

# Craftsmanship on Wheels

*This specialized woodworking is best appreciated  
in the driver's seat*

by Scott Gibson



*Car with a frame of wood—  
Vince Wanklin assembles a  
frame for a Morgan sports car,  
the last production car in the  
world still built this way.*

**C**radled in a plump leather seat, behind a door that closes as solidly as a bank vault, I'm staring at a dash and console in perfectly matched walnut burl veneer. It is a Bentley Turbo R in midnight blue, just off the production line. I have seen plastic dashboards in every incarnation of cracked old age, and all this polished walnut is a lot to take in. The man from the factory seems to know this, as he must know it of every first-time traveler in a Bentley. He's smiling faintly as he roars down the narrow country road, veering around trucks and sailing through a trail of mud left by a farm tractor.

If I had been buying the car instead of just riding in it to lunch, I could have had trim in bird's-eye maple, wenge, quilted mahogany, burl elm or anything else. Whatever the wood, it will be protected behind six coats of hand-rubbed lacquer, a finish capable of withstanding a direct hit from a Cuban cigar. Owners of new Bentleys and Rolls-Royces—some 1,600 of them a year—want this level of finish (see the photo on p. 85). That's one of the reasons people pay \$200,000 for a Rolls or Bentley when the same money would pay for a lifetime of Chevrolets.

Both owned by Vickers PLC, Bentleys and Rolls-Royces are built in Crewe, a railroad town between Manchester and Birmingham, England. Unlike London or Oxford, Crewe is not a town where tourists will spend much time, but Crewe is the place where buyers go to work out the design details for one of the most exclusive motorcars on the planet. And the woodworkers who turn out the meticulously veneered interior woodwork for these cars take pride in knowing that.

About 80 miles to the south, in Great Malvern, a much smaller work force builds Morgan sports cars. A Morgan is a good deal less expensive than either a Rolls or a Bentley, but you will have to wait a lot longer to get one—up to six years in the United Kingdom. One reason buyers will wait so long is that these cars are still coach-built. Unlike a Chev-

rolet, or even a Rolls-Royce, a Morgan is made by hand-fitting steel or aluminum body pieces to a separate frame made of ash. Morgans, the company says, are the only production cars that are still manufactured this way.

These two car builders are among the last in the world to give any serious consideration to wood or to woodworkers. A handful of other luxury car makers and custom shops aside, the rest of the world has turned to injection-molded plastic and robots: faster, cheaper, more uniform and less hassle.

### **At Rolls-Royce and Bentley, veneer is king**

There really isn't much wood in a Rolls-Royce or a Bentley, if measured by weight or volume—something less than 30 sq. ft. of veneer in the rough, plus a little solid wood and plywood. In a standard Rolls-Royce Silver Spur, there are 18 veneered pieces: three in the dashboard (or fascia, as it's called), four trim pieces to cap the tops of the doors (waistrails), seven pieces to make up the center console, two rear mirror frames (called companions) and a few fold-down trays called picnic tables.

All the wood you can see is veneer, and it's the best stuff the company can track down. Buyers travel to towns large and small—Rome, London, Cincinnati, Pleasant Hill, Missouri—where they will buy about 12,000 sq. meters of veneer a year. The veneer is .6mm-thick (about 1/40 in.) rotary-cut material, much of it from burls, or burrs as the English call it. Car buyers have traditionally favored walnut burl, and most of the cars still get that.

All the veneer in a car is taken from consecutive sheets of the same log and then book-matched. Thin panels, like the dashboard and console, are veneer over a plywood substrate. Thicker trim pieces, like the waistrails, are veneer laid up on solid walnut and tulip cores. Veneer is attached with a two-part urea-formaldehyde adhesive in one of two heavy presses. The presses use a combination of heat

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**Frames start as slabs of European ash.** A Morgan frame begins its journey on a band-saw in a shop adjoining the frame-assembly area (above). After frames are complete, cars move along for additional work (left).

**What looks hap-  
hazard really isn't.**  
*Veneered trim pieces  
for the interiors of  
new Rolls-Royce and  
Bentley automobiles  
are carefully tracked  
through the wood-  
shop so that veneers  
throughout each car  
match perfectly. Be-  
low, a woodworker  
repairs a minor de-  
fect in veneer for a  
Rolls-Royce door.*



and vacuum to form a bond. In all, it will take the woodworkers approximately 55 hours over 23 working days to finish the veneered woodwork for a single car.

### **Lower demand for cars, but plenty of work**

These are coveted jobs in Crewe, all the more since a recession in the early 1990s cut sales of these cars in half and forced some workers out the door. What the company wants, explains woodshop manager Ian Kerhsaw, are team players.

Adrian Minshull is part of that team. He joined the company when he was 16 years old and spent the next four years moving around the factory before going to the woodshop. He's been there for about nine years and is one of those who does the veneer scouting. He loves it.

Part of what saves Minshull and the others from the boredom of repetitive factory work is the sheer pleasure of working with some of the finest wood veneers available (see the photos above). And because the customers get exactly what they ask for, there's often something just a little bit unusual coming through the shop. Custom colors for veneer range from gun-metal gray to primrose yel-

low. Minshull remembers working with a purple bird's-eye maple veneer that was later teamed up with sky-blue leather in the rest of the car. And the workers are still shaking their heads over two marquetry buffalo heads set into facing door panels in the back of another car, a memorable special order.

### **At Morgan, the wood is in the frame**

On the outside, the Morgan plant has the same feel as the Rolls factory: low, brick buildings clumped together just off the road and cars in various stages of undress rolling through the shops. But things are done a little differently in Great Malvern. The workers don't fool around with primrose veneer or buffalo heads, and they're not into polishing book-matched veneer to within an inch of its life. Morgan builds revered, if somewhat dated, sports cars the old-fashioned way: no unibody construction, no robotics, no long assembly lines. If driving the car is, in the company's words, a seat-of-the-pants experience, so is building one.

At Morgan, the dash is made somewhere else because, as co-managing director Charles Morgan puts it, making a dashboard isn't that difficult. Instead, woodworkers at Morgan build ash



**Woodworking art on wheels**—Meticulously fitted and finished, this dashboard and console in burl walnut veneer is a characteristic detail of the Rolls-Royce, this one in a busy Connecticut showroom.

frames, the foundation for hand-fitted body parts and part of the car's mystique (see the photo on p. 82). Morgan hasn't given up on the wooden frame for several reasons: It helps keep the car light (about 1,900 lbs.); it's strong and resilient, and metal body parts attach easily to it. A wooden frame also is traditional, and well, this is England.

Morgan builds about 500 cars a year (only 30 to 40 of them are sold in the United States); a dozen of its 135 employees are woodworkers. Charles Morgan, grandson of the founder, oversees this domain from an 8-ft. by 12-ft. cinder-block office, awash in papers, photographs, books and the occasional suspension part. The pale blue and white walls are illuminated by a single fluorescent tube in the ceiling. Outside the office, bins of car parts are in a storage room. His father, Peter, a co-managing director and the son of the company founder, is in the office next door with his dog, Jade, who sleeps on the carpet in front of the desk. The company is small, friendly and homey. It has little of the glitter that infuses every corner of the Rolls operation.

### **Ash frames in just over a day**

Parts for a Morgan sports-car frame are cut and shaped from kiln-dried European ash treated with a preservative. In the assembly shop, the half-dozen or so woodworkers at benches around the perimeter of the shop get a rolling chassis, which has an engine and transmission but little else. The builders are expected to assemble and fit each chassis with a wooden frame, including a pair of doors, before sending the car off to the metal shop next door.

It takes a man (no women work in the woodshop) 10½ hours to make a frame. Although the roughly 100 pieces that go into one al-

*Whatever  
the wood, it will  
be protected behind  
six coats of  
hand-rubbed  
lacquer, a finish  
capable of  
withstanding  
a direct hit from  
a Cuban cigar.*

ready have been cut to shape (see the photo at left on p. 83), there's still a good deal of trial-and-error fitting. Half-lap joinery for door frames, for instance, must be laid out and cut at the bench before pieces are glued and screwed together. The doors form a gentle compound curve, like a dome segment, as they sweep in from top to bottom and from front to back. There are half-lap, mortise-and-tenon, spline and butt joints, all held together with a combination of waterproof glue and wood screws. The only bent-laminated parts in the car are the wheel wells, made from three layers of marine-grade plywood.

Even though the frames are made of wood, the standards are exacting. Charles Morgan says the two diagonals of a frame, which are just about 13 ft., are within 2mm of each other (that's about 5/64 in.). Woodshop foreman Graham Hall says it's less.

### **This shop has a long memory**

There are several models of Morgans, so some variety is built into these jobs. Beyond that, Morgan takes pride in being able to reproduce frames for older cars that have been damaged or are being rebuilt.

One day last winter, Hall was working with an apprentice on a frame for a 1961 two-seat Plus Four. The shop can handle that. In the back room are all the jigs they'd need to make parts for frames back to 1950. Hall, who has been working at Morgan for more than 40 years, can recite virtually any measurement from any model of car the company's made, and he's capable of identifying unmarked dashboards hanging on a wall from 50 ft. away. □

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