

**Early Wheels, Rims, and Tires for Automobiles:** Most of the cars in the F.A.H.P. collection have “wood” wheels, sometimes called artillery wheels. Only the spokes and the felloes to which they attach are wooden, however. The hubs, felloe-bands, rims, and hardware are steel. Most wooden wheels for automobiles are made of hickory, although ash was sometimes used. Although wooden wheels go back in history to Roman chariots and to most farm wagons, stage coaches, carriages, and buggies manufactured through the 19<sup>th</sup> century, early automobiles about 1900 favored wire-spoked or bicycle-type wheels.

“Wire” wheels, featuring many tiny steel spokes that were threaded into the rim, were invented just after 1800 but did not come into common use until after the American Civil War. First used on bicycles and racing bikes, the spokes could be tightened or loosened to keep the wheel strong and in perfect balance. Our three earliest steamers have “wire” wheels, one with single-tube tires glued to the rims and two with clincher rims, tires, and inner tubes. Rudge-Whitworth in England developed an excellent demountable heavy-duty wire wheel by 1905 that found favor with Rolls Royce and other high-end cars. Most wire wheels had between 40 and 60 spokes, whereas wooden wheels usually had only 12. Almost all of the earliest automobiles had pneumatic tires; only “High-Wheeler” motorized wagons and heavy trucks got by with solid rubber tires. By 1920, practically all automobile and truck tires were pneumatic with inner tubes.

Although some sporty cars were equipped with wire wheels of the Rudge-Whitworth type, the universal automobile wheel from 1905 until the mid-1920s had wooden spokes. This includes all of the Stanleys in our collection after 1905. However, if an owner desired, he could order a condensing Stanley with wire wheels, and several such cars exist today, including the 1918 Model 735 owned by F.A.H.P. member Bob Wilhelm. The Dodge Brothers pioneered solid or “disc” wheels on their cars starting about 1919, and although these first wheels were thought to be ugly, they were soon adopted by most automakers, making wood wheels obsolete. Wire wheels continued to be favored for appearance, first on cars of the classic period starting in the late 1920s and then on sports cars to this day. Our 1932 Packard Twin Six Dual Cowl Phaeton has wire wheels.

There were many types of hubs and rims that went with wood wheels. The hubs were dictated by the manufacture of the car, although the front hubs were similar on most makes except for size. The rear hub often had a spline that meshed with a matching one at the end of the rear axle. All Stanleys, however, had a taper on the inside half of the rear hub and a square on the outside half. When the axle nut was pulled tight, the taper kept the wheel tight on the axle, and the square drove the wheel.

There must have been 100 designs for rims. Basically, however, these can be described as clincher, straight-side, quick-detachable, and demountable, all made for pneumatic tires with inner tubes. A clincher rim was made in one piece and, when shrunk over the wooden felloe, eliminated the need for a felloe band. The corresponding clincher tire had no steel bead at the inside circumference, so the tire’s rubber could be pried over the contour of the rim, taking care not to pinch the inner tube that had been inserted. The tire and the rim were configured so that once in place, all was tight and safe for high pressure, often 60 p.s.i. or more.

A straight-side tire was not pliable, as steel strands vulcanized into the beads on each side at the inside circumference kept the tire stiff. A movable ring on the exterior of the rim allowed the tire to slide on from the side. Once the ring was locked in place, the tire could not blow off. By 1912 or so, straight-side tires and rims were favored over the earlier clinchers. Most straight side rims were “quick detachable,” which meant the tire could easily be detached from the rim for change or tube repair. On many of these rims, it was possible to use either a clincher or a straight-side tire by simply turning the lock ring “in or out.”

Demountable rims about 1914 ushered in a major advance. Now the entire rim was held to the wheel with lug bolts, and the tire could be mounted on the rim completely independent of the wheel. The big advantage was that a motorist could carry an inflated spare tire, and if a flat or blow-out occurred, he simply loosened six lug bolts and substituted his spare, already inflated. It was not until the mid-1920s that pressed steel wheels of American automobiles were carried as spares, and the lug bolts were at the hubs rather than at the rims. The rim was all part of the wheel.

“Drop-center” rims came on line in the mid-1930s. A very simple idea, it made possible the mounting of heavy stiff tires on a pressed steel wheel with no lock rings or external pieces. Our ’37 Packard is one of the first with drop center rims --

another great improvement. Heavy trucks maintained the “old style” until much later, however. Inner tubes were necessary until the 1950s, when tubeless tires, making an air-tight seal to the rim, became practical.

If kept dry and tight, wood wheels will often last over 100 years. Our three 1908 cars and our 1913 Stanley Model 76 still have their original wheels. So do our four condensing cars. Our 1910 Model 71, our 1912 Model 87, and our 1913 Model 78 have wood wheels made by the late Elster Hayes of Springfield, Ohio, in the 1970s, with new rims made by the late Bruce Green and Coker Tire Company. Our 1915 Mountain Wagon and our 1914 Model 607 have wheels made by Bill Calimer of Waynesboro, Pennsylvania (the Mountain Wagon also has new Coker rims). Calimer uses hickory; it was my impression that Hayes’s wheels were made of ash.

**Work Report:** On Tuesday, July 19, the following 15 volunteers were on hand, plus two or three more who attended the Events Committee Meeting. Those at the Work Session were Jerry Lucas (in charge), Brent McDougall, Dennis Tiley, Tom Sandbrook, Ted Kamen, Dave Leon, Steve Bryce, Jim Personti, Neal Sobocinski, Mark Russell, Matt Richard, Tim Ward, Tom Marshall, Bob Koury, and Jay Williams.

The white trailer, used to bring in the Model 87 on the previous Saturday, was parked in its permanent place. A lot of work was done on the red railroad cars, especially on the trucks. On Car #870, the trucks were removed, cleaned, lubricated, and their wheels checked for wear, then everything was reassembled. Two-inch letters, “A” and “B,” were glued to the ends of all the red cars, “A” at the front and “B” at the rear, in order to easily identify derailment problems. This effort was headed by Dennis Tiley, assisted by Brent McDougall and Bob Koury.

The battery on our “Diesel” was dead, and it appears the motor does not run fast enough in normal operation to charge the battery. Work continued by Jim Personti toward comprehensive mechanical restoration of Locomotive 402, with the connecting rods being installed and the valve gear being completed.

Wiring work continued on the ’37 Packard with Ted Kamen and Neal Sobocinski. A hydro test on the boiler in the Model 87 showed substantial leaks toward the left front of the boiler. The burner will have to be dropped to investigate further. Several cars used on the previous weekend’s tour were vacuumed and cleaned. The top was put down on the Model 725.

Jay Williams made ready the electric trains for their operation on July 23, when we entertained the Wilmington & Western Railroad for its volunteers’ picnic. Jerry Lucas completed the straightening of the copper cylinder case for the Model H-5, after which he soldered a few torn places.

On Wednesday afternoon, July 20, the following five volunteers responded: Richard Bernard (in charge), Dave Leon, Jeff Kennard, Jerry Novak, and Mike Ciosek. The battery was charged on the “Diesel” locomotive. The ’32 Packard, used two days the previous weekend, was partially cleaned by Jerry Novak. Mike Ciosek replaced more R.R. ties on the A.V.R.R. On the Model 740, the pipe from the throttle to the superheater developed a leak on 7/15, so an attempt was made to remove it for repair.

On Thursday, July 21, 11 volunteers turned out, as follows: Tom Marshall (in charge), Mike Ciosek, Jared Schoenly, Steve Bryce, Jim Personti, Geoff Fallows, Ted Kamen, Bob Jordan, Bob Stransky, Lou Mandich, and Bob Koury (early). The burner was dropped on the Model 87 by Steve Bryce and helpers, and the grate was covered with a thick layer of dark brown dust (see photo). It was obvious that perhaps ¼ of the tubes on the left front of the boiler were leaking. Preparations began for removal of the boiler from the car with removal of the bonnet. It is likely that this boiler will be replaced with a new one, but there is a chance it can be saved for limited usage. Cleaning of the burner holes was begun by Bob Stransky.

The leaking pipe on the 740 was removed by Jared Schoenly, and inspection showed where the leak exists. A new pipe will be fabricated. The Model T Ford was fueled and serviced by Lou Mandich. Bob Koury did some A.V.R.R. track work in the late afternoon. On Locomotive 402, the suspension was adjusted, the brake rigging connected and bracketed, and the connector-bumper plate between locomotive and tender was made ready for hook-up. Jim Personti and Geoff Fallows have this locomotive almost ready for testing, but a slight modification is still required on the brake rigging.

The week featured very hot summer weather, and the coming week’s forecast is no better. Intermittent showers occurred during the Wilmington & Western visit on Saturday, 7/23, but the food was good, the steam train ran, the museum and mansion were enjoyed, and all attendees had a good time.