After spending two and a half years acquiring various sheet metal skills while building my RV-8, I felt as though I'd learned something about building aluminum airplanes. When the time came to select my next homebuilt project, I knew that I wanted to gain experience with other materials and construction methods. The Pitts Model 12 I decided to build had the perfect mix of non-aluminum components: wood wings, steel tube fuselage, and fabric covering. I was especially curious about the wing building process and wondered whether any of my previously learned building skills would transfer to the new project. After all, I hadn't done any woodworking since 7th grade shop class a quarter-century earlier.

Having decided to begin my Model 12 project with the wing kit, I delved into the plans and instructions. It didn't take long to realize that an externally braced wooden wing has many parts and pieces that simply don't exist in a cantilevered aluminum wing. When I work on a project, whether it be a homebuilt airplane or simply an unfamiliar domestic chore (*e.g.* wallpapering, etc.), I'm most comfortable when I take the time, prior to beginning work, to thoroughly research and understand every component and facet of the task at hand. Therefore, myriad new items such as drag wires, drag wire blocks, corner blocks, compression ribs, truss ribs, flying & landing wire lugs, etc. all needed to be understood, and mentally positioned in their proper places, before I could begin work. Needless to say, this necessitated quite a bit of reading, perusal of the plans, and conversation with Kevin Kimball (of Jim Kimball Enterprises, producers of the Model 12 kit).

Many of the most basic construction skills carried over from aluminum to wood and are, in fact, identical. Such tasks as measuring and marking stock for parts fabrication are, of course, identical regardless of the material involved. Actual cutting of aluminum parts is done with some combination of snips, shears, nibblers and saws, as required by the actual task at hand. Cutting of wooden parts, at least regarding those in the Model 12 wing kit, is done almost entirely with a bandsaw. Dressing and finishing techniques did vary somewhat. Where an aluminum part would be filed and polished with Scotchbrite, a wooden part can simply be sanded to fit. I used a combination of hand sanding blocks, a belt sander and an orbital disc sander on my wing kit, as necessitated by each specific part.

The first parts fabricated for the Model 12 wing kit are all of the rib components. The kit comes with a set of heavy particle-board jigs, each with the shape of a rib deeply routed into it. Nose ribs are conveniently included in the kit, but capstrips, truss sticks and gussets must all be cut from raw stock and fit to the jigs. There are lots of little pieces that comprise each rib and I found it easiest to cut and fully assemble all of the ribs of one particular type before going on to repeat the process for the next sort of rib. There are truss ribs (comprised of sticks and gussets) and compression ribs (made from heavier stock and sheeted in plywood) to be fabricated, some with single nose ribs, some with double nose ribs. Both long and short versions of each type must be made. The long ones are inboard ribs and extend all the way to the trailing edge of the wing. The short ones are outboard ribs and end in a small gusset just aft of the rear spar, thereby creating the aileron well.

Once the parts are fabricated, rib construction begins and one is confronted with the messiest (if not actually the most significant) difference between aluminum and wooden assemblies. In a word, glue. The Model 12's wooden wings are assembled with a two part epoxy glue called T-88. It can be mixed by weight or volume, has a limited pot life (time before the mixed batch sets up too much to work with), stinks (though not as disagreeably as Proseal (used for sealing riveted aluminum fuel tanks like those on an RV)), and can quite easily make a mess if care is not taken. As someone used to working with riveted aluminum structures, adapting to the whole gluing process definitely required a period of forced adjustment. Once a routine had been established, however, the pace picked up and rib production moved along fairly quickly.

Another big difference between aluminum and wood construction, and something I learned the hard way, is the susceptibility of wood structures to humidity. A hole drilled into a piece of aluminum will remain indefinitely at its original position and dimensions. Two or three aluminum parts, drilled in assembly, will still permit a bolt to be passed through at any point in the future. A piece of wood, however, is organic and, while no longer literally alive, certainly seems to have a life of its own in the workshop. A hole drilled into a piece of wood will shift slightly and subtly change its dimensions in response to variations in the local humidity. A hole that will pass, say, an AN3 bolt on Tuesday may be a tight fit on Thursday. A hole drilled through several layers of a wooden assembly to fit that same AN3 bolt, may not allow the bolt to drop into place the following week. The shifts are slight, to be sure, but they do occur and holes in wooden structures will need to be occasionally reamed out to permit the passage of fasteners which previously fit.

Wooden structures do provide a different set of challenges in the workshop than their aluminum counterparts, but it's not difficult to make the adjustment. I'd certainly recommend that anyone considering a project with a different construction method from that to which they're most accustomed simply jump in and get started. The learning curve isn't actually as steep as it might seem from the sidelines. Anyone who's managed to acquire the skills to build an airplane out of any particular material shouldn't have any trouble acclimating to a new one. In fact, the process of learning a new set of skills will be fun – and will likely provide an excuse to buy some new tools!