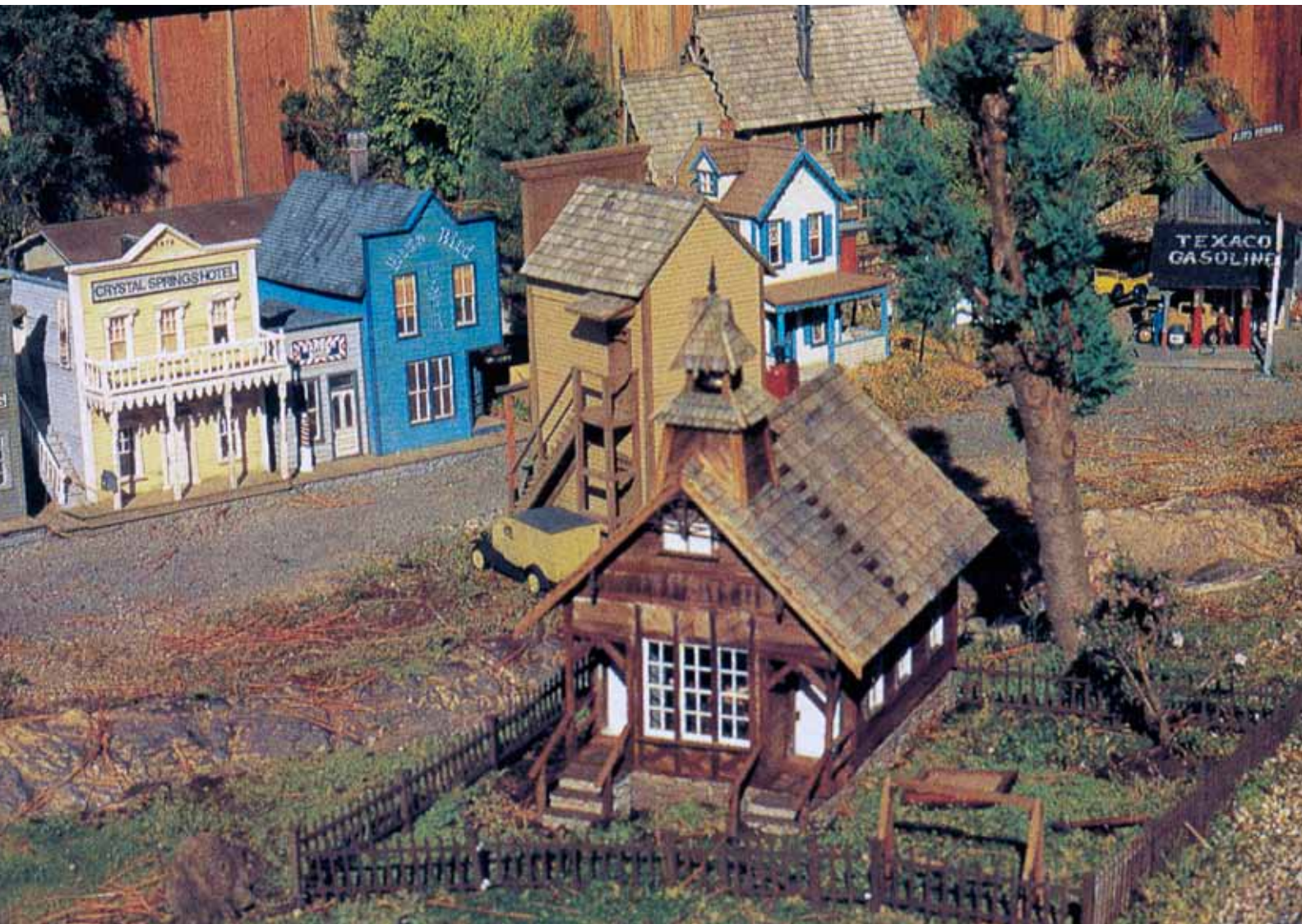


# Contents

<b>Introduction</b> .....	4
<b>Chapter 1</b> Plastic cement, glues, and adhesives.....	6
<b>Chapter 2</b> Tools .....	13
<b>Chapter 3</b> Kits .....	21
<b>Chapter 4</b> Scratchbuilding .....	26
<b>Chapter 5</b> Basic wood construction .....	31
<b>Chapter 6</b> Advanced wood construction .....	37
<b>Chapter 7</b> Doors, windows, and trim .....	46
<b>Chapter 8</b> Plastic fabrication .....	51
<b>Chapter 9</b> Building with Styrofoam and Precision Board .....	60
<b>Chapter 10</b> Magic Sculp epoxy putty .....	66
<b>Chapter 11</b> Casting resin parts for your buildings .....	69
<b>Chapter 12</b> Textured walls and roofs .....	77
<b>Chapter 13</b> Painting for protection and finish .....	84
<b>Chapter 14</b> Landscaping with model structures .....	90
<b>Chapter 15</b> Lighting.....	96
<b>Gallery</b> Detailing the Crystal Club Bar .....	102
Animating a steam-operated sawmill.....	105
Detailing Brown's Machine Shop.....	109



In this 1993 photo of my railroad, there are several types of real-life construction methods modeled, including board-and-batten, planked, novelty siding, and clapboard. Several methods of model construction are also represented—plank-on-solid, hardboard shell, cast resin, plywood shell, and styrene.

# Introduction

It could be argued that structures are one of the most important features of a garden railroad. Structures give a railroad purpose and make it come alive. Structures can also set the mood, location, and time period of the railroad. Even if you run trains frequently, you still look at the buildings more often than the trains. After all, a train doesn't run continuously, but the buildings are always in sight.

There are many ways to approach a building project. In some cases, there is no right or wrong way, but rather the way that works best using the tools you have. Another consideration is how

much time you want to devote to making a structure. Some may just want to populate their railroads with buildings in quick order, while others don't mind spending hours building structures one board or shingle at a time. I am going to show you how to do both.

This book is based on a series of articles that I wrote for *Garden Railways* magazine. I realize that potential readers will have various levels of skill and commitment. The material in this book, for the most part, is geared toward beginners, but I have also included some advanced modeling techniques.



May 13, 1989, celebrated the golden spike day of the Crystal Springs Railroad. With the exception of the sawmill, the structures were all kits from companies such as Boom Town, Korber, Pola and Greenleaf. Many of these structures would eventually be replaced by scratchbuilt and some kitbashed buildings (combined or altered kits).



This 1989 photo shows a combination of plastic and wooden kits.



My only scratchbuilt structure in 1989 was my sawmill. The others were kits, such as the Scan-Kit engine house seen in the background.



This 1989 view shows an excellent, long-lasting model kit, Pola's water mill.



A kit like Bobby's garage is another high-quality product that can certainly be a permanent part of the railroad.

outdoors, but it is simple to make, would help your layout quickly, and requires few tools.

Another simple box could be made of plastic with battens glued on and ready-made plastic windows. This is a long-lasting structure and can be made to look realistic. See chapter 8.

A built-up frame with boards and battens applied individually with a shingled roof results in a very realistic-looking structure and can last a long time. See chapter 6.

This same structure also could be made using cast-resin parts. See chapter 11. This is a way to build a lot of struc-

Part of the fun of populating your garden railway with structures is building each structure to represent the era and region you wish to model, and also building it as quickly or as carefully as you choose.

For example, the same building can be built with several techniques and materials to accomplish the same thing. One of the easiest and most realistic garden structures is a simple board-and-batten building.

This structure could be a simple box made of plywood or Masonite with battens and windows glued to it. This is not a structure that would last forever

tures quickly that will look both good and last a long time.

So just as there are many ways to construct a perfectly serviceable building, I hope this book will encourage you to consider many ways to accomplish your overall goals in your garden railway.

Most of all, I hope it will help you to realize you can do anything you set your mind to accomplish and have fun doing it.



► The Coldwater Canyon Sawmill is loosely based on the second sawmill of the Sanger Lumber company in the Converse Basin of California. I used selective compression to fit the mill into the allocated space. If I had built in full-scale size, this structure would have taken up half of the layout. My goal was to capture the flavor of a large mill even though it was in a small space. This structure is completely scratchbuilt, including the windows. It is plank-on-frame construction. Planks are nailed and the battens are glued with Titebond III waterproof wood glue. The roof is wood sheathed and covered, with wet-dry sandpaper cut into strips to simulate roofing paper. The wood was left untreated so it would weather naturally.



In choosing what to build, keep a few things in mind. What is the purpose of the structure? Just as in designing your railroad, you have a specific theme in mind when designing and ultimately placing your model structures. What do you want the structure to represent? A section house can be placed along the right-of-way where there are no other buildings to suggest an isolated area. Other structures, such as cabins, can indicate a temporary settlement or a place that is used seasonally. On the other hand, a formal building like a bank, train depot, or school would indicate it is part of a permanent settlement.



Most garden railroads have a limited amount of space for buildings, so you should give some thought to how to use your space. On my railroad, I have designated “no-build” spaces, and other spaces for towns. I also have a few outpost and temporary settlements.

I like to find my subjects in the full-size world whenever possible. Modeling structures from reality will give your railroad a unique look, and research is half the fun of model building. Working within a specific theme or time period offers the challenges of learning about a certain era and its surrounding history. You become a historian of sorts. I take my camera along on my travels so I can photograph interesting buildings. If you are modeling contemporary structures, a trip into town or out into the country with a camera is all that’s required.

Some of the nicest compliments I receive about my railroad are when people tell me my town reminds them of some place they have been. My towns are not models of specific places, but I model full-size buildings, so it gives the town the feel of authenticity.

Other sources of subjects are books and magazines. I have collected a large number of books on Victorian houses, ghost towns, local history, and styles of architecture. These have been a great source of information and inspiration.

One of my richest resources has been *Narrow Gauge & Short Line Gazette*. This magazine features photos and plans for the types of structures I like to build. *Up Clear Creek on the Narrow Gauge*, by Harry W. Brunk, is a compi-

lation of several articles that he wrote for the *Gazette*. I have used the plans in this book to build several structures.

Though I prefer to build structures from the real world, you could use model kits or photos of existing models as a basis for large-scale scratchbuilt structures. Sometimes an HO or N scale kit is inexpensive enough to buy just for the plans.

#### Plans

Whenever possible, I like to build models to scale, though this is not my main concern. I try to build things in proportion so that they look good together. I consider myself a “scene builder.” I include enough detail to make my structures believable. I happen

# CHAPTER 4

## Scratchbuilding

Learning how to scratchbuild structures will open up a whole new world for you. While kits have much to offer, there may come a time when you want to build something special. You may wish to re-create a structure from your childhood, like an old schoolhouse, a summer home, or a family store, or you may want to add an industry for your railroad to serve. A scratchbuilt structure personalizes your garden railway.

The author built this plank-on-frame sawmill for Charlie and Pam Allen. The challenge was to fit a large facility like this in the area available. The complex had to be compressed yet still maintain the character of the original inspirational prototype.



# 7 CHAPTER

## Doors, windows, and trim

This photo shows a good example of how only three structures can suggest an entire business district.

Every structure has at least one door and, in most cases, one or more windows. Doors and windows help give a structure its personality. A Victorian house, for example, has highly ornate windows, whereas the windows of a miner's shack are likely to be crude.

A large number of plastic windows and doors are available commercially from hobby shops or mail-order suppliers. Grandt Line Products, in particular, has a large selection.

The company's windows are clean and crisp, and include plastic glazing. Commercial windows are a good choice for beginners, because making your own windows can be time consuming.

Still, it is good to know how to make windows in case you want to create a structure with a unique style of windows and doors. The most basic method works well for structures that are seen from a distance.

### Simple windows

To make a simple window, cut an opening in the wall and make a window casing or frame around it. The casing can be as simple as a plain wooden border or as elaborate as a Victorian window adorned with gingerbread. At this point, you have a window without glass or mullions.

Cut a piece of clear acrylic slightly larger than the window opening. A margin of  $\frac{1}{4}$ " to  $\frac{1}{2}$ " all around is adequate. For most types of windows, use clear acrylic, but for a special effect you could use tinted or non-glare acrylic, which is slightly translucent. If you are comfortable working with glass, you may substitute it for plastic in your windows.

Apply automobile pinstriping tape to the acrylic, horizontally and vertically as desired, to simulate mullions. Attach a tape border to form a frame around the mullions. Apply silicone to the edges of the acrylic, then insert the window to the interior window opening (**fig. 1**).

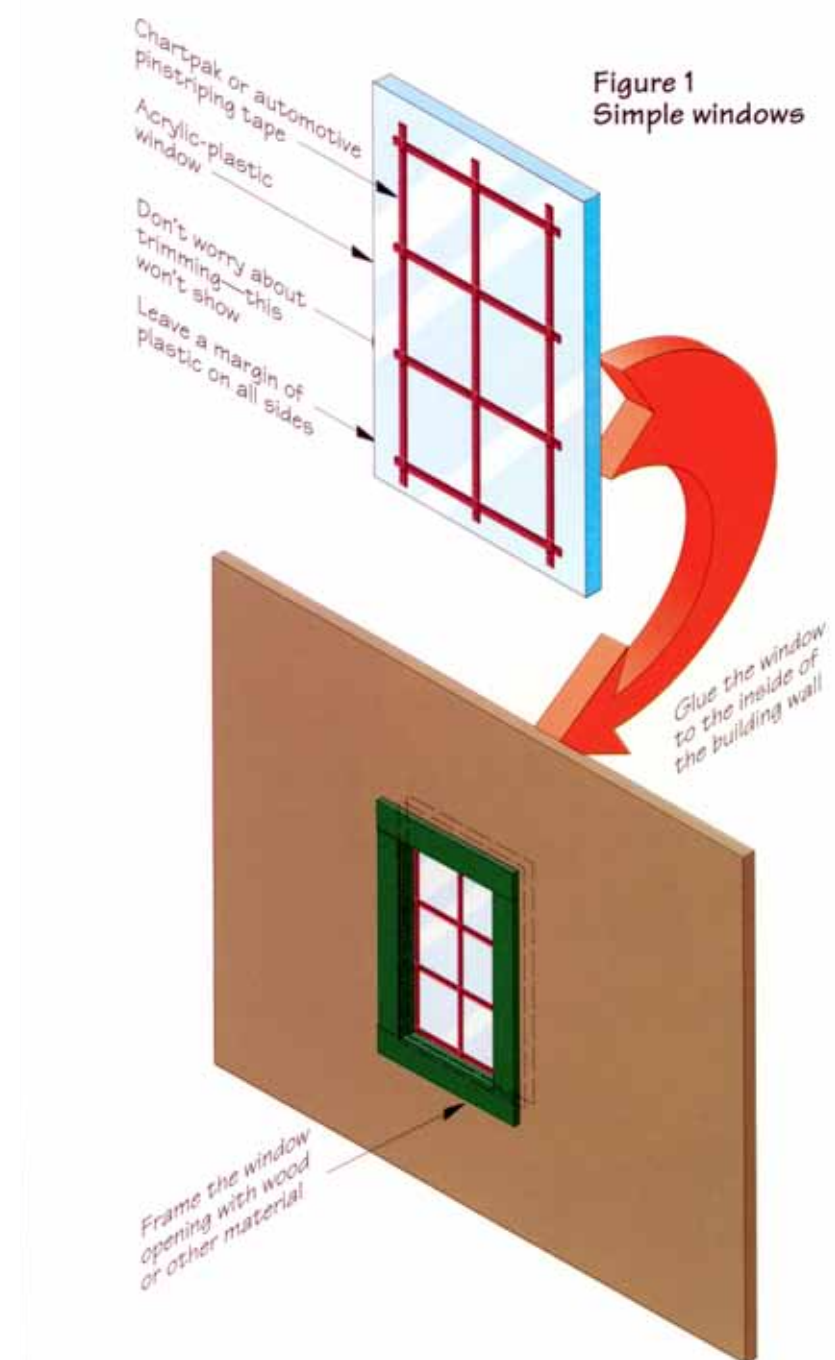
I chose wood in this application because it is easy to work with. Be aware that wood has a limited lifespan outdoors. Don't use woods like basswood. Choose wood that weathers better, such as redwood or cedar.

### Simple doors

Make a door using a similar method as the window. Cut a door opening into the wall and frame it. If you want a glass door, apply clear acrylic and pinstripe tape as described above. To simulate a wood-paneled door, use any



A wide variety of cast windows is available from Grandt Line.





# 10

CHAPTER

## Magic Sculp epoxy putty

Pauline's Tea House is patterned after a real storybook-type building in Carmel, Calif. The simulated thatch roof was shaped out of Magic Sculp.

Magic Sculp can be used for a variety of structure projects. It is an epoxy putty with two parts combined in a 1:1 ratio. You knead it like dough, then work the material like modeling clay. You can shape it by hand or with basic sculpting tools to create almost any shape. The material stays pliable for about an hour before it begins to harden. You can work the material anytime during the curing period and even after it is cured. The cured material will become nearly as hard as rock and, when painted, is weatherproof.

During the early curing stage, you can use water to shape and smooth the material, similar to the way you would work modeling clay. You can work the material into any shape or texture—and any size. The material's grain is fine, and once cured, the product will not shrink or crack.

Magic Sculp differs from products like Sculpy and Fimo, which are polymer clays that must be cured in an oven. Magic Sculp cures at room temperature. You don't have to worry about fitting your project in to an oven. It cures by chemical reaction, so it will cure even under water.

The working time depends on the temperature. It cures faster in warm weather than in cool weather. In almost any condition, you will have a minimum of an hour of working time. You can add new layers to cured material, so you can work with small amounts at a time if you are making a larger piece. If you choose to add a new layer to a cured piece, I suggest you make a series of holes in the first part to give the new layer more surface grip.

Magic Sculp will stick to most plastics and wood, and I have used it to bond parts together. When I wanted to install Accucraft knuckle couplers on my Bachmann cars, I used Magic Sculp to attach the draft gear. The Magic Sculp preformed two functions—it became the shim or mounting bracket for the draft gear, and it bonded the draft gear to the car. I did install one screw, mainly to hold the coupler together.

Magic Sculp can be stored indefinitely. The manufacturer suggests softening unmixed material in the microwave before working with it. I normally use it out of the container at room temperature. Heated material will cure faster.

If I need an item that's an odd shape, I use Magic Sculp. On Pauline's Tea House (a storybook-type structure), I needed a replica of a simulated thatch roof. The full-size building had an interesting curved shape covered with wood shingles. I made the basic roof out of styrene and hand-molded the curved section out of Magic Sculp. To ensure adhesion to the styrene, I roughed up the edges of the styrene to create some tooth. I applied aluminum



Here Magic Sculp camouflages a sprinkler. The riser pipe was covered with Magic Sculp, then made to look like a dead tree.



The seven dwarfs' cottage is an old structure. Originally, it had a straw roof made from a broom. That roof was replaced with one made from Magic Sculp.