HUDSONOTES

Column of Mechanical Miscellany
By George Schmidt
Mishicot, Wisconsin

Thoroughly Tired

INNER TUBES, like outer tire casings, were made almost exclusively from natural rubber until the early 1940's. They were made in numerous price ranges and varieties, but shared one fault of natural rubber: a slight porousness which allows the very slow escape of air pressure directly through the tube wall, much as with a toy balloon. With these tubes, the standard rule was to check inflation pressure regularly at least every two weeks.

Inner tubes made of synthetic "butyl" rubber quickly came into use after World War II. This material is dense and non-porous, and can often retain inflation pressure for a year or more. But it is less elastic or flexible than natural rubber, and so tends to crack or break easily with age and use. Butyl rubber today still finds a few applications in which its energy-absorbing qualities are more important than elasticity or "bounce"; but modern inner tubes (and the linings of tubeless tires) are made of other rubber compounds, mostly synthetic, which have airtightness combined with strength and good elasticity.

Only a few radial-ply tires today are used with inner tubes, but these tubes need to be of top quality to withstand the shearing action of adjacent radial cords in the sidewalls as the tire rolls on road. An inferior or less-elastic tube will usually develop tiny lesions or pinhole leaks in the sidewall area because of this action.

On early cars with clincher-type, demountable, or quick-detachable (split) rims, a "flap" made of rubber or sometimes of fabric was usually added to protect the inner circumference of the tube from abrasion by the metal wheel rim. Flaps are still made today, but almost entirely for trucks, and are not normally needed with drop-center passenger-car wheels except for a few versions with genuine wire spokes. However, extra-heavy-duty inner tubes sometimes have a thicker vulcanized area around the inside circumference to serve the purpose of a separate flap.

MANY OTHER specially-designed inner tubes have also been made in past years. Numerous attempts have been made to design inner tubes—and also tubeless tires—which would be relatively puncture-proof, or which at least would slow or minimize any leaks until they could be repaired. Even with standard-type inner tubes, it is important that the tube fit neatly inside the tire, with no wrinkles and almost no stretching. When re-using an old tube, some mechanics prefer to have it perhaps one nominal size smaller than the tire (to prevent wrinkling, which could cause a tube to crack)—but any serious stretching of the tube when inflated will usually turn small puncture leaks into large ones. For this reason, one premium-type tube of past years had pleats lightly molded in, with the purpose of avoiding both wrinkling and stretching.

Some inner tubes and tubeless tires have been made with a soft inside coating designed to seal small punctures and prevent them from leaking. One memorable 1950's advertising photo showed a tire which had several dozen nails driven into it, but was still holding air pressure. Puncture sealants have also been available for years in accessory aerosol cans, complete with a fitting to allow injection into tire through the valve stem. They are often effective but also tend to make later tire repair or removal an extremely messy process.

The main problem with most of these sealants, however, is that they are soft enough to shift their position inside the tire—thus putting it out of balance; and any re-balancing is likely to be temporary. Also, a nail or other puncturing object should not be left permanently in the tire, even if not leaking, since it is sure to do additional damage, probably breaking or separating several tire cords.

BLOWOUTS ARE neither as common nor as much feared as they once were. Indeed, the typical tire of today is much more likely to expire with a dismal psssssshhht-flop-flop rather than a sudden bang. Still, blowouts do occur, and the inherently good handling of most Hudsons makes these cars somewhat safer in such emergencies than most other vehicles.

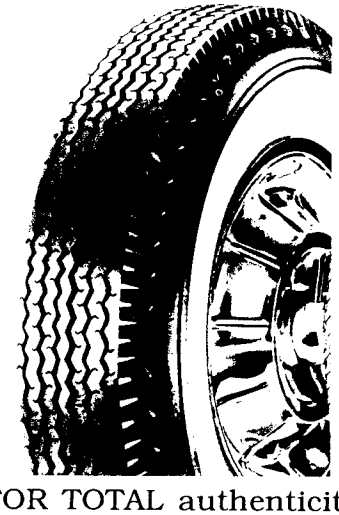
A special inner tube designed to make blowouts far less dangerous was introduced by the Goodyear company (just before or after World War II, if memory serves). Called the "Lifeguard," it was double-walled, with a strong internal chamber which could leak air into the outer chamber only at a slow prearranged rate, so that it would be impossible for tire and tube to go instantly flat in the event of a blowout.

Much seen in magazine advertisements, these tubes apparently performed as advertised, by providing enough time delay for a safe controllable stop, but they were premium-priced and often not salvageable for re-use after a blowout occurred. Inevitably a version was also introduced later for use in tubeless tires. "Inside Story" columnist Harry Kraus points out that tires

with these "safety liners" were a high-extra-cost option on GM cars about fifteen years ago, and he notes that they tended to be troublesome, commonly requiring replacement long before they were worn out.

As with the puncture-sealing compounds, the chief problem with both the double inner tubes and the tubeless-type safety liners was that all too often the heavy internal tube could shift its position enough to throw the wheel out of balance—sometimes violently so.

Fortunately the complete failure of a tire without even a few seconds of warning is extremely rare—but any tire which has been running smoothly and then appears suddenly to develop an imbalance or vibration on the road should be checked—immediately. Possibilities include a lost wheel weight, a bad safety liner, a lump of ice in rim...but most often a hump, distortion, or leak in the tire itself which calls for right-now replacement. On a collector car (or even a late model), be sure that the spare tire and rim are actually usable, and likewise the jack (which should be lightly lubricated), the lug wrench, and perhaps a wooden wheel chock or two. Try them well in advance.



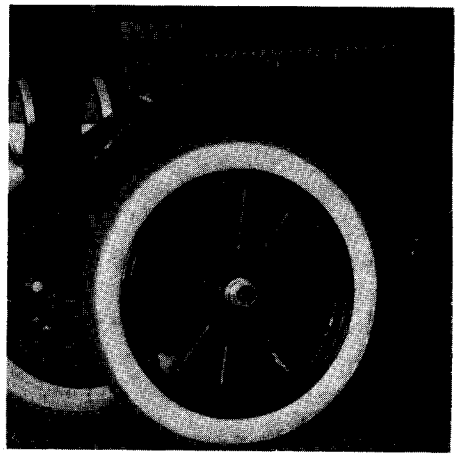
FOR TOTAL authenticity, of course, any pre-1954 Hudson should use inner tubes. On the other hand, if a tubeless tire is to be installed on an old rim which never held one before, some work with coarse sandpaper or a wire brush (preferably a power brush wheel) is usually needed, or the tire beads probably will not seal. Also clean and remove any rust from the valve stem hole, and check rim surface for any burrs, gouges, dents, cracks, or other defects. Ideally, tubeless tire sealing compound should not be needed, but it is harmless, and many tire men consider it to be good insurance, especially for an old tire. However, it is not a very good substitute for a rim being properly clean and smooth.

One fault of tube-type tires, it is said, is that they may not run as cool as tubeless ones, owing to friction and also to the added insulating layer. Also, in the early days there was sometimes a problem of the tube and tire sticking together. The usual correction for this was a dusting of "tire talc" powder between the two. In later years, powders of this type made a comeback because they reduced friction and hence also static electricity (which had been causing radio interference).

Most Hudson wheels have a larger $\frac{5}{8}$-inch valve stem hole. If an inner tube with the smaller-diameter valve stem (about $\frac{7}{16}$-inch) is to be used with these, be sure to add a protective bushing (usually a small shouldered black plastic ring) to the stem before installing tube.

REPAIRS TO BOTH inner tubes and outer casings in the early years were nearly all hot-vulcanized for reliability. Vulcanizing equipment was available in many types and sizes, often kerosene or gasoline-heated to avoid a need for electricity (or for a steam pressure source). Cold-type tube patch kits, plain or pre-cemented, were available but were mostly for home or roadside emergency use.

The first Hudsons, like Brand X's of the time, commonly carried a spare tire or perhaps two, and often one or two well-wrapped extra inner tubes as well, along with a patch kit, tire-removal tools, and an air pump—but not a fully-inflated spare tire and tube on an extra rim. This last feature was pioneered on the 1910 Rambler, and soon also appeared on Hudson and many other cars which had the demountable-rim option. While these rims (spare included) were not ideal from a cost, weight, or appearance standpoint, they saved much roadside inconvenience.



Though exposed rim lug nuts vanished in the early '30's, the full-size inflated spare tire remained nearly universal until recently. Also, cold tube and tire repair materials continued to improve, until by the late '30's there was seldom need for hot vulcanizing (except for substantial repairs to outer casings). In the postwar 1940's, however, it was soon found that standard cold patches did not hold very well on the dense smooth surfaces of butyl and other non-porous rubber synthetics, and so vulcanized hot patches made a quick comeback. Vulcanizers now were usually small electrically-heated units, operating on reduced voltage (some are still in use today).

Also, some hot-type patches were supplied with a matching metal cover on each. On the

cover was a thin coating of fuel. With these it was only necessary to cement the patch and cover in place, and then touch a lighted match to the fuel. In this way the patch was heated and firmly vulcanized in a few minutes. This system worked well (without burning any holes in tires or tubes), but was costlier than ordinary hot patches made for use with outside heat sources.

Although cold patches for tubes (and for tubeless tires) have been further improved since the '40's for better adhesion and sealing, vulcanization is occasionally still used. Also, some patches and cements at present are called "2-Way." These will form a quick airtight bond, cold; but for maximum strength they should receive some heat. In summer, a few minutes of use on a hot roadway is usually sufficient, but in cold weather it may be advisable to warm them well, perhaps using a "hair dryer" type heat gun, before re-installing on car.

SEVERAL REPAIR products intended especially for tubeless tires were introduced in the '50's. Also, most minor puncture holes in these tires could be repaired successfully using the same standard rubber patches as for inner tubes, if extra care was taken in cleaning and buffing the spot inside tire where the patch must adhere. This repair method, of course, required disassembly of tire and rim, as with tube repairs. Most high-quality tubeless-tire repairs today still require disassembly.

However, a quicker repair method, which could be applied externally to tubeless tires (even while on car) became possible with the introduction of soft rubber (or rubber-coated) tire plug strips, along with the special awls and needles for installing them. Several varieties were (and are) available, and although they do not reinforce the punctured area, they will usually hold air for the life of the tire—unless the tire (perhaps 2-ply) is unusually thin, and has not enough body to retain a plug tightly. These plugs are designed for tread-area repairs rather than for sidewalls (and particularly not for radial-ply sidewalls).

Some patches made for use inside tubeless tires include cord reinforcement for a bit of added strength, so that they somewhat resemble a small-size old-fashioned "boot" or "blowout patch." For best results, this type of patch should be installed with its cords as nearly parallel to the tire cords as possible. This is especially important for radial-type tires and patches. Sometimes a printed guide arrow is provided.

One more-elaborate tubeless-tire repair unit is a hybrid of patch and plug, giving it the appearance of a long-stemmed rubber mushroom. It is a premium item and gives good results even with fairly large puncture holes (two plug diameters are available). Larger-size units of this type are made for truck tires, but these require pre-cutting a round hole of correct size in the tire before installation, and these larger units are not recommended for passenger tires with fewer than 6 piles.

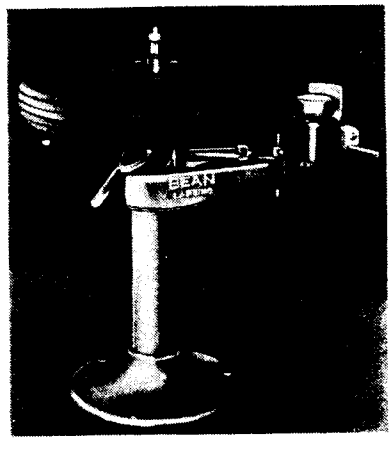
As stated in an earlier column, the tire repair suggestions here are offered in good faith, but readers will need to follow them, or not follow them, entirely on their own responsibility...even in our litigious era.

AFTER A PUNCTURING object (nail, glass slivers, etc.) has been removed, if the puncture hole remains easily visible, it is likely that one or more tire cords are broken. In such cases, even with tube-type tires, some tire men for years have recommended that a miniature boot, or reinforcing patch, be used inside the tire, in addition to the patch for the inner tube. Larger boots, of course, have traditionally been available for larger injuries, but these are not much used in passenger tires at present. There may be legal objections to them for highway use, and in any case it is difficult to repair a badly-cut tire, for instance, even with use of a boot, so that it will run perfectly true—as it must, if it is to be run on a car at all.

This writer admittedly has had no trouble with the boots used in old (bias) tires in past years, but perhaps he has simply been lucky. A mid-size boot is sometimes used to prevent an apparent beginning cord break from becoming worse, and also to prevent tube chafing at that point. For best reliability, the boot should be hot-vulcanized in place—and it should be installed before the tire bulges out of shape.

Note that a few tire repair materials may weigh enough so that the balancing of a mended tire should be re-checked before it goes back into use. A repaired tire should not be pounded unnecessarily because of wheel imbalance.

Bean Has Developed New Dynamic Wheel Balancer



Though it seems hard to believe now, repair boots to fit over the outside of a tire injury were

also once offered. The "Wiles Tire Sleeve" was available circa 1916, and was apparently held on by a combination of vulcanizing and sidewall rivets.

Another improbable repair (?) item found in one old tire a few years ago was a doughnut-shaped cotton net fitted all around between the outer casing and inner tube. Purpose is unknown—perhaps blowout protection for an especially tired tire? Reader suggestions will be welcomed.

One unusual tire problem which is not repairable is a break in the anti-stretch steel wire inside the bead. It causes an odd triangular distorted area near the wheel rim, and requires prompt tire replacement. Sometimes the bead wires may be merely bent or kinked slightly, due usually to mistreatment with tire tools. The tire in that case should be usable, but if tubeless it may not seal very readily against the rim.

VALVE STEMS for tubeless tires in the '50's (and still at present, for some truck and premium applications) were sometimes made of plated brass, rather than the usual rubber. They were held on by a threaded nut, and had two replaceable rubber rings to seal against the wheel rim. Some were Italian imports. Though shorter, they somewhat resembled the all-metal valve stems and nuts used with early inner tubes (and now again available reproduced, along with matching dust caps).

For tubeless tires on most cars, however, the ordinary pull-in rubber valve stems are appropriate. Use the standard short large-diameter size for Hudson wheels. A touch of tire bead sealant is optional when installing either type of tubeless stem, especially on an old wheel. A tubeless tire can be checked for bead, valve stem, or other leaks by use of a swab with soap solution or other similar foaming material.

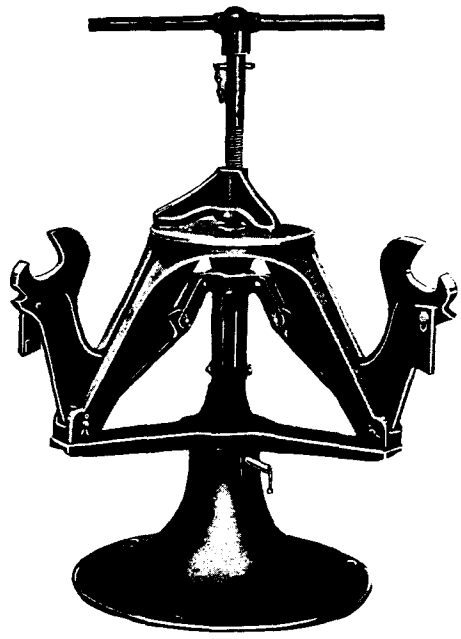
The "K-D Tools" brand name is familiar to most auto mechanics as a source for handy unusual and specialized tool items, often not available elsewhere. Normally, of course, the replacement of a tubeless valve stem requires loosening of one tire bead for inside access. However, K-D for a time (c. '70) offered a neat 4-piece tool set which permitted removal of an old rubber tubeless stem, and the quick insertion of a new one (of either diameter) entirely from outside the wheel! We haven't heard whether it is again available.

If the rubber valve stem on an inner tube is defective, it can be cut off or ground flush with the surface, and, if the tube is worth salvaging, a replacement-type rubber stem of correct diameter and length can be installed exactly like a circular vulcanized (hot or cold) patch.

In subzero weather, an underinflated tubeless tire can often become stiff enough to pull away from its rim when driven, thus going completely flat. Warm the tire and wheel, perhaps also apply bead sealant, and then inflate to at least 35 p.s.i. (it will be less when again chilled).

Before tubeless bead sealants came into general use, good used inner tubes were usually plentiful, and some tire shops preferred to add a tube when mounting a used tubeless tire on another rim, rather than trusting the old tire beads to seal perfectly again. An alternative pre-

Tire and Rim Remover



caution is to wipe the beads with lacquer thinner or tire patch solvent to clean and soften the rubber for a better seal. If sealant compound is not needed, soap solution is often applied as a lubricant to help seat the tire beads more easily.

HAPPY EASTER and a good springtime to all of our readers. We are planning another column in this series about wheels, tires, tools, size numbers, balancing, etc.