THE BOOT

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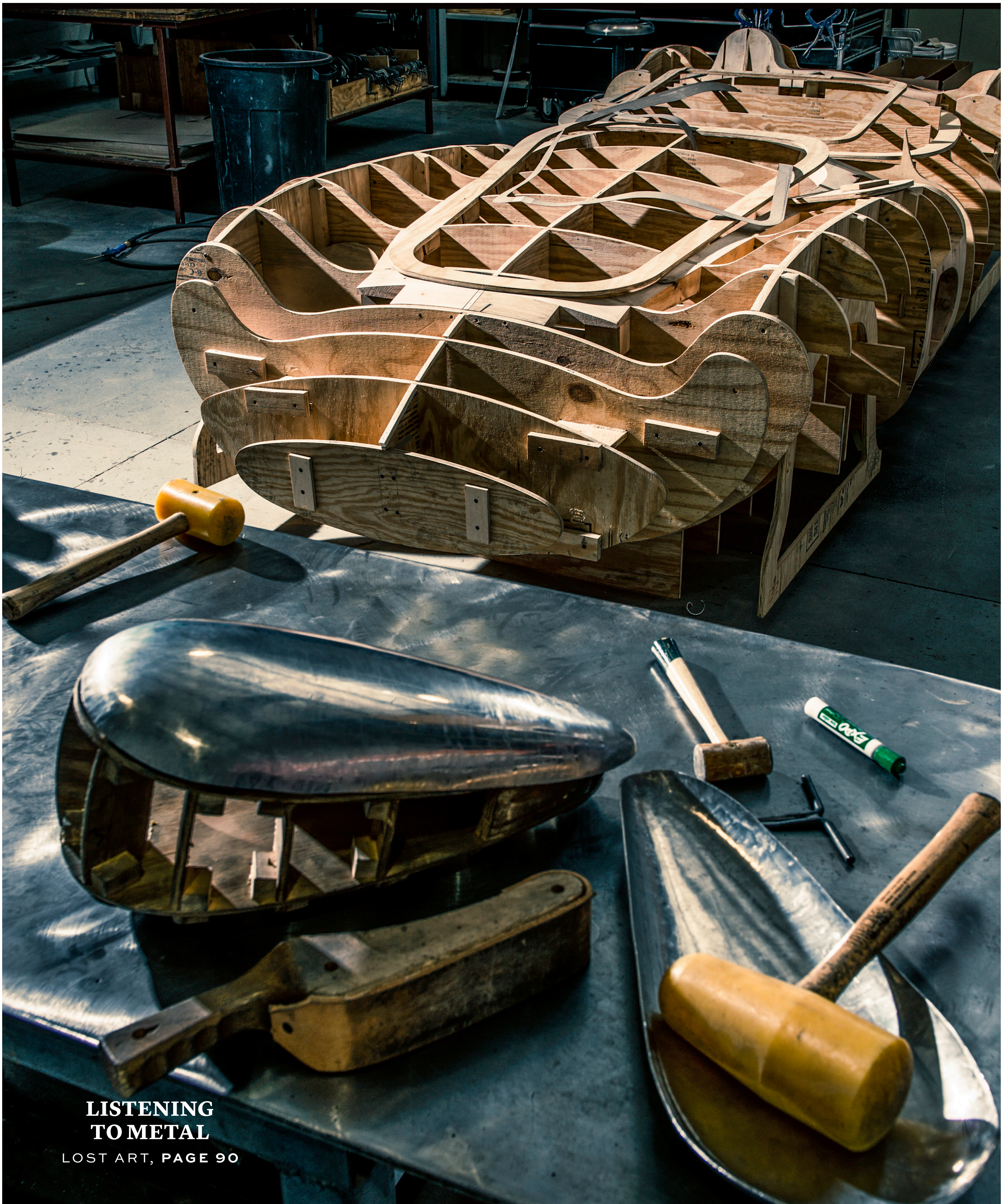

LISTENING TO METAL

LOST ART, **PAGE 90**

LOST ART BY SAM SMITH

THE ENGLISH WHEEL

HOW TWO HANDS AND AN OLD-WORLD TOOL MADE SOME OF THE SEXIEST CAR BODIES IN HISTORY.

Americans call it an English wheel, but the English call it a wheeling machine. It's technically a rolling hammer—two steel drums that can form sheetmetal into complex curves. In the wrong hands, an English wheel can turn a flat piece of alloy into sine-waved trash. In the right ones, it can make the fender of a Ferrari 250 Testa Rossa in a few hours. Or just about anything else you can build from curved metal.

Legend holds that the first wheeling machines appeared in medieval France. They supplanted part of traditional blacksmithing, where men used mallets and shot bags to pound out flat armor or coachwork. The American name came in the 20th century, when the tool pollinated here from English panelbeaters. It had a brief affair with mass production, but the machine's flexibility and skill demand made it perfect for low-volume work. Wheels helped birth early grand-prix cars, Bonneville record setters, most of Europe's classic sports racers, and many of history's great aircraft. Versions still shape NASCAR bodies and new Morgans, and they're the backbone of countless custom and restoration shops.

The English wheel has a reputation as a black art, the stuff of British cottages. To better understand it, we visited Fournier Enterprises, in Michigan's Shelby Township. Founder Ron Fournier worked for stock-car legends Holman and Moody in the early 1960s, then Penske Racing and Indianapolis maven A. J. Foyt. Four decades ago, he launched a series of revolutionary books and videos that helped spread the old-school fabrication technique. In addition to custom metalwork, his business puts on practical classes and sells a small line of tools.

When I met Jeff Fournier, Fournier's shop chief, he walked me past an Aston Martin DBR1/2 body buck—a 1950s Le Mans car in plywood—and toward several large English wheels, frames as tall as a grown man, under bright lights. In 90 minutes, as photographer Andrew Trahan and I watched, Fournier turned a sheet of annealed 3003 aluminum into half of a gas tank for a Norton motorcycle. The process involved little more than a nylon mallet, a plywood buck, a leather-and-wood "slapper" shrinking tool, and an English wheel.

The piece, three-dimensional and achingly pretty, ▸

PHOTOGRAPHY BY ANDREW TRAHAN

Time, pressure, and two hands: Jeff Fournier shapes and planishes a piece of sheet aluminum on an English wheel.

materialized in Fournier's hands as if by magic.

Trahan raised an eyebrow. "He's a metal-shaping Jesus."

Jeff glanced at me, laughing. "Wanna make the other half?"

It was like being handed an ax and told to chop down a forest: You know what to do, but the destination seems impossible. So you take it one step at a time.

Learning the English wheel, Jeff said, means understanding the four things you can do to sheetmetal: cutting, bending, shrinking, and stretching. And the difference between form and shape. Forming a piece of aluminum is bending it over your knee, easily reversible. Shaping involves a shrink or a stretch, and takes work to undo. (Molecularly speaking, shrinking compresses the space inside a piece of steel, while stretching expands it. Precision for each requires dedicated tools.)

The wheel is a stretching machine. Its polished steel rollers, called anvils, run parallel, in bearings, on each leg of a C-shaped frame. The frame is made of steel or cast iron and is either very heavy or bolted to something that is.

The anvils look like paperweights and are correspondingly hefty. They come in different contours and are adjustable for height, depending on the shape you're trying to produce. By walking metal back and forth between them, you stretch it, producing a simple curve. Change angle and put the same piece back in the wheel, you can make a compound curve. Change anvil height, and you can planish, smoothing out dimples or hammer marks. Given enough time, a wheel's pressure can polish metal to a mirror finish, no chemicals.

The process is quiet, repetitive, and undramatic—a wheel in use reminds you of meat being sliced in a deli, or maybe someone vacuuming a floor. It's also counterintuitive: You use the light, reflecting off the metal's rises and hollows, to improvise a course of work, but everything must be planned several steps in advance. You run the anvils without lubricant, because their pressure would embed oil in your work. And while most wheel mistakes can be undone (usually on a wheel), there's a clock—every pass you make changes the piece, and too many can divot or work-harden your project.

Above all, it's more difficult than it looks. A metal's hardness and alloy makeup is key, and in action, the stuff seems alive. Two pieces of identical aluminum can take different wheel moves to produce the same result.

"The metal will tell you what to do," Jeff said. "You just have to listen. A lot of it is understanding surface—some of our best students are painters. You don't want to do the wrong thing, or the right thing too soon."

For the record, until Jeff helped me fix it, my Norton tank half appeared to have been backed over by a dump truck. His hands moved surely, erasing my errors. I found myself wishing my fingers to work like his, suddenly willing to put years into getting them there. And while I was never much of a painter, that doesn't make a master's work any less obvious. Or the timeless elegance of his tools. ■