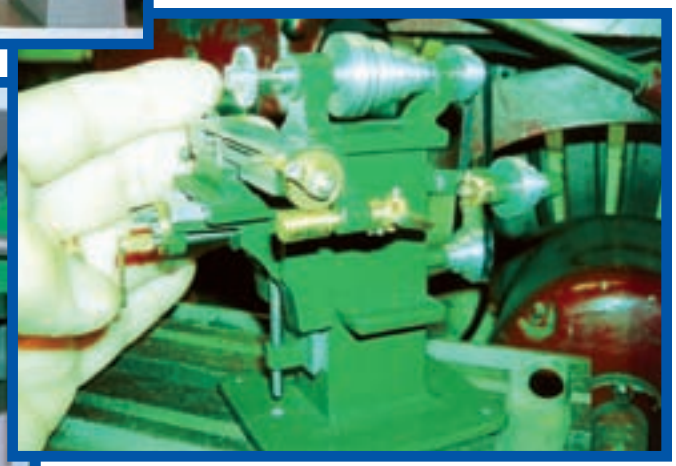

Micro-Machined *Memories*

Dollhouses may be toys for children, but an old-time working miniature machine shop is the ultimate toy for a self-proclaimed hobby machinist like Greg Bierck.

Bierck has spent the last decade—1,500 hours he estimates—building a fully-functional machine shop about 16 inches tall that models a traditional pre-1950s era shop. The machine "dollhouse" is filled with gears—straight cut, bevel and worm gears predominately—and pulleys throughout that Bierck handcrafted.

The "GB Machine Works Co." includes the usual suspects: a shaper, drill press, mill and stand grinder to name a few; every machine has gears except the grinder. Bierck built the model in his basement using Atlas machines and jeweler's lathes with typical screws sized 0-80, 1-72 and 4-40. Most of the parts he made from castings supplied by P.M. Research Inc., along with blueprints the company provides. The biggest challenge he cites came in studying the blueprints and castings alongside each other. The blueprints don't provide any tools or how to use them. Lucky for Bierck he has been machining for 37 years, and he grew up watching his grandfather machine next door. "Half the fun is figuring out how to machine a part to print with the tools and machines that one has to work with," he says.

Bierck built the model in memory of Bruce, an old friend who first envisioned the working model but tragically died from liver disease before he was able to lay the foundation. The project is almost finished, pending one machine's completion, and set to appear at the Museum of Miniatures in Carmel, Indiana in May, for guests traveling to the area for the Indianapolis 500 activities.

Working with tiny tools has brought a significant strain to Bierck's eyes, which is pressuring him to finalize the long-term project. "The lathe (over in the corner) is the last machine to be built, and so far only the bed and legs have been machined," Bierck says. The lathe requires a great deal of gears, and he expects the process to take another 600 hours over two years. "I saved the most challenging machine for last."

Bierck did experience a few blunders along the way. At one point, he couldn't make any of the worm gears right because he forgot that the left-handed machine he was using must run backwards. He was also set back for a while by an error with the mill. "I broke the main casting in half," he says, "It came out fine. You can't tell I broke it."

If he had to do it all over, Bierck says he would try to work more often instead of building a little bit at a time. His longstanding knowledge of machines and tools were critical to the project's success. He advises anyone considering a similar endeavor that "This is not a project for someone who likes things done quickly."

For further reminiscing, other machine shops from this era can be seen in full scale at the Henry Ford Museum in Dearborn, Michigan (www.hfmgv.org), or view this model, anticipated to display through Labor Day, at the Museum of Miniatures (*www.museumofminiatures.org*).