complete the installation by inserting spikes.

The ballast is a mixture of N, HO, O, and large scale commercial products, natural soil, sand, and gravel. I apply different colors and textures to create the impression of maintenance or neglect. Because the roadbed is half an inch thick, you must use diluted white glue to adhere the ballast in three stages. Otherwise the bottom layer will fail to stick and the entire mass will fall off. You also may carve medium density board to represent brick and stone. I use a Dremel motor tool and an array of attachments to scribe the board, then a hobby knife and sandpaper to finish it. Remember to use a dust mask for protection.

LIGHTING, DETAILS, AND FINAL THOUGHTS

My dioramas have painted backdrops so it is necessary to employ a lighting technique capable of both casting shadows on the foreground and eliminating shadows from the background. I accomplish that with a very narrow valance above the backdrop. It has three 100 watt incandescent bulbs. That way, a very intense light falls only on the backdrop. The two end bulbs are blue; the center bulb is an ordinary household bulb. I then direct other lighting on the foreground.

Mechanical signaling and turnouts may be a lot of trouble but seem worthwhile on a detailed diorama. Of course, I happen to have a particular interest in signals and wrote an article on Australia's semaphores for **Outdoor Railroader** some years ago. My signals have brass rods and levers and micro switches. One photo shows a scratchbuilt signal cabin. It may provide some idea of the detail I build into my signal hardware. You remove the roof to operate the levers with your finger. The drawings illustrate how I connect signals to my turnouts.