

# HUDSONOTES

## Wheel & Tires

### Encyclopedically Yours by George A. Schmidt

A. L. (Andrew Lee) Dyke reportedly was the inventor of an early-day carburetor, but he is far better remembered as the author of *Dyke's Automotive Encyclopedia*. This is a large volume which was published in no less than twenty two editions, 1910 through 1950. In its latter versions the book contained more than 1200 pages, plus added inserts and supplement sections. Previous books by Mr. Dyke included *Diseases of a Gasoline Automobile* and *Anatomy of the Automobile* (1903, 1904); and he also wrote an *Aircraft Engine Instructor* (1928).

Today his books are a useful source of detailed historical information for old-vehicle collectors and restorers. Unlike most later auto repair manuals, his *Encyclopedia* does not feature separate pages for each individual make and model, but instead has chapters or "lessons" about carburetors, about engines, about electrical components, about trucks and tractors, about trouble shooting and repair shop operation, and so on. Included too are a number of topics

not often covered in modern auto repair manuals, such as speedometer and vacuum wiper motor repairs and there is also a detailed section about early tires, rims, and wheels.

This later section of the book has provided much of the information for the present installment (Part 6) of our *Hudsonotes* wheels and tires column series. It has also provided some illustrations.

When the 1920 edition of the *Encyclopedia* was issued, auto tires had bias plies. A changeover was in progress from fabric to cord-type construction. Most sizes could be had in either type, but the author definitely recommended cord tires for better service and economy, despite their higher price.

There was also a choice at that time of either "multiple cord" or "cable cord" tires. The multiple type used many thin cords, often in 6 or 8 plies. Available brands included Firestone, Goodyear, and others. The cable type used fewer and larger cords, generally in 2 or 4 plies, and was originally a British design made by the Palmer Tire

Co., of Silvertown, England (a London suburb). In the U.S. this type was made by Fisk, Carlisle and notably B.F. Goodrich, thus giving Goodrich Silvertown tires their name. Hence we may note that although most 2-ply bias cord tires date from ca. 1960, a few were offered decades earlier.

Tires in use in 1920 included both those with clincher (bicycle-style, stretchable) beads, and those with modern non-stretching "straight side" beads. A third style of tire bead was also available, which looked like an ordinary clincher (with the extra retaining ridge), but was non-stretchable. It was for use on "quick-detachable" clincher rims only (the kind with one or both flanges removable). On these it would stay safely in place without need for "Y" shaped retaining lug bolts, or for rubber "filler" strips in the rim. As with other clincher tires, however, a protective flap was used between tube and rim.

Some quick-detachable type rims ca. 1920 were also demountable, so that the rim's, outer flange,

and also the complete rim, could be removed from the wheel if desired. This feature added further to the convenience (but also added to unsprung weight). According to a chart in later *Encyclopedia* editions which lists standard equipment rim brands and tire sizes for 1916-26 U.S. cars, all Hudson and most Essex rims of this era were either Kelsey or Firestone. Firestone, particularly, offered many detachable/demountable rim variants in the early years (see illustrations).

Early optional wire-spoke and disc-type wheels generally resembled modern types in that the entire wheel was easily removable from the car, but usually the rim was permanently fastened to the wheel. Standard wood-spoke "artillery" wheels were normally not removable (unless complete with bearings and hub); hence the need for a demountable rim on these. All three wheel types could be had with quick-detachable rim flanges, however.

The term "split rim" is somewhat confusing at present, since originally it meant a rim which was not of continuous construction; but split through so that, when demounted from its wheel, it could be reduced somewhat in circumference (with ends overlapped) to allow tire removal, without requiring a dropped center channel for the tire beads. Today, however, an uncut rim which merely has one removable flange (still common on trucks) is often referred to as a "split" rim, though for many years this type was known as a "quick-detachable" rim. We admit that the designation "quick" is somewhat optimistic, especially after rust and aging have done their part.

Inner tubes of the 1920 era were "all natural," but hardly long-lived. Author Dyke suggested that, due to normal deterioration, most of these tubes were of doubtful reli-

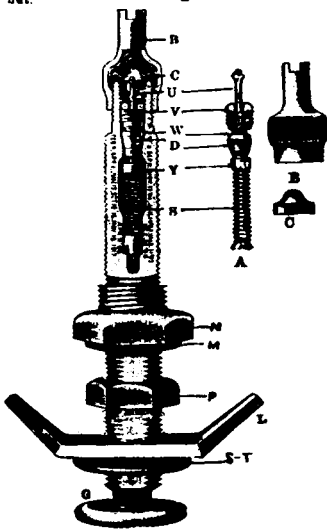
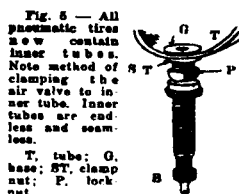


Fig. 6—Schrader No. 777 inner tube valve; full size for 3 in. tubes and under. No. 725 for 3 1/2 in. and over is larger.

- A—Inner valve.
- B—Valve cap.
- C—Rubber disk (for cap B).
- D—rubber packing.
- M—Locking nut (for dust cap).
- N—Leather washer.
- O—Valve stem base, goes inside of tube.
- P—Lock nut (for valve stem).
- S-T—Clamp disk.
- L—Valve spreader.

The Schrader Valve, which is one part of the automobile that has gone relatively unchanged since the adoption of the pneumatic tire.

ability after about two years of use. Some had antimony sulphide added to the rubber for better heat resistance and an orange-red color.

Proper use of tire talc could extend tube life somewhat. Powdered soapstone was a good anti-stick and lubricating agent provided it was not used in large enough quantities to form lumps (which would overheat). Powdered graphite was also effective on tires and rims, but of course could cause smudges. The author recommended finely divided mica (still recognizable today by its slightly "sparkly" appearance).

Not all topics were fully updated in later editions of the book. For example the superior strength

of "sea island" type cotton for use in early tire cords is pointed out. The introduction of rayon for some tire cords in, 1931, is not mentioned.

Much space, however, is given to elaborate tire repairs (even of blowouts and large cuts), and to the special vulcanizing equipment needed for these. On the other hand, another writer of the period (Clyde H. Pratt: *The Automobile Instructor*, ca. 1917), cautions that, "it does not take much of a repair to amount to \$10.00, and few repairs run a thousand miles." He urges car owners to compare the cost of a new replacement tire instead, which he says should not total more than about 1¢ per mile per tire at that time; or on a small light car, not much more than 1¢ per mile for all four tires together. Most of us today would find these tire costs distinctly high, even without allowing for the 80 years of inflation (monetary, that is).

Several special tires of the era are described by Mr. Dyke. Lee (a familiar early day tire brand) offered a "puncture-proof" version which featured three layers of overlapping thin metal discs, of about 7/16" diameter, imbedded in rubber, and vulcanized between the fabric and the tread of the tire. How well they remained vulcanized is not reported.

Some smooth-tread tires, "slicks" continued in use through the fabric-tire era, but the author recommended using a molded "non-skid" tread (several patterns were available), at least on the rear wheels. Front wheels on these 2-wheel braked cars could use a matching tread pattern (for convenient tire rotation), or perhaps smooth treads--or preferably a pattern of plain circumferential ribs, which gave good steering control, and was available on some premium cord-type tires. It resembled

the pattern on many wagon and farm implement tires today.

"Balloon" type tires were introduced in 1923, Mr. Dyke states, they were of cord construction, with straight-side beads. Required air pressure for these was only a little more than half of that needed for the older-type tires. A few balloon tires were also used as replacements on older vehicles, though this usually required a rim change (to no more than 20" or 21" diameter), and even then could cause clearance problems. Hence some tire manufacturers also offered "interchangeable" or "semi-balloon" tires, mainly for the replacement trade.

The *Encyclopedia* cautions especially against the use of tires (of any type) which are too small for their load and against under-inflation, which is stated to be the cause of about three-quarters of all tire troubles. For the old high-pressure tires, a listing shows that in normal use, the larger the tire size, the higher the inflation pressure (up to nearly 100 p.s.i.!). However, this need not be the case when a large tire is merely substituted for a smaller one without any increase in load, in order to give longer tire life and better traction and ride.

Mr. Dyke observes that in the early days of motoring, no one except perhaps a few engineers or the like; gave any thought to a need for proper balancing of auto wheels—but with the coming of plumper tires, smaller wheel diameters, and higher wheel speeds, the matter soon arose as wheel thump, vibration, and shimmy were noted. He offers some suggestions for wheel balancing without special equipment for example, loosen brakes temporarily to eliminate all drag; also loosen wheel bearings slightly, or perhaps mount a spare wheel spindle in a vise for testing. He also explains how a pair of identical

weights 1 ounce each, for instance can be used to give any correction from 0 up to the full 2 ounces, depending upon how far apart they are placed on the rim. Some early wheel weights were held in place by set screws rather than by the usual clips. Sometimes a new tire bore a mark indicating its lightest spot; the inner tube valve stem could then be placed at that point.

Genuine leather overshoes for your antique Hudson? They were available complete with metal button studs, to fit over tires; intended to add puncture resistance, protect worn treads, and substitute somewhat for tire chains. The brand name was Woodworth, but we have no idea of the mileage expectancy of these leather covers, even at the suggested slow speeds. The company also offered a tire with an extra internal leather ply to resist punctures. Accessory tire lining belts of fabric or other material, to be placed between the inner tube and the casing, were available as well, but were recommended for use with old tires and low speeds only.

The "temporary spare tire" on its own special rim, for emergency use only, is not an especially new idea. One after market item available early in this century was an inflated tire on an odd rim designed to clamp onto the wheel spokes or rim beside the flat tire, thus allowing the car to be driven, slowly, to a repair shop. This gadget never became popular, however, since it made steering and handling difficult. It represented one more attempt to deal with what was surely the most exasperating feature of early motoring tire trouble.

Early drop-center rims in the 1930's, were nearly always made with an elaborate pressed-steel center spider designed and resemble an individually spoked wheel rather than a smooth disc shape

whether for structural or styling reasons is not certain. Drop-center wire-spoke wheels were also available and, strangest of all, some luxury models came with beautiful chromed wire spokes as standard equipment, but then offered optional full metal wheel covers (usually by Ace) to conceal the wire spokes! At this time, too, the protective grease cap for the wheel bearing, long made as an ornament (usually of cast aluminum) to display the Hudson triangle or other auto insignia, disappeared behind a larger decorative outer hubcap which also concealed the wheel mounting bolts, and was usually held on by clips on the wheel.

The years from approximately the mid-1930's through 1947 were the era of 16-inch wheel rims and tires on Hudson and most other U.S. cars, although parts books show a few odd exceptions. For 1940-41 Hudsons, for example, the 16-inch wheels were offered with rim widths of 3- $\frac{1}{2}$ ", 4.0", 4- $\frac{1}{2}$ " and 5 inches, depending on the model, the option choice if any, and the intended tire size (5.50-16, 6.00-16, 6.25-16, and 6.50-16 respectively, give or take a little tire width for some applications). But a special 18-inch wheel option is also listed (rim width 3- $\frac{1}{2}$ ") for 6.00-18 tires. Purpose of this is not stated (truck use?), but it must have been a close fit under 1940-41 fenders. (Special steering arms were needed.)

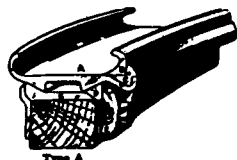
On the other hand, a 15-inch wheel option was also available for some of these Hudson models as early as 1940-42, including the rare prewar "woody" station wagons. Rim width was 5" for 6.50-15 or 7.00-15 tires. Does any HET member know of a 40-42 Hudson originally so equipped? Post war wheel selection for Hudsons 1946-47 was much simpler, generally again with 16 x 4.50-inch rims (for 6.00-16 or 6.50-16 size tires). An "air

wheel" version of these evidently heavier duty was specified for trucks. But 15 x 5-inch rims (for 6.50-15 or 7.00-15 tires) were again an option, and they also were listed as standard for Commodores (except export models).

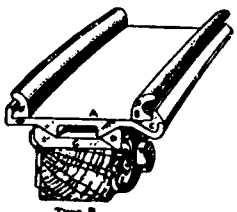
Small and large hubcaps, and also beauty rings, were available to fit all 15 and 16-inch Hudson wheels for 1940-52 and later. The larger hubcaps were standard on some models and optional on others. Beauty or trim rings appeared in the late 1930's (does anyone know the exact year?), and were a long-time optional or service "dress-up" item although a few in 1940 were standard equipment. The first full wheel covers for Hudsons were a late-1951 option.

All Hudson stepdown models, 1948-54, have 15-inch wheels, although there are many 16" rims which will fit O.K. in an emergency. These include Nash, older Hudson and Chrysler products, and more. Some 14" rims may also fit if they offer enough clearance around the brake drum. All of these wheels, of course, have the same size 5-bolt pattern for mounting; also the same size center hole, and 5 extra holes (or just one) for the guide stud on the brake drum. Many Brand X's, including GM products, have a smaller 5-bolt pattern which will not fit (unless with adapter rings).

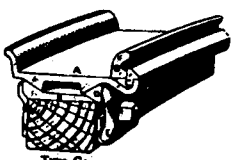
Occasionally a wheel may be found which fits but which has its center spider placed in the rim farther inward or outward than normal, thus changing the car's effective tread width slightly. This difference in "offset" can cause clearance problems, and in front can cause undesirable steering effects (though somewhat less if a matched pair is used). This can also be a problem with adapter rings but it is an unlikely one since there appears to be no shortage of good spare original type wheels for



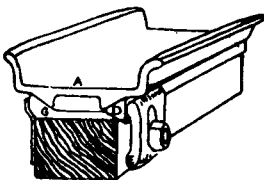
**Type A—Firestone Rim.** Quick detachable and demountable. This rim takes a plain "clincher" or a "quick detachable clincher" tire. Tire can be removed without removing rim, or the rim and tire can be demounted.



**Type B—Firestone Rim.** It is also a quick detachable, demountable rim, but the side ring (B) can be reversed for use with any straight side or Q. D. tire. Therefore this rim will take a plain "clincher" or "quick detachable clincher" or "straight side" tire. By removing the clamp the rim with tire is demountable. This is called the universal rim.



**Type C—Firestone Rim.** Quick detachable, demountable for use with any standard "straight side" tire. This is a quick detachable rim with demountable features. See page 556.



**Type E—Firestone Rim.** A demountable one-piece rim for straight side tires. It is a split rim, see figs. 4 and 5, chart 236B.

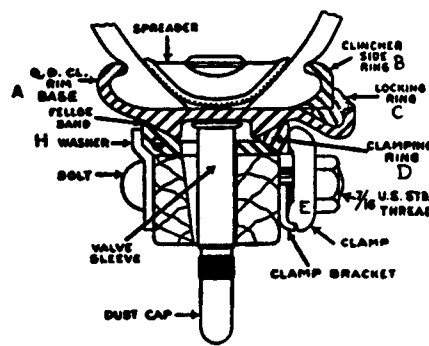


Figure 1

The valve sleeve can best be explained from the instructions given by a prominent tire manufacturer as follows:

Be sure that valve sleeve, sent out with every set of Firestone demountable rims, is being used. This is an important feature of this rim as it serves to hold steel valve spreader securely in place, making it impossible to throw a tire even when deflated, prevents moisture from working into the tire around the valve stem, and the dust cap need not be removed when the rim is mounted or demounted.

**\*Quick Detachable Rims.**

**Type A—Firestone Quick Detachable, Demountable Rim:** A—Rim Base. B—Side Ring. C—Locking Ring. D—Clamping Ring. E—Clamp. F—Clamp Bracket. G—Felloe Band. H—Bolt Washer.

**Type B—Firestone Quick Detachable Reversible Demountable Rim:** A—Rim Base. B—Reversible Side Ring. C—Locking Ring. D—Clamping Ring. E—Clamp. F—Clamp Bracket. G—Felloe Band. H—Bolt Washer.

**Type C—Firestone Quick Detachable Demountable Rim:** A—Rim Base. B—Side Ring. C—Locking Ring. D—Clamping Ring. E—Clamp. F—Clamp Bracket. G—Felloe Band. H—Bolt Washer.

**Type E—Firestone Demountable Split Rim:** A—Straight Side Split Rim Base. D—Clamping Ring. E—Clamp. F—Clamp Bracket. G—Felloe Band. H—Bolt Washer.

**Standard Sizes of Pneumatic Tires After Nov. 1, 1920.**

- 30x3 1/2 clincher
- 31x4 clincher
- 32x3 1/2 straight side
- 32x4 straight side
- 32x4 straight side
- 32x4 1/2 straight side
- 32x4 1/2 straight side
- 32x4 1/2 straight side
- 32x5 straight side
- 35x5 straight side

**Oversizes.**

31x4 is oversize for a 30x3 1/2;  
 32x4 for 32x3 1/2; 32x4 1/2 for 32x4; 34x4 1/2 for 32x4; 32x5 for 32x4 1/2; 35x5 for 34x4 1/2.  
 See page 556, how to figure oversize tires.

Above are made in fabric construction in "plain" and "non-skid" tread. Made in cord construction in "ribbed" and "non-skid" tread.

**Pneumatic Truck Tires.**

**Sizes To Be Discontinued Nov. 1, 1920.**

- 30x3 clincher
- 31x3 1/2 clincher
- 34x4 straight side
- 35x4 1/2 straight side
- 36x4 1/2 straight side
- 37x5 straight side

- 36x6
- 38x7
- 40x8
- 42x9
- 44x10

Above made in straight side, non-skid or cord construction only.

The four figures on the left show "Firestone" rims. Firestone rims were commonly found on Hudson built automobiles, although rims from other manufacturers are occasionally encountered.

these cars at present. Some Hornet stock-car racers had a second center spider welded into each rim for extra strength. Further suggestions and facts about wheels and tires for postwar Hudsons are slated for a future column, Part 7, to conclude the present "tire-some" series. 'till then, be sure your wheel bolts are properly (and uniformly) tightened, and tires are well inflated for either storage or driving of your Hudson this winter.

Also, this is the time once more to wish all of our HET members and their families a joyous holiday season, and a great '98 as well!

During 1997 I attended several "all-make" old-car (and old-tractor) shows here in east-central Wisconsin. An interesting one, now in its second year, was held May 24 in Green Bay at the Railroad Museum, beside the old locomotives and parlor and Pullman cars. Despite rain, the show featured some O.K. wheels including an Alfa Spy-