make another mold if you wish. BUT, don’t try to pull that mold out of the box for at least four, that’s FOUR (4) hours. It takes at least that long for the mold to completely set and if your using another brand of RTV rubber it could require a setting time of up to 24 hours. I like to make my molds late at night, then go to bed and let the mold set overnight.

Once the mold has set I don’t just pull the mold out of the box as that could damage the mold. You should break the sides of the styrene box apart, and gently lift the mold at each of the corners. The mold will then come up fairly easily, especially if you used the mold release compound.

At this point, you will notice much flash on the mold. Some areas of the mold have flash simply because you might not have had a perfectly square box or the clay wasn’t perfectly square. It will trim up fairly easily. I use a knife to carefully trim the flash around the mold cavities and all the gates. Around the outer edges of the mold, you can use a good sharp pair of scissors. Cut that outer flash off carefully, don’t just pull it off as that can also rip the mold. As robust as these molds are, they do have their delicate side. Taking care not to damage the mold will give you a longer mold life.

Now it’s time to make the other half of the mold. After all the trimming and cleaning is done on the first half, it’s time to put the master patterns back into the mold. This time you can put the clay away as the next mold pour will be done right on top of the first mold pour.

Putting the masters back into the first half is easy. They should fit the mold perfectly. Just remember to put them back in exactly the same location they came out. The extra pieces used to make the gates in the first half of the mold will also be used again. After you make the second half of the mold, you can throw them away.

Before you mix the rubber, you will need to put the mold box back together. Do this by putting the first half of the mold where the clay base was before, then rebuild the sides. This will only take a few minutes. Once you have everything in place, it’s time to put on the mold release. Remember, this is the most important step.

Mix the RTV rubber just like you did before. Pour into the mold box, sit back and relax... just don’t try to pull that new mold off for at least four hours.

As you can see in the photographs, after breaking the sides of the mold box we have what appears to be a solid mold. At this point, it is important to be careful. Don’t be in a hurry. Gently work around the corners first and pry apart the mold with your hands. If it looks like some mold release didn’t get into certain parts, not a problem. That’s what X-Acto knives are made for. Be sure you are cutting as close to the seam as possible. The mold will begin to come apart on its own, provided, of course, that you used mold release compound.

Now that the mold is apart, it’s time to pull everything out of the mold. For the time being, unless you want to use them to make another mold, it isn’t necessary to keep the masters around.

Clean the second half of the mold of flash, the same way you cleaned the first half. Once this is done, your new mold is ready for casting.

For those that are using the Micro Mark stuff, it is the same with the casting resin as it is with the mold making material: a 50/50 mix of parts A and B. The thing to remember here is that it isn’t going to take very much resin to fill a mold of this size. Notice that I also cast another motorcycle, so as not
Now the second half of the mold is ready to be removed and cleaned. Be careful, as some of this mold may still be stuck to itself."

The first order of business here is to spray the mold with casting mold release. This comes with the Micro Mark beginners kit and it is a nice large can that will probably outlast all the resin you have. You just need to spray the inside surfaces of the mold. Make sure you spray into all cavities and the mold is ready for casting.

Now you need to secure the mold halves together. You do that by cutting a couple of pieces of wood, styrene, heavy card stock or Bristol board to the same size as the outside of your mold. It doesn’t have to be exact, but it does need to be enough that you can wrap a couple of rubber bands around it. They don’t need to be real tight, but snug enough to hold the mold together.

Pour some resin from the bottle labeled Part A. Try to pour only as much as you think you will need to fill your mold. For small parts like this, it isn’t very much, maybe a half ounce. Then do the same into another measuring cup from the bottle marked Part B. Into a third cup, any cheap, disposable cup will do, pour both Parts A and B and mix completely. Scrape the sides of the cup with a wood mixing stick. Once you have done this, you have about five to seven minutes to work with the casting resin. Start pouring into the mold. Do it slowly. The stuff from Micro Mark is water thin, however, you still need to go slowly with the resin, the resin has a pot life of about seven minutes, and a full setting time of thirty to forty minutes. I usually give it about forty five minutes just to make sure.

After letting the castings cure in the mold, it is safe to remove the rubber bands. Gently pull the mold apart. You can see by the photographs that the first castings out of this mold came out fine. They aren’t perfect, but you can’t expect them to all be perfect every time. One casting had a little bubble in it. Other than that, these first castings are totally usable.

Less than an hour old, I have painted the trash cans I just cast. They’ll be placed on the diorama that I’m working on and I will, of course, use this mold again.

To make a backup for the mold, as it will need one while the rubber bands hold the two halves together, you can use any good flat material, wood, styrene, or even heavy duty Bristol board.

Here are both parts of the mold, clean the second half and cut a nice funnel into the entrance gate at the top of the mold.

Here is the mold in use, the resin has been mixed and poured, now to wait about forty five minutes, and this set of castings should come out.

The finished mold ready to cast, the mold release has been sprayed on, now to put the mold together.

Fresh out of the mold, these castings do have some flash, but it cleans up fairly easily.

Micro Mark, 340-3151 Snyder Ave., Berkeley Heights NJ 07922-1538
www.micromark.com 800-225-1066
Here are the fresh castings now cleaned up. They do look really good at this point. These castings painted up well. Not even an hour old and they are ready to be put into any scene.

Here I add two to the station, as it only had one before from another mold, note that the fifty five gallon drum is also one of my castings.

**NOW!**
**DUE TO EXTREME WHINING!**

A New Drive By Accurate O Scale

MAX-M-DRIVE Synchronous Belt
All New Ball Bearing Quiet Drive
Replace Those Tired Wornout Old Technology Drives With A Pittman Bearing Motor.

**NEW PRODUCTS**
• California Roadbed •
• PECO Track & Turnouts •
• Special Shapes Brass •
• NWSL • Keithco Loco-Link •
• Freight Trucks • Kadees •

Accurate O Scale
38623 Orchard St
Cherry Valley CA 92223
Chapter IX

Soon after I came home from my first Korean trip in late 1987, problems started to develop. My friend Jun was having a lot of trouble with another importer. It doesn’t matter which one. They had a difference of opinion and a lot of money was at stake. GangSan built a very poor model for them, and they refused to pay. Jun came to the U.S. to try and resolve the problem. They made a compromise, but it was a mistake that would cost GangSan heavily.

While in the U.S., Jun paid a visit to his other customers, and I was one of them. Jun tried to get me involved in the dispute, but I had a very difficult time with that. I could see both sides of the argument and knew that there was plenty of fault to go around. I live in a glass house and I couldn’t take sides. I liked Jun very much. We were very close. I spent time with him and his family and watched his boy grow up. Our relationship went beyond business. Many people in business told me to not get personally involved with my builder, but I had to. It was my way to know the person too, and respect the family. Then I knew it would be a two way street.

Gang San sent over a pilot model of very poor quality, but it was accepted by the importer. It was an O Scale steam loco and very Pennsy, i.e., curves everywhere. But pilot accepted, the production was started and the models were shipped. Still no complaint from the importer. Soon, consumers started to complain and then the ball was passed to Korea. The models had to be painted to cover the finish, but the importer charged GangSan for this painting at American costs, and also charged the dealer for the painting as well. Granted I didn’t like what was going on, but I also didn’t like to see my builder and friend building such a poor model. But the price was low, and the pilot was accepted. You get what you pay for, and in Korea, in this business, you get what you accept. However, there was a loophole in the LC (Letter of Credit) and the importer refused payment.

Much of the model business is done with an LC. If something goes wrong, or the builder disappears, the only thing you are out is the cost of the LC. But the LC is to protect the builder. He is guaranteed that when he ships, he will be paid. He could ship a box of rocks, and if the paperwork to the bank is correct, he will be paid. The only protection to the importer is that if the builder wants to continue working, he will fix problems honorably. But the paperwork must be perfect. Once I got a shipment and then a call from the bank. The builder sent me extra trucks. On the invoice it read 100 pair of trucks. On the bank paperwork, it read 100 pieces of trucks. The bank refused payment. I gave my OK, payment was made and I got my trucks. However, this importer chose to NOT pay. It cost GangSan (my builder) great woe.

I didn’t get involved, and perhaps that was a mistake. It was the beginning of the end for GangSan, and I did not see it coming. I also got in my first Sn3 project, a DRGW gondola and flat car in 11 versions. I don’t know why I did that project to this day. I wanted to do many different things, and I wanted to make the pie bigger.

I was doing well with Sn3 in my hobby shop and thought the market would be terrific. I did not take into consideration another major Sn3 importer. When my project came in, I couldn’t get one major Sn3 shop to carry it. It seemed as though the word went out that if they supported another Sn3 importer, they would lose favor. That is why I wanted to do the project in the first place, so there would be choices. Competition is better for everyone, right?

It hurt. It took 9 years to sell those gondolas, and except for a little too much weight, they were perfect to accuracy. You don’t make any money carrying inventory for 9 years. I think Sn3 lost. They could have had some choices, and they ended up losing a source of models. I had the same problem in N Scale. It worked for others, but just didn’t work for me.

While this Sn3 gondola was approaching, reservations had not accrued like I had hoped, so I encouraged Jun to cut me some slack on the price. Then I could move them out cheap and get out of a pending disaster. Jun was a good business man. He knew that if I lost again so soon after the T&P poor showing, the cash flow to him would stop. Therefore he cut the price, costing him, too. It was still a disaster.

When Jun returned to Korea, he found out that his best friend had died. He was a young man in his thirties and his death was sudden and painful. Jun dropped everything immediately and went to the side of his friend’s wife. At the same time, his bookkeeper decided to take off with about $40,000 of the company’s money. Had Jun gone right to the factory upon his return, he might have stopped that theft, but he did not, and that allowed the man to escape with the funds and have time to get lost.

All of this was too much for GangSan. When Jun finally got back to the factory, the end was in sight. They had just enough time to escape with the materials, plans and machinery, and go into hiding before the bank came to collect. The bank came to the factory and found only a building. They took that. Everyone was gone in just a day.

Next week, I got a call from Mort Mann at Sunset asking me if I knew where Jun was. I said that I hadn’t heard from him in a week. Mort told me that the factory phone was not working. I said not to worry as I had Jun’s home phone. I would call and let him know. I called Korea and Jun’s home phone was also disconnected. I called Dave Bush from Precision Scale, and found out that he was in Seoul. I told his staff that if he called in, please ask him to call me from Korea. He did and informed me that the factory was empty, and nobody knew where anyone was.

Both importers had lost models. I had a LC (Letter of Credit) that was cancelled when the company went bankrupt, so I only lost time, samples, and plans. That could all be replaced. No money was lost. After a few days, it was evident that I would have to go to Korea again. I made a call to my travel agent, and two calls to other Korean builders to start up a relationship. In one week, I was on my way to Korea for the second time in 6 months, to start over.
Freight Cars

In this day and age, you can obtain information, history, drawings and photographs on nearly every railroad that existed or still exists. Model railroading has become more attuned to prototype modeling. HO is now the hotbed for this interest. Model kits and R-T-R equipment have come a long way in achieving prototype accuracy. It isn’t good enough to just paint a model in your favorite lettering or color scheme; you have to be sure that it is the correct model that fits the era and lettering for the road you model. Some call this “rivet counting” and consider it too much trouble to bother. To others it is just one more dimension in a very diverse hobby. It can bring you a great deal of satisfaction to modify a kit or R-T-R model to more accurately reflects the prototype.

It seems that O scale modelers have not been as interested in what is pulled behind the tender. Many have been content to buy a large number of cars to create long trains running behind their favorite locomotive. Rather than buying 100 cars of questionable accuracy, why not own a couple dozen accurate pieces of rolling stock that compare to the highly detailed steam locomotives imported these days?

Accurate models start with information in the form of plans, photos and technical data. Hobby magazines, historical societies, railroad books and the Internet offer an immense amount of information to sift through. If you are interested, you can find websites dedicated to freight car modeling and even a bulletin board on Yahoo similar to O Trains or Proto48. One such website, “Steam Era Freight Car Modeling”, is an excellent example: [http://www.steamfreightcars.com]

Ted Culotta has done a beautiful job of presenting a diverse amount of freight car information. Some of you may have noticed Ted’s articles in Railroad Model Craftsman on building urethane kits. While he writes about HO kits, these are ideas that can be used on O urethane kits as well.

Consider a car like the Intermountain 1937 AAR boxcar. As many of you know, this was nearly a universal standard for steel boxcars from around 1936 to well into the WWII period when it was superseded with the modified 1937 AAR and later cars like the PS-1. The AAR 1937 design can be distinguished from earlier and later cars by the interior height and the style of ends, the underframe design and roof styles used. They were 10’ 0” high on the inside with few exceptions like the WP at 9’ 6". That relates to an overall height from the top of the roof to the top of the running board of 14’ 6” and a fraction. Most were built with either a square-corner Dreadnaught end or an end with a “W” corner post (rounded corner). The end had 4 major ribs on top and five below the riveted seam. If you look at the PRR X-31a end shown above, you can see what a 45 square corner Dreadnaught end looks like.

In the early 1940’s a “modified” 1937 AAR boxcar was introduced. It raised the roof height to 10’ 6” (some variation could be found as well). This raised the running board height to just over 15’ above the rail. The ends became 55 Dreadnaught with either square or “W” corner posts. The next change occurred when a new style end was introduced. It has been labeled as the “improved” Dreadnaught with the major corrugations looking like rolling pins. Generally, these cars were produced with 44 ends. There were nearly 20,000 cars built to a 10’ interior height with an improved Dreadnaught (34) design. Most 1937 cars had riveted 10-panel sides but that started changing with the introduction of 12-panel with riveted seams and eventually welded seams. You have probably noticed that door designs vary with a common Youngstown design, Superior and others. Nearly all of the cars of this era were built with a Murphy raised panel roof. In the late 1940’s, a new design that featured diagonal raised roof panels was introduced and quickly adopted.

In the late 1940’s, Pullman introduced the PS-1 boxcar. It was a totally new look with an end that looked like corrugated metal that was not tapered. The roof changed with introduction of a tapered raised panel instead of the raised panel Murphy roof found on nearly all 1937 AAR cars. Railroads may have bought a standard design boxcar but they did customize their cars with different brake equipment, roof walks, trucks and other equipment like Duryea cushioned underframes, Royal F slack adjusters, and other more subtle changes.

We are fortunate in O scale to be able to obtain many of these special detail parts to aid in customizing of our models. Companies like Custom Finishing, Details Associates, Precision Scale Models, San Juan Car Company, Chooch Enterprises, Grandt Line, Keil Line and others make a good selection of parts and trucks to aid in your quest of an accurate model. While the selection of parts is good, the inventory of good kits or R-T-R cars is somewhat limited.

Here is my critique of “steel” type models that I am familiar with:

• Intermountain AAR 1937 - Accu-
rate model of 1937 AAR design. Offered in square and “W” corner posts, two different doors, Murphy roof and the unusual Viking roof. Not all of the lettering schemes produced are accurate for the car. Some were lettered for cars with 10’ 6” interior height. It could be described as a stand-in.

- Lionel PS-1 - Accurate model of Pullman’s standard car of the late 1940’s through 1950’s. Lionel has been offering accurate color schemes and lettering. Converting to scale will require some efforts since compromises were made in the underframe to permit the installation of the usual 3-rail trucks.
- Atlas LLC PS-1 - Accurate model of Pullman’s 50’ car with several door configurations and underframes available. The basic car is accurate with a fair representation of lettering and coloring schemes.
- Atlas/Roco - They introduced a plastic 40’ boxcar patterned after the PRR X-43 design of 1947. The tooling was quite good for its day. The car was somewhat compromised on height. The design is very similar to a large group of cars built by AC&F in the late 1940’s through the middle 1950’s.
- Weaver PS-1 - A fair representation of the Pullman 40’ boxcar. The ends and roof are not as accurately tooled as the Lionel and Atlas cars. Lettering schemes are not all accurate for the car type.
- All Nation 40’ Boxcar - It has been offered in a couple of variations including a smooth-sided car with PS-1 ends and a Murphy roof. Not quite accurate for a common PS-1. An earlier version depicted the common modified 1937 AAR with 55 Dreadnaught end, riveted sides and a Murphy roof. The models feature metal exterior parts with a wood core. You would use small brads and hammer to assemble the parts. A logical solution before the days of epoxy and ACC super glues. This model is nearly 50 years old and is not quite up to Intermountain standards (as you would expect given its age and the changes in manufacturing technology since its introduction.)
- Pecos River Brass 50’ AAR boxcar - A fairly accurate model of an AAR standard with its 10’ 6” height. They have imported a variety of color schemes. The car is equivalent to the venerable Athearn car in prototype. PRB is the first to offer a working end-loading door on a plastic car. Clouser Models offered a non-working casting in epoxy many years ago.
- Athearn 40’ and 50’ boxcars - The cars are patterned after the 10’ 6” height AAR designs. Athearn cars were the benchmark 50 years ago when they first came out. Many still find them attractive and actively collect them. The models were made from stamped steel with a wood floor.
- Clouser Models - Bill Clouser offered several different 40’ and 50’ AAR boxcar models (10’ 6” interior height with “W” corner posts) cast in metal-filled epoxy. The cars were very accurate and surpassed the Athearn and All Nation cars in detail. They were first released in the 1970’s. The cars were expensive and saw only limited distribution directly by Clouser and others. High Sierra Models was the last to offer them nearly 10 years ago.

There were other models produced in O scale but I have not seen them so it would be difficult to comment on their accuracy. Even with this selection, there are some serious gaps in the boxcar lineup. We lack a good quality 10’ 6” height 40’ boxcar with a variety of ends and roofs to depict a very common car in the late steam era lasting well into the 1970s. We can dream can’t we? ✪
Reader Feedback

An Offer You Can’t Refuse

I have an offer to anyone interested in possibly subscribing to send them a complimentary issue of Trolley Talk. All they need to do is send me their address by mail or email at drew.sack@att.net. You may feel free to let you readers know this. I enjoy O Scale magazine tremendously. It’s the gauge I model.

Thanks Best regards. Drew Sack Publisher/editor. 1913 Roanoke Ave. Louisville, KY 40205-1415

The Graying Of O Scale

In regard to your statement about the status of O scale being in good shape, I recently advertised some Precision Scale trucks in your competitor. I got two replies and both gentlemen were over seventy years old. There is a “graying” of the current O scaler. Also, it is an expensive hobby in spite of the Chinese imports. One way to beat the high cost was through kits and scratchbuilding. But, parts are disappearing from the market. Northeastern has stopped making O scale wood parts and Champ decal will be out soon if it isn’t sold. All the beautiful kits by American Standard are also gone. I enjoy O scale for its size and, at 85 years old, I am still building and enjoying it.

Oscar Wilhelm, Blaine Wash.

Joe says: Oscar, good for you! Keep the spirit alive. Yes, O scale has both an older demographic and a scarcity of kits. I think that many modelers in smaller scales move "up" to O as they get older. Parts and equipment are harder to handle and see in HO and N when your eyesight starts to fade. As for the lack of kits, well we’ve become a society that demands instant gratification. And most people value their time more than their money. When a manufacturer finds he can sell more ready-to-run cars at a higher profit than a kit, then good business practice tells him to keep his inventory down and sell only RTR. When people stop ordering parts to the point where inventory gets very old, then companies like Northeastern make decisions to stop making those parts. However, we at OST are trying to bring in new people to O scale by putting this magazine in places where new blood will see it, like in supermarkets and on newsstands rather than just hobby shops.

We also encourage both kit and scratchbuilding in the articles we publish. Those skills are being lost. What you "more mature" O scalers can do is make sure the skills you’ve developed get passed along to a new generation of modelers. Share your knowledge and mentor a younger (meaning anywhere from 25 to 55) modeler.

More On Power For O Scale

I’ve noticed there seems to be no real power source for O-scale trains. I’ve been having a problem that is driving me batty and I was wondering if you could help. I’m in the final design phases of my layout and I am using Atlas 3-rail track. However I would also like to wire up the track to run D.C. powered 2 rail equipment. All I’m using is a simple loop in a bent dogbone fashion of about 75 feet of track. I’m going with a scenery approach and not just trains, trains, trains. Anyway I recently bought a Red Caboose GP9 and love it. When I wire up my MRC transformer to my rail track it does not seem to have the power to electrify the whole track. It will do a short section but once I combine it with others it just peters away to nothing. Do I need a power pack for G-scale trains to provide the necessary umph to move my diesel. I had it running on a small loop of MTH track but I feel that has better conductive qualities than the Atlas. Should I just give up, or can I do what I want to do. Thanks for the help, Bill

Joe says: Bill, what you need to do is run multiple feeders. Your problem is likely resistance losses at the track joints and a too small power supply. Running multiple feeder wires will help with the current drop. Try running just an extra set of wire to the farthest point from the throttle. See how that works.

Disagrees With Sam

In respectful disagreement with Sam Shumaker’s remarks (OST # 8, Page 31) about the forthcoming Atlas USRA Steel Rebuild Boxcars, I saw an actual sample of this car during February at Norm’s O Scale display at O Scale West. In my opinion, the artwork on Atlas’ website does not do this car justice. The only compromise with the prototype, likely due to tooling cost considerations, is that the side sill is not inset quite as deeply as it should be. The effect of the bottom tips of the side braces extending below the outer steel sides is achieved by what I think is rather clever 3-D molding.

In comparing the model with the prototype photo on page 439 of the 1940 CAR BUILDERS CYCLOPEDIA, I don’t think it’s as poor a model as Sam implies. If one thinks the appearance is too far off, I suggest cutting off the side sill, slightly narrowing the bottom edges of the ends and reworking the chassis as required to achieve one’s desired result. (Another approach might be to leave the sills “as is” and cut out both entire sides and move them slightly outward.)

The car will certainly cost less than a brass model as a basis for further modification. Also, Atlas can convert any unsold 2-rail cars to 3-rail by changing the chassis, and using the leftover 2-rail chassis under other, more “accurate”
models such as their USRA outside-braced single-sheathed boxcar. My guess is that they won’t have to convert many, if any at all. I know they won’t have to convert the one I’ve ordered! The models should be available by the time OST # 9 is released, and readers will then be able to judge these cars for themselves.

J W ("Woody") Mathews, Seattle Wash.

OST#7 Review

The feature on the small shelf layout in OST#7 was very well done and it will show people once and for all that you can build a[n O scale] layout in a small space and it does not have to be a megadollar project either. At the other end of the spectrum is the huge home layout of Bob & Elizabeth Jakl and what a super layout that is. I think it’s great that the layout is open to visitors. Harry Heike is not only a master builder in brass and other metals, he is also an expert custom painter as well if that hopper car is any indication. It was nice to see that you also find the time to do some modeling and your article on converting a Lionel express refer to a realistic looking 2rail version was very good with lots of pictures to show what you had done to the truck assemblies.

OST#8 is one of the best (they have all been good) yet and all the “mug shots” are a nice touch. I’m impressed that Pacific Limited popped for a full two page ad in this issue. I really enjoyed Bobber’s article about restoring and rebuilding a Whitcomb “critter” locomotive. Thanks Bobber for including a photo of those rare axle assemblies with their two sets of driving wheels. Brian Scace had two good articles. The only thing I would add about the coupler issue is it sure would be nice if all the manufacturers would equip all their products with a “common” coupler mounting pad in case the modeler wanted to replace the factory supplied couplers with Kadee couplers mounted in their own draft gear. With Weaver Mod-}

els this is not a problem as they have always built in a pad that will accept Kadee as well as their own coupler but with AtlasO it can be a hassle on their diesel locomotives. It never ceases to amaze me why someone would deliberately make it difficult to remove a component that so many people will want to replace in the quest for better reliability. Brian’s other article on mail trains was great as I learned a lot from that especially how to assemble a realistic looking consist of head end equipment. I really like the article by Phil Opielowski on building three different caboose models. Phil did an excellent job of painting and decaling as well since when you look real close at the photos there is not a trace of decal film which ruins so many otherwise fine models pictured in all of the magazines. The Rose River was another fine home layout with a lot of nice features. Thanks Herm Botzow for some real good tips about adding interior detail to structures as I learned a lot from his article. As usual, the Modeler’s Shelf photos were outstanding and are always a real treat. With regards to your Observations Column, I really liked your comment about there being “room for both” as it applies to brass models of wide ranging prices and level of detail. I recently acquired a New York Central J1D Hudson by Sunset Models and although the detail is nowhere as nice as the Hudson imported by George Kohs, for me it was a real good value for the money and I am satisfied with it. So, yes, you are absolutely correct when you say that there is room for both. Scott Mann and Rich Yoder are to be commended for their efforts to keep the price of brass O Scale models at what I would consider a reasonable level.

Speaking of reasonable, I just purchased another All Nation EMD F-3A unit and I have to tell you, Joe, these are still nice kits and build into a real nice looking locomotive in spite of dies that are ancient. And to top it off, these all metal kits are less expensive than a plastic O Scale diesel locomotive and it will probably outlast the plastic version by a margin of ten to one!

Pete Klick, Sequim, Washington

Chiclets As Details

Excellent issue, that # 8, and I see my friend Herm Botzow has now ‘made it’ as a member of the “OST Author’s Club.” I do miss the Buckeye but I’m doodling some possible track plans of my own now. Herm mentions Chiclets used as flour bags. Attached is where he got the idea. This car at times was in the Sunbeam Bakers siding when operated on the Buckeye. The Lehigh Valley car was built from styrene using Intermountain parts for the roof, doors and under-frame frame which was “backdated” to an earlier AAR version. LV used these primarily in the milled flour trade between Buffalo and the metro NY area. The model is fully detailed with interior wood sheathing and doors that can be opened. There is a load of Chiclets as flour sacks inside as well. Because they can weigh rather much, only the door area is so detailed. The stacks of gum were glued together and are held in place with foam inserts in the car ends.

Ed Bommer, Okla.
western locomotives, so, your RGS steamer fits right in.

SoundTraxx has a web site (www.soundtraxx.com) that tells which locomotives they support and even has sound clips of the sounds they produce.

Their DSD line has units that combine the DCC controller with the sound generator. So the receiver controls speed like any DCC unit, and the sound unit knows, from the DCC signals, how fast the locomotive is moving and can generate corresponding sounds. The DSD line is out of stock now (may be going again by the time you read this) but they do not provide enough current for some O scale locomotives. Soundtraxx also makes the DSX line that are just for sound and can be installed in a locomotive that already has a DCC speed controller. The DSX connects to the wheels in parallel with the DCC controller. Of course, their products come with installation instructions. I usually buy my DCC equipment from Tony's Train Exchange (www.ttx-dcc.com), which seems to have everything in stock and they send extra instructions and sell compatible speakers.

But, there is a small problem. For O scale, SoundTraxx recommends and supplies a 39-ohm resistor to go in series with the DCC sound unit to drop the voltage. This is because O Scale can use 18 volt systems rather than the 14 volt HO systems. That resistor can interfere with programming the sound unit. Programming the sound unit may also interfere with programming the DCC speed controller. (Actually my SoundTraxx unit worked fine as factory programmed). So it pays to have a way to temporarily short out the resistor or disconnect one of the DCC units. I use a small integrated circuit socket mounted in the bottom of the locomotive and plug in small "croquet wickets" of solid wire, formed with pointed nose pliers, to make or unmake the appropriate connections.

After doing all this, you want to get good sound out of the unit. Personal computer sound units are about the same size as an O scale boxcar. So why do computers sound so good and trains sound so bad?

Try this experiment. Set up your SoundTraxx unit and a speaker on your workbench, with two wires going to your DCC master controller. It will sound tinny and unrealistic. Then do something as simple as moving the speaker from the table top and setting it on a glass or coffee cup. You will notice a startling increase in bass sounds and therefore, more realism.

Sound is created by something that vibrates and so compresses and uncompresses the air. That wave travels through the air and to our ears where it causes vibrations that our brain hears as sound. Sound is characterized by frequency (think of the different notes on a piano) and amplitude or loudness. Real-life sounds are a complex combination of different frequencies and amplitudes.

A speaker in a model locomotive generates train sounds by such vibrations. But, while the front of the cone is compressing the air, the back is decompressing it. Especially at low frequencies, these two sound waves can combine and cancel out. So, pre-
vent the back sound from escaping by putting the speaker in a closed container. Modelers in smaller scales use such things as 35 millimeter film cans. But with sound, bigger is better. O scale has an advantage that locomotive speakers and sound boxes can be twice as large as HO and so reproduce sounds an octave lower in frequency! The idea is to use the shell of the locomotive, or tender, as a sound box. But you have to block all holes where the back sound can escape. When you have the hole-free container, you can improve it more by lining the inside with some porous substance. Foam is good but fasten it so it cannot rattle.

Figures 1 and 2 show a SoundTraxx unit mounted in my Weaver model of an Alco RS3, used as a B unit. An RS3 provides a challenge because it has a narrow body shell. I used an oval speaker, 1½" by 2¾" that just fits in the shell. But its mounting holes get in the way so I had to clamp it in. I filled in all other holes in the bottom plate and sealed around the speaker frame with Walthers Goo. You see the SoundTraxx which is about a large as a finger joint, and the 39 ohm resistor and the capacitor that goes in series with the speaker. I cut the bottom out of the fuel tank and used the pieces to strengthen the tank ends. In the shell, I installed a baffle to close off the engineer's compartment.

O Scale: not only looks better and works better, but also sounds better!

I want to agree with reader Richard Cooke (OST #7) who provided electrical current needs for five of his locomotives. We need that information, in O scale, where current can't just be ignored. I plan to add more locomotives to his list and also solicit your inputs. But how do you measure operating current when your Radio Shack multimeter has no current scale that large (or at all)? The answer is to put a resistor in series with the dc power (not DCC) and measure the dc voltage across that resistor. Then current equals the voltage you measure divided by resistance. A good compromise is Radio Shack's 0.47 ohm, 5 watt power resistor (nr. 271-130). For more efficient motors, put two resistors in series for almost one ohm. Then the voltage reading equals current. Remember power dissipated equals current squared times resistance (P=I²R). So 4 amperes and a half ohm resistor will make 8 watts of heat and drop your voltage to the engine by 2 volts (V=IR).

Send me your measurements through OST and we will create a list.
O Scale Signals

Highly detailed, accurate, affordable. Made in the USA. Assembled and hand-painted by a model RR craftsman.

- Double Semaphore Train Order Board $59.95 + p/h
- 3-Color Block Signal w/Equipment Box $49.95 + p/h
- 3-Color Block Signal w/Standard Mast $49.95 + p/h
- Dwarf Signals (2/pack) $39.95 + p/h

Get Real Productions
11 Out of Bounds Road, Palmyra, VA 22963-2318
434-589-2660
fx434-589-4898
kjkrigil@aol.com

O SCALE WEST 2003 FAVORITE MODEL CONTEST

3rd place (tie) winner - Steam Locomotives - “Dunkirk”
modeler: John C. Sigurdson, Escondido CA

Freight Cars - Arbuckles’ Ariosa Despatch Wooden Box Car
modeler: Don Clauder

NCE goes wireless

Model railroaders’ number one choice in Digital Command Control introduces the cordless cab!

Introducing wireless technology that has all the bullet-proof performance you expect from NCE.
• Every Pro Cab™ function is available
• The only 2-way wireless DCC system available that provides full functionality
• No annoying delay in speed control.
• Features engage instantly and on the fly
• Easily retrofitted to existing NCE cabs

The NCE Power Pro DCC systems bring you power and simplicity unmatched by other manufacturers. NCE has the widest array of decoders offered for all scales and “silent running” is standard.

At your dealer now. For more information and request a free catalog email or write:
NCE Corporation • 899 Ridge Road • Webster, NY 14580 • www.ncedcc.com
Whitehall Hobbies
Specializing in Brass Locomotives
1431 Windrush Circle, Blacklick, Ohio 43004
Voice: (614) 861-0018 • Fax: (614) 861-3034
JWTrains@aol.com

Get Real Productions
Prototypical Model Railroad Photography

Through the use of lighting, smoke, fog, and steam, our photographs project special moods and portray the romance of the rails. Our artistic images are all photographed in our studio and are unretouched for added realism.

• Prints • Calendars • Posters
• Greeting Cards • Postcards • Custom Orders

Call or write for our color brochure.
“Our photos make model trains look real!”
Get Real Productions
11 Out of Bounds Road
Palmyra VA 22963
Voice: 434-589-2660 • Fax: 434-589-4898 • kjkriigel@aol.com

O Scale Trains • 51
The transformer design engineers at Westinghouse were required to work closely with the company traffic department to ensure that the outside dimensions of any product as shipped would pass through all the obstruction clearances throughout the selected rail route from the factory to the installation site. As transformers became increasingly larger, special rail cars evolved to meet this need. Depressed center flat cars allowed full use of the width clearance but the depth of the center section of the flat car still limited the available vertical clearance. Hollow center well cars allowed full use of the vertical clearance above the rails but the permissible width was limited by the space required for the side beams of the car. The advent of the Schnabel car allowed full use of both the vertical clearance above the rails and the width clearance for the safe passage of the transformer. The Schnabel car would measure about 75 feet long without any transformer and with a typical transformer inserted it would be about 100 ft long. It was often referred to as the longest rail car in the world, even without the presence of a transformer.

Announcements for an O Scale replica of the Schnabel were first noted in January 2000. As a retired Electrical Engineer that used to work at a Westinghouse division which manufactured transformers that sometimes required the Schnabel car, this was announcement immediately recognized as a MUST BUY for my O scale railroad. It is unfortunate there is much general confusion and very little clear distinction made between true O scale for 2 rail operation and O guagescale for 3 rail operation. Three rail models have progressed a long way from the tin-plate and diecast models of the 1900 - 1980 era and are now being offered as models more realistically copying the prototype. In the current marketplace it is easy for even a knowledgeable 2 railer to get stuck with an unwanted conversion project and gifts from well-intentioned, but less knowledgeable, relatives are even more likely to be 3 rail. Thus, it slowly dawned on me that the Schnabel Car from MTH was a 3 rail product.

Although announced in early 2000, the model did not become available for distribution until the summer of 2001. Throughout the interval of waiting, I discussed with several hobby shops and also with MTH the possibility of its conversion for 2 rail operation, and without exception the responses all indicated that conversion was not possible.

In August 2001 I was finally able to inspect the MTH Schnabel car at a Canadian retailer. I was so impressed with its quality and faithful reproduction of the prototype that I immediately made the purchase in spite of the prospect that I may be able to use it only as a nostalgic display item. However with a little persistence I have been quite successful in the conversion of the MTH Schnabel car for 2 rail operation. The conversion attention was focused on three items in particular, the wheel sets, the couplers, and what I will later refer to as vertical articulation.

**Wheel Sets**

The underbody wheelsets consist of four 4 wheel and two 6 wheel trucks. The obvious first step was to remove the 14 axles with their 3 rail wheel profiles and electrical continuity common to 3 rail operations, and replace them with appropriate 2 rail scale axles with insulated wheels. For this I should have obtained wheel sets with NMRA Type I axles with pointed ends that would more readily have matched the axles of the wheel sets being removed.

Since I was in a hurry and already possessed a sufficient supply of wheel sets with NMRA Type II axles, I filed the ends to crudely match the required...
axle end shape and they worked fine. The illustration copied from the NMRA Recommended practices illustrate what I mean by Type I and Type II axles. The photograph shows a 3 rail wheelset on the left, a wheelset with NMRA Type II axle in the center and on the right, one with the axle ends filed to a point which approximates the NMRA Type I.

The complete car assembly consists of 3 main elements. The Westinghouse large power transformer is the optional middle element. The two identical car bodies fore and aft of the transformer can be joined together for travel without any transformer. Each identical car body of the Schnabel consists of 3 sections, with two bolsters that pivot, below which are one 6 wheel truck and two 4 wheel trucks. The pivoting of the two bolsters and three trucks of each car body provide the articulation required for the car to navigate any curves.

The assembly of the car has been quite cleverly accomplished with no screws visible from above, and very few visible on the underside. To remove the trucks, one must first remove the two bolsters to which the trucks are attached by a concealed pivot screw from the top side of each bolster. The pointer in the photograph of the forward or secondary bolster shows the location of the pivot screw to be removed that attaches this bolster to the main bolster.

The forward platform has to be removed from the forward bolster in order to obtain access to the pivot screw and assembly screws of the four wheel trucks. The pointer in the forward platform picture show the location of the screw attaching the forward platform to the forward bolster.

The pointers in the photograph of the four wheel trucks still attached to the forward bolster, show the location of the countersunk screws that can be removed to allow the original wheel sets to be taken out and replaced with the 2 rail replacements. Black screws show up well when contrasted to any blue body parts. These black countersunk screws into the black truck body were photographically invisible until they were touched up with white.

Access to the truck pivot screw and the assembly screws of the 6 wheel truck requires the removal of the main bolster. The pointers in the picture of the main bolster identify the location of the three screws attaching the middle platform to this bolster and the pivot screw attaching the main bolster to the truss structure of the main car body. Note that the forward centerline screw is attached to the underside of the small transformer on top of the middle platform.

The pointers in the six wheel truck photograph show the 4 assembly screws of the 6 wheel truck that can be removed to allow the taking out of the 3 rail wheelsets and their replacement with the 2 rail wheelsets. The pivot screw of the six wheel truck will be referred to later in the paragraph on vertical articulation.

Before reversing the above steps to reassemble the Schnabel, read about the couplers and vertical articulation as those changes should be made before reassembly.

**Couplers**

Kadee couplers were installed to the underside of the forward platform at each end of the Schnabel car. The Kadee coupler provides for attachment by either 2 screws on its centerline, or one screw on each side of the coupler body. I chose the latter option as I was unsure if the plastic car floor in this area was of sufficient thickness for securing the coupler. I prepared a small metal block with two tapped holes as per the sketch and cemented this into place. The two holes were drilled with a  #51 drill for a 2-56 tap. Flat shim spacers the same outline as the coupler body were used to achieve the correct coupler height above the rails, as checked with the coupler height gauge.
MTH Schnabel Car Conversion

Vertical Articulation

The Schnabel car is beautifully articulated to enable operation on curves as small as a 30 inch radius, which is much tighter than would be used by a typical O scale modeler. This product specification provided my first suspicion that the product was actually built for 3 rail operation. The model as received was tight in the vertical direction. Because of its extreme length, any change in grade would result in some of the wheels losing contact with the rails. Whenever the car encountered a positive change in grade, the six wheel trucks would be elevated clear of the rails and whenever the car encountered a negative change in grade the fore and aft 4 wheel trucks would be elevated clear of the rails. With approximately 6 inches between the forward 4 wheel truck and the 6 wheel truck, by simple triangulation for each 1% of grade, the affected wheels will lift off the rails by about 1/16 of an inch. For a 5% grade, this separation of wheel to rail contact could be over 1/4 of an inch. I felt this to also be a serious problem for 3 rail operations even though the wheel flanges for 3 rail are much more generous.

I solved this problem by using a longer pivot screw for all of the trucks so that it would provide some vertical movement of the truck relative to the car. In the six wheel truck picture, the pivot screw replacement is a 4-40 screw 1/2 inch long. A fine wire coil spring shown in the vertical articulation picture provides slight downward pressure to maintain truck to rail contact throughout grade changes. The hub extension is three concentric brass tubes to make up the hub dimensions of 1/8 ID x 5/32 OD x 5/32. When the pivot screw is tightened there is freedom for about 1/4 inch of vertical movement of the 6 wheel truck. The spring has to be light enough so that the weight of the Schnabel car is capable of fully compressing it, yet strong enough so that its presence adds to the effective downward pressure of the wheels against the rail.

Wheel to rail contact for the 4 wheel trucks were improved by two means. By adding a 1/2 inch thick washer 1/4 ID x 9/16 OD, the hub length of the truck was effectively increased. By opening up the pivot holes of the forward bolster with a 15/64 drill, there was more freedom for the 4 wheel trucks to pivot in all directions, including both rotation and tilt.

Summary

I suppose I could have more simply said that I removed the 3 rail wheelsets and replaced them with 2 rail wheelsets and then added Kadee couplers to complete the conversion. Because I had been told by several who should have been authentic information sources that this conversion was not possible, it seemed that I should go into greater detail for my story to be believable.
Equal Spacing Along Any Line

Bill Becker

If you do any scratch building, or building from plans not drawn to scale, it is often necessary to locate a repetitively spaced part on the model—examples include side bracing, roof ribs, roof walk supports, etc. (Even if the plans are drawn to scale, humidity causes paper to expand/contract non-uniformly so that the plans may become unreliable.) What follows is a quick procedure to accurately lay out the spacing.

One procedure that many people attempt is to use a pair of dividers and set the spacing between the parts, then systematically move the dividers, putting one side of the dividers into the previously marked location. This doesn’t work. Any error in marking one location is systematically carried to the next location and the accumulated error soon becomes impossibly large.

A procedure that does work requires only two triangles (Yes, they are still made in spite of all of the computer drafting software available), and a ruler. I recently had to lay out roof walk support spacing on a Main Line Models (now Ye Olde Huff-N-Puff) poultry car. Reference to the plans showed 15 supports between the end of the car and a solid roof support over a $5 \frac{1}{16}$" span. The plans were not to scale and could not be used as a template. Yes, the spacing is almost $\frac{3}{8}$", but not quite. I suppose in this case it would have been possible to fudge the small difference, but the point is how to do it in general without fudging. The following procedure makes it easy. The example uses 8 equally spaced locations rather than 15, but illustrates the technique.

Draw a line on a piece of paper some length longer than the actual required length (Line OA in Fig. 1). Draw a second line (Line OB) at an oblique angle to this line (30 - 45° often works well). On line OB, mark the actual total length required on the car.

Using a ruler, mark off the required number of equally spaced divisions at a convenient interval on line A. (lines C). I used 8 divisions in the figure, but it was 15 for the Main-Line kit. I often use a length not too much different from the required spacing, but one that is convenient to mark off, say, $\frac{1}{2}$ inch when the true dimension is more like $\frac{7}{16}$ in. The point is that it should be something convenient. This will determine the total length of line OA.

Mark the true total length on line OB (Point D). Draw the line AD from the last division on Line OA to the end point of the true length on Line OB.

Now use two triangles to draw the remaining seven lines parallel to line AD, marking the true lengths on line OB (Fig 3). If you use 30-60-90 triangles, put the two long sides together and line up one side of a triangle parallel to AD. If you now slide one triangle relative to the other, the two sides remain parallel to each other as you move one of the triangles. Move the triangle along, each time marking the intersection on OB. You now have a template that you can use to glue up the supports on the roof ribs.

◆
Modeler’s Tricks

Building a Locomotive Deck Plate

Stuart Ramsey

I have a number of steam engines that didn’t come with a bridge or deck plate between the locomotive and tender. Without the deck plate there is a big gap which doesn’t look prototypical. So I decided to build a deck plate. I tried to find some small hinges and had no luck. The plan I ended up with was the simplest. I used a piece of 1/16 inch brass tube for part of the hinge. I measured the size of deck plate I needed and cut it out of .020” sheet brass. To make a better looking one you could use diamond plate stock. I then soldered the tube to the plate by laying both pieces on a flat surface. This will put the tube/hinge on the bottom when finished. I used a piece of .025” wire through the tube to complete the hinge with the ends bent at right angles to the plate. I then measured and drilled 2 holes into the back of the cab deck and inserted the hinge wires. If the engine and the tender are the same polarity you won’t have to insulate the bottom of the plate where it rests on the tender, otherwise you need to glue a piece of styrene to the bottom of the plate. Add some paint and you are finished.

Modeler’s Shelf

Here is a sample photo of part of the “City Block” module on Neville Rossiter’s layout “Brooklyn Terminal Railroad” (BTR).

David Schultz built this modified Lionel kit. The photo was taken at the March 2003 MidWest O Scale Meet.

Robert Schultz scratchbuilt this model of a Monon 317 passenger car. The sides are made from a gallon paint can. March 2003 MidWest O Scale Meet.
Great Central Railway
Shot 1 (GCR 16) south bound freight passes the local at Tara Mills. (Locos are Atlas SW, Weaver RS and Red Caboose GP)
Shot 2 & 3 (GCR 18 and 19) RS-3 # 418 switches Acme steel in Tara Mills. (RS-3 is a reworked Weaver, the gondola is Lionel)
All photos taken by Trevor Marshall
of those trucks at the Colorado RR Museum. Everything is there.

The 2-10-4 is a scratch-built Burlington M-4 class. Note position of the valve gear, I have a separate motor that will move the valve gear to the correct position. This engine is not finished.

details to add before it is finished. The stack is wrong, need to build another one. The tender trucks are scratchbuilt.

The CB&Q caboose is scratchbuilt, including the trucks. I took many photos and measurements of some

I work in Proto 48, started in the late 50’s when I was a young sergeant of Marines and bought my
first lathe, a Unimat SL. Back then there weren’t many working in "Fine Scale" as it used to be called.

Tom Mix, Colo.
Events

July 2003

12, St. Paul, Minnesota

August 2003

16 & 17, Gettysburg, Pennsylvania
The Great Scale Model Train Show & The All-American High-Rail & Collectors Show at Gettysburg College ballroom at College Union Building. Admission: $6, children under 12 free, family max $12. Vendor costs: 8′ tables $55 (includes 2 worker’s passes for the first table and 1 for each add’l table), free electricity if you bring your own 50′ cord. Info: E CSMRA, 5236 Thunder Hill Rd, Columbia, MD 21045; Howard Zane, (410) 730-1036; [email: hzane1@hcomcast.net] [web: http://www.gsmts.com/]

September 2003

6, Merchantville, New Jersey
2-rail, "O" Scale Swap Meet Saturday, May 10th, 2003 Held at the Grace Episcopal Church, 7 Maple Avenue, Merchantville NJ 9:00 am to 1:00 pm. Admission is $4.00; there is no charge for your spouse or children under 12 years of age. There are only 36 tables available, a check must be enclosed with your reservation. Tables are $16 for the first table (includes one admission) and $12 for each additional table (helpers are $4 each). For additional information contact Chuck Jacobs (856-234-1898) or Dave Richter (215-639-7290) E-mail eostains@att.net. Make checks payable to Cherry Valley Model Railroad Club (CVMRC) P.O. Box 192, Maple Shade, NJ 08052.

20, St. Paul, Minnesota
Twin City Model Railroad Museum, Inc., Model RR & Hobby Sale, 9 am to 3 pm. Education Building at the Minnesota State Fairgrounds. Admission $4, under 5 free (includes admission to the RR Museum at Bandana Square on the day of sale if you get your hand stamped). Info: 651-647-9628, www.tcmrm.org

19 & 20, Indianapolis, Indiana
Indianapolis Midwest "O" Scale Fall Meet, at the Sheraton Inn, 7701 E 42nd St., 317-897-4000. O Scale, Proto-48, On3, On2, O Trolley/Traction displays and sale, 5,000 square feet, manufacturers and importers. INFO: Jim Canter, 1203 Rotherham Ln, Beech Grove, IN 46107-3323; Ph: 317-782-3322, [email: jcanternkp@aol.com]

October 2003

11 & 12, Timonium, Maryland
The Great Scale Model Train Show & The All-American High-Rail & Collectors Show at the Maryland State Fairgrounds. Admission: $6, children under 12 free, family max $12. Vendor costs: 8′ tables $55 (includes 2 worker’s passes for the first table and 1 for each add’l table), free electricity if you bring your own 50′ cord. Info: E CSMRA, 5236 Thunder Hill Rd, Columbia, MD 21045; Howard Zane, (410) 730-1036; [email: hzane1@hcomcast.net] [web: http://www.gsmts.com/]

November 2003

1, Wind Gap, Pennsylvania
Eastern “O” Scales O Scale 2-Rail O Scale Swap Meet - Plainfield Fire Hall, 6480 Sullivan Trail. From 9 am to 1 pm. Admission $5 ($1 discount on admission is given if you bring an index card with your name and address). Vendors: table $16 (includes 1 admission), additional tables $12. Info: EOS, PO Box 1781, Bensalem, PA 19020. (215) 639-3864; [web: http://www.EasternOScalers.com]

15, Strongsville, Ohio (Cleveland area)
Annual Western Reserve O Scale Meet at the Holiday Inn Select in Strongsville. From 9 am to 3 pm. Admission: $5; tables $20. Info: Bob Boeddeker, 32165 Hickory Ln, Avon Lake, OH 44012. Phone: 440-933-7169.

December 2003

20-21, Greensboro, Maryland
Caroline County Public Library Toy Train & Model Railroad Exhibit. North County Library at 101 Cedar St. From 10 am to 3 pm. Free Admission. For more information contact Richard O Smith, Branch Manager, 410-482-2173.

July 2004

22-25, Washington, D.C.
2004 O Scale National Convention at the Hyatt Regency, Crystal City at Reagan National Airport. Convention and Dealer registration will be available at the 2003 convention in Dallas, Texas, or you may write for info to the Capital Area O Scalers, 2004 O Scale National Convention, 10401 Grandin Rd, Silver Spring, MD 20902, or email to sonc2004@hotmail.com.

Advertisers Index

| Accurate O Scale                  | 42 |
| Andersen’s Train Station          | 37 |
| AtlasO                           |  IBC |
| BTS                             | 19 |
| California Roadbed Co.           | 9 |
| Central Locomotive Works         | 37 |
| Chicagoland                      | 31 |
| Get Real Productions             | 51 |
| Jim Hackworth Model Trains       | 31 |
| Harry Hieke, Jr.                 | 51 |
| House of Duddy                   | 45 |
| JV Models                        | 9 |
| Keil-Line Products               | 59 |
| Keystone Model Works             | 36 |
| NCE Corp                         | 50 |
| O Scale Realty                   | 9 |
| O Scale Signals                  | 50 |
| Old Pullman                      | 19 |
| P&D Hobby Shop                   | 21 |
| Pecos River Brass                | BC |
| Precision Scale Models           | IFC |
| PRR Brass                        | 37 |
| Public Delivery Track            | 54 |
| Rons Books                       | 37 |
| RY Models                        | 21 |
| Stevenson Preservation Lines     | 9 |
| Sunset/3rd Rail                  | 10, 22 |
| T Bone Models                    | 9 |
| Train America Studios            | 36 |
| Weaver                           | 42 |
| Whitehall Models                 | 51 |
Arkansas
Hobby Shack
1200 John Harden Dr
Jacksonville, AR 72076
501-982-6836

Mickey’s Model Works
611 Court St, Ste 4
Conway, AR 72032-5417
501-450-9423

Arizona
Coronado Scale Models
1544 E Cypress St
Phoenix, AZ 85006
602-254-9650

California
All Aboard Model RR
Emporium
3867 Pacific Coast Hwy
Torrance, CA 90405
310-791-2637

Bruce’s Train Shop
2752 Marconi Ave
Sacramento, CA 95821
916-485-5288

Fulton Station
454 Larkfield Shop Ctr
Santa Rosa, CA 95439
707-523-3522

Just Train
5650-H Imhoff Dr
Concord, CA 94520
707-523-3522

K-Val Hobbies
New
505-881-2322

Albuquerque, NM 87107
3351A Candelaria Rd NE
Trains West Inc.
908-296-1050

Torrance, CA 90505
3867 Pacific Coast Hwy
Trains Unlimited
126 Will Scarlet
Elgin, IL 60120
847-697-5353

Bath, NH 03740
PO Box 48
Custom Trains
775-825-5557

Bath, NH 03740
501-982-6836

Arkansas
Hobby Shack
1200 John Harden Dr
Jacksonville, AR 72076
501-982-6836

Mitchell’s
2303 Concord Pike
Wilmington, DE 19803
302-652-3258

Trains & Hobbies
313 Newark Shopping Ctr.
Newark, DE 19711
302-266-8063

Florida
Kirkland Hobbies
187 Concord Circle
Panama City FL 32405
850-215-1973

Georgia
Riverdale Station
6632 Hwy 85
Riverdale, GA 30045
770-991-6085

Caboose Stop Hobbies
301 Main St
Cedar Falls, IA 50613
800-642-7012

Deerfield, IL 60014
3008 N Sterling
Mike’s Scale Rails
3008 N Sterling
Peoria, IL 61604
309-689-6656

Illinois
Chicagoland Hobbies
6017 Northwest Hwy
Chicago, IL 60631
773-775-4848

Des Plaines Hobbies
1468 Lee St
Des Plaines, IL 60018
847-297-2118

Hill’s Hobby Shop
10 Prairie Ave
Park Ridge, IL 60068
847-823-4464

Indiana
Big Four Hobbies
1005 E Main St
Plainfield, IN 46168
317-837-1024

Big Four Hobbies
1005 E Main St
Plainfield, IN 46168
317-837-1024

Kirkland Hobbies
187 Concord Circle
Panama City, FL 32405
850-215-1973

Georgia
Riverdale Station
6632 Hwy 85
Riverdale, GA 30045
770-991-6085

Michigan
Ureka Trains
1219 Ureka Rd
Wyandotte, MI 48192
734-284-0021

Ohio
20th Century Models
32575 Pettibone Rd
Solon, OH 44139-545
440-248-3055

M & S Trains
4157 W Broad St
Columbus, OH 43228
614-274-1178

Terminal Hobby Supply
10200 Springfield Pike
Cincinnati, OH 45215
513-326-3613

Oregon
Whistle Stop Trains
11724 SE Division St
Portland, OR 97266
503-761-1822

Pennsylvania
C&E Branchline RR Shop
102 W. Grove St.
Dunmore, PA 18509
570-347-7909

Rider’s Hobby Shop
2055 28th St SE
Grand Rapids, MI 49506
616-247-9933

Missouri
Main Line Hobby Supply
16522 Gravois Rd
St Louis, MO 63123-4345
314-638-8250

Kirkland Hobbies
301 Main St
Cedar Falls, IA 50613
800-642-7012

Unreal Station
127 West Street
Quince Valley Designs
United Kingdom
011-411-715-3666

Strasburg, PA 17579
Strasburg Train Shop
717-794-2860

17214 Blue Ridge Summit, PA
Mainline Hobby Supply
215-412-7711

Lansdale, PA 19446
128 S Line St
Reading, PA 19601-2312
610-374-8598

Li’s Junction
128 S Line St
Lansdale, PA 19446
215-412-7711

Mainline Hobby Supply
15066 Buchanan Trail E
Blue Ridge Summit, PA
17214
717-794-2860

Strasburg Train Shop
Rte 741 E, Box 130
Strasburg, PA 17579
717-687-0464

Tennessee
Adirondeck Car & Foundry
160 Harwood Rd.
Gray TN 37615
423-477-5345

Hobbytown USA, 8901
Town & Country Circle,
Knoxville, TN, 37923,
865-690-1099

Texas
Pecos River Brass
560 E Church St
Lewisville, TX 75057
972-219-0202

Virginia
Granddad’s Hobby Shop
5260-A Port Royal Rd
Springfield, VA 22151
703-426-0700

Rallyard Hobby Shop
7547 Williamson Rd
Roanoke, VA 24019
540-362-1714

Walt's Hobby Shop,
PO Box 1805,
Petersburg, VA, 23805,
804-861-1333

Washington
The Inside Gateway
14725 Northeast 20th
Bellevue, WA 98007
425-747-2016

Wisconsin
Depot Drygoods
220 W Wisconsin Ave
Neenah, WI 54956
920-725-8654

Greenfield News & Hobby
6815 W Layton St
Greenfield, WI 53220
414-281-1800

Non-US Dealers
Canada
George’s Trains
510 Mt Pleasant Rd
Toronto Ontario M4S 2M2
416-489-9783

Switzerland
Trainmaster
3 Hochweidstr. Kilchberg
CH-8802
011-411-715-3666

United Kingdom
Quince Valley Designs
17 West Street
Weedon, Northants
NN7 4QU
044-132-734-137
Congratulations to Ron Gribler and Steve Sansome for winning the Design-A-Layout Contest. Well done guys. All of the entrants received an OST tee-shirt and an “attaboy.” In future issues, we’ll show you some of the best contest submissions that didn’t win the Grand Prize. We’d like to do another layout contest in the near future so keep watching these pages for an announcement.

As for the magazine, we’re doing very well, thank you. In fact, much better than we had expected to do. One part of our plan was to reach out to O scale modelers in “non-traditional” hobby venues and that’s working great. Some of our advertisers report they are getting orders from people who found this magazine in a grocery store or a newsstand. That benefits all of us by bringing new blood into the hobby. And, if 2 rail O scale needs anything, it’s new members.

Several people called me around the 5th or 6th of May to ask where their magazine was. We didn’t get it into the mail until May 2nd, so their calls were a bit premature. People got used to having the magazine arrive early in the month. Sometimes our schedule doesn’t always allow us to make an early mail drop. In the case of the May issue, it was our printer who was later than usual. But, be assured, you will receive your issues in the month printed on the cover, and usually no later than the 15th of that month.

A few callers asked about First Class postage subscriptions. We’ve talked it over here and we can do that but it’s going to cost you more, like $48 a year. Overseas subscribers pay $80 and receive their issues by Air Mail. In some cases, they get their issues before U.S. subscribers, but they’re paying for that fast service. So, let us know if you would be willing to pay $48 a year for First Class delivery. Call or email us.

Some of the people I discussed this with felt our subscription rate was already too high. Yes, the cover price is high but subscribers get a 25% discount. Also, consider the quantity of the content you receive in each issue. OST gives you just about one-third more editorial content than our colleagues at O Scale News. That means every three issues of OST are equivalent to four of OSN. Six issues of OST (one year) are equivalent to eight of OSN. Guess what? Eight issues of OSN cost the same as six of OST, $36. Except you get the content faster.

I also realize that some people buy OST and OSN for the ads as much as the content. And, we’ve been asked why isn’t so-and-so advertising in OST? Good question. We have solicited every O scale vendor multiple times. If your favorite supplier, manufacturer, or importer isn’t advertising in OST ask them why, not us. One thing I will promise, however, is that we will keep our ad to content ratio at no more than 30/70 percent. As we gain more advertisers, we will add more pages to keep giving you the best articles about O scale that we can. Don’t hold me to any promises but I would like to see OST at 80 color pages by year’s end.

I want to apologize to all our readers for the inordinate number of typos in the last issue, even our new phone number was incorrect. We’re going to use a proof-reader (other than ourselves) starting with this issue.

This issue carries Part 2 of the three part Scale Command feature we started in OST#8. I’ll be building a new layout in our new digs and I’m still on the fence about a control system. I definitely want the options provided by a command control system and I was pretty much set on using Digital Command Control (DCC) until I saw Train America’s Scale Command system. The more I learn about it, the more I like it, and the entry cost is extremely attractive. We’d like to know what you think about the future of Digital Command Control in O scale, in general, and, in particular, what you think about Scale Command. Write or email us with your opinions.

I want to encourage all readers of OST to provide us with feedback on any aspect of the magazine. We really do read every letter and email sent and make decisions about the direction the magazine takes from that feedback. This is, after all, a magazine for you, by you. Got an idea for an article? We’ll help you make that idea a reality. We need articles on every aspect of the O scale hobby, from trackwork to scratch building brass locomotives and anything in between. You don’t need a degree in journalism. If you can put your thoughts together in a logical manner, we can make them into an article.

Meanwhile, keep high ballin’!
**NEW PAINT SCHEMES! O 36' Wood Reefers**

*Features Include:*
- Highly detailed ABS body
- Separately-applied grab irons, ladders and stirrups
- Opening hatches and doors
- Die-cast chassis and detailed braking system
- 40-ton Bettendorf-style die-cast sprung trucks
- Minimum diameter curve (3-rail): O-31
- Minimum radius curve (2-rail): 24"
- And More...

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>DESCRIPTION</th>
<th>ITEM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>8000</td>
<td>Undecorated</td>
<td>9000</td>
</tr>
<tr>
<td>8008</td>
<td>Kingan's</td>
<td>9008</td>
</tr>
<tr>
<td>8009</td>
<td>Krey's</td>
<td>9009</td>
</tr>
<tr>
<td>8010</td>
<td>Nuckolls</td>
<td>9010</td>
</tr>
<tr>
<td>8011</td>
<td>Selecto</td>
<td>9011</td>
</tr>
<tr>
<td>8012</td>
<td>Swift (Red)</td>
<td>9012</td>
</tr>
</tbody>
</table>

Two road numbers are available per road name except for Swift, which has four road numbers.

**NEW PAINT SCHEMES & NEW ROAD NUMBERS!**

*50 Ton War Emergency Hoppers*

*Features Include:*
- Unique construction in die-cast and ABS
- Full interior details
- Accurate trainline details and brake system details
- Separately-applied grab irons and ladders
- Sprung hopper doors
- Removable coal load
- 50 ton Bettendorf die-cast sprung trucks
- Minimum diameter curve (3-rail): O-27
- Minimum radius curve (2-rail): 24"
- And More...

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>DESCRIPTION</th>
<th>ITEM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>6420</td>
<td>Undecorated</td>
<td>7420</td>
</tr>
<tr>
<td>6421</td>
<td>Baltimore &amp; Ohio</td>
<td>7421</td>
</tr>
<tr>
<td>6423</td>
<td>Chesapeake &amp; Ohio</td>
<td>7423</td>
</tr>
<tr>
<td>6427</td>
<td>Central of Georgia</td>
<td>7427</td>
</tr>
<tr>
<td>6428</td>
<td>L&amp;N</td>
<td>7428</td>
</tr>
</tbody>
</table>

Four road numbers are available per road name.

To get your "Official Member" of the Atlas O Forum Pin shown at right, please send $3 to the address shown below.
COMING IN MAY FROM PRB

AAR 50' DD Box Car in C&O, B&O, WM, & PM

ALSO in MAY
AAR 50' DD Box w/ Opening End Door in Santa Fe and Union Pacific
AAR 50' Single Door Box Car in CB&Q and Erie
(Undecorated kits will also be available)

IN STOCK NOW
DRGW 1951 PROSPECTOR & ROYAL GORGE NOW WITH LIGHTS & INTERIORS
(Some models available unpainted for your own road choice)

Check out our website at http://www.pecosriverbrass.com

Pecos River Brass 560 E. CHURCH • LEWISVILLE, TX 75057
Phone and Fax: (972) 219-0202
john@pecosriverbrass.com • visit our NEW website at http://www.pecosriverbrass.com