

Two raised railroads built for easy access p. 30, p. 54

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## Build a perfect scene p. 16

- Combine different elements
- Build a landscaped border
- And more tips and ideas!

**25**  
**HOW TO**  
**PAGES**

No. 3414 hauls freight across a group of wooden bridges, walls, and flume, all framed by a natural mat of color.



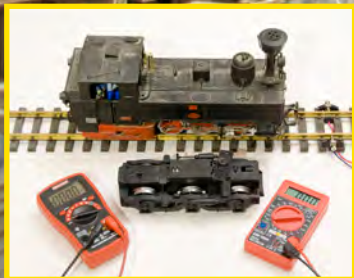
### HOW TO

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**CONTENT**  
**CODE** p. 5





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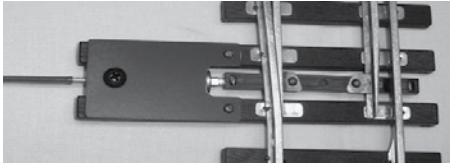
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**20**



**58**



**54**

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- Part 8 of High-tech modeling for garden railroaders. Part 8 discusses using a professional printing service and gives tips on modifying parts for the best results at home.
- Video of Accucraft's live-steam 4-8-4 in action

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# Signage on buildings

One of the things I like best about our hobby is that it often brings out a creativity in people who heretofore had thought themselves uncreative.

This frequently shows up in the structures that people build for their railroads. Buildings are thoughtfully chosen to match the railway's period and are painted and weathered to look natural in their environments. However, the effect of many of these beautiful structures is often marred, if not completely destroyed, by the signage that is attached to them.

Lettering—its style, color, and usage—is period-specific in the same way as architectural design and use of materials. Hence, a relatively modern typeface, say Helvetica (1957), on the front of an 1890s saloon is anachronistic and jarring to the eye, even though the observer may not consciously realize why.

Also, there is a big difference between type and hand lettering. "Type" usually refers to individual letterforms that are combined to be used in printing. There are thousands of typefaces available. Hand-painted lettering may be related to type forms but can be easily manipulated by the sign painter (or, more correctly, the "sign writer") based on its application. Look up "sign writing" on YouTube to see some wonderful examples.

Typography and hand lettering are interrelated and each have long histories and traditions. Old-time sign writing is a dying art. Most commercial sign companies today, including the one I worked for years ago, use modern equipment and techniques to produce signage for buildings, most of which uses type writ large. However, in the old days, sign writers did their work by hand, which you can often detect just by looking at old photos. There is a lovely, flowing beauty to a well done, hand-painted sign.

How do we achieve authenticity in our model signage? Frankly, it might not be easy. Ideally, we should study and closely observe old signage. There's tons of it on the Internet. Look at the letterforms that were used in the period you are modeling and compare them to more modern (as well as older) lettering. In cities, much signage was painted on the sides of brick buildings. In small towns, where wooden buildings abounded in early years, lettering was often applied directly to the building, as opposed to sign boards attached later.

Once you feel like you know where you're going, a computer drawing program like Adobe Illustrator or CorelDRAW can be a valuable tool, allowing you to manipulate individual letterforms, change their shapes, make them walk around curves, add shadows, etc. All of this must be approached with care, though, as it is easy to go too far, making the result look odd and obviously computer generated.

Lettering and signage is a vast, deep, fascinating field. I urge you to look into it, discover its rudiments and principles, and begin to learn how it can be used to better advantage on your garden railway. You'll not be disappointed.



The beautiful signage on the structures on Ed and Richard Abate's Rooster Creek Railroad in California was hand painted by Rey Giese, a professional sign writer with 50 years of experience.

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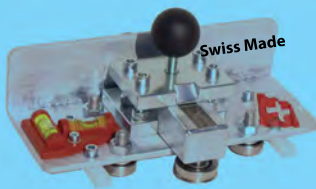
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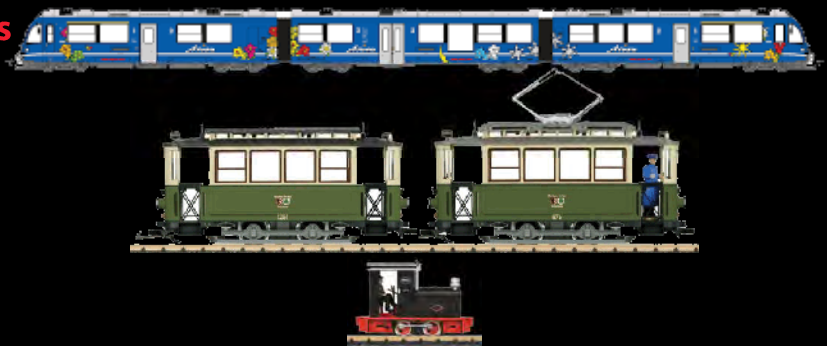


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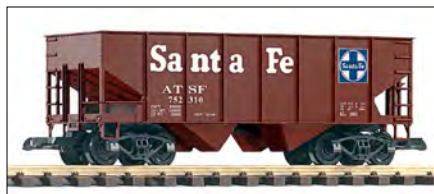


**Roundhouse Engineering Co. Ltd.**, Unit 6-10, Churchill Business Park, Churchill Road, Wheatley, Doncaster DN1 2TF, United Kingdom, has announced a new 16mm scale, live-steam locomotive. This is an 0-4-0ST based on *Lilla*, a Hunslet quarry engine built in 1891. The model is internally gas fired and features inside valve gear, a water top-up system, a water glass, exhaust enhancer, glazed windows, and will be available fully radio or manually controlled. It is gauge adjustable between 32 and 45mm. Price: TBD. Website: [www.roundhouse-eng.com](http://www.roundhouse-eng.com)



**LGB (Märklin)**, has announced a new Grizzly Flats locomotive and rolling stock for release in the fourth quarter of 2017. The locomotive, *Chloe* (#L23131), is an 0-4-2T steam-outline engine based on Disney animator Ward Kimball's locomotive. The model is finely detailed with prototypical paint and lettering and both driving wheelsets are driven by a ball-bearing motor. It has a working headlight and traction tires. Price: \$369.99. The Grizzly Flats 1st class, open-air observation car (#L30431) has seatbacks that can be reversed and metal wheelsets. Price: \$94.99. A set of two open-air passenger cars (#L32441) includes one 2nd class and

one 3rd class car, each with metal wheelsets. Price: \$169.99. Also from LGB is a BNSF boxcar in two different road numbers—725562 (#L43931) and 726159 (#L43932). The cars are prototypically painted and lettered for Era V. The cars have many separately applied details, as well as sliding side doors and metal wheelsets. Price: \$169.99 ea. Website: [www.lgb.com](http://www.lgb.com)



**Piko**, Lutherstr. 30, 96515 Sonneberg, Germany, has announced three new large-scale items, as follows: an Erdinger Beer car (#37952), a hopper car lettered for Santa Fe (shown, #38876), and an ore car lettered for the Reading Railroad (#38877). For more information, visit the company's website: [www.piko.de](http://www.piko.de)

### Bridges & structures



**VES Enterprises** has a new, 1:24 scale, classic downtown-theater façade. The façade represents a fancy movie house typical of those found in almost any town from about 1920-1960. The model is suitable for either indoor or outdoor use. Theater name and movie titles can be modified per custom order. Price: \$119 + s&h. Website: [www.gtrainbuildings.com](http://www.gtrainbuildings.com)

### Accessories & details

**G Scale Engineering**, 625 Townsend Dr., Aptos CA 95003, is offering its corru-

gated metal in a new package of 10 panels plus four angle caps for \$6.50 + s&h. Website: [www.gscalecorrugatedmetal.com](http://www.gscalecorrugatedmetal.com)

### Track products



**Locomotive Joe** is offering a Hayes-style end-of-track bumper made of metal and finished in red oxide. It fits within all large scale, 45mm-gauge track rails. The bumper can be height adjusted to perfectly match your coupler height. It is 2.5" long, 1.5" wide, and 2.25" high. Price: \$18 each, plus s&h. Website: <http://locomotivejoe.ecrater.com>

### Electronics & software

**G-Scale Graphics**, 5860 Crooked Stick Dr., Windsor CO, has released a new "no frills" Track Throttle. The unit just supplies up to 5 amps of power needed to control large-scale trains, when paired with a low-cost industrial power supply. Total cost for both Track Throttle and power supply (purchased separately) is about \$90. The Track Throttle is available as a panel-mounted circuit board for use in your custom control panel, or mounted in an enclosure (shown). Website: [www.GScaleGraphics.net](http://www.GScaleGraphics.net)



## MISCELLANEOUS

**Enjoy Garden Railroading** is a new website aimed at beginners in the hobby. Authored by Jim Garcia, the site offers basic information under several tabs,



including "Getting started," "Locomotives-trains," and "Gardening." There's also a photo gallery, a resources page, and a blog. This site will be updated on an ongoing basis. Jim comes from a railroad family and has provided a little of his background on the "Contact me" page, along with a form that anyone with questions or comments can fill out and send to him. The website is [www.enjoygardenrr.com](http://www.enjoygardenrr.com)

**The Water & Rails Tour** in Reno, Nevada, now in its 12th year, is a tour of more than 25 of Northern Nevada's ponds and garden railways. This year's tour will be on June 17-18. Proceeds from the event, which is sponsored by McLean Financial Group and Rail City Garden Center, go to the Nevada Chapter of the ALS Association. For more information, visit the website: [www.waterandrails.org](http://www.waterandrails.org)

**The Benson Visitor Center**, 249 E. 4th Street, Benson AZ 85602, has added a replica AAR control stand that controls a large-scale model train. The train runs on 96' of track suspended from the ceiling inside the Visitor Center. A camera on the front of the train and a video monitor in front of the control stand lets anyone feel they are actually driving a full-size train. The train and control stand were acquired through a grant from the Union Pacific Foundation. Measurements for the control stand were taken from an EMD GP-30 control stand from the San Pedro & Southwestern Railroad. A Bridgeworks Magnum 10 SR transformer mounted in the stand is linked to the actual throttle and reverser levers. Website: [www.bensonvisitorcenter.com](http://www.bensonvisitorcenter.com)

**Caboose** (formerly Caboose Hobbies), has reopened. The store's new address is 10800 W. Alameda Ave, Lakewood (Denver suburb) CO 80226, 303-777-6766, [info@mycaboose.com](mailto:info@mycaboose.com). The website is [www.mycaboose.com](http://www.mycaboose.com)

**Model Motor Cars**, 10124 NW 4th Street, Plantation FL 33324, has purchased the brand name and inventory of **Scale Hardware**, a company that specialized in miniature nuts, bolts, rivets, fasteners, etc. Scale Hardware has served hobbyists and miniature machinists globally for more than 20 years. Website: [www.modelmotorcars.com/scalehardware](http://www.modelmotorcars.com/scalehardware)

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## Using social media to attract newcomers



Jeff Young's February 2017 "Raising Steam" column made some excellent points about promoting and introducing live steam to the public using in-person demonstrations at makers fairs. Nothing beats an in-person demonstration. But nowadays there is a close second—social media. All the young people are on it.

If the hobby in general (not just live steamers) wants to reach young potential future participants, then individuals and manufacturers should go where the kids and young adults are. I would encourage

you, if you have a garden or indoor railroad, to give it a Facebook, Tumblr, or Instagram account (there are other options—find one you like). Start by sending the link of your railway's social-media page to young people in your family. I would assume most grandkids will look at their grandfather's railroad's Facebook page, and some of them might even "like" it. Once something like "friending" or "liking" or "sharing" happens, then some of their young friends might stumble on to it and check it out.

Getting back to Jeff Young's point, if there is something like a maker group in your area, besides meeting and showing trains in person, find out if they have a Facebook page or similar, then "like" or "friend" it. These types of connections on the web can grow and, in the end, offer more routes and chances of exposing new people to our hobby, in part because search engines take into account what is linked to what on the web.

Now I'd like to step onto my anti-soapbox soapbox. If you do give your railroad a social media page, then keep it soapbox free. What I mean is, don't get preachy about things like prototype vs. freelance, or collecting vs. running, or this scale or that gauge is better than another. The general public, from their point of view, is viewing a "train page on the web." They don't want to be preached at, particularly about topics they are not aware of and therefore don't understand. But they do want to be entertained! Make your page fun and inclusive. Invite them to post and ask questions. Supply links to several different kinds of rail modeling and real-life railroad websites—cast a broad net. Swallow your pride—if some person posts a question asking how they might run Thomas the Tank Engine in their fairy garden, then give them your very best friendly advice on how to do that, even if the thought of Thomas and fairies might give you hives. That person you help might someday drift into parts of the hobby you do like.

Some might wonder if I practice what I preach. The answer is, "sort of." In December of 2016 I started a Tumblr page for my garden railway so that my young-adult daughter, who lives 2,000 miles

away, and some long-distance friends could keep up with my garden-railway activities. On reading Mr. Young's article and thinking about writing this letter, I believe I helped myself better understand what I want my railway's Tumblr page to accomplish. —*Scott Ziebell*, *scottandnancy@charter.net*, <https://duluthstpaulandomaharr.tumblr.com>

## Dating your work



I enjoyed the article about building a stone arch bridge in the February 2017 *GR*. It reminded me of a bridge I built in 2014 using similar materials and construction approach, but the author left out an interesting feature of many stone bridges. On my bridge, I carved a block from the foam panel to serve as a date-of-completion plaque. In my case, I carved in "2014;" however, if someone was building a bridge like the one in the article, they could put on any date to reflect the period they are modeling. Bridges often have such plaques to commemorate their completion and it is an easy thing to include when building to add a touch of realism. —*Todd Haskins*, *Brewster, Massachusetts*

## Standard Gauge in the garden

Mr. Kelly's article in the February 2017 issue on using Lionel Standard Gauge trains on our layouts was very interesting. He is correct in saying that both Lionel Standard Gauge and American Flyer Wide Gauge rolling stock are available at reasonable prices. Both companies made

## COMING IN THE Next issue

A **public railway** in Germany celebrates 20 years

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## Shooting on location

Today we hit the road. Our goal will be to make an interesting three-minute home video using a readily available action camera, still cameras, and homemade accessories. Our raw video will be edited on consumer-level software and we will add sound effects and zippy music. We'll make a gift copy for the railroad's owner and show the video at the club meeting. As a bonus, this video will go into the viewing cue at the Children's Museum.

I wanted to visit Bill Ralph's Porcupine Gulch, the first place winner in the Small Garden Railway competition (see *Garden Railways* June, 2016). After visiting there as part of the National Convention, I asked to return for filming on a less crowded day.

## Make a planning checklist

Making a video on the day of an open house seldom works. A day or two before



or after is usually much better. Here's my on-location checklist: Assemble everything in a portable container, charge batteries, bring extras, check camera operations, and pack extra media cards. Confirm the time and duration with the owner and crew, check the weather forecast, plan the route and parking, and include time to visit with the owner prior to the shoot.

## Pack your bags

Today I'll be working with some new equipment. I built a 4' jib supporting two cameras. I'm bringing a steady cam and

am packing a radio-controlled engine and camera-mount flatcar to create front-end look-backs. I packed the big flatcar, with its flexible platform for the onboard perspective, as well as two small tripods for flybys, and some duct tape and zip ties.

## On location, get the story

Visiting with the owner, I asked:

- What is the story of this railroad?
- What photograph locations do you recommend?
- What should we be sure not to miss?
- Do you have some favorite equipment and structures to include?
- Can we work you into the video?
- Are there sounds we need to capture?
- Where can we get a panoramic view to orient the viewers?

Visit [www.GardenRailways.com](http://www.GardenRailways.com) and type the author's name into the search box to view the related video.

products that look similar. They are all-metal and built like tanks.

About five years ago I found a set of five American Flyer Wide Gauge cars at a local estate sale, but there was no engine. They were in near new condition in their original boxes. I paid about \$100 for them. I then found an American Flyer Wide Gauge engine for about \$100. Now I had a train to run but no layout. Standard-gauge track is made of steel and would rust outdoors on my Rock River Pass Railroad, so I decided to build a loop of Standard Gauge track about 65' long, made from brass rail. I made a track gauge out of steel bar stock and set out to build my oval. I made sections about four feet long at a time. I cut ties about 3/8" square x 3" long from cedar 2 x 4s. The curves I hand bent to fit the area the oval was going into. Two thousand #2 screws and washers later, and many trestle bents, and I had my track.

I have been running Standard Gauge in the garden for about four years. It sure generates a lot of attention. I would encourage others to look into using Standard Gauge in the garden. —Raymond Holich, Mount Prospect, Illinois, [rkhlich@sbcglobal.net](mailto:rkhlich@sbcglobal.net)

## Boxcab



I thought readers might like to see the boxcab engine I just completed. It was built from a kit by The Gal Line of Great American Locomotion. The locomotive has Airwire battery R/C, a Phoenix sound board, and LED lighting. Decals were homemade. There are more than 400 brass brads used to simulate rivets. Detail parts came from Ozark Miniatures. My earliest memory of an electric train was my older brother's Lionel boxcab. I could never understand why no large-scale manufacturer ever came out with a similar locomotive. —Dave Smith, Fort Mill, South Carolina


If you have something to say, send your comments to "Letters," c/o *Garden Railways*, PO Box 460222, Denver CO 80246 USA; or e-mail them to [mhorovitz@gardenrailways.com](mailto:mhorovitz@gardenrailways.com)

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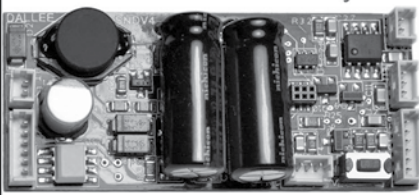
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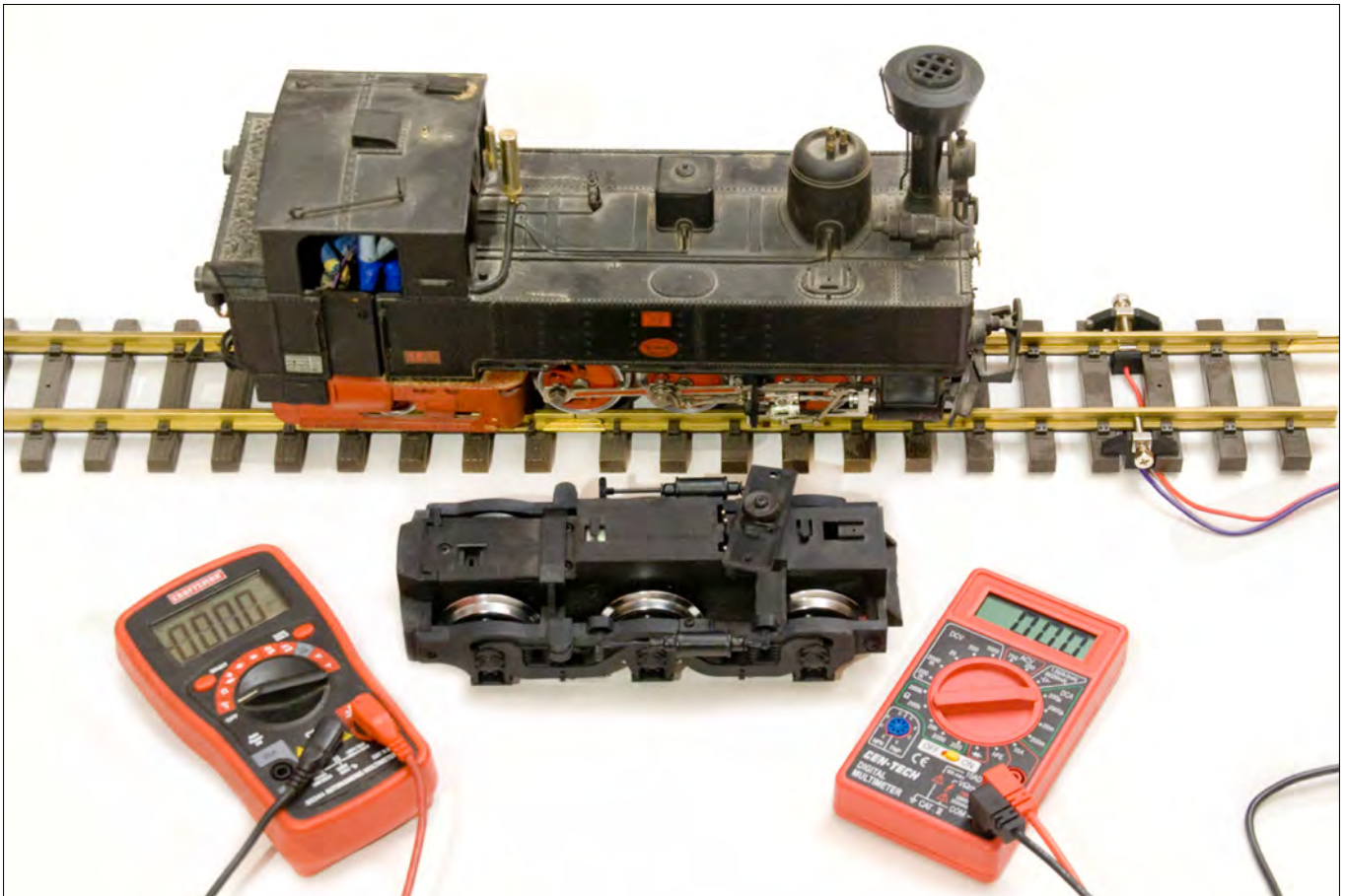
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## GARDEN RAILWAY BASICS

# Understanding the multimeter



When you have electric trains, you need a way to measure electricity to make sure the electrons flow as they should. A multimeter (a.k.a. “volt meter”) is an inexpensive, yet indispensable, tool for this task. PHOTOS AND ILLUSTRATIONS BY THE AUTHOR

A fellow modeler and I were talking about an electrical problem he was having. I asked if he had a volt meter. He responded that he did but didn't know how to use it. I was a little taken aback by that but, being the son of an electrical engineer, I learned how to use a volt meter about the same time I learned how to write my name. It never dawned on me that some folks wouldn't know how to use one.

It's high time to demystify this invaluable tool for model railroaders. The term “volt meter” is generic; most, if not all, volt meters these days are what are called “multimeters.” These measure volts, current, resistance, and continuity; some even measure capacitance, temperature,

and other things. There will almost always be a large dial on the front of the meter with which to set the function you wish to measure.

Multimeters are easy to find. A cheap one will run \$10 or so. If there's a Harbor Freight in your area, check your paper for ads; they frequently offer inexpensive meters as freebies if you buy something else. Higher-priced units tend to have more features but, for a model-railroader's tool bag, you don't need anything fancy. You'll only need to be able to measure voltage, current, continuity, and maybe resistance.

There are three basic parts of a multimeter. The display, the dial, and the probes (**photo 1**). The display is where you

read the values of what you're measuring. Do yourself a favor and get a digital display. They're far more accurate than the old-style analog needle. Most of the displays I've seen have four digits, though some may have more. For our purposes, four digits is adequate.

The dial allows you to select what you're measuring: **Voltage** (DC or AC); current, measured in **Amps** (A) or **milliamps** (mA); resistance, measured in **ohms** (Greek symbol omega— $\Omega$ ); and **continuity**. There are two types of multimeters: traditional and self-adjusting. With a traditional meter, you have to select the anticipated range of whatever it is you want to measure. If you're measuring a battery, for instance, you'd set it to DC





1. A multimeter has three basic parts: the display (digital shown), the dial (to select what you want to measure), and the probes (to connect to the component being measured.)



2. With a traditional meter, you must select from a range of values within which you believe your voltage, current, etc. might read. Here, the meter is set to 20V and displays the measured voltage (of a throttle) at 14.04V DC.



3. The accuracy of the value being displayed depends on the setting. In this example, the meter is set to 2,000 mV (2V). Reading a standard alkaline battery, it reads 1,304 mV, or 1.304V—accurate to a thousandth of a volt, as opposed to the hundredth shown in photo 2.



4. If the value measured is outside the meter's selected range, it will display an error message or similar, such as the "1" on this meter.



5. An "autoranging" meter will say "Auto" somewhere on the front of the meter or on the display. Also, you will not see any ranges from which to select; you'll simply see one setting each for voltage, current, etc.

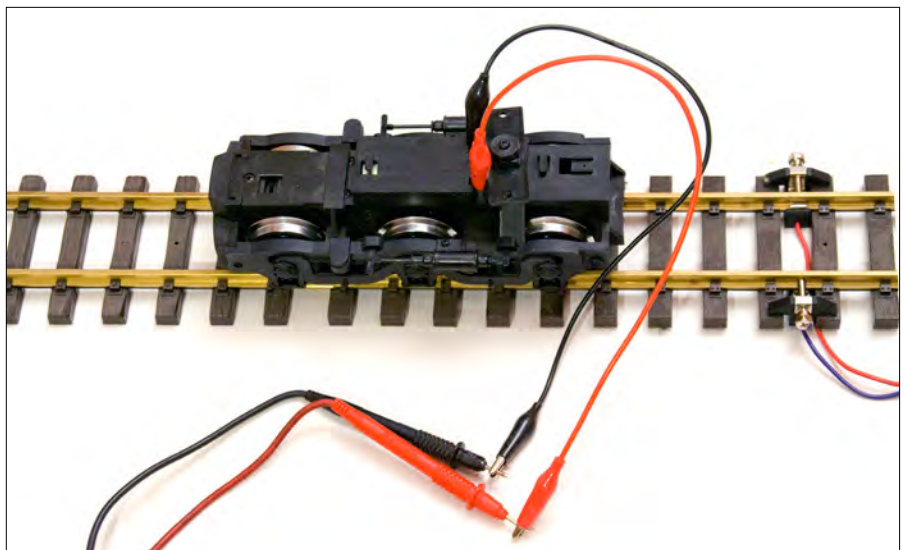


6. Probes connect the meter to the object being measured. Most meters come with simple probes, such as these. Other varieties can be purchased for specialized circumstances.

voltage, 20V (photo 2). This gives you the most accurate measurement of the voltage. If you set it to DC voltage, 200V, it will still display the voltage, but not to the same degree of accuracy (photo 3). If you set it to 2V, it will display an error (photo 4).

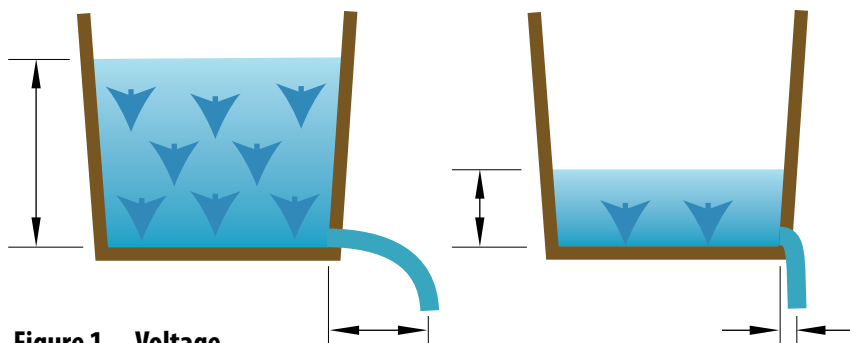
A self-adjusting meter takes the guesswork out of the equation. Rather than a range of values to choose from, you simply set what you want to measure (DC voltage, AC current, etc.) and the meter will adjust the display to match what it's reading as accurately as possible given the number of digits it can display (photo 5).

The probes (photo 6) are used to test the component you want to measure. Some meters may have multiple ports for the probes; typically, there will be a



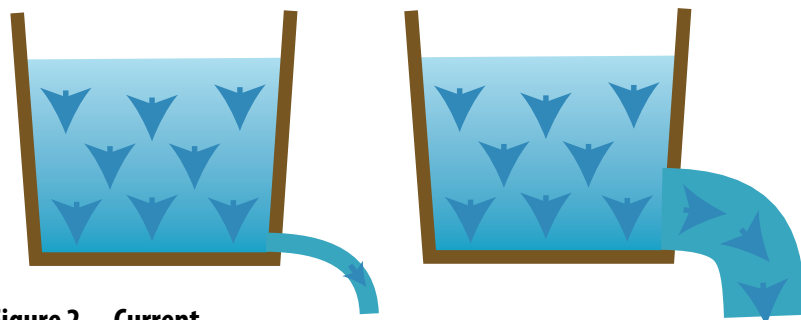
7. Alligator clips can be easily employed to adapt your probes for hands-free operation.





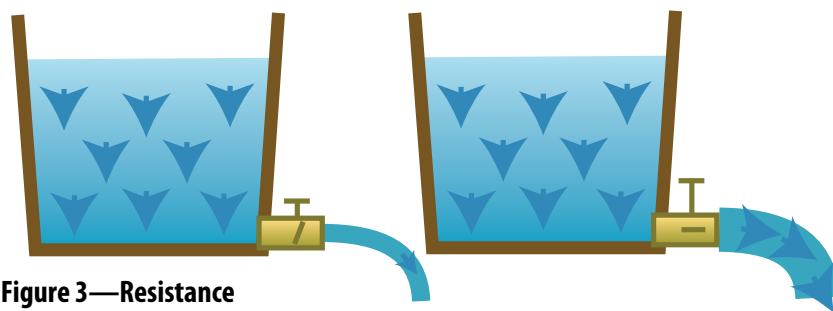
**Figure 1—Voltage**

Voltage is a measure of potential, like water in a bucket. The more water that's in the bucket, the greater the pressure, and the further a stream of water will travel when emptied from the bottom. Likewise, the greater the voltage, the greater potential for power when applied to a motor or lights.



**Figure 2—Current**

Current (measured in Amps) is a measure of how swiftly the electrons are flowing. A small opening in a bucket allows only a slow flow of water. Increasing the size of the opening increases the rate of flow.



**Figure 3—Resistance**

By putting a tap on the bucket, the rate of flow can be controlled by increasing or decreasing the opening through which the water flows. A smaller opening offers more resistance to flow than a larger opening. In the electronics world, this is known as Ohm's Law: Voltage = Current x Resistance

measured. Voltage is a measure of energy. Consider a tank filled with water. The more water that's in the tank, the more potential energy there is to be used (**figure 1**). The higher the voltage, the more energy there is to make our motors turn—they will turn faster with higher voltages. Now, let's tap a hole in the bottom of the tank. The larger the hole, the faster the water will leave the tank. That's current (**figure 2**). Now, let's put a spigot on the bottom of the tank instead of just a hole. The spigot is resistance. The more the spigot is closed, the greater the resistance and the less current passes. The more the spigot is open, the less resistance and the greater the current (**figure 3**). This is known as Ohm's Law: Voltage (V) = Current (I) x Resistance (R).

### Using the meter

Measuring voltage is probably the most common use we'll have for the meter. We need to know how much voltage is going to the track, the motor, a light, etc. For most model trains, the voltage will be DC (direct current). Lionel trains and others (particularly three rail, 0-gauge) run on AC (alternating current) voltage. Certain accessories, like switch machines, may also work on AC. Direct current flows in one direction (negative to positive), while alternating current flows back and forth. On the meter, DC voltage may be indicated by a straight line, while AC may be indicated by a wavy line (**photo 8**). Voltage (AC or DC) is measured in "parallel," meaning the probes go from one terminal to the other, or parallel to whatever load is on the circuit, be it a motor, light, etc (**photo 9**).

To measure the voltage going to the motor of a locomotive, you would ideally put the probes directly on the contacts of the motor itself (**photo 10**). To measure the voltage on the rails, you'd put one probe on each rail (**photo 11**).

Another common measurement is determining how much voltage drop there is along the track. To check this, measure the voltage at the output of the throttle, then at various points along the track. The farther away the track is from the point where the power is fed, the greater the resistance (which causes voltage drop).

### Related reading

For more hobby basics, check out the author's book, **Garden Railway Basics (#12468)** at [www.KalmbachHobbyStore.com](http://www.KalmbachHobbyStore.com)



special one for measuring high currents. In most cases, the probes are just short metal posts used to touch the various components. You can always connect alligator clips to them if you need hands-free measurement (**photo 7**).

### Current, voltage, & resistance

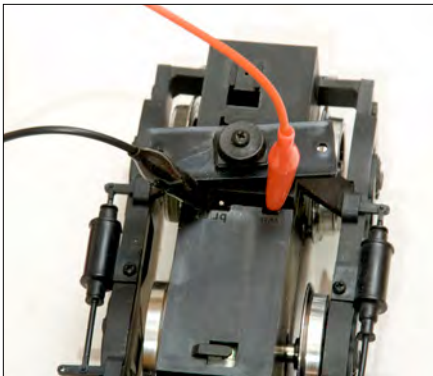
Let me explain current, voltage, and resistance, so you understand what is being



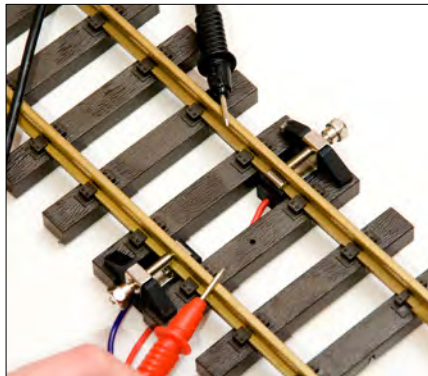
**8. A side-by-side comparison of an autoranging (left) and traditional meter. Note that the autoranging meter will also automatically determine AC or DC voltage, as indicated by the icon with the straight line underneath the wavy line.**



**9. To measure the voltage of a battery or power supply, the probes are touched to the positive and negative ends of the power source.**



**10. To measure the voltage going to a motor, simply touch the probes to both contacts of the motor.**



**11. Measuring track voltage is simple; just touch one probe to each rail.**

This is mostly due to rail joiners and poor connections between them, which is why it's recommended for longer railroads to use multiple feeds for power.

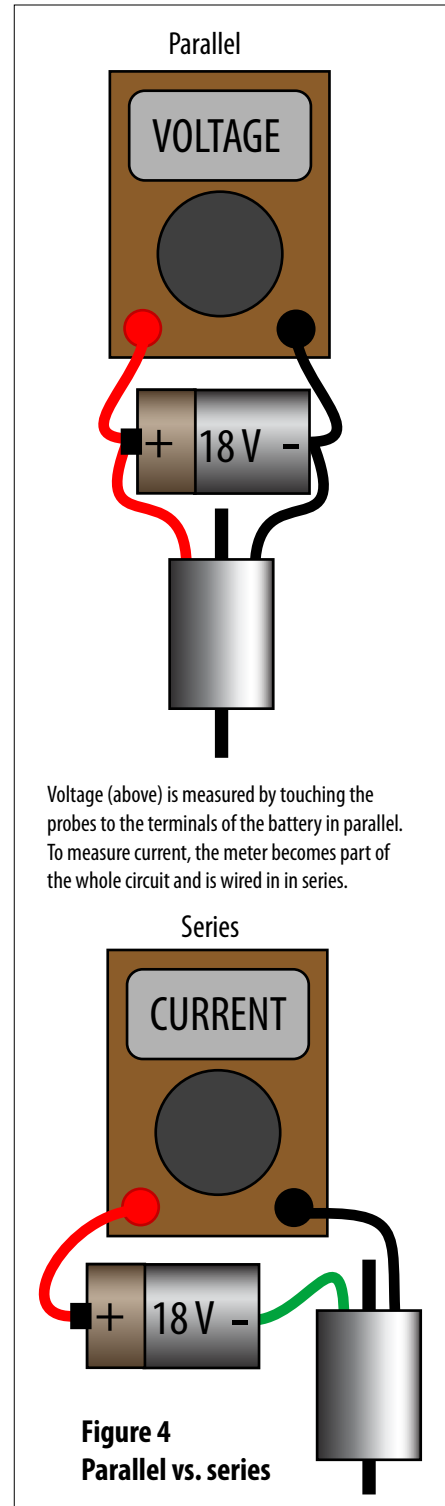
Continuity is another common measurement. This makes sure there's a good connection between point A and point B. Poor continuity might be caused by corroded rail joints, broken wires, loose plugs, or blown fuses. Some multimeters will emit an audible sound with a continuity check, while others just have a graphic display. Less expensive ones rely on the resistance meter to check the continuity. When the resistance reads 0, there's good continuity.

The resistance setting measures the resistance of a resistor or circuit, but that's typically not something done in routine maintenance on a railroad. The only time I measure resistance is when I need to confirm the value of a resistor if I can't remember the color codes.

Finally (at least for this column), the multimeter can be used to measure current. Current is measured in "series." Since you're measuring how fast the electrons are flowing, they need to flow through the meter (**figure 4**). This is harder to measure because the meter must be physically inserted into the electrical loop—it's not just a matter of touching the probes across the components.

You must be careful about how much current you're expecting to measure; if you're measuring high amounts of current, use the high-current-probe port. Using the wrong port, high current could cause damage. Typically, our motors will draw anywhere from half an amp to three or four amps under heavy load. A good rule of thumb is to always err on the high side.

As long as electrons make our locomotives run (or, for live steamers, provide lights and/or controls for our fire-breath-



ing dragons), having the tools to check on them is pretty much mandatory. A multimeter is not an expensive tool and is pretty indispensable. Next time, I'll finish my "electronics toolkit" with a look at other tools we should have on hand to fix things when the electrons stop flowing. 🐉





## GREENING YOUR RAILWAY

# Design your railway: Part 2—Pick a theme for a perfect scene



**1. Crossing a stream deep within their large Bulldog Junction, Joe and Mary Schrock's N° 3414 hauls freight across a series of wooden bridges, flume, and retaining wall. A colorful mat of pink thyme and phlox, yellow cinquefoil, and blue lobelia highlights the distant scene while dwarf Alberta spruce frames it all.** PHOTOS BY THE AUTHOR EXCEPT WHERE NOTED

Creating a focal point within your railway is the easiest of the design principles discussed in this three-part series. In part 1 (April), I showed how to draw the trackplan after researching the basics. Now, we'll see how experienced railroaders have arranged elements to create obvious themes. Visually, it's common sense; we see that the roundhouse needs a turntable, but positioning all the components for optimal viewing is the art. Stories, movies, books—even gardens—convey some drama, as in a theatrical play.

Joe and Mary Schrock's first scene on the Bulldog Junction as we enter their backyard makes a dynamic statement

about the era, theme, and authenticity of the railroad (**photo 1**). We don't have to guess what the story's about because all of the elements unify the scene with a common, uncluttered thread. Even the rocks and blooming plants are repeated on either side to contain your field of vision.

### Manifest drama, then diminish it

For each new perspective of the main theme, you, as the director of your backyard play, get to produce each area within the larger garden as a subplot (**photo 2**). Here's how: 1) set the stage with a level platform and backdrop of hardscape; 2) provide a mood with harmonious plants and natural gravel; 3) cast the players with

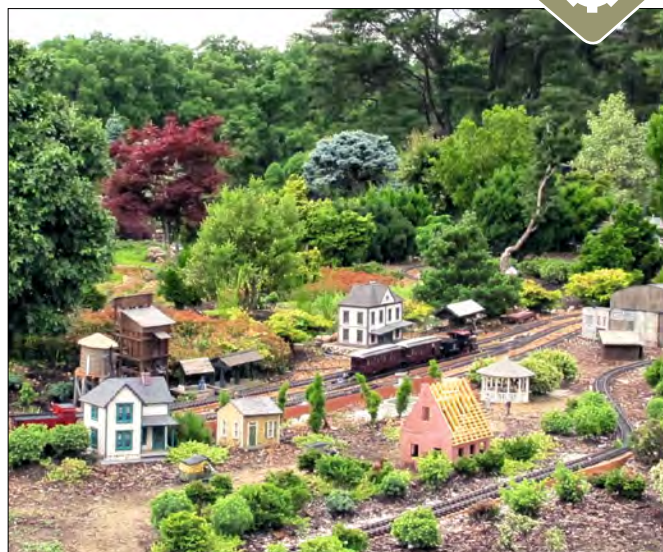
structures and figures busy on the railroad; 4) thicken the plot with a problem (like how will they fit that engine into a full roundhouse?); 5) then surprise us as a train emerges from a tunnel; and finally, 6) give us enough story to let us draw our own conclusions.

Between acts in the theater, an interlude of music gives us breathing space from the drama. Likewise, expanses of landscaping act as transition areas between subplots. A length of groundcover, a forest, or a rock formation prepares us for yet another view to investigate. Two photos show this concept in different ways. In Indiana, Taltree Arboretum's vast garden of trees (**photo 3**) forms a





2. Within the bigger picture, this subplot plays out a stage-like production; a movable gallows turntable and sensibly placed workers suggest motion. Partridge feather (*Tanacetum densum* var. *amanum*, Zones 4-9) acts as a stage curtain in blue-green fuzzy leaves and sulfur-yellow flowers.



3. Beyond this little town, the groundcover under 1:1 specimen trees shows distance, even isolation, in Indiana's Taltree Arboretum. The scale trees in the foreground act as supporting characters singing the small-town song. The focal point is played out by a group of buildings that house a small industry and its workers.



4. In Ohio, Denny and Judy LaMusga's Garden Northern Railway shows how to group buildings into a limited number of focal points so the train can be useful, seemingly traveling the distance over plains of stonecrop (*Sedum* sp.) to carry much-needed chocolate to the next whistle stop.



5. Framed by the landscape, a "stone" bridge is the center of attention. Julie and Jim Barber model structures of their hometown near Toronto, Canada. They stick to buildings, materials, and plants that are relatively carefree so they can easily maintain this tidy look on their JMB Garden Railroad.

backdrop for a whole town as the focal point. The train then becomes the point of focus as it travels behind Main Street's stretch of buildings. In **photo 4**, the train is always visible on a tiny railway, but Denny and Judy LaMusga grouped the buildings into two focal points, surrounded by a single species of groundcover, which allows us to perceive distance between the two showpieces.

### Framed!

Without distraction, a focal point can tell its tale. Take the Styrofoam bridge in

**photo 5**, built by Julie Barber as a vista, underscored by an attention-grabbing stream. It's simple but not too simple. The bridge's great detail matches the color of the riverbank's rocks but contrasts the rich green thyme meadow (*Thymus serpyllum* 'Elfin', Zones 4-9). Thyme lays out the matting for this picture, then the boxwood trees (*Buxus* sp.) make the frame. What is the couple talking about? We get to imagine our own story when there's breathing room between scenes.

Frames point to openings. Use portals, dooryards, canyons, mountaintops,

industrial yards, bridges, meadows, cemeteries, and parks. All provide framing for shining a light on a short story. Warren Eckman designed the portal in **photo 6** to highlight a mining industry—he even installed a lamp for nighttime runs. The ore cars imply action but a sleepy lizard wants to get into the act.

One way to frame the stage is to flank a structure with plants. Two trees on either side of a home would encompass the picture of a snug place worthy of highlighting. Tall, stately trees may give the impression of wealth but could grow



REGIONAL GARDENING REPORTS Zones are USDA Hardiness Zones**How did you create a focal point within your railway?**

NANCY NORRIS

A single groundcover surrounds Mike Wall's focal point, a mountain-high lodge. Creeping speedwell (*Veronica repens* 'Waterperry Blue', Zones 4-8), grows over the rocks of the mountain, creating a feeling of isolation and compressed remoteness, although the structure is only a few feet from the circus train below.

**Mike Walls**  
Near Columbus, Ohio  
Zone 5

**Elevated and dominant**

I scratchbuilt my lodge building using Garden-Texture blueprints and lumber cut from red cedar, glued with Titebond II glue and fastened with a pin nailer. The roof panel is Precision Products plastic. I sealed the Grandt

Line windows with Minwax spray stain sealer. This took many hours in the wood shop. Since this photo was taken, the lodge was relocated to its new home at the Cobblestone Railroad and is currently undergoing a much-needed renovation to reopen as a ski lodge, complete with a new accessory—an aerial-tram service to the mountaintop.



RAY TURNER

Mystic Mountain railyard is the first focal point one sees coming into Ray Turner's backyard. All the objects belong to this scene. To separate this from the next focal point, Ray frames it in a cast-rock mountain above, with fields of thyme at track level (to the right of the yard).

**Ray Turner**  
San Jose, California  
Zone 9  
**Surrounded by hardscape**

I think a key thing about focal points on your railroad is that they be visually separate from one another. While a guest is focusing on one element of my railroad, I don't want him/her distracted

by a nearby scene. I use tree lines, hills, and cast-rock mountains to separate areas. The yard at one end of my railroad has several custom-made structures, including a turntable and detailed roundhouse under construction. Trains leave the yard through a tunnel and re-appear around a bend in Deep Canyon.

too big and dwarf a house. In **photo 7**, Katy and Dan Hill planted seemingly overgrown grasses, like parentheses, around a small cabin where country folk play jug-band music. In a garden railway you may find stage footlights made of living yellow flowers.

**True to your theme**

Simple is a good way to start out when confused about the direction to take in designing your railway. Some of us can handle copious amounts of detail and trains traveling over mazes of track amid wall-to-wall stuff. I do like "busy" but I'm not a multi-tasker. In fact, as a teacher, I've learned that our brains can't focus on more than one thing at a time.

Other than grouping or framing, another way to keep your railway from looking cluttered is to stay on track with your theme. Ask if your elements "belong" to the scene, or are you spreading out all your scale goodies as in a smorgasbord? It's always okay to partially hide some items in a group to help us make sense of the story. Once you invite us in for the meat and potatoes of your theme, we'll search for dessert.

When reading about featured railways in this magazine, notice the section called, "Railway at a glance." This list offers two more clues on how to keep your railway on theme: the era and the scale. While smaller-scale items may be positioned far away to lend perspective, the

era should be consistent unless you're modeling a historical theme park. Some modelers suggest that it's prototypical for rolling stock to be of different sizes and yes, that's so.

**Balance the budget**

Nothing's wasted in Bill Smith's railway (**photo 8**). Bill kept to his theme and still packed in loads of items. From eye level to our toes, the "story of water" flows down a waterfall painted on the fence, turns liquid at the back of the railway, then gushes under three bridges (all visible because of the choice of styles). Next, the shores open up to a boating/swimming beach and, finally, the stream runs under a captivating predicament.





6. Warren Eckman created the perfect focal point for his Wc&Grr Railroad—a string of detailed wooden ore cars about to enter a mysterious tunnel framed by a wooden portal. Only in a garden railway could a Cuban brown anole lizard steal the show.



7. On their Mackay Mills Railroad in Ohio, Katy and Dan Hill planted dwarf mondo grass (*Ophiopogon japonicus* 'Nana', Zones 6-10), like parted curtains, to hug the cabin on either side. Miniature moneywort (*Lysimachia japonica* 'Minutissima', Zones 4-8) contrasts with the weathered building to shine on the musicians.



8. Bill Smith lined up a series of bridges to best show off major features. He supported the closest bridge underneath, made the middle bridge minimal in structure, and trussed the farthest bridge above the deck. Everything including the water is visible right up front to the tightly pruned and gnarled boxwood (*Buxus* sp.).



9. Picking up where photo 8 left off, Bill used the river's flow for a compelling story that includes two more bridges. Embankments held by false cypress (*Chamaecyparis lawsoniana* var.) above and baby tears (*Soleirolia soleirolia*, Zones 8-10) below add the touch of nature, all in scale in Bill Smith's Oceanside, California, railway.

In photo 9, at the front of Bill's garden railway, just parallel to an active dual-track railroad bridge, a de-construction company takes apart an obsolete automobile bridge. Bill gives each member of that work crew a job, grouped as a team. Nature frames the entire scene: the water continues to flow under that scene, past green embankments, over the retaining wall, and into a grate at our feet. Suddenly, under the bridge on the left bank, is that an EPA official? (Or make up your own story.)

In the next issue we'll compare and

contrast details to draw viewers into your show. One last thing—the concept of “theme” is not an edict but a suggestion. If fantasy is your theme, then embrace it and let the track tie it all together. I saw a Snoopy-themed train on eBay you can get for “peanuts.” 🐶

## About the series

- Part 1:** Organize the plan (April)
- Part 2:** Focus on the theme (June)
- Part 3:** Detail with pairings (August)

## Related reading

### Greening your railway:

“Dramatize your railway with plants” (February 2008 GR)

Greening your railway: “Mass planting to frame a focal point” (August 2009 GR)

*Miniature Garden Guidebook*, “Mass planting to frame a focal point” <https://kalmbachhobbystore.com/product/book/12444>



# 2017 Garden Railway Con

by **Donnie Shirey** | Tulsa, Oklahoma

PHOTOS BY THE AUTHOR EXCEPT WHERE NOTED

**T**he Tulsa Garden Railroad Club is excited to host the 2017 National Garden Railway Convention in Tulsa, Oklahoma. This will be the first time the convention has been held in the state of Oklahoma and we are pleased to have everyone come and visit our city, the surrounding area, and even the state of Oklahoma!

The convention is scheduled for July 10-15, and will be held at the Renaissance Hotel in Tulsa. There will be self-guided and bus tours of garden railroads, as well as daily clinics. The vendor hall will be open Wednesday through Saturday.

On Monday, a train ride is scheduled on the Arkansas-Missouri Railroad, which runs between Springdale and Van Buren, Arkansas. Passengers will enjoy a nice lunch in Van Buren and shopping in the historic downtown district. On Tuesday, garden railroads in the Oklahoma City area will be open, as well as a tour of the Oklahoma Railroad Museum. Wednesday morning will open the garden-railroad tours in the Tulsa area. On Thursday evening an ice cream social will be held and, on Friday evening, attendees can enjoy great Oklahoma barbecue. On Saturday, the vendor hall will open to the general public. The final banquet, on Saturday evening, will feature the Sweet Adelines and a historian who will reenact Will Rogers' life and times. Please visit our website, [www.ngrc2017.org](http://www.ngrc2017.org), and like us on Facebook.

Other area attractions include The Gilcrease and Philbrook Museums in Tulsa, as well as the Frisco Meteor engine in the Route 66 Village on Old Route 66. Related websites include Visit Tulsa at [www.visittulsa.com](http://www.visittulsa.com) and Travel OK at <http://travelok.com>



GARY GILL

## **Green Acres Railroad** **Bob and Shelia Buttram**

This railroad is a work in progress. It has recently been expanded with a new 4'-long iron bridge with a double-track mainline and new loops for the trains. Lots of new rolling stock and a circus train that stops at the huge circus tent have been added, as well as new tunnels and a waterfall under which the trains run, a covered bridge, buildings, people, two fish ponds, and lots of plants. There's plenty of seating, so come, sit, and enjoy.



## **Rambling River Railroad** **Donnie, Barbara, and Jeremy Shirey**

The Rambling River Railroad is entering its fourth year of operation. Locomotives are both steam and diesel, all powered by batteries and controlled by radio. The double-track mainline traverses the outer perimeter and travels over a 20-foot trestle. The railroad has a total of 85 feet of handmade trestle. The logging train chugs around the mountain where the stream/waterfall originates. This railroad is unusual in that it lives on a real airport.



# vention preview

*A glimpse of some of the  
railroads on the tour*



## **B & J Railroad**

**Bob and Jonna Gardine**

This is a 2,000-square-foot railroad with multiple loops and pneumatically controlled switches. Most of the hand-made redwood and cedar structures are lighted for nighttime viewing. Highlights include an Amish farm, an Arkansas chicken ranch, a zoo, a circus, a western town, cattle loading pens, a gold mine, a wind farm, covered bridges, a trolley track, a freight yard, a five-bay roundhouse, a railroad station, and a 2,500-gallon koi and goldfish pond. You will hear many realistic sounds throughout the railroad to complement the scenery.



## **Coweta Southern Railroad**

**Sully and Lisa Sullivan**

This garden is set in the River Bend South development. Step back in time to the '30s and '40s when the steam engine was king, or fast forward to today for modern diesel locomotives. Walk the bridge over the koi pond and listen to the sounds of three waterfalls. Multiple trains run at the same time. Watch them cross bridges, go through the tunnel, and come around the mountain. There's lots to see!



CHARLES EMERSON

## **Rock Island Railroad**

**Emerson Family**

The railway models the Rock Island around OKC in 1960. It features 1950s diesel equipment amid iconic OKC scenes, such as the Wellston bridge, Route 66 highway, Harter Yard, and the Santa Fe elevated tracks. A horse-and-cattle farm covers the middle of the railroad. Equipment is mostly Aristo-Craft 1:29-scale, running on battery power. The line has 200 feet of track, passing through steel bridges and over steel trestles. The terrain contains tons of sandstone, and limestone simulating central-Oklahoma sedimentary outcroppings.



## **Pine Mountain Railroad**

**Joe and Alice Salamon**

There is a lot of activity and beautiful landscaping on this railroad. Multiple trains, a trolley, and Eggliners run in five separate areas that include tunnels, a waterfall, bridges, lots of buildings, a wedding in progress, as well as a few ball games. You will see a logging train, passenger trains, and numerous freight cars. Plan to spend some time seeing all of the detail.



# 33rd National Garden Railway Convention



**July 10 - 15, 2017**  
**Tulsa Oklahoma**

[www.ngrc2017.org](http://www.ngrc2017.org)

For More Information  
 Email: [info@ngrc2017.org](mailto:info@ngrc2017.org)

Calendar Subject to change

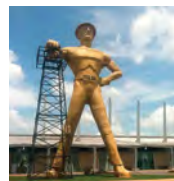
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>9</b> Pre-Registration Opens	<b>10</b> Registration Opens Arkansas & Missouri Train Trip	<b>11</b> Oklahoma City Tours Oklahoma Railway Museum Clinics	<b>12</b> Garden Layout Tours Clinics Vendor Hall 1-6 pm Ice Cream Social	<b>13</b> Garden Layout Tours Clinics Vendor Hall 1-6 pm Barbeque	<b>14</b> Garden Layout Tours Clinics Vendor Hall 1-6 pm	<b>15</b> Clinics Vendor Hall Open to Public 9 am - 2 pm Banquet

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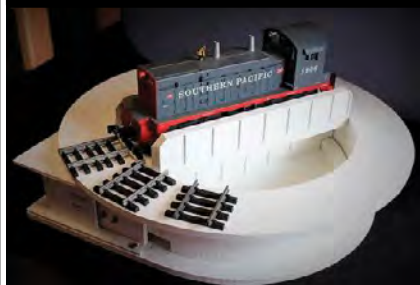
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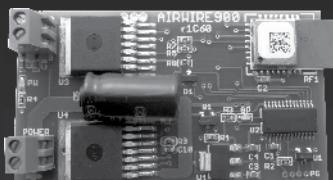
70mm x 38mm x 44mm

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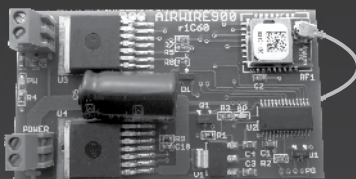
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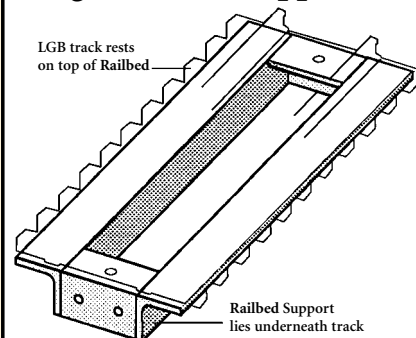
CONVENTION SCHEDULE	Monday June 4th	Tuesday June 5th	Wednesday June 6th	Thursday June 7th	Friday June 8th	Saturday June 9th
<b>Bus Schedule</b>	<b>Buses Leave Conv Hall @ 8:30A</b>	<b>Buses Leave Conv Hall @ 8:00A</b>	<b>N/A</b>	<b>Buses Leave Conv Hall @ 7:30A</b>	<b>Buses Leave Conv Hall @ 7:30A &amp; 6P</b>	<b>Buses Leave Conv Hall @ 7:30A</b>
8A-9A	A 90-min coach trip to Chattanooga, TN where we board the riverboat, Southern Belle for a 2-hr lunch cruise on the TN River. [Hot buffet served on real china & white linen table cloth]. We re-board coach bus & on to the famous Chattanooga Choo-Choo for a brief tour & photo op. Then it's on to TVRM for a 7-mile round trip steam train tour of Civil War landmarks & photo run-by. On the return trip back to Convention Hall, coach bus will stop at 1 of 3 Cracker Barrels on the way. [Dinner is Dutch treat].	Today's 1:1 rail adventure starts with a short coach trip to the Hiwassee Ocoee State Park. There we board a TVRR diesel train for a 47-mile scenic ride through historic loops on the former L&N mainline rail. We get off at Copper Hill for a 2-hour antique shopping & lunch (on your own).	Vendor Hall Booth (Pipe & Drape) Set-Up	Garden Railway Layout Tours Northwest Metro	Garden Railway Layout Tours North Metro	Garden Railway Layout Tours East & South Metro
9A-10A				Ice Cream Social @ So Museum of Loco & Civil War History		Vendor Hall Open To Public (9A-3P)
10A-11A				Travel Back To Conv Hall	Vendor Hall Open (2P-5P)	
11A-12N				Vendor Hall Open (3P-9P)	Travel To BBQ Party	
12N-1P					BBQ Party @ Stone Mountain Park (1:1 Train Ride, Laser Show & Fireworks)	
1P-2P					Dinner Banquet @ The Georgian Club (3 Entrée-Dinner Buffet)	Vendor Hall Dealer & Exhibitor Take Down (3P-9P)
2P-3P						
3P-4P						
4P-5P						
5P-6P						
6P-7P						
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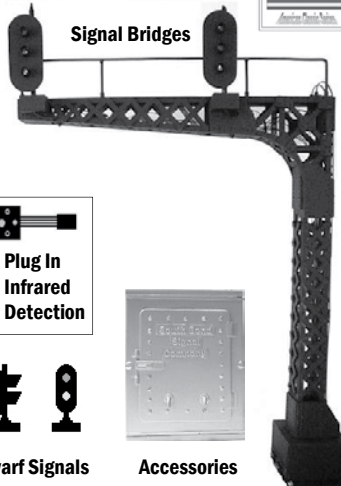
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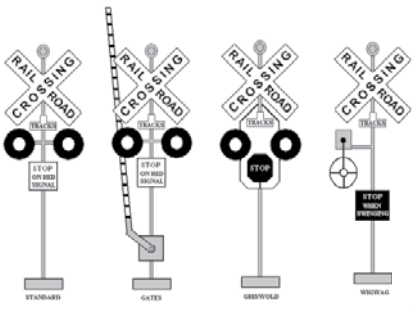
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1. Accucraft's Rio Grande N° 340, pulling the mixed daily freight, rounds the curve past the Lucky Lady Mine. Far left, a compact Scotch pine is topped with candle-like buds.



# Visit the JP Union

*A well detailed, narrow-gauge  
railroad from the 1930s*





by Paul Garrett | Roberts Creek, British Columbia | PHOTOS BY JOEL JOHNSTONE EXCEPT WHERE NOTED

## SINCE I'VE BEEN A MODEL RAILROADER

for 40+ years, I visit local hobby shops frequently. In 1999, I was visiting Central Hobbies in Vancouver, British Columbia when I saw a dusty, no-box Bachmann Gold Belt Line high-side gondola sitting in the window. I thought, "What a great size"—and it was only \$19.99. Sold.

That fall we spent a lot of time at the LGB layout on display at an annual train show and, in early 2000, we joined the Greater Vancouver Garden Railway Club (GVGRC). The collecting then began, from local hobby stores, online sales, and the National

Garden Railway Convention in Seattle. We were also able to visit numerous members' garden railways, including those at the Seattle convention, from which we got ideas for what we wanted to build.

Our home at the time was on a hill, with little space for an outdoor railroad, but we still ran trains on the deck on a 12-foot-long oval. A small area was eventually graded for track but, with retirement looming, and with it a move, track was never laid. However, the basis of what a large-scale railway would look like was conceived.





**2. An overview of the JP Union in mid July, 2016, looking north. Grouping of like trees, massing of groundcover, and repetition of gray boulders ties the scenes together, which also reflect the surrounding gray walls and conifer woods.**



**3. An overall view of the railway 21 days into construction in August 2011. The red chimney flues form the tunnel liner. Level stacking blocks form a solid foundation for the easy-reach railroad bed on the perimeter.** PHOTO BY PAUL GARRETT

We wanted a narrow-gauge railroad depicting the early 1930s. The railway would purchase pieces of “used” equipment from various US narrow-gauge railroads. It would be planted with scale foliage as much as possible, and have distinctive buildings and appropriately weathered rolling stock. Most importantly, it had to be off the ground and be flat. My wife Judy had given me a live-steam Accucraft C-21 and I did not want to have to install radio control. I also wanted to be able to follow the trains around the line,

so the track needed to be on the outside of the railway.

After some research, I decided to use four rows of large Allan Blocks—self-aligning concrete blocks—for a retaining wall, which brought track level up to a comfortable 32" and provided a firm road base. Trains also had to be able to be run into the house for storage. To ensure reliability, all equipment was to be converted to Kadee couplers and any plastic wheels were replaced with metal ones.

A decision had to be made on scale.

Our diesel is 1:29 scale but would only be run as a round-and-round train. For operation, the steam locomotives were all 1:20.3, while the cars were primarily 1:24 scale. However, as narrow-gauge cars came in all sizes, this was acceptable. All scratchbuilt buildings would be 1:24, matching the cars that would be staged at their locations and for easier conversion of scale plans.

An area was prepared for the railway at our new home and left for the winter rains to settle the soil. During that time, planning commenced for a single mainline of 375' on an inward-folding oval, with minimum 7.5'-radius curves. There were to be four towns, with 12' passing sidings at each locale and spurs for various industries. Allan Blocks would be removed at certain areas for the installation of bridges to give some sense of elevation. In the center, dirt and rock would form hills to act as view blocks, therefore requiring operators to follow their trains. Some form of radio control of the (electrically powered) locomotives would therefore be required.

The first Allan Block was laid on August 1, 2011; on September 30, 2011, with the mainline and passing-siding



## The railway at a glance

**Name:** JP Union

**Size of railroad:** 48' x 75' plus 3' x 14' storage yard

**Scale:** Mixed

**Gauge:** No. 1 (45mm)

**Era:** Early 1930s

**Age:** Five years

**Motive power:** Electric (DCC) and live steam

**Length of mainline:** 375'

**Maximum grade:** None

**Type of track:** Llagas Creek code-250 nickel silver

**Minimum radius:** 7'6"

**Structures:** Scratchbuilt and kit-bashed

**Control system:** NCE CabPro  
10-amp radio system

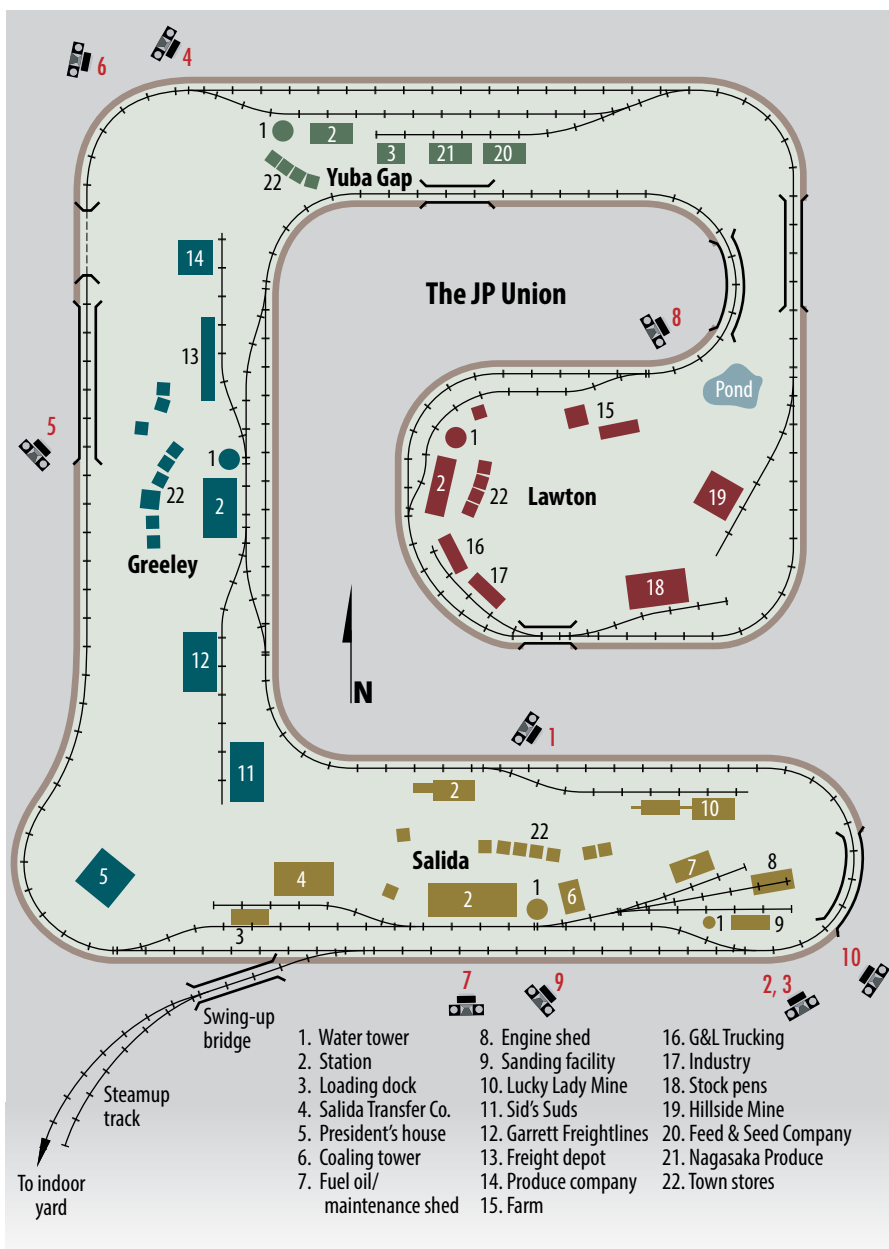
switches laid, a rusty-spike ceremony was held. Our track is Llagas Creek code 250, nickel-silver rail with Split-Jaw rail joiners. All switches are #6, including the curved switch just outside the town of Lawton. A three-way switch serves the small yard in Salida. All switches are hand thrown using Sunset Valley brass switch-stands. The track floats on the Allan Blocks, with crusher fines as ballast.

A six-foot-long tunnel, built on a curve, was constructed using 9½" x 13" chimney-flue pipes. The pipes were laid directly on the Allan Blocks so that no shifting would occur. Landscaping cloth covered and sealed the top and sides to prevent the dirt/rock covering from washing into the tunnel.

The only problem encountered during construction was how to get the trains from the house to the railway and back while still allowing operators to easily walk around. A medium-size doggy door was installed in the basement wall, which led to a five track, 14'-long yard. A space saving Train-Li five-way switch at the lead-in to the yard tracks eliminated the need for a switch ladder, thereby providing more track storage space.

Some type of lift-out bridge was

**4. Rio Grande N° 375, a live-steam C-25 from Accucraft, stops to pick up several passengers in Yuba Gap. Beyond the depot, dwarf conifers seamlessly blend with the distant full-scale forest.**







## Plants on the JP Union

Roberts Creek, British Columbia, Canada, USDA Hardiness Zone 8

### GROUNDCOVER

**Corsican mint**  
*Mentha requienii*

**Scotch moss**  
*Sagina subulata* 'Aurea'

**Doone Valley thyme**  
*Thymus citriodorus*  
'Doone Valley'

**Creeping red thyme**  
*Thymus praecox*  
'Coccineus'

**Woolly thyme**  
*Thymus pseudolanuginosus*

### TREES AND SHRUBS

**Japanese maple**  
*Acer palmatum* var.

**Miniature azaleas and rhododendron**  
*Azalea* sp.

**Morris Midget boxwood**  
*Buxus microphylla* v. *japonica* 'Morris Midget'

**James Stirling hebe**  
*Hebe ochracea* 'James Stirling'

**Golden Gem boxleaf holly**  
*Ilex crenata*  
'Golden Gem'

### CONIFERS

**Ellwood's Lawson cypress**  
*Chamaecyparis lawsoniana* 'Ellwoodii'

**Wissel's Saguaro Lawson cypress**  
*Chamaecyparis lawsoniana* 'Wissel's Saguaro'

**Golden Pin Cushion false cypress**  
*Chamaecyparis pisifera*  
'Golden Pin Cushion'

**Black Dragon Japanese cedar**  
*Cryptomeria japonica*  
'Black Dragon'

**Spiraliter Falcata Japanese cedar**  
*Cryptomeria japonica*  
'Spiraliter Falcata'

**Little Bogle dwarf Japanese larch**  
*Larix kaempferi*  
'Little Bogle'

**Little Gem dwarf Norway spruce**  
*Picea abies* 'Little Gem'

**Dwarf Alberta Spruce**  
*Picea glauca* 'Conica'

**Dwarf white spruce**  
*Picea glauca*  
*echiniformis*

**Tanyosho pine**  
*Pinus densiflora*  
'Umbraculifera'

**Japanese white pine**  
*Pinus parviflora*  
'Glaucua'

**Dwarf blue Scotch pine**  
*Pinus sylvestris*  
'Glaucua Nana'

**Compact Scotch pine**  
*Pinus sylvestris*  
'Viridis Compacta'

**Dwarf golden eastern arborvitae**  
*Thuja occidentalis*  
'Harvest Moon'

**Stolwijk American arborvitae**  
*Thuja occidentalis*  
'Stolwijk'

**5. Nevada County Mogul N° 2, an Accucraft live-steam locomotive, pulls a string of Bronson and Tate passenger cars through the truss bridge at Chimney Tunnel. Under the bridge, dwarf James Stirling hebe does not occlude the wooden piers.**

required to connect the railroad to the indoor yard. A GVGR member had built a steel, double track, hinged truss bridge for the club's portable layout, so a request for a quote was put to him for a single-track bridge. This unit was installed in spring of 2016.

Also completed at this time were the industrial spur tracks. These were laid on concrete half blocks. To keep them level, they were glued to the Allan Blocks and to each other with PL 2000 adhesive.

### Locomotives

Track-powered locomotives are primarily Accucraft 2-6-0 Moguls and a C-19, while a Bachmann Connie, 4-4-0, and K-27 round out the rod engines. Locomotives are lettered for either the Colorado & Southern or Rio Grande. Each locomotive has a QSI sound decoder installed, controlled by a radio NCE ProCab 10-amp system. Bachmann and Berlyn Locomotive Works railbuses are also on the roster but have yet to be converted to DCC.

All five live-steam locomotives are by Accucraft. The C-21, C-25, and K-28 are in Rio Grande livery. The only name



variance is a 4-4-0 in NCNG (Nevada County Narrow Gauge) colors. This engine is used to pull my three NCNG Bronson & Tate passenger cars. A two-truck Shay pulls a five-car (plus caboose) log train. We recently added a track-powered Bachmann Climax, so the log train can be run under live steam or DCC.

For just running something while working on the railway or to build a quick consist for guests, we acquired a USA GP30 and a 38-2 in Canadian Pacific colors to pull a mixed freight of 15 cars and caboose. These engines also have QSI sound decoders installed.

There are approximately 40 narrow-gauge freight cars, manufactured primarily by USA Trains but mixed with a few Aristo-Craft, LGB, Bachmann, and Delton cars. All have been weathered to some extent using Hunterline's Weathering Mix (brushed on) and thinned Floquil paint (airbrushed). All plastic wheelsets have been replaced with USA Trains steel wheels; Kadee #1-scale couplers have been added as well. The railroad also has four passenger-train sets, of which two have been upgraded with tarpaper roofs, air hoses, various castings, and passengers.

## Structures

Except for the water towers, where town names have been added, all structures on the railway have been either kitbashed or scratchbuilt. Most of the plastic buildings are stores, houses, and a farm from Piko kits. All of the town buildings have had wooden sidewalks and window shades/curtains added. Details fill the windows of stores and people and dogs populate the sidewalks. All people and other details are attached to each building as vignettes, making it easier to move buildings and their attached details into storage.

To date, two stations and all the industrial buildings have been scratchbuilt. These are made from cedar boards ripped, to ½"-square strips, then cut to scale on a bandsaw. Wood siding is glued to a plywood shell with Titebond II glue, then mounted on a ¾" pressure-treated plywood base. It is sealed on the inside and bottom of the base with paint. The siding is then spray-painted to seal the wood.

Corrugated roofing is made from beer cans, first annealed in a barbecue, then run through a crimper. Shakes are cut from thin strips of cedar, colored with



**6. RG N° 340 pulls into Yuba Gap with a mixed freight to drop off some cars and switch the Nagasaka Produce Company. Trackside Scotch moss is repeated along the siding.**



**7. Bachmann's K-27 N° 455, at the head of the San Juan passenger train, heads east past the Salida depot. A variety of cedars and false cypress form the forest and creeping thyme the meadow.**





**8. C&S N° 49, a Bachmann Consolidation, takes a westbound freight over Pine Gulch, heading for Greeley. Passing several dwarf Alberta spruce, N° 49 approaches a handsome Tanyosho pine.**



**9. Workers prepare the Berlyn RGS goose N° 6 for a day of rail-and-tie maintenance on the mainline. Boxwoods flank the water tower.**

stain made from a mixture of vinegar and steel wool, then applied one row at a time. Roofs are then painted with a coat of Titebond II glue and sprayed with a heavy coat of Varathane to seal out the rain. All buildings sit on poured-concrete bases to further keep the elements at bay. Scratch-built buildings are brought indoors if long periods of rain are forecast, and all buildings are stored indoors October through mid May.

The four bridges and two trestles are all scratchbuilt to fit their locations. As they remain in place year round, they are constructed of cedar and painted with a deck stain to withstand the elements.

## Plants

After the rockwork was completed on the mountains, Judy looked after plant selection and planting. We wanted the flat parts of the railway to contain deciduous trees, while the upper slopes and tops of the mountain would have the conifers, suggesting a mountainous railroad with the tracks running through the valleys. Covering the mountains in woolly thyme was important, as it creates a thick mat that discourages weed growth. In the spring, a shop vacuum quickly cleans up the dead cedar branches from surrounding trees.

Some of the trees planted on the



railroad are unknown species, as trips to the nursery usually ended up in the discount area. Unfortunately, most had long lost their tags.

Trees have yet to be properly pruned to a more miniature form but this task is planned for this year. The summer of 2015 was stressful for all plants due to drought conditions, so they have been allowed to settle in before the further stress of pruning.

## The future

With the railway only a few years old, much more still needs to be done. Still to be scratchbuilt are the third station, a



10. The early morning light bounces off the gold buildings of Salida's maintenance depot at the east end of town. Personnel have yet to construct the engine house. Also gold, Scotch moss covers the ground between the siding and mainline and contrasts with the red Japanese maples above.



one-stall engine shed, a cattle pen, the Hillside Mine, and four more industries. The town stores of Yuba Gap are finished and some structures are complete in Greeley, but town structures are still required for Salida and Lawton.

Once the buildings are installed, final landscaping around the structures needs to be completed. Most importantly, groundcover needs to grow up and around the buildings' concrete bases so the structures do not appear to be sitting on top of the ground. Also, as the railroad was built for operation, we need to identify and implement a car-forwarding system to achieve this objective. 🚂

## About the authors

Paul Garrett is a retired Certified Financial Planner from one of Canada's major banks. He has been a lifelong model railroader. Along with the garden railway, he is rebuilding an 18' x 24' HO railway in the house's basement.

Judy Garrett, a long-time banker, retired as a Financial Planner with another major Canadian bank.

Although she helps with the garden railway, her main interest remains with her extensive orchid collection.

The Garretts live on the Sunshine Coast, just north of Vancouver, BC.





**BEGINNER**  
PROJECT



The author weeding in the Baker & Grande Ronde Railroad, which she and her husband Gary own.





# GARDENING TIPS for beginners

*Don't be afraid of your garden—learn about it*

by **Jonette Lee** | Corbett, Oregon | PHOTOS BY THE AUTHOR EXCEPT WHERE NOTED

**W**hen my husband Gary decided to build a garden railroad, I felt fear. We had never been gardeners and all I could think of was trying to figure out what plants to use, how to maintain them, and, oh yes, the weeds.

As luck would have it, my mother-in-law Hazel Lee is an avid gardener. She helped by giving us starts from her garden railroad and suggested other suitable plants. We also read articles in *Garden Railways* magazine and got ideas from those who have gone before us. The most important things we learned were to buy perennials so you don't have to replant every year, and to buy to scale. Plants must be smaller and low growing. I went to the book store and found a wonderful book on perennials. It has photos of each plant, the name, the width and height when full grown, flowering or not, whether it needs sun or shade, its USDA Hardiness Zone, invasive or not, and symbols that tell if they are low allergen, poisonous, or a skin irritant. All this is helpful when planning your railroad garden.

When building your garden railroad, be sure to plan an irrigation system within the garden or it can become a

chore to water by hand. We have a sprinkling system on a timer, so we can go on vacation and not worry about our garden drying up.

## **Groundcover herbs**

We found herbs that spread, stay low, and smell great. These included many varieties of thyme, such as Elfin thyme (*Thymus serpyllum* 'Elfin'), woolly thyme (*T. pseudolanuginosus*), red creeping thyme (*T. praecox* 'Coccineus'), white creeping thyme (*T. serpyllum*), Pink Chintz thyme (*T.s.* 'Pink Chintz'), orange-scented thyme (*T.* 'Spicy Orange'), and variegated lemon thyme (*T. x citriodorus* 'Variegata'). Many varieties of thymes are hardy in Zones 2-9 if given winter mulch protection. Then there's Corsican mint (*Mentha requienii*, Zones 7-9).



**The author's granddaughter Maddie Rose is intrigued with red creeping thyme surrounded by woolly thyme.**

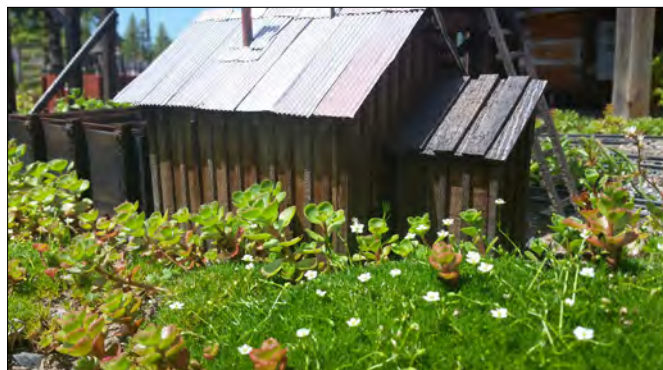
We found stonecrops that flower and spread well. *Sedum spurium* 'Dragon's Blood' has dark-red leaves and pink flowers, and Russian stonecrop (*S. kamchatka*) has similar broad leaves and yellow flowers. Both of these varieties are hardy in Zones 3-9, while the lowest-growing plant, *S. album* 'Coral Carpet' (Zones 5-9), has tight reddish leaves.

Stonecrops and blue star creeper (*Laurentia fluviatilis*, Zones 6-9) can be invasive, so only use them in places where you don't mind if they spread. Other delightful plants we found for more shaded and moist areas include pink miniature baby's breath (*Gypsophila repens* 'Rosea', Zones 2-9), miniature daisy (*Bellium minuta*, Zones 5-9), and heron's bill (*Erodium reichardii*, Zones 6-10).

## **Use of color**

When your garden is in full bloom, what will it look like? Think about the color scheme when you're planting so that (for instance) you don't have all pink in one area. Make sure you use multiple colors so that your garden pops visually. We have found that blue plants are hard to find; talking to your local garden shop may help you with that problem. Sometimes adding an annual here and there will help, such as sweet alyssum (*Lobularia maritima*) and blue lobelia (*Lobelia erinus*). Both are perennials in warmer climates, Zones 8-11. We also found the sun-loving *Lithodora diffusa* 'Heavenly Blue' (Zones 5-9).

What will your garden look like when most of the blooming is over? Use plants that have different colors of foliage.



**Irish moss with tiny white flowers and Dragon's Blood stonecrop fill in behind an industrial shed.**

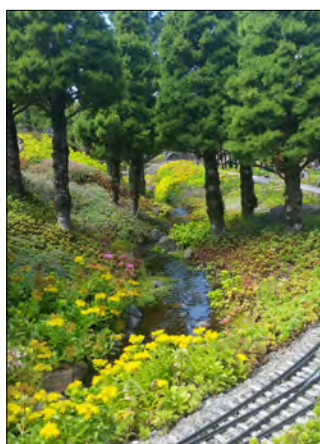




The lowest groundcovers, Pink Chintz thyme, woolly thyme, and red creeping thyme act as steppable paths between stone walkways. Pink blooming Dragon's Blood stonecrop and yellow blooming Russian stonecrop hold back embankments.



*Sophora prostrata* 'Little Baby' (Zones 8-11) makes an unusual trackside tree, growing in a natural bonsai form with zig zag stems, tiny green leaves, and yellow parrot-beak flowers.



Easy-care groundcovers seem to go on forever past a grove of dwarf Alberta spruce trees.

Fill in with Irish moss (*Sagina subulata*, Zones 3-10) and Scotch moss (*Sagina subulata* 'Aurea', Zones 3-10). Make sure you have a variety of greens.

Keep a list of all the plants and where they are planted.

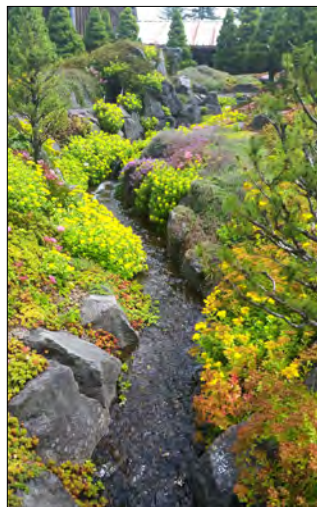
## Trees

Trees make the railway even more real. We use dwarf Alberta spruce (*Picea glauca* 'Conica', Zones 4-8) and two varieties of Lawson cypress (*Chamaecyparis lawsoniana* 'Ellwood's Nymph' and *C. l.* 'Treasure Island', Zones 5-9). These trees stay relatively small. You will need to prune the dwarf Alberta spruce, as they get bushy. In fact, we bon-sai and trim all our trees, starting in late March or the first part of April and continuing through the middle of June. We have 130 trees, so fewer

trees will obviously not take as long. Always plant your trees singly or in groups of three—this looks better to the eye.

Once your plants become established you will be amazed at what you have accomplished. The plants will eventually spread and grow together, allowing fewer weeds, and the maintenance can lessen depending on the plants you use. If you don't like where you planted something, move it to another location. You will learn as you go.

This brief article will help you to get started but it is just a beginning. There's lots to learn, much of it depending on your local conditions. If anyone would like a list of what we used in our garden, email [jonetteandgarylee@gmail.com](mailto:jonetteandgarylee@gmail.com) and we will be happy to send it to you. 🐘



The riverside overflows with the seasonal flowers of pink and yellow stonecrop and the blue and pink blooms on several thymes.



Up front, blooming lithodora grows near a clump of tall water iris (*Iris* sp.). On the far embankment to the right of the track, woolly and creeping thymes blend with blue star creeper.



A blend of creeping thymes and stonecrops carpet the street of this park-like town.



In the moist climate of the Pacific Northwest, several varieties of stonecrop handily hold the hills in place, preventing them from eroding onto the track and into the river.

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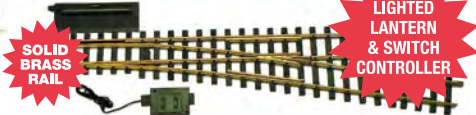
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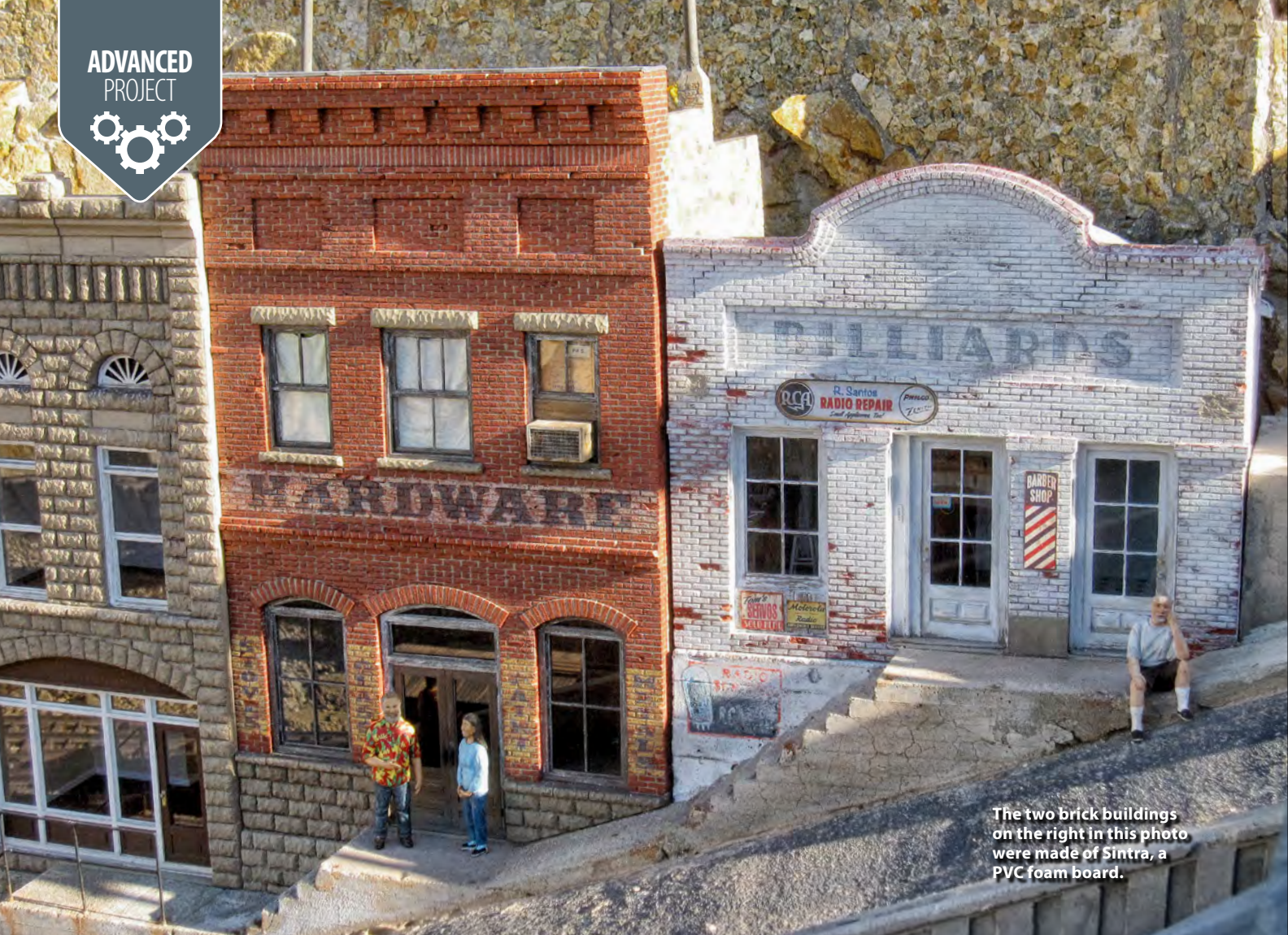
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The two brick buildings on the right in this photo were made of Sintra, a PVC foam board.

# Modeling with SINTRA

## *Part 2: Making brick buildings*

by Ray Dunakin | San Diego, California | PHOTOS BY THE AUTHOR

### PART 1 OF THIS SERIES DESCRIBED HOW

I used Sintra, a PVC foam board, to make a building with a quarried-stone-block façade and rubblestone sides. This time, I'll show you how to make a weathered-brick building out of Sintra.

Scribing the brick pattern onto the Sintra requires a pair of homemade tools. These are simple and anyone can make them. The first is a hobby knife with a #11 blade. Use an old, worn-out blade and grind the cutting edge down. Grind off the tip too, unless it's

already been broken off, and round it slightly. This tool will be used to create the horizontal mortar lines\* (**photo 1**).

The second tool can be made from a ¼"-wide strip of .020" brass. Grind the tip of it down to about ⅛" wide, then sand it to make it slightly thinner, too. Bend the other end into a wide, shallow "S" shape, to give your finger something to press down on. This tool will be used to create the vertical mortar lines (**photo 2**).



I cut out the front wall of my structure from a sheet of 6mm Sintra, and laid out the openings for the doors and windows. These must be positioned to align with the brick pattern. If necessary, they can be redrawn more precisely after the brick pattern has been scribed. Marks were made at  $\frac{1}{8}$ " intervals for the horizontal mortar lines, which were then scribed with the dulled-blade knife tool, using a T-square as a guide.

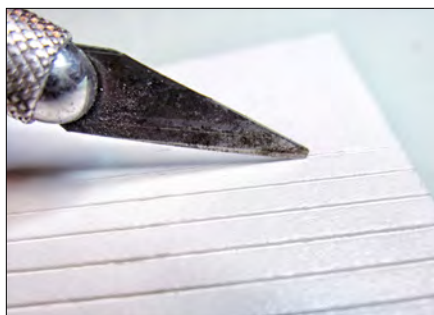
Vertical lines were marked off at  $\frac{3}{8}$ " intervals, then were indented using the brass tool (**photo 3**). These dimensions are approximately 1:20.3 scale. Adjust as needed for your scale to get standard  $2\frac{1}{4}$ " x 8" bricks. Note that one advantage of using Sintra versus commercially available brick sheets is that you can also create custom patterns, such as bonding courses or decorative designs.

The area above the second-story windows is raised, with three recessed sections. I laid out the pattern on a sheet of 3mm Sintra, scribed the bricks, and cut out the openings for the recessed sections (**photo 4**). I then laminated it to the front wall. Another layer of scribed, 3mm Sintra was added to that, in two pieces (**photo 5**).

I built up the cornice and the brick corbels using strips of 3mm and 6mm Sintra. These were scribed first, then cut to fit. After they were applied to the front wall, I used the dulled-blade knife tool to extend the scribed mortar lines around the edges (**photo 6**), then did the same on the edges of the door and window openings (**photo 7**).

Next, I used a sharp knife to distress some of the bricks, carving out small bits to represent chipped edges and corners, and large chunks to represent decaying or damaged bricks (**photo 8**). I studied photos of real buildings with heavily weathered bricks to make sure the damage looked natural. Where necessary, I used automotive spot putty to fill unwanted scratches or mistakes (**photo 9**).

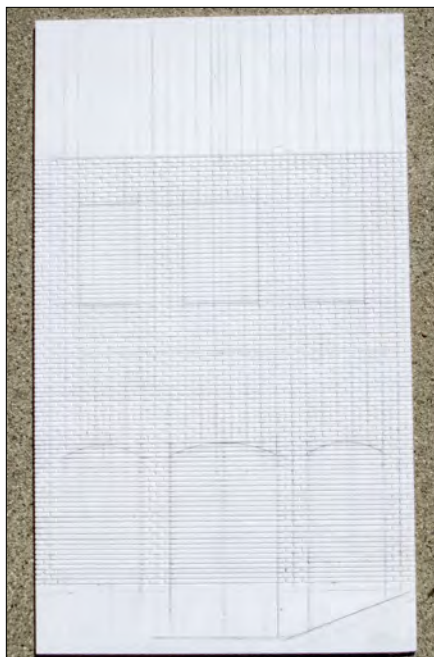
I added stone lintels and sills to the window openings. The lintels were carved from Sintra specifically for this building, to match the height of three courses of bricks. The sills are two bricks high; for these, I used extra resin castings from a previous project (**photo 10**). I used more resin castings for the stone blocks at the bottom of the building, cutting them



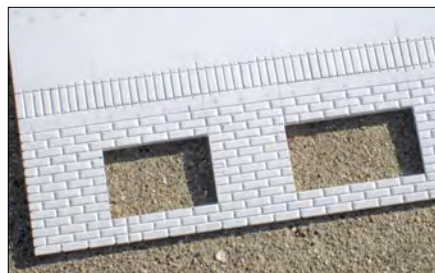
**1. A dulled-down X-acto blade is used to scribe the horizontal mortar lines between courses.**



**2. A special tool, ground from a strip of brass, forms the vertical lines between bricks.**



**3. Lines were marked on the building face, then indented with the tools.**



**4. An overlay of 3mm Sintra was used for a raised area, with recesses cut out.**



**5. The overlay was added to the front wall, as was a second one above it.**



**6. Brick cornice and corbels were applied, and mortar lines brought around the corners.**



**7. Mortar lines were also brought around door and window edges.**

where needed to fit against the sidewalk (**photo 11**).

The brick arches over the first-floor doorway and windows were made from 1mm Sintra. These were drawn and scribed, then cut out and glued in place. The undersides of the arches were smoothed with putty, then scribed (**photo 12**). I also used putty to fill in and smooth

the corner joints on the sides of the building. Although I used automotive putty for this, a better choice would have been an epoxy putty, such as Milliput, Magic Sculpt, etc. These can be scribed, whereas the automotive putty tends to crumble.

Painting began with a light spray of white primer, followed by a coat of concrete-colored latex paint. This was

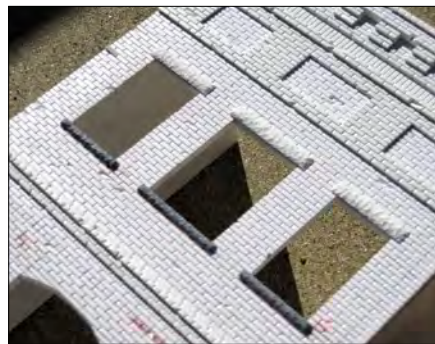




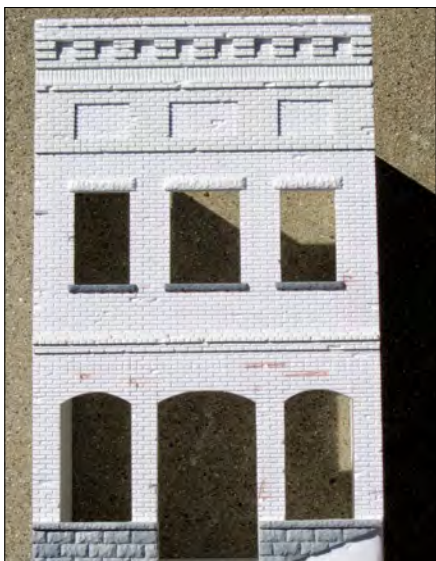
**8. Individual bricks were distressed in various ways to represent weathering and damage.**



**9. Automotive putty was used to fill in scratches.**



**10. "Stone" lintels are carved Sintra, while sills are resin castings.**



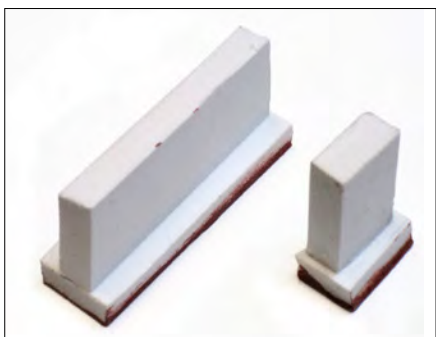
**11. Stone blocks, trimmed to fit the sidewalk, are also resin castings.**



**12. The undersides of the Sintra arches were smoothed with putty, then scribed.**



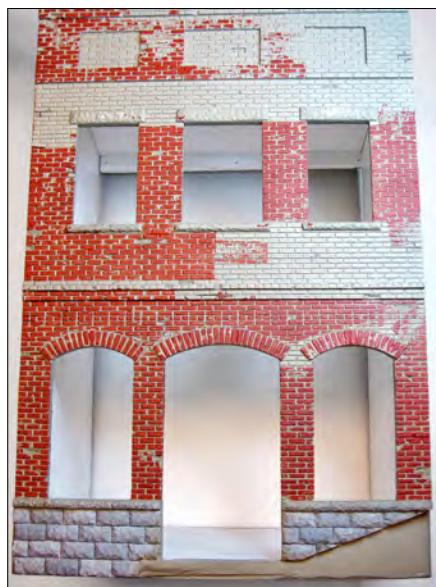
**13. A base coat of mortar-colored latex paint was applied.**



**14. Special pads made of Sintra were used to apply paint to the brick faces.**

thinned with water to avoid filling in the fine details (**photo 13**).

I made a pair of flat stamps out of 6mm Sintra scraps and used them to apply paint to the brick faces without filling in the mortar lines (**photo 14**). The brick-colored latex paint was thinned with water and had to be brushed onto the face of the stamp to get the best results. The paint-smear stamp was then pressed down onto the surface of the



**15. Paint is being applied with the pads.**

wall, leaving paint on the face of the bricks. The smaller stamp was used to get into tight places (**photo 15**).

As you can see in **photo 16**, this



**16. Areas left unpainted by the pads had to be attended to by hand.**

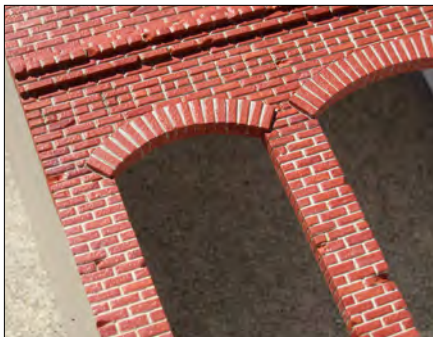
method doesn't cover everything perfectly, especially the broken or decayed bricks, so there's a lot of touch up that must be done with a small brush. It beats painting each brick individually, though. Alternatively, you could dry-brush the paint directly onto the bricks, but care must be taken not to fill in the mortar lines.

In addition to touching up the missed spots on the bricks, I also added a few subtle variations in shade, and brighter





**17. The façade, finally painted. Damaged bricks received a slightly brighter shade.**



**18. Too-deep mortar lines were filled with a mixture of paint and sealant.**

tones inside the bricks that had decayed and crumbled. Then I painted the stone blocks, lintels, and sills in a sandstone color (**photo 17**).

I felt that many of the mortar lines were too deep, especially since I wanted to paint old signs onto some areas of the front wall. So I mixed some concrete-colored latex paint with DAP Dynaflex 230 paintable sealant, and rubbed it into the grooves. I only worked on small areas at a time, quickly washing off the excess with a damp cloth and a paper towel. This process worked well, though I left many areas untouched to represent places where mortar was crumbling and falling out (**photo 18**).

After I'd painted the signs and other exterior details, the building was given a couple of light coats of Krylon UV-resistant matte clear. Then the doors and windows were installed (**photo 19**).

Many old brick buildings have deep cracks due to sagging lintels, settling, etc.




**19. The complete façade, with doors, windows, and graphics.**



**20. Cracks in the mortar, as seen here, can also be accomplished with Sintra.**

With Sintra, it's easy to add this kind of detail, as I did on the former billiard parlor in **photo 20**.

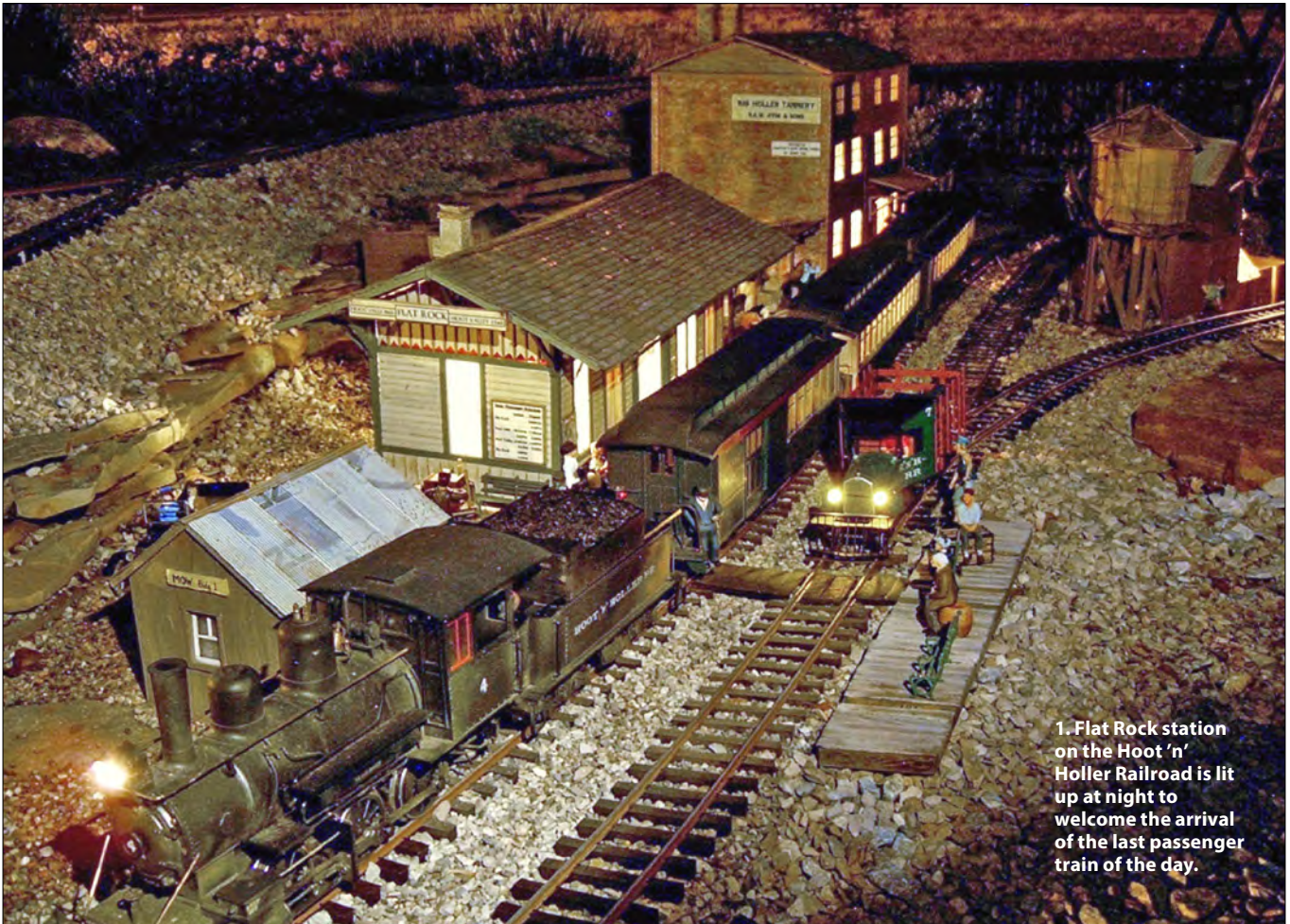
In the next installment, I'll show you some techniques for using Sintra to represent stucco, cast concrete, and wooden buildings. 

## About the series

**Part 1:** Modeling stone buildings  
**Part 3:** Modeling wood, concrete, and stucco buildings



# Twelve volts in the garden



1. Flat Rock station on the Hoot 'n' Holler Railroad is lit up at night to welcome the arrival of the last passenger train of the day.

Since I run trains with onboard battery power and radio control, there's no reason to be connected to the grid for electrical power—neither now nor in my former garden railroad. I can't resist the appeal of buildings illuminated at night, however—light spilling out of the windows of stations and houses. The risks of using high voltage (110V AC) to supply power, what with excessive moisture, nibbling rodents, and inquisitive children in the mix, was enough reason for me to choose low voltage (12V DC) for all applications that required electricity. That was easy in my first garden railroad (the Rustin & Decrepit), which was located next to my garage, allowing me to run wires a short

distance from an AC-to-DC converter/power supply to the railroad buildings.

However, my current Hoot 'n' Holler Railroad is located 75 feet from the nearest electrical outlet. If I had wanted to run household current to the garden to be converted to DC there, it would have required conduit in a trench that met building codes and running under a lawn-covered yard used by ourselves, neighbors, and visitors. I chose instead to put a 12V DC power supply in our sunroom and run a 16 gauge, outdoor-approved, two-conductor wire in a standard conduit and bury it about one foot underground using a small, powered trencher. The line from the sunroom exits through a weather-tight hole I drilled in

the wall. The power supply has a rated output of 12V DC, 10 amps, but the actual output averages 14.5V, which is conveniently reduced to about 12V when it arrives at the garden, due to the inherent drop in voltage from the resistance of the long supply wire.

All of my current buildings can be lit after dark, having been fitted with either incandescent bulbs rated at 12V DC or LED bulbs with appropriate resistors (photo 1). The main 12V supply line runs to my control panel. From there, the current is carried through 16-gauge wire in conduits to convenient distribution points throughout the railroad garden. The final distribution is through 18-gauge lines buried in the gravel roadbeds, leading to





**2. Hootenanny Falls has a flow rate of about 1,200 GPH, with a small amount diverted to run the grist mill. The water in this pondless waterfall flows into a buried 20-gallon tub (under the mill), where a 12V marine bilge pump recirculates it.**

the individual structures.

There are some disadvantages when the only power source is 12V DC. The first challenge was my desire to have a waterfall with a goodly flow. Where was I supposed to find a pump with sufficient output that would run on 12V DC? A Google search led to a logical source—boat bilge pumps that run on 12V battery power. I ended up with two waterfalls, the larger one using a Rule marine pump with a discharge rate of 1,500 gallons per hour (**photo 2**). It has been in service for eight years with no problems. It is connected directly to the main supply line from the house through an outdoor switched receptacle near my control panel.

The second challenge was how to charge the batteries in my locomotives (that are housed on tracks in my train shed). I charge the NiMH batteries with a 110V smart charger and I didn't want to string a 75' extension line from the house every time I wanted to do a charge. The resolution was not elegant, but it is effective. I bought an automotive 12V DC-to-110V AC power inverter and wired the 12V supply line to a cigarette-lighter socket to accommodate the plug on the inverter. Power starts from our sun porch outlet at 110V AC, is stepped down and convert-



**3. On the left is the fan-cooled 110V AC-to-12V DC converter/power supply; on the right is the 12V DC-to-110V AC inverter to provide correct current for the battery charger.**



**4. Sound effects for the main saw blade in this primitive lumber mill come from a small speaker located directly above the blade (the edge of the protective—and nicely resonating—metal tuna can is just visible in this photo).**



**5. The 1889 Missionary Baptist Church resounds with the singing of the choir and the bell tolling when a button is pushed (under the lid of the can in the foreground).**

ed to 12V DC, is boosted back to 110V AC in the train shed, then reduced again to 18V DC to charge the batteries, which it does nicely. **Photo 3** shows the two components.

Having 12V available in each building allowed me to add sound features at several sites. One of these is a lumber mill, where a recording of a hand-held Skilsaw cutting through a 2 x 4 reproduces the sound of the mill's main saw blade, followed by the rumble of the log carriage

being drawn back for another pass through the blade. This latter simulation was represented by a recording of a dehumidifier motor running in the background (**photo 4**). Another sound application is a recording of an Appalachian bluegrass group singing "Gathering Flowers for the Master's Bouquet," which can be heard coming from a replica of an 1889 church I modeled after one I measured and photographed in the Great Smoky Mountains National Park (**photo 5**). **▲**



Don Parker is a retired physician who now spends his time in the garden, art studio, or writing. He has been involved with art all his life, doing oil, acrylic, and now watercolor paintings. He also teaches watercolor classes in his retirement community. Model trains have been the incentive to learn basic electronics, soldering, and related model-making skills. Art principles have found their way into his models and railroad garden.





# Scratchbuild an Argent Lumber Company LONG LOG CAR



This Argent Lumber Company skeleton log car is a relatively simple scratchbuilding project, using an actual log as part of the frame. Other pieces are made mostly of stripwood and detail parts.

## *Natural materials make an unusual piece of rolling stock*

by Thomas A. Yorke | Roswell, Georgia | PHOTOS AND DRAWINGS BY THE AUTHOR

**T**he Argent Lumber Company, which existed in the first half of the 20th century near Savannah, Georgia, has always been my favorite narrow-gauge lumber railroad. Unfortunately, I never saw it in person, although I did travel to the site in about 1971 and collected many miniature spikes. Nothing else was left then except some concrete foundations and, of course, the No. 7 locomotive.

Argent used 20' skeleton log cars for most hauling but, in later years, some of these cars were rebuilt into 30 footers to carry longer logs (figure 1). It was a simple matter for the shop crews to take out

the center beams and replace them with longer pieces of tree trunk to fashion longer cars. My model is built to 1:20.3 scale.

### Construction

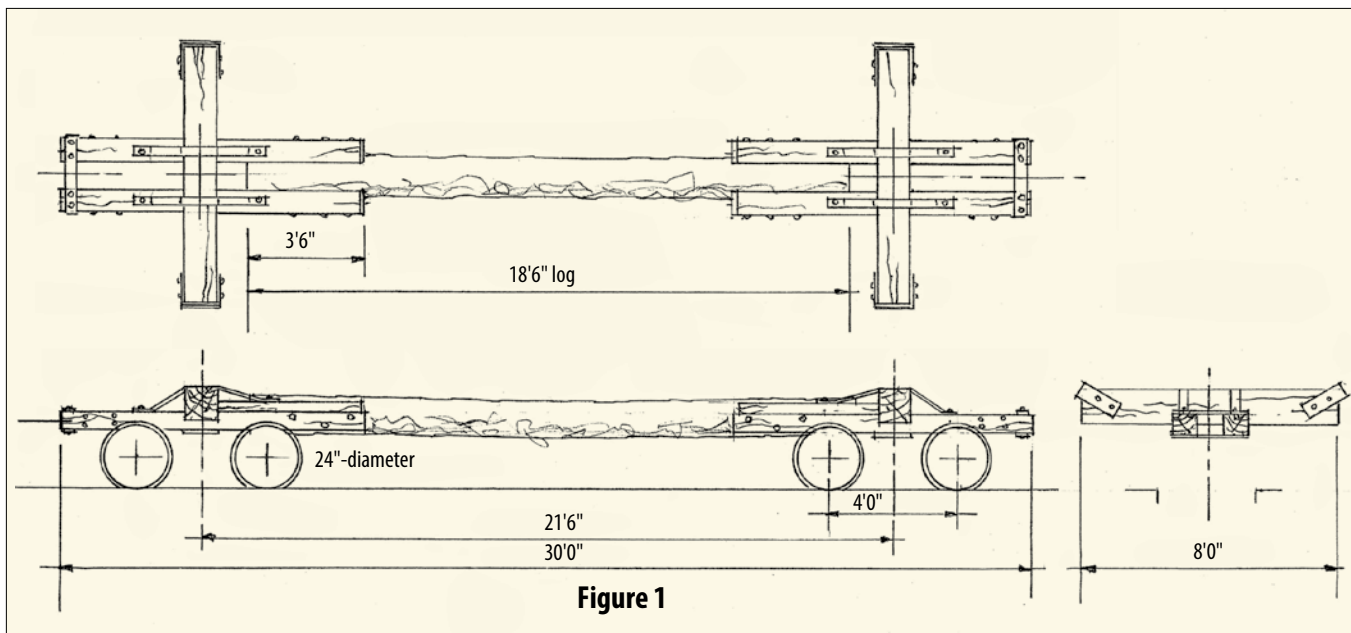
Now for the fun. Go outside and find a piece of branch, approximately  $\frac{5}{8}$ "-diameter, that has a slight belly to it. This should be a clear branch with no twigs jutting out from it. Cut it 11½" long.

There are only 10 pieces of lumber needed for this car in addition to the log center beam. Start by making two identical car ends. Two pieces of  $\frac{3}{8}$ " x  $\frac{5}{16}$ " basswood, 6½" long, for each end are the beginning, forming the side beams. I used

metal link-and-pin couplers from Ozark Miniatures. These must fit snugly between the two pieces of wood.

With the branch belly down, make two vertical cuts into the sides, 2⅝" from each end. These cuts should go into the branch about  $\frac{3}{32}$ ". This is the most critical part of the project. Each cut end of this log must fit between the two pieces of already-cut lumber for each car end. (Refer to figure 1.) The log needs to be cut down to fit into this space, the same thickness as the coupler assembly. This can be seen in photo 1. Be careful to match both ends vertically so that when they slip into the end lumber, they are both straight and align with one





another. Leave most of the bark in place.

Now cut two pieces of  $\frac{1}{2}$ "-square lumber,  $4\frac{3}{4}$ " in length, for log bunks (figure 1, photo 2). Use a table saw to cut the dados to let in the short car-side beams. A Zona saw or similar could also be used for this. Remember that the car-side beams are spaced the same distance apart as the width of the coupler draft-gear boxes.

Cut four pieces of  $\frac{3}{8}$ " x  $\frac{1}{4}$ " lumber,  $2\frac{7}{8}$ " in length. These will go atop the two end side beams, just inside the log bunks atop the frame.

The straps on my car are white-metal castings that I had specially made years ago. However, these are easy to make from brass or aluminum straps of the appropriate dimensions.

## Assembly

The first thing to do in assembling this car is to blacken all of the metal parts. After my parts were chemically blackened, I let them dry, which usually leaves a gray coating on the metal. Spray these parts with dulling spray to affix this gray coating. Instant weathering!

Now assemble the coupler draft gear and spring parts. Carefully use CA cement for this and let dry. Check the fit of the log bunk with the coupler draft gear in place and make any slight adjustments if needed.

On a flat surface, bond the draft-gear assemblies and log bunks in place. Make sure all is flat and square, then leave everything to completely set overnight.

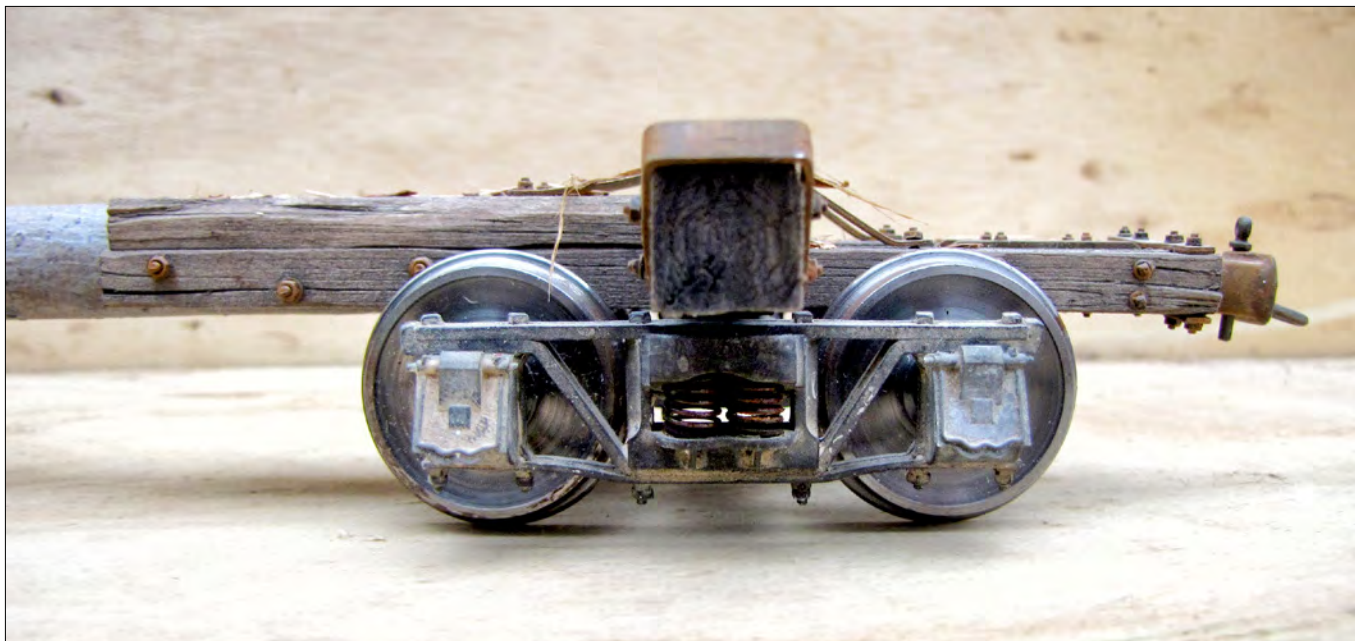


1. Large notches are cut into the log ends to accommodate the side beams. The various straps are made from brass or aluminum strips.

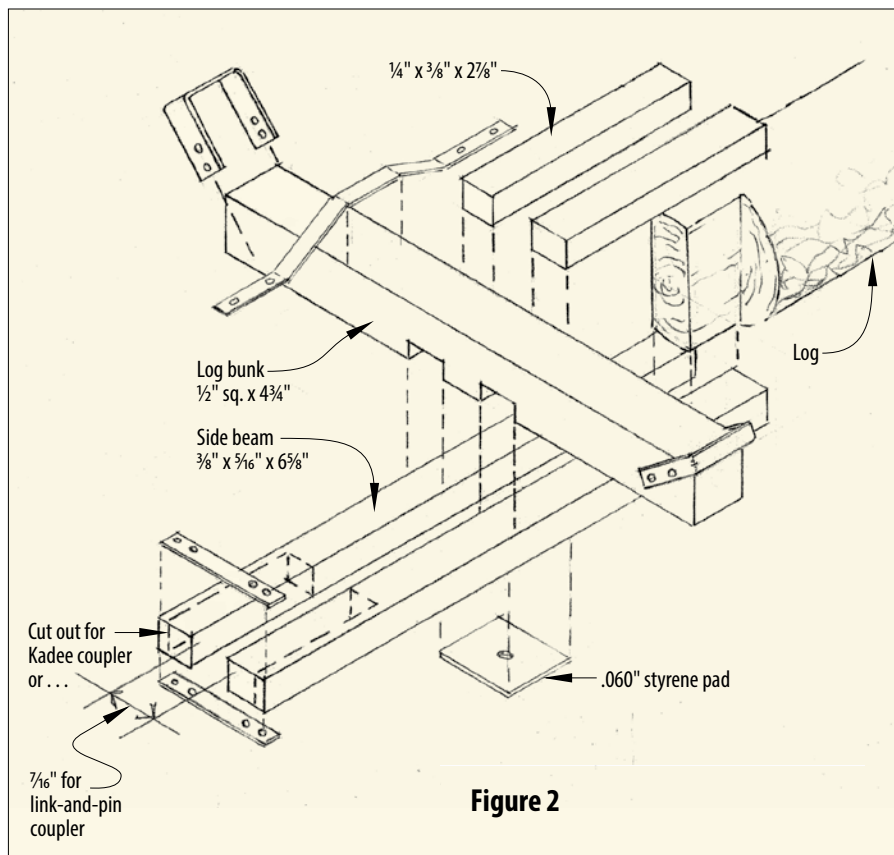


2. Log bunks are cut from  $\frac{1}{2}$ "-square stock, notched on the bottom to fit over the side beams. All of the wood is heavily aged and weathered.





**3. Your choice of trucks may be used. The author used metal trucks with 24" wheels.**



**Figure 2**

Glue the four 2 $\frac{7}{8}$ " pieces of lumber atop the side sills just inside the bunks and again let them set.

Once everything has set, the car can be completed with the log between the bunks. Do this on a flat surface large enough to hold the entire length of the car. Slip the log into position and glue it in

place using white glue. Keep the ends of the car flat and as square as possible during drying.

### Details

Some of these cars were built new while others were rebuilt using old car ends. Mine is a model of a rebuilt one. This

means the wood ends need to be aged and grained. I used an X-acto knife and the teeth of a saw blade for this. Keep in mind that these cars were mistreated daily. They should look very worn.

When this is completed, the car can be stained a light brown/gray. I used acrylic paints made into a thin stain, which I applied with a large brush. Remember that white glue is water-soluble so be careful not to soak the wood at the glue joints!

It is now time to add the nuts, bolts, and washer castings. I used two sizes of Grandt Line castings. Drill the metal straps to receive the castings, then glue the straps in place with CA. Use CA to add the bolt trim.

Drill the mounting plate for the truck-mounting screws. The most accurate trucks I found are Delton arch bars, which are no longer available. I used the smallest metal trucks I could find with 24"-diameter wheelsets (**photo 3**). As a final detail, I added some scrap lumber and leaf pieces atop the car. These can be seen in **photo 1**. These cars were treated very roughly and were then hosed off at the mill after unloading their logs.

Almost every wooden car operated by the company was based on the skeleton cars. This is not a difficult car to build and is the basis for other Argent rolling stock pieces that I will describe in future articles. Among these are short skeletons, flatcars, gondolas, tank cars, scrap-wood cars, and crew cars. **■**





These items were made using the drawings in this article. ABOVE: Metal lawn furniture was known for its bright colors. The umbrella was found at a party store, intended as a baby-shower decoration. LEFT: A picnic bench is a versatile detail part. Incorporate one into a variety of scenes. It can also be used as a work bench, mess-hall table, craft table (such as might be found at a school), or anything else you can think of.



# Finishing touches

## *Make some outdoor furniture: Part 2*

by Jack Verducci | PHOTOS AND ILLUSTRATIONS BY THE AUTHOR EXCEPT WHERE NOTED

**W**e'll add to our collection of outdoor furniture in this issue. Some of these are based on things found in the book *Projects for Outdoor Living*, published by Deltacraft Publications in 1955.

### **Picnic bench**

This style of picnic-bench-and-table combination is a real classic. The basic design

has been around for hundreds of years. These tables can be used for eating, playing games, as work benches, and many other things. I have even seen them used as sawhorses. This kind of detail part can form the nucleus of a detailed module. Picnic tables can be found in residential yards, public parks, campgrounds, and more. Tables of this type would be perfect for a logging camp, eating house, cafeteria, or a

roadside fast-food joint.

**Figure 1** (p. 52) shows the design for a basic wooden picnic bench that would seat four to six people. This project can be made of wood or plastic. I prefer to use  $\frac{1}{16}$ "-thick plastic (acrylic, styrene, or ABS are all suitable). My preferred means of cutting this material is a laser cutter; however, a razor saw will also do the job. For laser cutting, you can use the one-piece



## Spiral scrollsaw blade



MARC HOROVITZ

**A Hegner scrollsaw.** The inset shows a closeup of a spiral blade.

**A SPIRAL SCROLLSAW BLADE** is a very thin blade that has been twisted into a spiral, giving it a nearly round cross section overall. It can cut in any direction and its cut is quite fine. Inside cuts are time consuming, in that the blade must be reinstalled for each inside cut. This type of blade can be used with a hand-held coping saw or with a powered scrollsaw. I have owned my Hegner scrollsaw for many years. Before I bought my laser cutter, it was my preferred tool for cutting out delicate patterns and is still an excellent tool for this purpose.

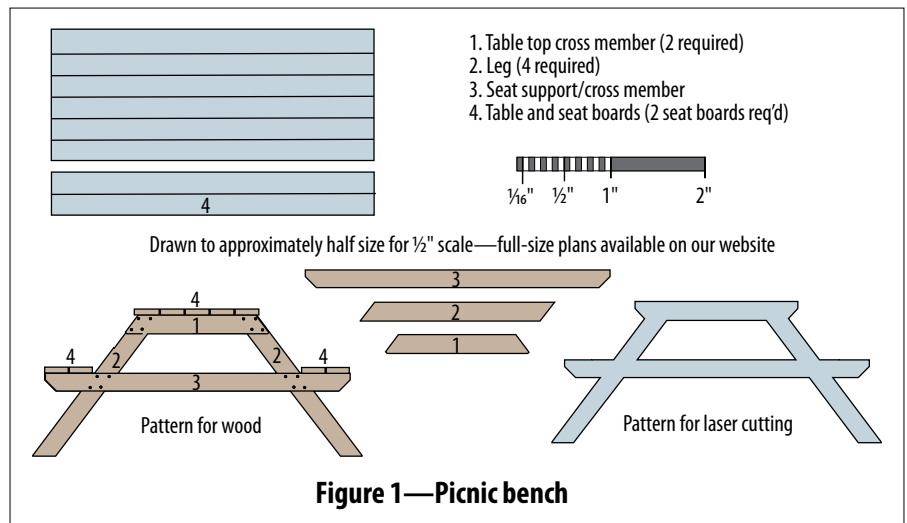
leg-and-cross-brace assembly shown in the drawing. If you are using a saw, use the patterns to size each piece.

Some modern versions of this table design are made of concrete and sometimes even plastic. You can modernize the design shown in the drawing to look like a concrete table by making the table top and seat out of thicker material and not making slats, but rather solid pieces. The finished product can be painted to look like concrete.

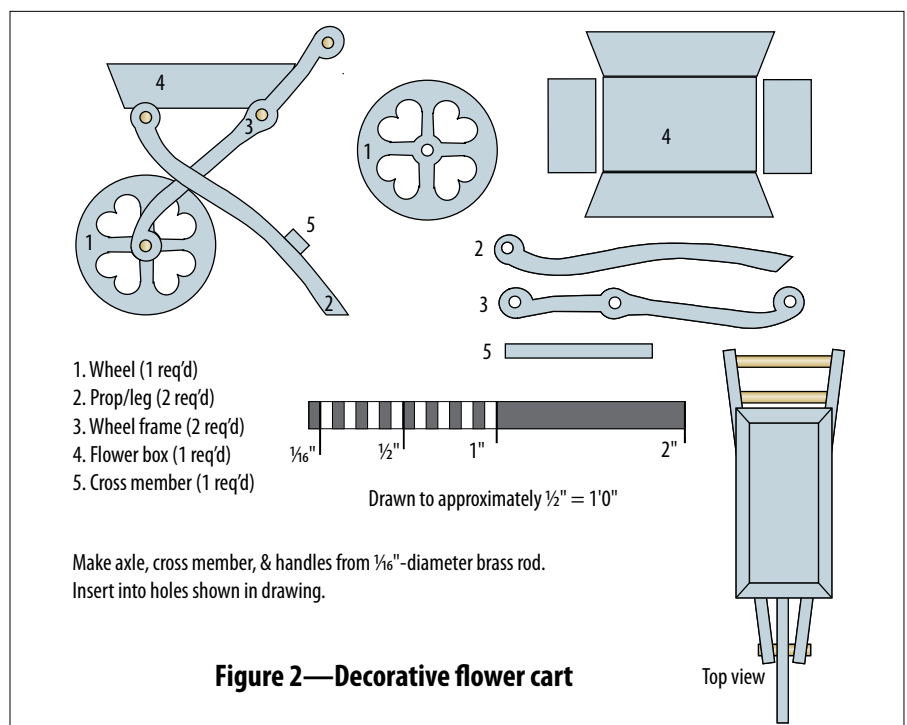
## Decorative flower cart

I found the design for this little old-school flower cart (**figure 2**) in the Deltacraft book. It's charming and can contain artificial flowers or even sedums or succulents. I think part of the charm is this item's delicacy. This, however, makes it more difficult to reproduce in miniature. A laser cutter definitely makes the job easier. An alternative way of cutting out these parts is with a scrollsaw, using a spiral blade that will cut in any direction (see sidebar).

I made my cart out of plastic, mainly because it is waterproof. If you are going to hand-cut the patterns, wood might be



**Figure 1—Picnic bench**



**Figure 2—Decorative flower cart**

the best choice. You can use either  $\frac{1}{16}$ "-thick wood or plywood. Plywood is relatively strong and would be fairly easy to cut. I used  $\frac{1}{16}$ "-diameter brass rod for the axle and the cross bars. An alternative to making a wheel is to use a button.

## Decorative wheelbarrow

I call this a "decorative" wheelbarrow (**figure 3**), as I intend to use it as yard art. This is how wheelbarrows were made in the early days. There were hundreds of variations on this design; I show three here. This type of wheelbarrow would be right at home around a mine, farm, construction site, or as yard art.

Again, I used plastic to make my

version so it will be weatherproof. Plywood or thin hardwood, such as that offered by Midwest Products, is also an option. If you are using hand tools, the wood version is easier to make. Since wood is subject to the weather, you should not leave the finished product outdoors for extended periods.

## Old-style metal lawn furniture

Metal lawn furniture became popular in the 1930s. I noticed reproductions of these are being sold at our local home center/hardware store. They even come pre-rusted. Shellback, tulip, clamshell, and bouncers are other names for these chairs. Back in the day, you would see



## Wood & plywood

### WHEN WORKING IN SCALE

(or attempting to), one goal is to prevent your project from looking clunky. One way to achieve a more scale appearance is to use thin material. You can buy aircraft-quality plywood as thin as  $\frac{1}{64}$ ". Also available are hardwood boards as thin as  $\frac{1}{16}$ ". Wood will degrade in the outdoor environment, so anything made of wood should be protected with either a clear sealer or paint. Titebond III or other waterproof wood glue should be used as an adhesive.

### SOURCES

Midwest Products

<http://midwestproducts.com>

Northeastern Scale Lumber

[www.northeasternscalelumber.com](http://www.northeasternscalelumber.com)

Kappler Mill & Lumber Co

<http://kapplerusa.com>

Titebond Adhesives

<http://titebond.com>




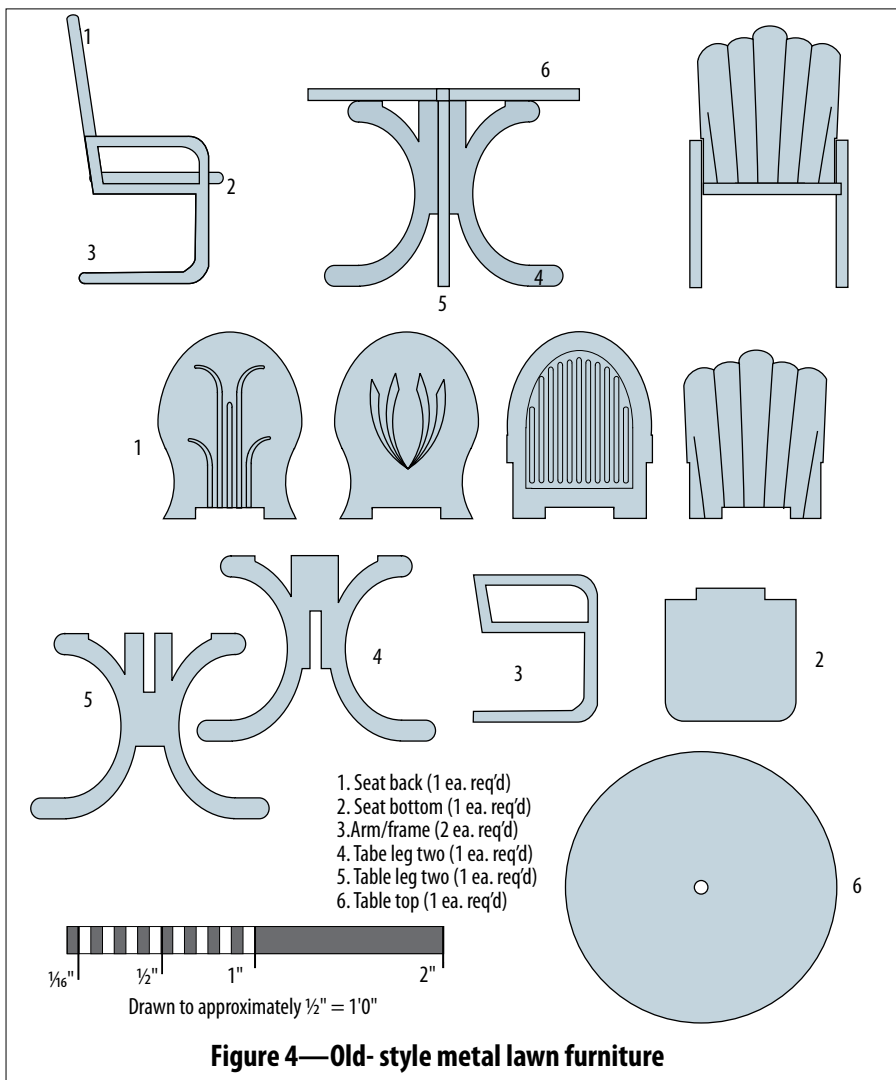
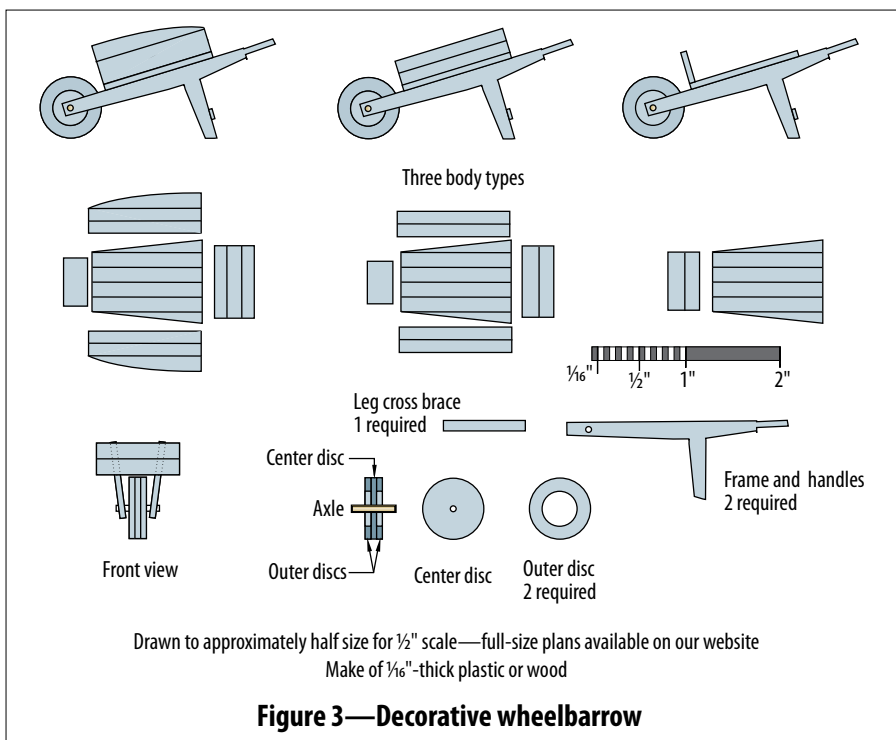
### Online extras

Full-size PDFs of the drawings in this article can be downloaded from our website at [www.GardenRailways.com](http://www.GardenRailways.com). Type "outdoor furniture" in the search box.

them in backyards, on front porches, all around resorts, motels, summer cottages, swimming pools, etc.

This furniture was made of stamped sheet metal and metal tubing. You could make these models out of sheet metal and wire. An excellent source of information on working with sheet metal is the Tinplate Girl website ([www.tinplategirl.com](http://www.tinplategirl.com)). Figure 4 is based on cutting the parts out of plastic or wood sheet. However, you could use my drawing as a template for metal parts.

The cut-out version is made of  $\frac{1}{16}$ "-thick plastic for the seat back and bottoms and for the frame. If you are using wood, the frames can be cut out with a spiral scrollsaw blade. One could also use wire to make the frames and plastic to make the seat back and bottom, which would actually be more realistic, since this is closer to how the original was made. 







An A-B-A set of LGB see-through F7s passes on this raised outdoor railroad. The four-track mainline comprises more than 500 feet of running track.

# Raising the Rock Hill Junction

*A tabletop railroad in the woods*

by Alan Stewart | Merrick, New York | PHOTOS BY SHELBY GOLDMAN

EVER SINCE I CAN REMEMBER, I've been into model trains. When I bought a house in upstate New York some 15 years ago, one of the first things on my agenda was to build my garden railroad. I wanted the railroad to be huge. I put on my knee pads and started laying track from one end of the house to the other.

I'll not go into detail about how I secured the track to the ground, but doing so was difficult. Once the entire track was down, I started purchasing trains, accessories, lights, decor, etc. The railroad was many years in the making.

One of the first things I purchased was LGB's #20670 track-cleaning locomotive. Since I had a serious amount of track, I needed a serious track-cleaning locomotive with all the bells and whistles, such as the flashing lights on top and the huge abrasive wheels underneath. This was followed by the LGB





An overview of the multi-scale railroad. The trackplan closely follows the author's original ground-level railway.

see-through F7 diesels, OBB diesel, Conrail and NYC Central engines, a railtruck, and more.

The difficult part of living in New York is the climate, where we can have harsh, snowy, cold winters. Every year around late September or early October I had to remove everything from the railroad (except the track) and store it for the winter. Every spring I started over again, re-setting up the entire railroad. Although this was hard, I enjoyed every minute of it and looked forward to it every year.

As the years went by, though, I found it was getting too difficult to bend down to work on the line. I knew I had to come up with a better plan because I certainly did not want to sell my train collection. I asked several train experts in my area, "What do I do now?"

## Raising the track

Of course, the universal answer was to elevate the construction, but the idea of a lot of 4' x 8' plywood sheets necessary to handle this load of track was not something I was in favor of. That was really more for an indoor track.

I started doing some research and found a carpenter, Dave Wilkins, in my neck of the woods. With his creativity and

ingenuity, he built train tables raised 36" off the ground that mirrored my original design. With the tables now at waist level, working on my trains has never been easier. Now I just have to do one small bend to walk under the table, and I operate everything from inside the loop.

## Construction

All wood used in the construction of the tables is pressure-treated, including the plywood used on the top surfaces. This will ensure longevity and expand options for the finished look. I used a basic weatherproof stain over the wood to help ensure long life.

The table is assembled with ceramic-coated decking screws throughout. These not only ensure stability and strength, but also enable the removal of any damaged areas and allow for future expansion.

The table legs are not anchored to the ground, in the event I want to relocate or dismantle the tables. The vast square footage of the whole railroad requires nothing more than gravity to keep it standing. Also, the table's shape actually adds to its strength, since the legs are spread out at random intervals.

The setting and landscape in which the railroad is built called for a primitive construction style that was reminiscent of

## The railway at a glance

**Name of railroad:** Rock Hill Junction  
**Size of railroad:** 48' x 20'  
**Scale:** 1:22.5-1:29  
**Gauge:** N° 1 (45mm)  
**Era:** 19th century-modern era  
**Theme:** Old west passenger-modern freight  
**Age:** 15 years  
**Motive power:** Track-powered engines  
**Length of mainline:** 524 feet (four parallel tracks, 131' per track)  
**Maximum gradient:** 3%  
**Type of track:** LGB & Aristo-Craft  
**Minimum radius:** 7'  
**Structures:** Kitbashed  
**Control system:** MRC AG990  
 Power G; MRC Trainpower 6200;  
 MRC Sound & Power 7000; MRC  
 Control Master 20 (walkaround)

a train trestle, while not crowding the area or creating something visually overwhelming. The focus had to remain on the trains, while making maintenance much easier for the owner/conductor (me). Maintaining the railroad is as simple as it is for any deck, and uses just about all the same supplies.



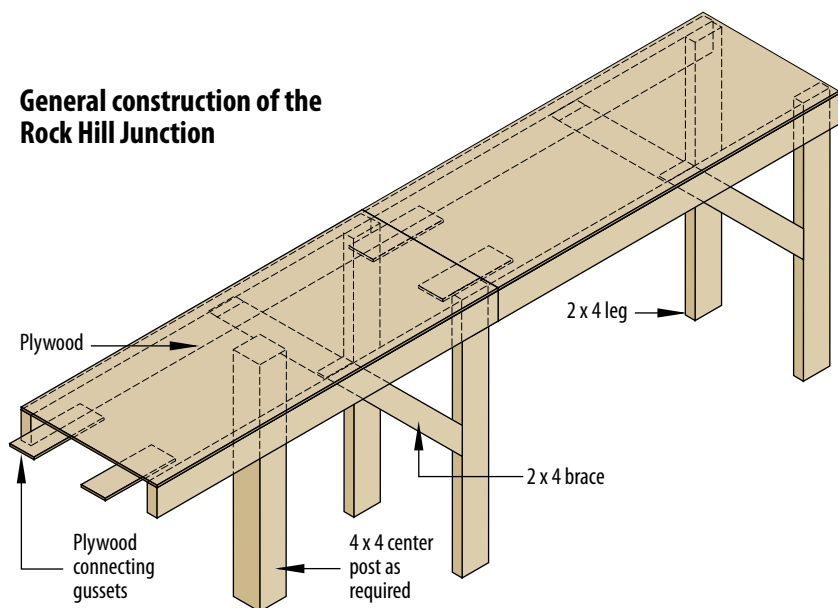


The underside of the tables, showing the construction. Gravity alone keeps everything in place; the railroad is not anchored to the ground.



An old traffic signal is one of the eclectic objects adorning this railroad, which was meant strictly for running trains. No switches were included in the trackplan.

### General construction of the Rock Hill Junction



MARC HOROVITZ

The overall design, although dictated by the landscape, is actually a good recreation of the original ground-level trackplan. The build was done freehand, with only basic sketches of what we hoped to achieve.

### The track

The only problem I encountered was laying the track on the tables to accommodate all of the curves, corners, and angles of the original trackplan. I had to calculate the radius of every turn to ensure it would not bring the cars dangerously near the edge of the tables.

I set up a workbench and went to work with a hack saw, measuring the tables at

the most crucial points. Some of the tasks included shortening track sections, adding and securing rail joiners to each section, and securing the sections to the tables. As long as I didn't operate the trains on the outer sections of the tables at high speed, everything would be fine.

To sum up this project, it all came down to one factor—age. It's inevitable and happens to all of us. As we get older, we are prevented from doing the things we liked best when we were younger. Case in point: my trains. Among my many other hobbies, including collecting classic cars, I am always drawn back to my trains. I always wanted them to be the largest scale possible. This reconstructed

### About the author



Besides family and pets, Alan Stewart has two passions in life: love for his railroad and his exotic cars. While he collects classic muscle cars and rents them to the movie industry, he tries to spend as much time as possible in his house working on his garden railroad. Due to the climate, he only gets to spend five or six months a year working on this. He compensates by having an overhead large-scale layout in his basement at his upstate New York home and an O-scale layout at his Long Island home.

railroad has given me the ability to enjoy my hobby to the fullest without experiencing the pain of age and the hardships that come with it. I hope that readers will see what I have done and follow suit so that they don't have to give up their own outdoor railroads. 🚂



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## MINISCAPING

# How to use color combinations



1. This riot of intense colors, with snapdragons, marigolds, and other annuals, borders the mainline of Ned and Phyllis Ruetz's Rock Canyon Garden Railroad in Michigan.

A spot or two of color can add interest to a garden railway; a lot of color can add more interest or become cluttered and confusing, depending on how it is used. When placing several colors in one area, using the right combinations can increase the impact and visual pleasure. How that is achieved relates to combination choices and some understanding of color theory.

In this column, I'll show how one color can be enhanced by its juxtaposition to another (or more) color. I'll use photos from my collection to illustrate the impact of effective color combinations.

**Photo 1** demonstrates how color can have an emotional impact. Whether you like the effect or not, the riot of color in this planting of annuals can't be ignored. The colors are bright and intense and attention grabbing. They highlight and define the straight edge of the mainline on this railroad. As a side note, the plastic



2. This hillside is spread with a variety of softer colors belonging to (clockwise from lower middle) yellow ice plant (*Delosperma nubigenum* 'Basutoland'), blue Dalmatian bell flower (*Campanula portenschlagiana*), pink dianthus (*Dianthus gratiopolitanus* 'Tiny Rubies') with sky-blue Turkish veronica and purple rock cress. (Taken on the author's former garden railroad.)





3. The yellow flowers belong to Utah yarrow (*Achillea* sp. x 'Utah') and the red ones are of a tiny spirea (*Spirea japonica* 'Bullata').



4. The hot magenta-red flowers are those of Firewitch dianthus (*Dianthus gratianopolitanus* 'Firewitch') and in front of those are blue Turkish veronica (*Veronica liwanensis*).



5. The yellow-flowered clump is a Mexican creeping zinnia (*Sanvitalia* sp. 'Sunbini') and the purple flowers are germander (*Teucrium ackermanii*).



6. The yellow-flowering tree is a weeping Siberian pea shrub (*Caragana arborescens* 'Walkeri') and the bluish-purple flowers are moss phlox (*Phlox subulata*).

edging holding back the plants could pass for a painted wooden fence, transitioning the out-of-scale flowers into the scene of the railroad.

In **photo 2** there are multiple colors, but the impact is subdued compared to **photo 1**, by the pastel or lower-intensity colors. A variety of colors in close proximity is appealing to many people, thus the popularity of its use in decorative landscape plantings and cottage gardens. Which colors you choose and their intensity will determine the impact of the area.

**Photo 3** demonstrates the juxtaposition of deep red and bright yellow. Both of these are primary colors (not made from the combination of other colors).

The colors in this photo are relatively high intensity and draw attention to the scene.

**Photo 4** shows an even higher-intensity red (almost fluorescent) next to another primary color, blue. Magenta-red colors such as this are so powerfully attention grabbing that they should be used sparingly or in a constrained way. In this photo, the color combination helps define the front edge of the railroad garden and does not impinge on the railroad itself.

In **photo 5**, the color pairs are yellow and purple. Purple (or violet) is a secondary color, a combination of red and blue. Purple and yellow (on opposite sides of the standard color wheel) are considered complementary colors—colors that play

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**7.** Three heath shrubs (*Erica* sp.) show different hues of red, from the deep-red foliage of the bush on the right to the three shades of pink blossoms. Heaths bloom in late winter.



**8.** The pure white flowers of variegated rock cress (*Arabis ferdinand-coburgi* 'Variegata') contrast with the purple flowers of moss phlox. These are spring bloomers.



**9.** The light-colored grass clumps are Elijah Blue fescue (*Festuca glauca* 'Elijah Blue'), which contrast nicely with the green conifer trees. (Photo of the seasonal garden railroad at Holden Arboretum, Willoughby, Ohio.)



**10.** A drift of blue-flowered lavender (*Lavendula angustifolia* 'Blue Cushion') towers over a clump of pink-flowering Dalmatian geranium (*Geranium dalmaticum*).



**11.** Purplish-blue Dalmatian bell flower (*Campanula portenschlagiana*) shares this rural hillside with lavender-pink Elfin thyme (*Thymus serpyllum* 'Elfin').

off each other to enhance the intensity or impact of the other. The most common complementary colors are red and green—red flowers on green foliage.

**Photo 6** shows another yellow-and-purple combination, this one with a more bluish-purple flower. The contrast is not as noticeable as with a more pure purple, but is still effective. The large area of yellow flowers on the tree becomes more interesting with a complementary color


nearby to contrast with it.

Color combinations can also be effective with colors that are similar to each other. In **photo 7**, three different heath bushes are flowering in pinks and reds. The different hues and intensities of the reds add interest while the similarity of color unifies the area.

We don't ordinarily recognize white as a color, although technically it is the combination of all colors. White can be quite attention getting, especially when paired with a darker or more saturated color, such as with the purple flowers in **photo 8**. This illustrates the effect of value contrast, the juxtaposition of a less-saturated (lighter or lower value) color with a more-saturated (darker or higher value) color.

**Photo 9** shows how the contrast between light and dark colors is achieved with foliage instead of with flowers. The contrast is made greater by the different textures of the foliage, but the color contrast is the more dominant.

**Photo 10** illustrates how more subtle colors, such as the light-blue flowers, can be used in a mass planting, or drift, surrounding a brighter pink area. The less-dominant color is benefited by there being more of it to make the effect more noticeable.

**Photo 11** shows two swathes of flowers that share a lot in common: the blue having some pink tones in it and the pink tending toward a bluish undertone. The colors are somewhat subtle and show up better by there being a significant amount of each. 



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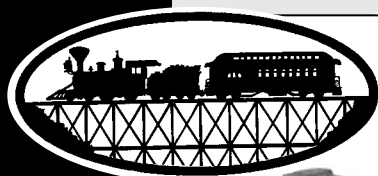


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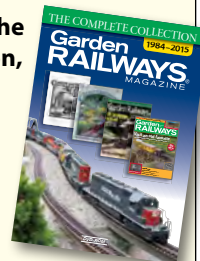
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## ONLINE STATION

VANCE BASS

**M**y first item this month is not a link, or rather, it's an empty link. I want to remind my readers to back up your computers. This means you should have two backups, in different physical locations, and you should test the backups to make certain they're usable and everything you might need to recover is actually in there. Don't ask why I'm starting my column this way. I might start crying again.

That said, I've been looking at a lot of plans lately—rolling stock, locomotives, and buildings, made by hand or by CAD—and was reminded how I've often made mock-ups of projects from CAD files printed on cardstock. (You can also print out dimensioned drawings this way, of course.) I wrote an earlier column on making passenger cars from varnished cardstock, once a popular medium for scratchbuilders. But railway coaches aren't the only candidates for cardstock models, and they don't have to be cardstock—plans are plans.

I have a cardstock model kit of Germany's first steam locomotive that I bought many years ago. It's printed in color on heavy stock, with tabs and instructions. These printed kits are still around but they have moved from bookstores to the Internet. Now you can download color plans for just about anything, from stone axes to spacecraft. You can scale them up or down, print them on your own cardstock, then start cutting and gluing. Since cardstock doesn't hold up well when left outdoors (even when varnished), you could also transfer the plans to styrene, wood, or metal.

Free plans abound if you go looking. Here are some I found useful: [ss42.com/toys.html](http://ss42.com/toys.html) has links to a large selection of free, printable toys—airplanes, cars, trucks, and, of course, trains. For all sorts of models, have a look at [papermodelers.com](http://papermodelers.com) (Free registration required.) [creativecloseup.com/100-exceptional-free-paper-models-and-toys](http://creativecloseup.com/100-exceptional-free-paper-models-and-toys) also has a large selection of vehicles. That 1932 Chevrolet would be perfect for the front of a railbus. [instructables.com/id/Beer-Can-Models/](http://instructables.com/id/Beer-Can-Models/) has no plans, but good techniques for making things out of soda-can metal. 

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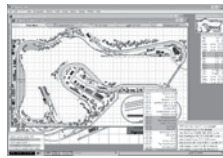
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## Magnificent steamer

**T**he Norfolk & Western's J-class 4-8-4 N° 611 was built in 1950, one of 14 locomotives in the class built between 1941 and 1950 for (primarily) passenger service. These locomotives were entirely designed and built in the N&W shops, not by an outside locomotive builder. The class featured 300 psi boilers and roller bearings on all axles and rods. Despite relatively small drivers, the engine was capable of speeds up to 100 mph. N° 611 is the only engine of its class to be preserved and is alive and well today, used in excursion service.

### VITAL STATISTICS

**1:32 scale, gauge-1 N&W 4-8-4**  
**Accucraft Trains**  
**33268 Central Ave.**  
**Union City CA 94587**  
**Price: \$5,950**  
**Website: [www.accucraft.com](http://www.accucraft.com)**

All metal, 1:32 scale, gauge-1 model of Norfolk & Western J-class streamlined 4-8-4; working Baker valve gear controlled from the cab; gas-fired boiler; ceramic burner; weight, 28.8 pounds (loco, 19.8 pounds; tender, 9 pounds); fittings: two safety valves, axle pump driven from second axle, hand pump in tender, throttle, blower valve, pressure gauge, water glass, bypass valve, whistle, displacement lubricator, cylinder drain cocks; sprung driving axles; sprung six-wheel tender trucks; ; 10' minimum radius. Dimensions: length, 42" (loco and tender); width, 4.25"; height, 7 in. In 1:32 scale this works out to 112"0" x 11'4" x 18'8", respectively

Accucraft's model arrived in a big box weighing 65 pounds. Unpacking an Accucraft locomotive is a job in itself, especially a large one like this. You should allow yourself at least an hour just for unpacking. The locomotive and tender, wrapped in tissue and plastic, are each packed in their own wooden boxes. They are firmly secured to wooden platforms with strapping tape and foam inserts. The platforms are bolted into the boxes. There is a separate compartment in the tender's box that holds the usual accessories: pump handle, syringes, wrenches, etc.

Once I got the locomotive and tender unpacked, I had a good look at them. My first thought was, "Impressive!" Accucraft has produced another fine model, an accurate representation of its prototype. The engine has all drivers sprung and a high level of detail. Its Baker valve gear is controlled from a reversing lever in the cab. Water can be fed to the boiler via a hand pump in the tender tank. This is plumbed in series with the axle pump. When the engine is moving, the axle pump, driven by an eccentric on the sec-

ond axle, can be used to keep the boiler topped up. A bypass valve on the back of the cab, below the footplate, returns unneeded water to the tender tank.

Boiler fittings include a pressure gauge, water glass, throttle, blower valve, whistle valve, and two safety valves. Access to controls is via Accucraft's standard hinged cab roof. The locomotive is fired with butane gas. (An alcohol-fired version is also available.) A large gas tank resides in the tender under the dummy coal load, which must be removed for filling. Once the tank has been filled, the coal can be replaced. A valve handle protrudes unobtrusively through the coal load to control the gas. The whole tender shell forms the water tank as well as a water bath for the gas tank to keep it from freezing. A removable panel at the rear gives access to the hand pump.

The locomotive is fitted with a ceramic burner that is lit through the fire door. This fire door has a long, thin rod attached to it. The hinges on our review sample were a little too stiff, making it difficult to easily open and close the door with this rod.

Under the left-hand running board is a good-sized displacement lubricator. Beneath the right-hand running board is the whistle. This is just a single-chime affair and is completely incapable of producing the deep, throaty, multi-chime sound that the prototype makes. The whistle, in my opinion, does nothing to enhance this elegant locomotive and might just as well have been left off.

Each driving axle is sprung. All drivers are flanged and, given the long wheelbase, a 10' minimum radius is recommended—more is better. The prototype locomotive itself was fairly rigid and had trouble with raggedy track. I suspect the model behaves prototypically in this regard. There is a front coupler that hides behind a swinging door, which preserves the locomotive's streamlined aspect. The door on our review sample did not fit well and was prone to opening a little.

There are three hoses between the locomotive and tender: two for the feed-water system and one for gas to the burner. Transporting the engine and tender should be done individually because of

### PROS and CONS

**PROS:** Beautiful, well made engine; correct scale/gauge combination; fully fitted boiler; excellent paint and graphics; high level of detail; excellent running characteristics

**CONS:** Fire door a little too stiff to conveniently open with supplied rod; no lubricator drain; no filler plug; no blowdown valve; unprototypical whistle





their length and weight. They can be connected when on the track.

The weather on test-run day was a mild 75 degrees, with a breeze. I prepared the engine on the bench, oiling all moving parts with a lightweight machine oil, then filling the displacement lubricator with steam oil. I filled the gas tank in the tender with butane and the surrounding tank with distilled water. With the engine and tender on the track, I connected the various water and fuel lines. The gas line and water-return line are push fits, while the feedwater line has a screw connector.

I used the hand pump in the tender to fill the boiler. The boiler on the engine is huge, and it took a *long* time. There is no filler plug on the boiler itself for initial charging, so you just have to sit there and pump. Once the boiler is full, keeping it that way is no trouble, either with the hand pump or, while the engine is running, with the axle pump.

Unlike most gas-fired engines, this one is equipped with a blower, controlled by a valve in the cab. This is similar to coal- and alcohol-fired engines with internally-fired boilers, so you'll need a suction fan (not included) to get this locomotive going. Also unlike most gas-fired engines, this one is lit through the fire door on the boiler's backhead. You'll need something like a long-nose barbecue lighter to get into the firebox. I placed the fan in the smoke stack and turned it on. I used the igniter I normally use for alcohol-fired engines—a bit of wicking on the end of a wire—to light the fire. I soaked this in alcohol and lit it, then turned on the gas a little. I poked the flame into the firebox and the fire lit immediately.

The rectangular ceramic burner pretty well fills the firebox. Initially, the fire appears as myriad points of blue flame. When the burner warms up, it glows

orange. Because of the stiff firebox-door hinges, I had to poke the door closed with a screwdriver.

It took about 10 minutes to heat that huge boiler to 20 psi, at which point I removed the suction fan and turned on the engine's blower. When pressure was up to 50 psi, I opened the cylinder drain cocks, put the engine into forward gear, and opened the throttle. It took a little bit of pushing before the engine showed signs of life. Water spurted from both of the drain cocks and the stack. The condensate soon cleared and the engine was off and running.

I found the throttle to be a little touchy when the engine was running light. After some experimentation, though, I found a setting that it seemed to like. I think its performance would improve with a heavy train behind it, which would smooth things out some while allowing the engine to be run at a higher throttle setting.

The minimum recommended radius is 10 feet. I think this engine would find that pretty tight. Even my 13-foot-radius track slowed it down on curves. Since all drivers are flanged, there's bound to be a little flange binding on all but the broadest curves. Having said that, though, the engine performed well.

The roof swings to the side for access to the cab. With a little practice, the throttle lever can be accessed without lifting the roof. The pressure gauge is visible through a window but you'll have to lift the roof to see the water glass and get to the reversing lever.

This locomotive is magnificent in motion. It exudes power in the same way as its prototype. It's a smooth runner, even running light, due in part to its weight. Its big cylinders will probably pull just about anything you care to hang behind it. I've seen a video of it

effortlessly pulling a nine-coach train. The whistle, as mentioned above, is a bit of a joke. It emits a clear, high tone, more suited to a British narrow-gauge locomotive. I didn't time the run, shutting the engine down after about 45 minutes. I have heard reports of non-stop runs of an hour or more. You'll have to stop to refuel, as the pumps will keep the boiler full.

To shut this engine down, I turned off the gas, closed the throttle, and opened the blower valve to relieve the pressure and prevent a vacuum from forming inside the locomotive when the boiler cooled. I would like to have had a blow-down valve to be able to properly blow down and drain the boiler.

To refill the displacement lubricator, the water must be sucked out with a syringe. Again, a drain valve on it would have been good. The only other little niggle is the size of the tender tank. It would be nice if there were a couple of baffles in there to mitigate sloshing, but this is a small matter.

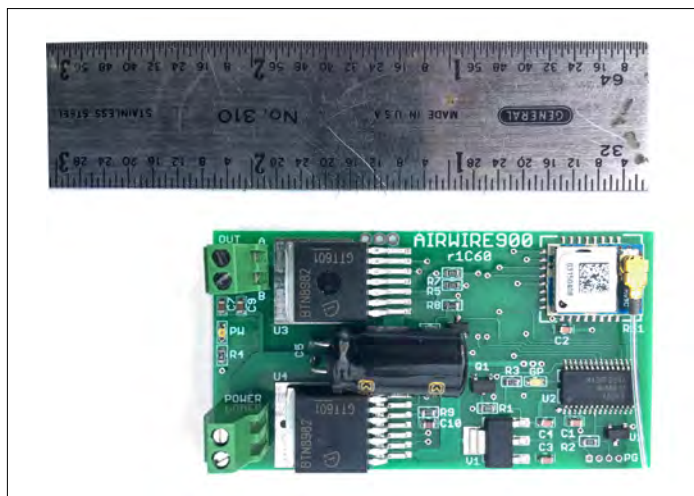
My first impression of this engine was handsomely borne out. It is impressive indeed, whether running or sitting stationary. It's not an engine I'd recommend to beginners but if you have some steam experience, you'll enjoy this one. Spending time with it will reap dividends, too, as you discover its quirks and foibles and learn how to get the best possible run out of it given the conditions on your railroad. —**M. Horovitz**

## Online extras

**For subscribers:** Watch a video of this locomotive in action. Visit [www.GardenRailways.com](http://www.GardenRailways.com) and click on "Product videos" under "Subscriber extras."



# High-capacity receiver



Three years ago, CVP Products (Airwire) introduced a generic receiver called the Convertr, which worked with the company's line of Airwire throttles. It output a standard DCC signal that could operate any generic DCC decoder. It had a current capacity of 2.5 amps, which was on the low side for large-scale trains. I said at the end of that review (Feb. 2014) that I would love to see a higher-capacity receiver that would be more suitable for the higher-current-draw locomotives we commonly run in large scale. That's precisely what they have introduced.

The Convertr-60 receiver is at the high end of what is now a line of three receivers. The original Convertr has been renamed Convertr-25 and a smaller version is called Convertr-15. The Convertr-60 has a continuous-current capacity of

6 amps, the Convertr-25 is rated at 2.5 amps, and the Convertr-15 comes in at 1.5 amps. The Convertr-60 can handle momentary current spikes as great as 55 amps, according to the company's literature. I don't have any locos that draw 6 amps, nor did I want to spike the

current to test these capacities.

I'm always pleased to see new ways of being able to use the latest generation of DCC decoders in a wireless battery R/C (increasingly referred to as "deadrail") environment. The notion that I can get a receiver and hook it up to any generic DCC decoder and be off and running is pretty remarkable. At a time when we're seeing an increasing number of locos available factory-equipped with DCC decoders pre-installed, this makes converting them to battery power an absolute breeze. (I'll get to that in a bit.)

At 2.4" long x 1.2" wide, the Convertr-60 is fairly small for its capacity. That's about the same size as many large-scale DCC decoders so, in terms of the space required, you could easily piggyback one on top of the other in cramped spaces if need be. The unit comes in two varieties: one with an internal antenna, and one with a roughly 3"-long external antenna. The latter is good for installations in brass locomotives, where the metal construction may otherwise shield the radio

signals from getting to the decoder. You can drill a hole and extend the antenna outside the brass shell. For plastic-shell locomotives, the internal antenna will work well. I'm reviewing the external-antenna version here.

The board comes with two sets of screw terminals. One side is for battery power in, the other side is for DCC out. The board can accept battery voltage from 8V to 24V maximum. Airwire says the board is "optimized" for 14.8V, though that's likely more just a reflection that many folks who run battery R/C use 14.8V Li-Ion battery packs. It's important to note that the battery input is polarity sensitive. According to the literature, if you hook the battery up backward, you will kill the unit and such damage is not covered under their warranty. The polarity is clearly marked on the board. The other set of screw terminals is the DCC output that goes to the decoder. This side is not polarity sensitive, as the DCC signal is an AC (bi-polar square wave) signal.

When power is applied to the board, a green LED illuminates to indicate it's receiving power. If the receiver is receiving a valid signal from an Airwire transmitter, a red LED will illuminate. If there is no valid signal from the transmitter, the Convertr will not send any signal to the DCC decoder.

The Convertr must be set to a frequency that matches that of the transmitter, and also a DCC address that matches the decoder it's running. By default, the Convertr comes set to frequency 0 and DCC address #3. It's not imperative to reset either of these to another value, though most people program the decoder in a locomotive to the road number on that locomotive. The instructions walk you through the frequency- and address-setting process.

Operationally, the Convertr is invisible to the user. In a track-powered DCC environment, you use the handheld controller to communicate with the central command station, which then sends the commands through the rails to the onboard decoder. With the Convertr installed, the handheld transmitter communicates wirelessly to the onboard receiver in the locomotive, which then sends the

## VITAL STATISTICS

**High current, wireless DCC receiver**  
**CVP Products (Airwire)**  
**PO Box 835772**  
**Richardson TX 75083**  
**Price: \$132 (internal antenna);**  
**\$138 (external antenna)**  
**Website: [www.cvpusa.com](http://www.cvpusa.com)**

Convertr-60; 6-amp wireless DCC receiver for battery R/C. Dimensions: 2.4" x 1.2"

## PROS and CONS

**PROS:** Easy installation; good range; high current capacity; able to use all 17 available Airwire frequencies

**CONS:** No polarity protection on battery input



commands directly to the DCC decoder that is paired with the receiver. The only difference is that the wireless communication is unidirectional, so if you're programming CVs on the decoder, you cannot have the decoder read back the values to the transmitter. You would need to hook the decoder up to a traditional command station or PC to do that.

When programming the Converter, know that you will program the same values to CVs on both the Converter and the decoder attached to it. This shouldn't be an issue, as the Converter has mostly the standard DCC CVs, which you'd need to program on both anyway. The exception may be CV 200, which sets the frequency. When programming the frequency of the Converter, check the documentation that comes with your decoder to make sure

there's no CV 200 that you may inadvertently reprogram. (You can disconnect the decoder from the Converter when programming CV 200 if there is a conflict.)

The subject for this installation was an LGB track-cleaning locomotive that had a factory-installed DCC decoder onboard. There was ample space under the hood of the locomotive for the Converter, and the battery fit nicely in the cab. Converting this loco to wireless control was a simple matter of connecting the Converter to the battery (via a power toggle switch), then finding the two wires providing track power to the existing DCC decoder, removing them, and replacing them with wires from the DCC output of the Converter instead. You could easily wire in a switch to toggle between the two if you wanted. Instead, I just taped the ends of

the old wires and left them in place, should someone down the road wish to convert the loco back to track power.

I found the range to be sufficient for reliable operation in my backyard. One feature Airwire advertises is that if/when the receiver does go out of range (in a tunnel, around a corner, etc.), certain functions, like whistles, will automatically shut off, so those sounds don't get stuck on until the receiver regains contact with the transmitter. I've not found that to be an issue with any of the wireless DCC systems I use so it's hard to say how effective that feature is.

Overall, I'm pleased with this board. It's great to see more options become available for wireless, battery radio-control systems and this board performs as well as any other I've used. —K. Strong

## All-resin structure kit

**T**horley Miniatures is a British company that offers a wide and growing range of structure and accessory kits. The company specializes in cast-resin kits that are complete—no additional parts or details are necessary. Kits are supplied unpainted.

Sent for review was a generic model of a small British signal box, or what we would call a switchman's tower, although this model is not a tower. It portrays a basic brick structure with steps leading up

to the door, windows, a chimney, and a shingle roof. It might be adapted to any number of different uses—a yard office, for instance. Also included are various detail parts, like fire buckets and signage, and some short sections of  $\frac{1}{32}$ " brass rod.

The instructions are text only—no photos or drawings of various steps. They begin with a short list of required tools and end with a color guide that included no less than 13 suggested colors for the various pieces. American modelers may have a little difficulty with some of the British terminology. For instance, "sugar soap" (TSP) and "barge boards" (the cosmetic trim pieces applied to the ends of the roof gables).

Construction begins with washing all of the parts in TSP. I suppose any good degreaser would suffice to remove any remaining mold-release residue. This was



followed by going through each part and removing any flash. There are a surprising number of parts for this relatively simple structure. Although the castings were pretty clean, there was a little flash on each part that required removal and/or smoothing. Once that was done, assembly could begin. Super glue (CA cement) is recommended. I used both a semi-thick glue and the water-thin variety.

Construction commenced with the walls. A little additional smoothing of the inside surfaces was necessary for a good fit. Masking tape was helpful in temporarily holding the wall sections together. The roof was then glued into place. I added the barge boards next. In this case, a diagram showing exact placement would have been helpful but I figured it

### VITAL STATISTICS

**Large scale signal-box kit**  
**Thorley Miniatures**  
**Penllain, Rhydcymerau**  
**Llandeilo, Carmarthenshire SA19 7RP**  
**United Kingdom**  
**Price: £39.99 + s&h**  
**Website: [www.thorleyminiatures.com](http://www.thorleyminiatures.com)**

Thorleys End Signal Box; suitable for 16mm, 1:20.3, 1:22.5, and 1:24 scales; all-resin kit; instructions and window glazing included; extra details and color guide included.  
Dimensions of finished model (not including steps): 8¼" x 6" x 7½"

### PROS and CONS

**PROS:** Highly detailed kit; well thought out; good-quality resin castings; goes together well; attractive finished model

**CONS:** Assembly instructions are text only—no drawings or in-progress photos



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out. The roof ridge was next, a piece of  $\frac{3}{8}$ "-styrene 90° angle. The roof sections come together at around 70°, so the fit of the ridge angle is not all that might be desired. However, when the building was finished, the discrepancy was not that noticeable. The chimney, which is composed of three parts, came next.

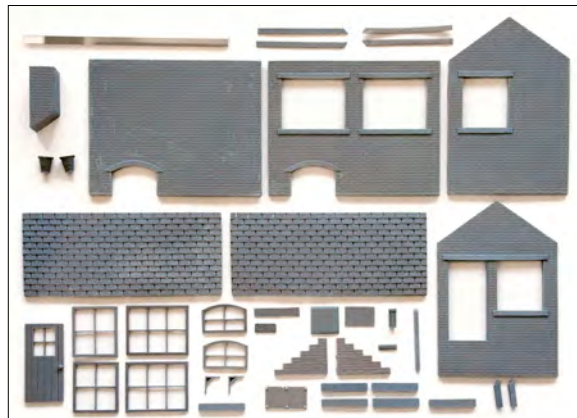
In the interest of saving time I did not paint the review structure. This would have been the time to paint it. Acrylic paint is recommended. You can follow the color guide or do what you please. Windows are glazed by gluing their backsides to a provided sheet of acetate, then cutting them apart. The instructions say to paint the windows after they are glazed but I think it would make more sense to do it beforehand. Cleaning up the windows with sandpaper and a file took a little time. They then had to be fitted to their proper holes. Some fit right in while others took a good bit of sanding, as per the instructions—especially the lower, round-top windows.

The stair assembly is composed of the brick side pieces and six treads to be glued on top. This was the only significant problem in this kit's assembly. When

finished, I found the stairs to be too tall for the doorway by about a brick and a half. I reduced the height on my belt sander and all was well. The stair rail is composed of two uprights and the railing itself, all resin castings that required clean-up. The railing came out of the mold with the bottom surface quite convex. To flatten it properly so that it would sit on the uprights correctly looked like a real pain, so I substituted a piece of wood instead, which I think is less prone to breakage anyway.

On the face of the building is a plate with brackets that hold a pair of fire buckets. I discovered that the  $\frac{1}{32}$ " wire was intended to be formed into bails for the buckets, so this I did. The buckets had to be drilled to receive the bails.

The provided signage was glued to its resin backing plates, which were then glued to the building, and the project was finished. The resulting structure looks quite good. It is robust and will stand up well to the elements. No interior detail is



provided and the insides of the walls are rough, but an enterprising modeler could provide an interior, which would be visible through the large windows. With a nice interior, the building would be a good candidate for lighting, as well.

I'm not sure I'd recommend this as a first-time kit for those who have never built a cast-resin model, especially given the rudimentary instructions. However, for those with a little experience, the model goes together well and the end result looks great and would be an interesting addition to any garden railway.

—M. Horovitz

## Operations-only controller

Airwire's first wireless throttle system was a simple, handheld affair that had a traditional throttle knob with a definite "off" and "full speed" end, as well as a clearly-defined direction key. Airwire has since introduced subsequent throttles with much improved functionality overall, but those two features were sacrificed in the process. I always find myself reaching for that first throttle most of the time—there's just something about the feeling of that knob that I like.

That simplicity is now back in Airwire's latest throttle, the T1300. It is, by Airwire's own description, a simplified "operations" throttle, designed solely for running trains. It cannot program a decoder but, once the decoder is programmed, the simpler T1300 throttle is all you need to operate that locomotive.

The design of this throttle is a throwback to that first throttle. The case is similar in size: a comfortable 2" wide x 1" deep x 6" long. The knob is in the middle and the whole affair is easily controlled with one hand. Below the knob is a keypad with small plastic keys for function and direction control. The LEDs for power, direction, and other functions are bright and easy to see in daylight. I wish there was a means of attaching a lanyard or belt clip for hands-free operation.

Instructions cover the basic operation of this throttle, including setting the frequency at which the throttle transmits (channels 0–16), setting the locomotive number, building consists, and controlling accessories. The key strokes required to program these things are clearly illustrated. To start, you select the locomotive you want to run and enter it per the



instructions. Then, if necessary, you set the frequency of the transmitter. At that point, you're ready to run. Set the direction you want to travel, turn the knob, and off you go.

The transmitter can store two locomotives in its memory, so you can toggle between two locos running on the railroad (called "swapping" in the instruc-





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tions). The transmitter links the loco address with the frequency, so if you have one loco with one address at one frequency, and another with a different address and frequency, you can easily toggle between the two with the push of a button. Remember when toggling between locomotives, though, that the position of the knob dictates the speed. So, if you have one loco that's running forward, and the knob is set to half throttle, when you swap to the next locomotive, its speed will change to whatever speed the knob is set at. If it was stopped, it's going to start moving. If it was moving full speed, it will slow down. The throttle does remember the direction, though, so the engine will continue in whatever direction it was previously set to travel, but at potentially a

different speed. (Combatting this was one reason why Airwire went to digital knobs on their other throttles.)

Having said that, the throttle does have a safety built in for when you first power up the throttle. If the knob is not set to "off" when the power is turned on, the direction light will flash and the locomotive will not move until you turn the knob to off. This prevents runaway locos when the throttle is first powered up. Also, the throttle will power itself down to conserve battery power after 15 minutes if the throttle is set to "off." If the throttle is set to any speed other than that, it will remain powered up.

The throttle does have one limitation with regard to controlling trains; it can only control DCC functions 0–19. Functions 20–28 cannot be triggered by this throttle. If you don't use the higher functions (I don't), then this isn't an issue.

One improvement of this throttle over previous Airwire throttles is it contains a

rechargeable lithium-polymer battery. I can't begin to tell you how many AAA batteries I've put in my older Airwire throttles, so I'm thrilled to be able to plug this one in and have it always ready to go. You can charge it via a micro-USB port on the side of the throttle. There's a "low battery" warning light, which, when flashing, tells you have about an hour of battery life left and, when solid, tells you there's less than 30 minutes. The throttle works while plugged into a charger so, if you need to charge it up in the middle of an operating session, you can connect it to a battery-powered charger commonly used to charge phones and tablets on the go. My throttle has run through two or three average operating sessions without the warning light coming on, so I think battery life is not going to be a concern.

In terms of use, I find the throttle easy to operate and the return to the older-style analog knob is a welcome feature for how I run my trains. My eight-year-old son took quickly to it as well, noting that it was much easier to tell when the train was stopped with this knob. The range of the throttle seems on par with my other Airwire throttles. If you're new to the Airwire system, you'll definitely want to get the T5000 throttle first, so you can program your decoders. The T1300 is a great supplement for day-to-day operations on the railroad. —K. Strong

## VITAL STATISTICS

**Wireless DCC throttle**  
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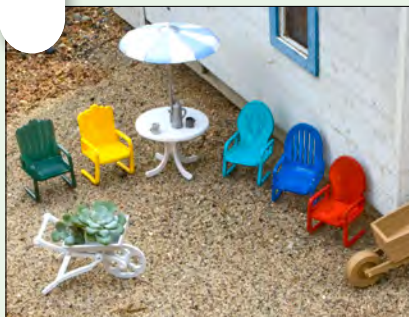
T1300 throttle; operations-only (no programming) throttle. Dimensions: 6" x 2" x 1" (excluding knob)

## PROS and CONS

**PROS:** Throttle knob has defined start and stop points; rechargeable battery via USB cable included; easy to use with one hand

**CONS:** Controls only 20 of 28 possible DCC functions; no belt clip or hook for hands-free carrying

## Online extras



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Registered users can download full-size drawings of Jack Verducci's outdoor furniture. Type "outdoor furniture" into the search box.



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# Detailing Hartland's rail motor car

by John Carl | Deer Harbor, Washington | PHOTOS BY THE AUTHOR

Self-powered passenger cars, or railcars, were one way that railroads tried to slow dwindling revenue from automobile-infatuated former customers. From the iconic Colorado & Southern's Galloping Geese, to the Doodlebug, to the sleek Budd RDC cars, many railroads used self-propelled cars.

Hartland Locomotive Works (HLW) makes a well running, two-motor version of a car loosely based on a St. Louis Car Company-EMD prototype. Inspiration for this project comes from the book *The Ma & Pa*, by George W. Hilton, which focuses on the history of the Maryland & Pennsylvania Railroad. Just inside the front cover is a wonderful line drawing of Ma & Pa's car N° 62, which gives an idea of possible additions to the HLW model.

I wanted to add stacks over the engine, which sits just behind the engineer. I used ¼"-diameter aluminum tube in the tight space behind the headlight. I made a radiator of styrene for the roof, with a small piece of screen wire to represent the air intake on the front. Again, space was limited for this addition.

Roof access was made possible by grabirons added just back of the freight door on one side. Also, a stack over the coal stove seemed appropriate.

I wanted a later version than the stock model evokes, so I removed truss rods and queenposts and added battery boxes, a gas tank with filler and cap, and an additional air tank. A rerailer completed



Four new smoke stacks adorn the roof behind the headlight on the author's motor car. To the left of the stacks is a new radiator.

underbody treatment. The interior of the unit is well lighted so I added passengers, engineer, and a conductor.

I'm a sucker for a good sound system. Reed switches for horn and bell went under the cab, where the front pilot and side steps block their view.

Additional detail could include a water tank over the bathroom. Access to the engine might mean additional metal doors on the side.

These cars did not stop the slide of passenger traffic at the time but they may have given birth to today's light rail. 🚂

Have you done a garden-railway-related project that can be described in a page? Send us 300-600 words with up to three photos and/or illustrations. E-mail [mhorovitz@gardenrailways.com](mailto:mhorovitz@gardenrailways.com) with "One-page project" in the subject line.



Roof access is provided by new grabirons aft of the baggage door. A new step below the baggage door has also been added.



Figures were added to enhance the lighted interior. New paint and weathering finished the job.





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