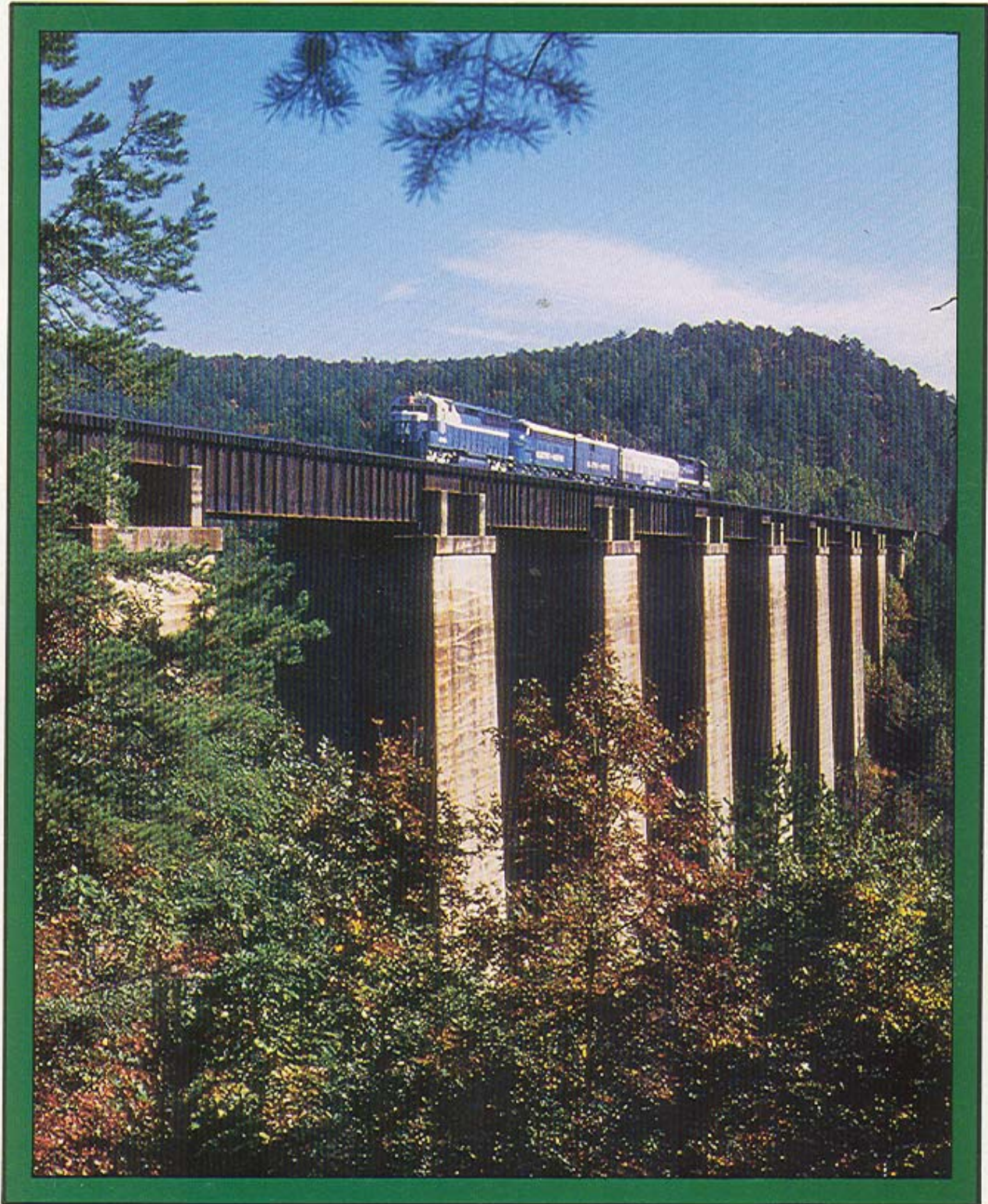


MAINLINE

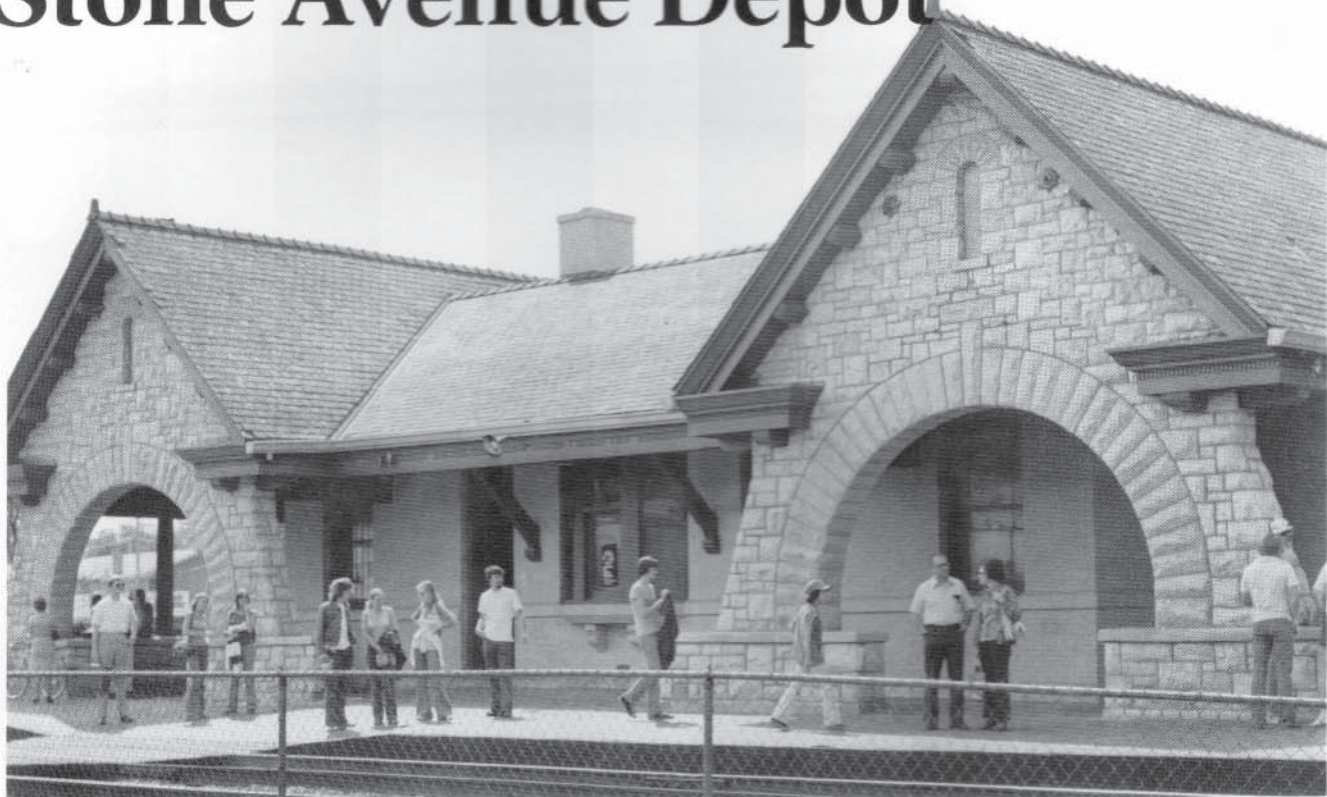
July 1984
MODELER

N&W 2-6-6-4 Foldout • FEC E-Units • Modeling La Grange Station



\$2.75 Higher in Canada

Modeling the Stone Avenue Depot



Bruce Meyer photo

Part One: A Stonework Technique

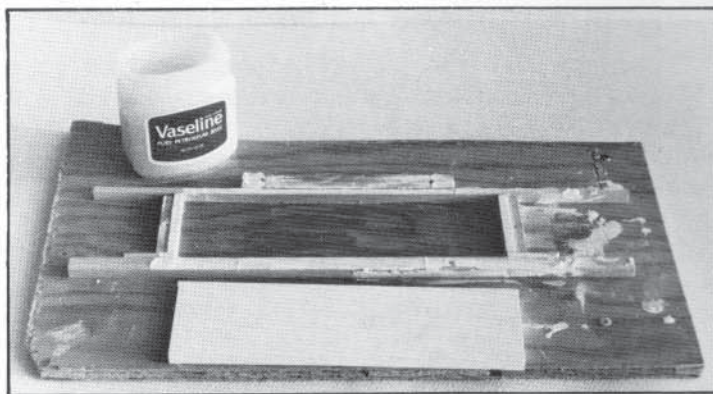
by Clint Crow

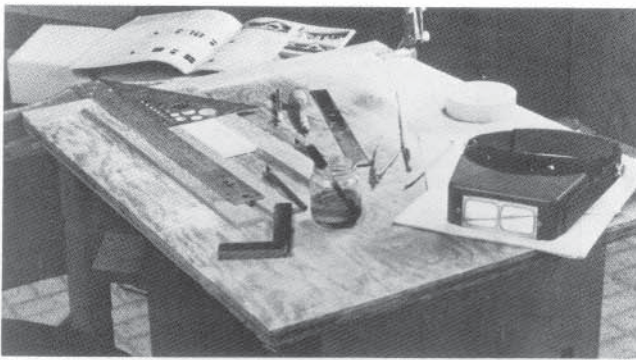
When I first read Jack Work's article on stonework and masonry in the charter issue of *Mainline Modeler* and *Models by the Millions in Model Railroader*, September 1961, describing the use of silastic rubber molds to reproduce model details, I knew they would prove invaluable. If only I had seen them sooner! The use of silastic rubber molds has opened up techniques that make practical models formerly set aside as too difficult or time consuming to pursue. It takes 4 to 24 hours of labor to produce a single hand-scribed pattern, but once complete, the work can be reproduced both simply and inexpensively in just a few minutes. With this in mind, the initial expense of the silastic rubber (\$14.00/lb.) is quickly offset. I am also

free to experiment with the castings, which is something I wouldn't dare do with originals or commercial castings from a kit. Painting techniques, weathering, kitbashing (wallbashing) are all easily at hand. I can even venture to use castings to produce new patterns for molds. There are a multitude of possibilities!

My new found skills are just now allowing me to undertake such projects as the stone and brick structures seen here. A year ago, I would have thought it to be an overwhelming task but last fall I began experimenting with scribing brick courses into Hydrocal blocks and blank walls.

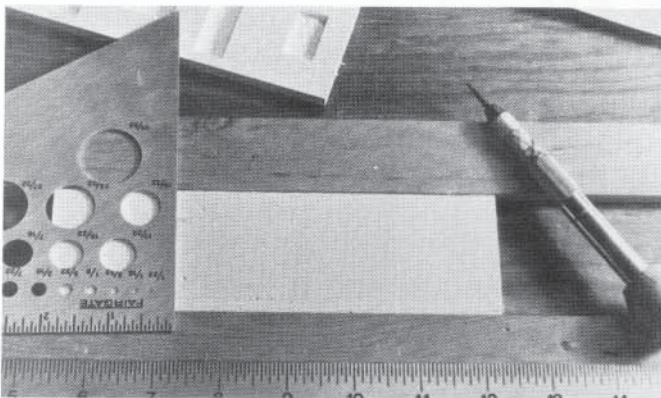
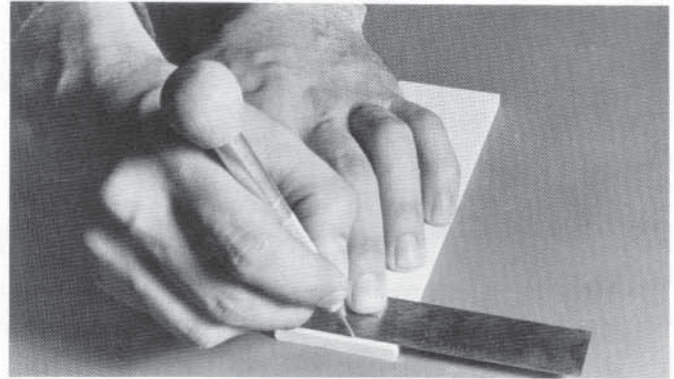
Hydrocal blanks were cast for the station wall masters in a simple mold. A plywood base had one quarter-inch framing applied with two even-width spacers placed for the long wall and then moved in closer for the shorter end walls. Vaseline was lightly spread over the entire mold for easy release of the casting. Following pouring of the Hydrocal, the surface was scraped with a metal edge to assure constant thickness and a smooth surface. After pouring Hydrocal into the mold, air bubbles must be released. I used a saber saw without the blade, and mounted against the work surface to provide the vibration. The Hydrocal should be a rather soupy mixture, fairly thick yet still runny. You may want to experiment to find a consistency that you like to work with. Any wood grain or other pattern picked up on this blank can be removed by scraping the surface with the flat edge of a razor.



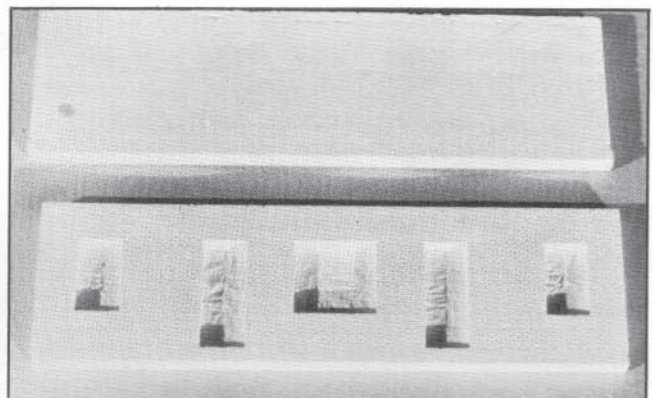


When the blank was dry (at least an hour after pouring), I created a work space with a 1/4 inch strip used to raise the T-square guide and strips of equal thickness used to contain the work piece. A good source of light was of great benefit. While you're about it, it wouldn't hurt to set this up where other diversion is also available . . . perhaps a TV. This won't be a fast job!

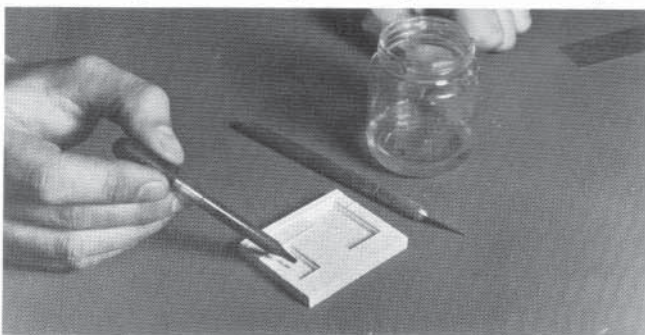
The horizontal mortar lines were marked on the blank; for brick three inches apart is the proper spacing. The scribing tool can be used to locate each of these marks or, if you prefer, you can find a sheet of equally spaced lines at an art supply store that will save the effort of marking the individual pieces.



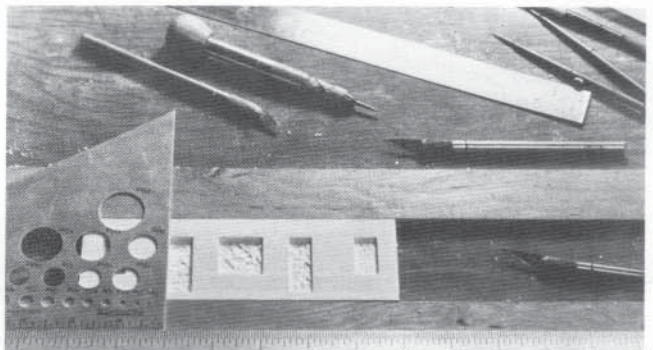
Next, with the window and door openings marked on the blank, I scribed the horizontal rows, but not across the window or door openings. I then marked the location of the vertical rows for the bricks spaced at eight to nine inches apart



and scribed those lines. This task is a bit tedious, but when complete, you can make as many castings from this master as you desire.



In order to remove the material from door and window openings, I placed a bit of water on the Hydrocal to somewhat soften it. Next, with an X-acto knife, I cut the basic opening, moving it slightly to one side or the other if necessary to match the edge of a row of bricks. I took the material out just a bit at a time, cutting along the edge first and then



making a lattice of cuts in between and always using the triangle over the brick I wanted to retain so that if the knife slipped it did not damage the master pattern. To facilitate removal of the material in the window and door areas, an X-acto #11 blade was broken off and ground to a chisel tip.

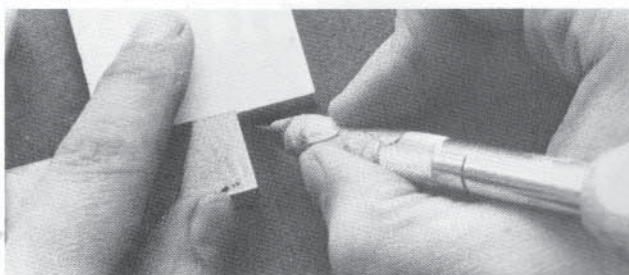
The initial results were crude but with perseverance, the quality has steadily increased. My previous scratchbuilding had been limited to wooden structures and any stone or brick work would incorporate only available commercial brick paper or embossed stone. The Jack Work article inspired me, however, to construct some stone walls and with further inspiration from such kits as Thomas Yorke's, brick construction naturally followed.

you scale bricks the size of cinder blocks, you may get cleaner lines and be able to paint them red; however, all that you will have is red cinder block! Using your scale ruler and creating accurately sized brick will be well worth the additional effort. Adding header courses or Flemish bond can only enhance your work. Don't forget the rubber molds; they'll recapture your day's efforts time and time again.

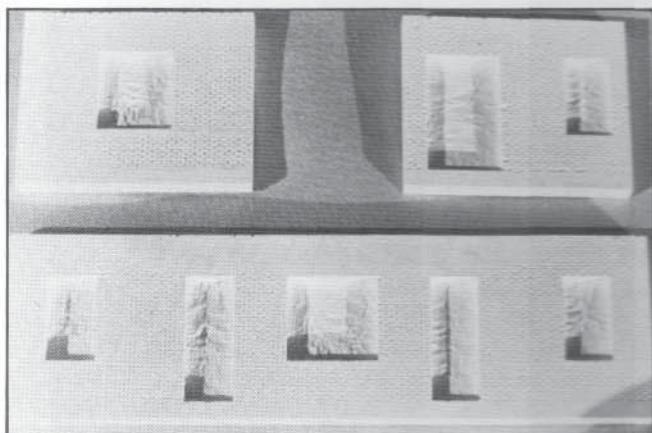
Be aware that proper scaling of brick is imperative! If

In preparation of pattern work, I looked over the station drawings (see pages 48-52 in the February 1984 issue of

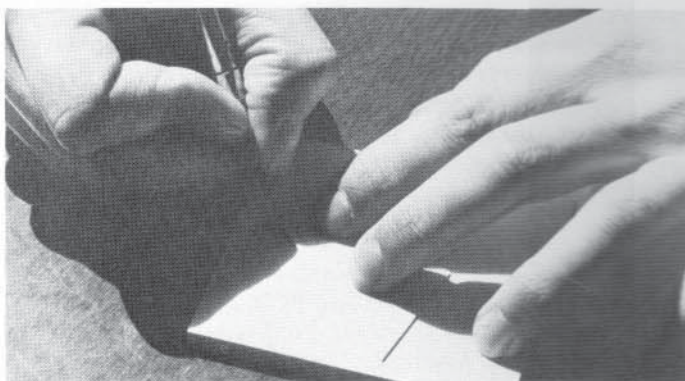
In order to carry the brick lines around the corner, the edge of a square was placed along the end of the blank and used as a guide for scribing.



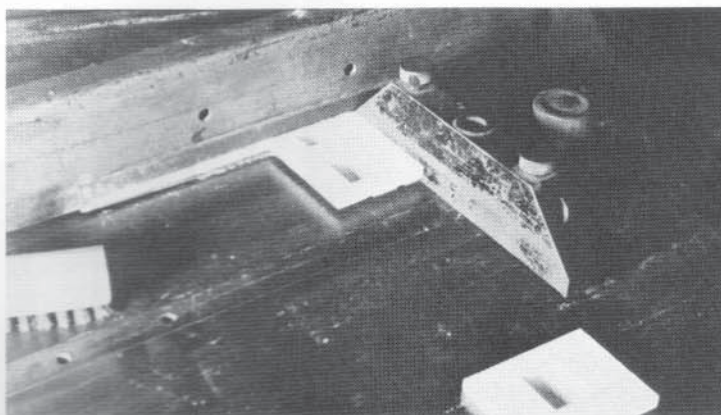
Remember that you're preparing masters that will be used to prepare molds from which the actual parts will be made. Additional pieces such as belt rails, window sills, or window framing can be added once the scribing is complete. Scribing generally requires at least two passes in order for its depth and appearance to be acceptable. This entire procedure is one that takes a "touch." Your first part may not look great, but following parts will be better. Before long you'll have the procedure mastered and be turning out beautiful models and eyeing 18-story buildings!



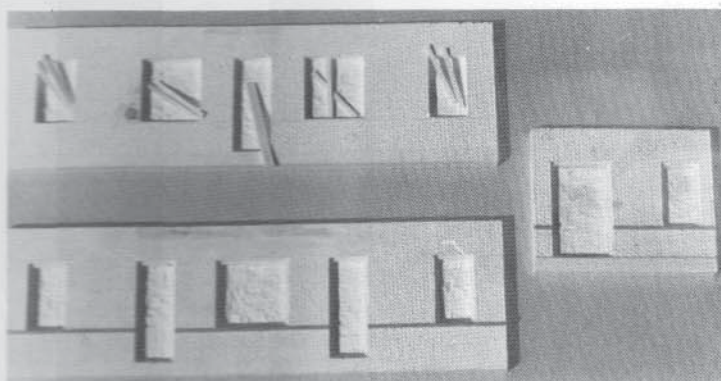
When the bricks and window and door openings for the sides and ends were completed, I tried the stone arch. Cast a Hydrocal blank of sufficient size, then lay out the arch and scribe the outline using a straight edge and your scriber.



Mainline Modeler). Window and door size should be compared to available commercial parts. In my search, I found door frames available from Grandt Line but the windows would have to be scratchbuilt. Their placement was considered because I prefer to have their edges at the end or



To square the edges of the individual wall segments, a file was placed against the fence of a table saw. The wall segment was then placed against the "T" or mitre guide and scraped along the file to assure that the edge was both square and perpendicular. Another tool that would do the same job is the Northwest Shortline sander. Clean the file off using a wire brush or file cleaner and do it often.



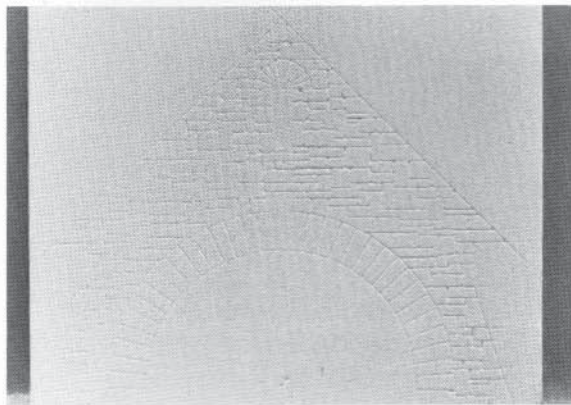
The framing for windows and doors can be made of wood or styrene and is applied before silastic is poured over the masters. The inset of the windows is going to have a lot to do with the feel of the model — too shallow will make it very model like; too deep will look wrong also. Be sure that the depth of the final window is similar to the prototype.

at half a brick. A layout sketch was drawn noting the opening dimensions, trim, hidden portions and overall dimensions. Joints were also considered at this point.

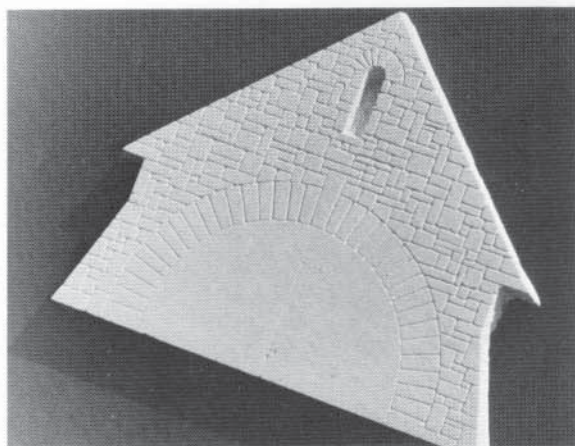
From the sketches, ¼ inch thick Hydrocal blanks were cast. I used Hydrocal because of its strength; when sealed it's very hard but can easily be carved with a knife. Even when hard set, it can be softened with a few drops of water. Simple wood dams were constructed on a flat pine board, Hydrocal mixed with water and poured, tapped to release the air bubbles, and the back smoothed flat. Once set, the blank was removed and the surface smoothed with a razor blade to remove the wood grain texture.

Using a T-square and metal triangle, the openings were scribed onto the wall followed by the horizontal brick courses at three inch intervals. My scribing tool was a small prick punch mounted in an X-acto pin vise. Vertical lines followed next with the brick spacing measured at nine inch intervals on the lowest course. The staggered alternate rows were then scribed using the triangle. The brick walls unfortunately had to be rescribed to obtain proper depth.

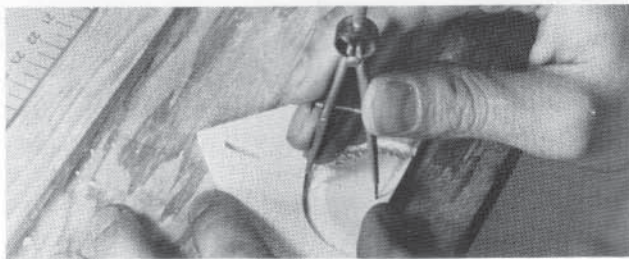
Using a compass or a pair of dividers, I laid out the semi-circular opening and the top side of the arch as well. I then scribed the stone with multiple-pass scribing. Use the stonework on the drawings and in the photos as your guide for spacing and the size of individual blocks. The small arch was laid out with the circle template and lines scribed using that same template.



I trued the edges to be sure that they were perpendicular to the outer surfaces and straight and then removed the material from the openings. The upper opening was quite narrow and because of its upper curved edge, I removed the material carefully.

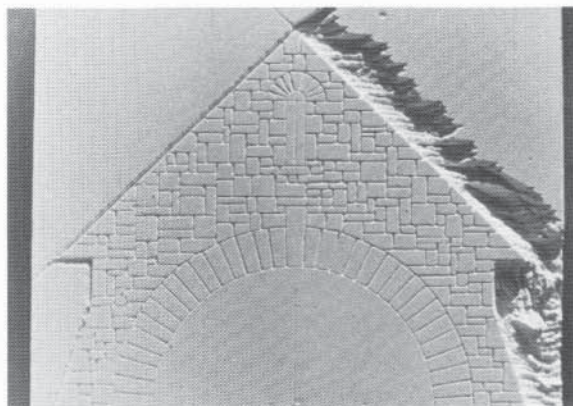


To trim the semi-circular opening, I used dividers to provide the semi-circular cut and then chipped away the material toward that cut. With care and patience you'll get a very satisfactory opening.

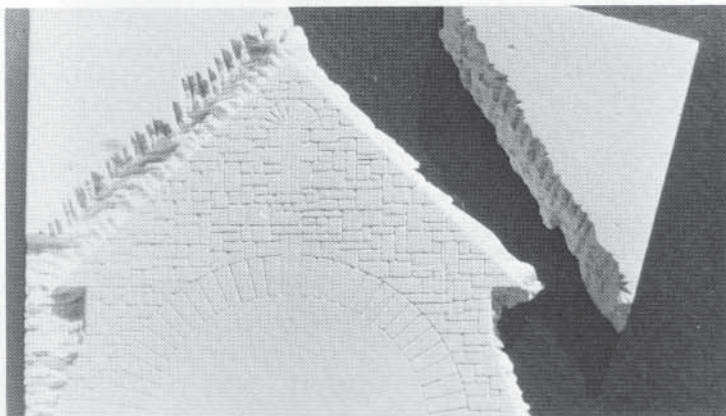


Pushing too hard the first time through caused chipping so that the lighter lines had to be retraced.

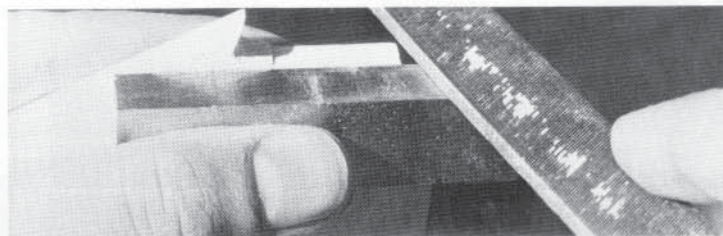
Openings were then cut out for the doors and windows with a straight edge placed over the wall, covering the bricks to protect them from accidental cutting. A #11 X-acto knife was then used to cut out the hole. The edge was first cut by using the straight edge and then by cross



With the stonework detail in place, I scribed the outline a bit deeper and then proceeded to remove the material around the part.

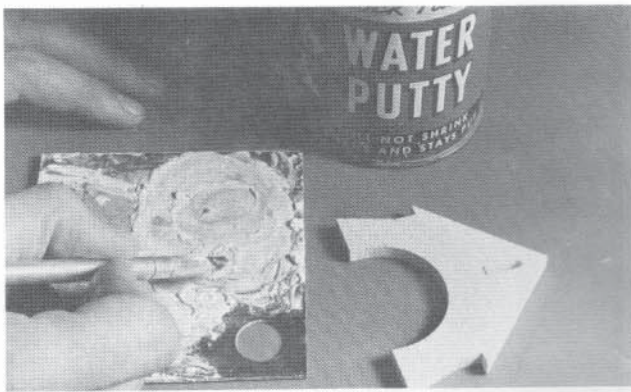


When the Hydrocal was cut away almost through its 1/4-inch thickness, I broke away the outer scrap portions. Be sure that the corners are not vulnerable when you do that breaking, however. Inside corners were a bit difficult requiring a lot of care and patience. The outside straight lines were easy.

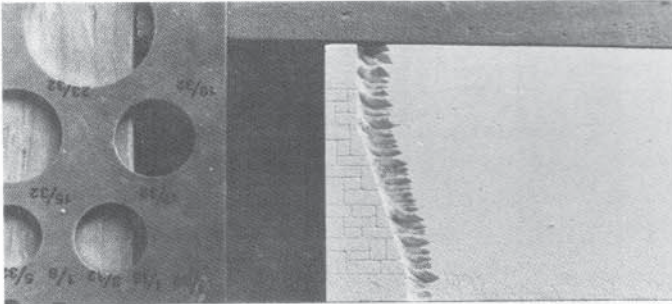


I trued the outer edge by placing a right angled block alongside the part and used this as a guide for filing the outer surface.

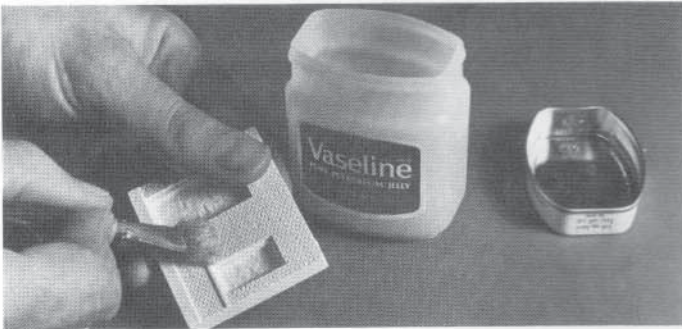
hatching to remove the opening a layer at a time. The object is to remove a little at a time but be sure to control it, for too hard a cut can break the wall or cause the knife to slip. I don't cut all the way through the walls when I'm planning to make molds but instead cut to approximately 2/3 depth. I prefer this so that when I'm casting fragile walls, the extra plaster will help strengthen them. When window castings are to be used, the opening should be checked for proper fit. Sometimes a lip is required to retain the window molding which can be achieved either by carving or by attaching wood or styrene. One must also think of setting them at the proper depth. I had originally put them at approximately 6 inches but later found this to be too



Before the mold was made of the arch casting, the sill for the upper window had to be added. Durham's Water Putty was used to make that additional bit of detail.



The stone uprights were cut from a siding blank and then the edge chipped away until the part was isolated and complete. An additional lip was added to the uprights at the bottom and also to the railings before the master was encased in silastic. Any cracks or imperfections were repaired with water putty before the molds were poured.

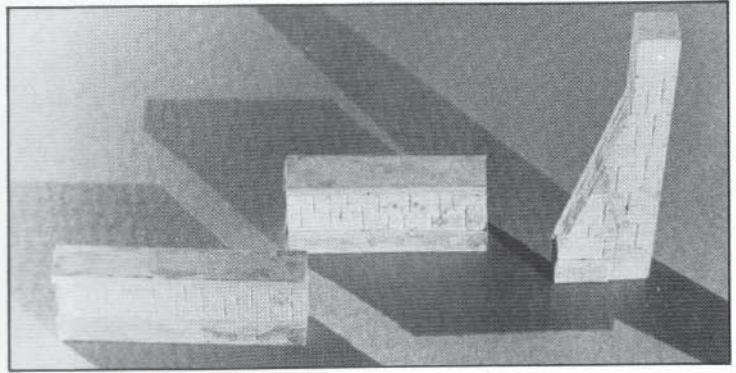


Once the sanding sealer was dry, which doesn't take long on this porous material, the master was coated with Vaseline, with a small amount rubbed on the part and then a brush used to spread it thoroughly.

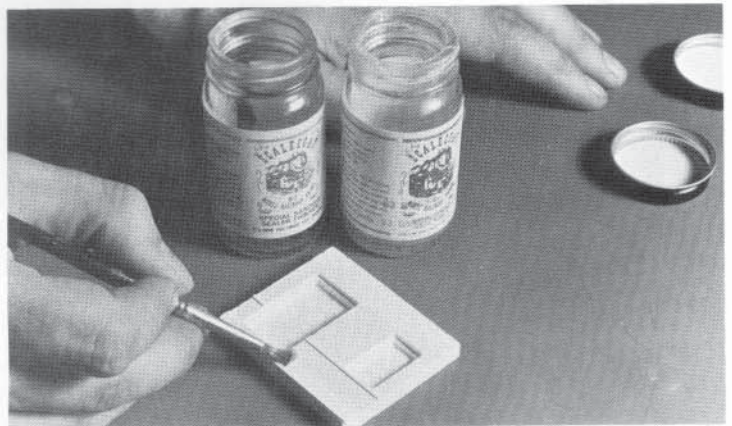
shallow and had to carve them down to approximately 12 inches.

The squareness of the corners was checked next. I used a machinist square but have learned that a table saw can also be helpful. I placed the wall base against the mitre gauge and a bastard file against the rip fence, drawing the wall past the file several times until the proper finish was obtained. This was much easier than by hand as well as very accurate. Note that the file will need to be cleaned often with a wire brush. When the brick was carried around a corner, I used the thick end of the machinist square, placing both it and the wall on a flat surface and then scribing the lines using the end of the square as a guide.

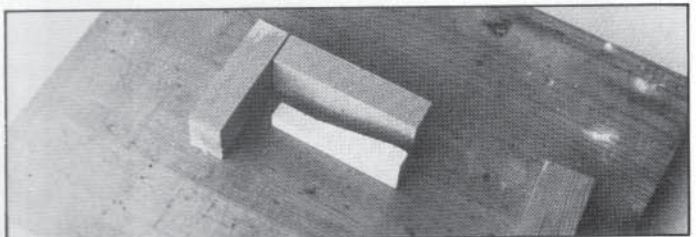
The end railings were constructed in a manner similar to the sides and arches with individual segments made to bridge the gap between uprights.



Before a master was ready for silastic to be poured, the pattern had to be sealed. I used Scalecoat sanding sealer giving the part a reasonably liberal coating of the sealer.



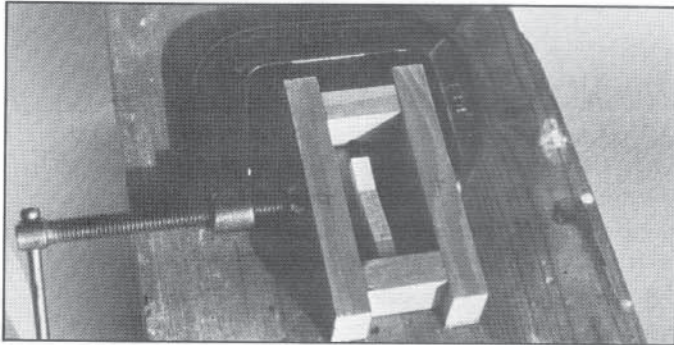
For the vertical stone columns, $\frac{1}{2}$ x $\frac{3}{8}$ wood pieces were used to create a dam around the part.



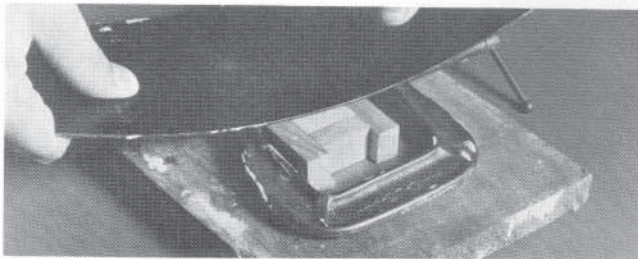
The stone walls were layed out in much the same manner. About half the stones were lightly texturized with lines, dots and dashes, cutting and rounding edges with a knife, and then scribing texture lines. I also used Durham's Water Putty to add texture to the surface and to build up individual stones, making a nice sandy texture. With other stonework you'll probably prefer to emphasize the texturing. The arch opening was removed by scribing with a compass and then making cross hatch cuts in the same manner as for the window openings. The arch was double sided and required a two piece mold that was filled from the bottom. The front and rear have a different stone pattern so they may be reversed and thus the same casting used for all four arches.

Final details, both wood and styrene, were added with white glue and then bubbles, nicks and goofs filled in with the water putty. Once the final details were complete, the pattern was ready to be used to make a mold. The patterns

The configuration of the dam was unimportant as can be seen from the previous photograph. Most anything that would retain the silastic was acceptable. A small diameter piece of plastic was added to the master to provide an air escape when pouring the Hydrocal for the finished castings. This part had a fully encased silastic mold; therefore, an air escape became necessary. The dam can be either held in place with C-clamps or nailed down if you choose.

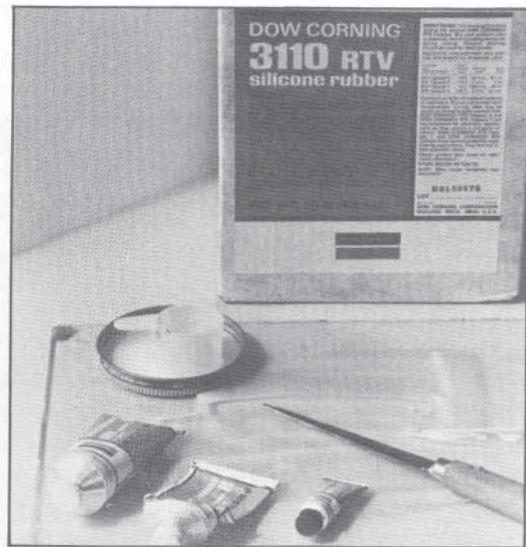


A smooth sheet was applied on top of the silastic so that the rubber dried with a perfectly level surface. Glass or metal can be used for this purpose.



were sealed with Scalecoat sanding sealer which dries before you clean off the brush. No waiting!

To help release the pattern from the mold, I covered the pattern with a small amount of Vaseline petroleum jelly. I used my fingers and an old brush giving it a light coat. To make the mold, I used Dow Corning RTV 3110. There are four different catalysts available, each taking a different amount of time to cure. Working time also varies and the proportions can be increased or decreased to speed up or slow down the cure time. I used the fastest, catalyst 4, which gave me only four working minutes but cured in less than an hour. I have also used the others and would



Dow Corning 3110 RTV silicone rubber was placed on a sheet of glass and with a bit of hardener added to it. The amount and type of hardener used controlled its setting time. Missing on the mixture would just simply vary the time required for the material to set. The two parts were thoroughly mixed on the sheet of glass and then the silastic transferred to the part to be encased. A spatula was used to move the silastic to the part.



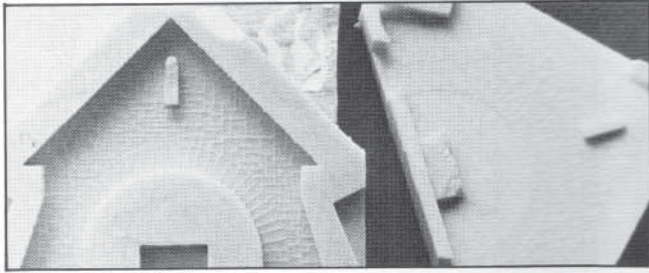
For parts that were to be fully encased such as the stone columns, the upper three quarters were included in the first mold and the bottom surface included in the second. The first mold was notched so that when the second was poured it registered properly and easily. The surface was coated with Vaseline spread thinly. The dam was then raised with spacers to a new height allowing the second coating of rubber to be poured.



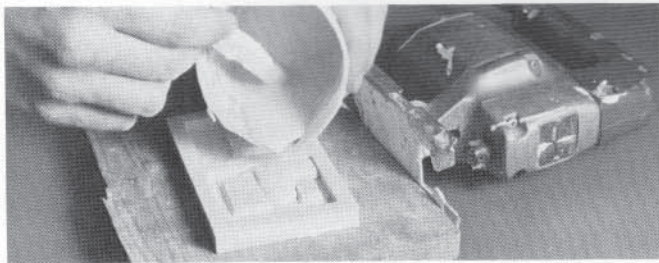
suggest a longer working time for those who are trying silastic molding for the first time. Experience will guide you here! The silastic rubber and catalyst must be mixed thoroughly or pockets of uncured rubber may remain and mar, if not ruin your mold.

A dam was built, (a stock of 1/2" x 3/4" wood is useful), nailed to a wood base and the form coated with Vaseline. I did not glue my patterns to the wood but instead used a small dab of Vaseline to hold them in place which seemed to work well. The rubber was mixed with the catalyst and poured over the pattern. Excesses can be saved and

For the stone arch elements a two piece mold was developed. In these photos the registration elements can be easily seen.



When pouring the mold, you're always working against time as the Hydrocal sets rather rapidly. Be sure that you tap the mold a number of times and relatively vigorously to free any air bubbles. Any air bubbles that remain on the part can either cause the loss of that casting or cause you some repair time with Durham's Water Putty.



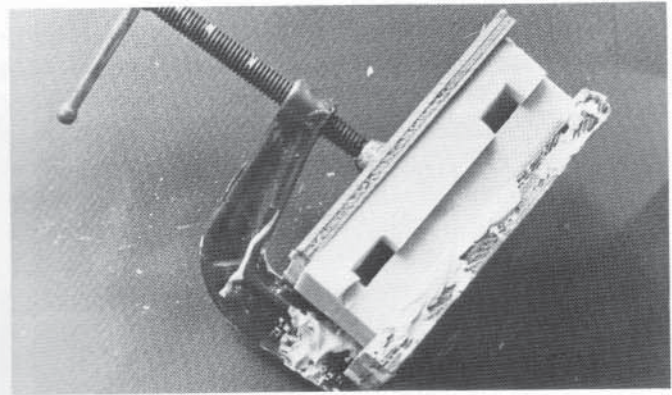
When pulling molds from the part, be sure to do just that. Do not try and pry the part free; instead, flex the mold ... that's where the flexibility is. Otherwise you're likely to end up with a broken part.



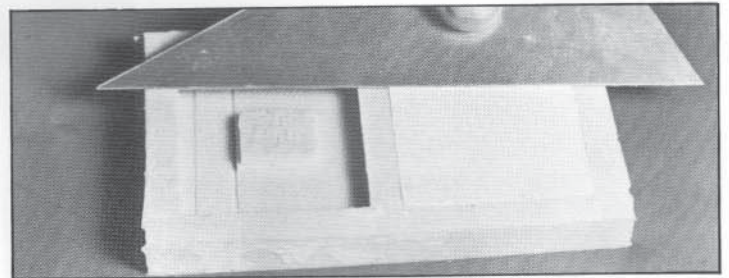
later cut up and dropped into new molds to fill excess space and if kept clean the pieces will stick to the new rubber.

Air bubbles must be released from the surface of the pattern; tapping on the base will accomplish this. I used a sabre saw without the blade as a vibrator which insured that the pattern would be bubble-free. The back of the mold must be flat so I used a piece of plastic, keeping it flat and in place by placing a drill press vise on top of it. Any irregularities in the outer surface will bow future castings. The cured mold was removed from the pattern with care taken so that the pattern could be saved (some of them took a whole day to produce and are of gem status). If the mold is damaged, however, a new one can be made from the original pattern later on.

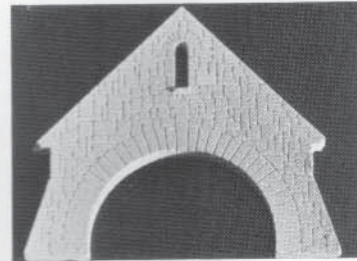
Casting was fairly simple. I used Hydrocal here for a number of reasons: its strength, quick setting time, cost (100 lbs./\$15.00), and its ease. The molds were first misted with a spray bottle mixture of water and detergent with the excess shaken off. (Spray N' Wash works well). The Hydrocal was mixed and poured, with the mold then vibrated to release the bubbles. Some molds never seem



The two halves of the stone arch were clamped together between thin pieces of plywood in preparation for pouring Hydrocal into the mold. The surface of each half of the mold was first given a misting with water and detergent to be sure that the Hydrocal would flow into all segments easily.



The partially set Hydrocal was scraped level with the mold, giving a flat surface.

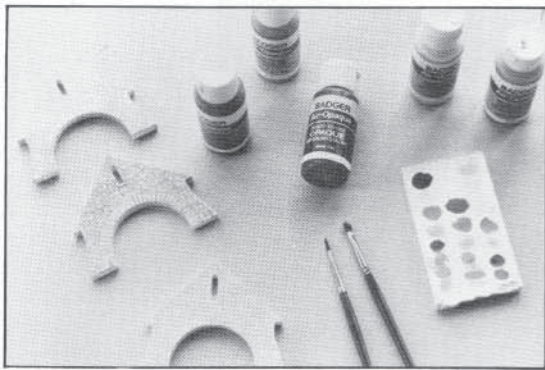


The stone arch casting already begins to have the flavor of the La Grange Depot. Your effort is now being rewarded. One problem, however, occurred in that the tip of the eaves stone-work had not filled properly and had to be repaired.

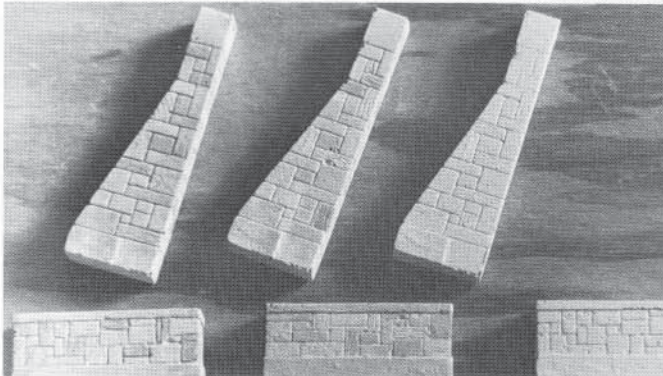
to have any air bubbles while others almost always have the little devils! Generally, the flat molds do well while the deeper ones do poorly. The back was then smoothed flat on an open mold and the casting allowed to set. The casting can be removed in approximately 10-15 minutes.

The castings must be allowed to harden a day or two before they can be painted and used. Flash was then removed and joints checked for proper fit. The back of the front and rear walls were filed so that side walls mated flush.

Painting was an exercise in experimentation! (Mainline Modeler had previously published a color photo of the depot which served as my guide). Several pigments were tested: water colors, Floquil paints and stains, Badger Air-Opaque and artist oils. In testing, I was looking for not only hue but ease of application, consistent results, depth, quality, and weathering. I began with colors from the tube or jar and applied them to a test panel of scrap Hydrocal-full strength, thinned in half, thinned a lot, black added thinn-



With the parts actually made from molds, it was easy to cast a few extras so that I could play with coloring and weathering techniques. It was of no concern if a part was ruined, for additional parts were made easily. Two coloring materials were used for the project. Air-Opaque was used to give the base color and to bring individual stones to a little bit deeper or different color.



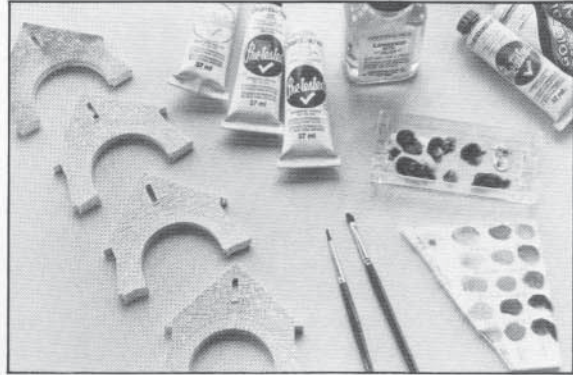
The stone columns are shown from right to left in blank, undercoat, and finished coloring. The railings are similarly placed: blank, undercoat and finished coloring.

ed, and white added thinned. From there, you can obtain a good feel for color possibilities. The next step was to choose the closest color and then test possible modifications. With the oils, Burnt Umber was close to what I wanted and by adding one part Raw Sienna to eight parts Burnt Umber, a satisfying color was obtained. The same method formed matching colors with other paints. The final test was to apply the stain to spare walls of the actual structure.

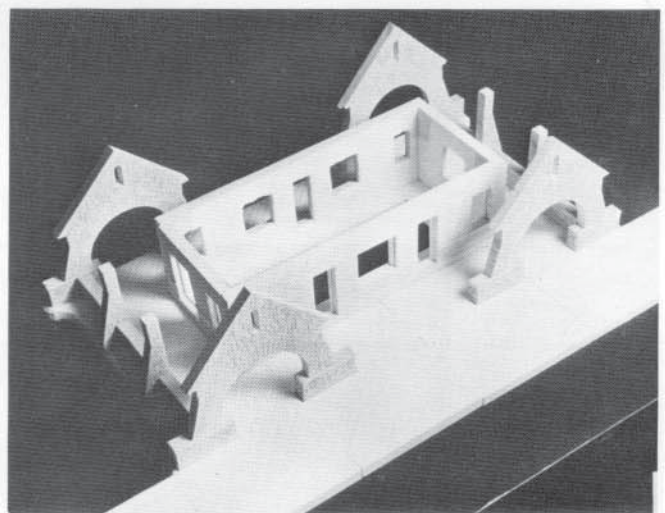
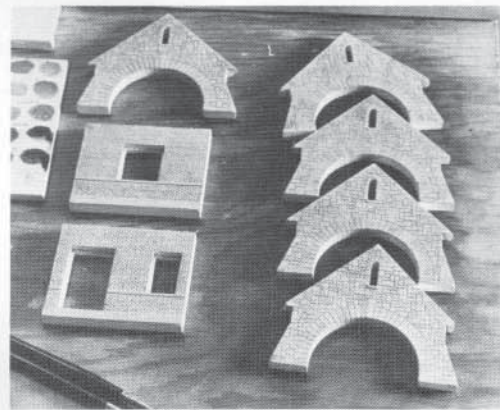
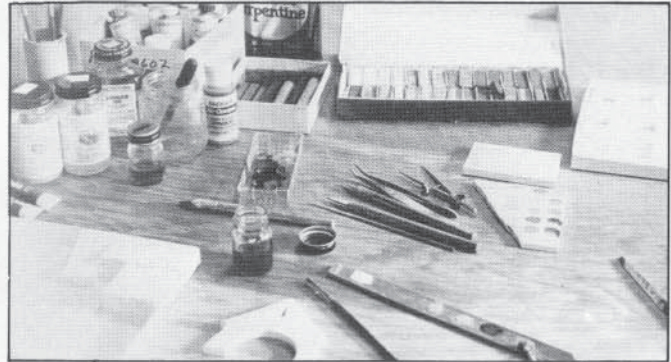
My decision was mixed! The Badger Air-Opaque was easily controlled with stones individually painted but the finished look was too dull. The oils penetrated the plaster and resulted in better depth while weathering with pastels on the oils also worked better. I undercoated with Badger Air-Opaque (water colors would also work) and individual stones were highlighted with darker hues. The oils were then applied over the Badger stains, thinned with turpentine and linseed oil, and the results were satisfactory. I wanted a lighter color as pastels used for weathering darkened the hue. I used grey, white, a little brown and two tan pastels, just dusting lightly.

All of the pieces prepared for the LaGrange Depot are shown here in their relative position. We've not discussed the herringbone brick base nor have we discussed the final steps in the development of these pieces. In our next issue we'll finish the project!

Artist's oil colors, thinned in gum turpentine, were used to provide additional color over the Air-Opaque. You'll have to experiment with this phase of coloring to arrive at something you find satisfactory.



For final weathering, pastels were ground to powder on a file and then applied to the painted and tinted castings.



All photos by Clint Crow and Robert L. Hundman unless otherwise specified.