

POINTS WORTH KNOWING ABOUT AUTOMOBILE TIRES

(By N. B. Scott, of Scott Brothers.)

The modern pneumatic automobile tire ought to be called "The 8th Wonder of the World," for, as one man expressed it, the real wonder is, not that they give out once in a while, but rather that anything made of cotton fabric and rubber can stand the work an automobile tire is put to.

Tires carry about as much "pressure" (60 to 90 lbs.) as commonly used in a steam boiler—yet, the boiler has only to "stand still" while the tire has to whiz over all kinds of roads, over rocks, bumps and railroad tracks at 25 to 40 miles an hour—sometimes properly inflated and sometimes sticking out on both sides like a man with double mumps.

Despite this hard service and the thousands of road accidents to which a tire is subject, it is surprising how very few strictly high quality tires fail to make good big mileage.

The owner's part in the obtaining of large mileage resolves itself into first buying of the best possible tire and then in giving it reasonable care in the important matters of keeping up pressure—a voiding excessive blows, stones, etc., as much as practical and prompt repair or reinforcement of numerous damages.

In the selecting of "what tire to buy" it is first necessary to remember that tires like shoes, hats or clothes are made in the three grades of "cheap," "medium" and "extra fine" and that "best service" and in the long run "lowest cost" always follows "best quality."

The purpose of this article then, is to provide the owner with more "definite" information about tires than manufacturers usually give in the belief that this will not only be appreciated but that it will also actually help the owner more than any other one thing.

What "Quality" Means.
"Quality" is a word so often misapplied to even the cheapest tires, that it recalls the Aesop fable of the boy who hollered "Wolf! Wolf!" when there wasn't any wolf—with the result that when a real live one came down the pike nobody heard him and the wolf ate the boy all up.

"Quality" in tires, however, consists of certain absolutely definite things about which (as owners become better posted) they will probably demand more definite statements.

Two "Kinds" of Fabric Used.
The strength of a tire—which means its ability to resist damage for the longest possible time—depends primarily on the strength of the fabric or cord of which it is made—and of the quantity used.

There are two principal grades of fabric, which are commonly used in the production of probably 95% of all automobile tires.

The best and strongest of these is what is known as Egyptian Fabric—being fabric woven (in this country) from imported long fiber cotton grown along the Nile River—the rich overflow soil of which produces a cotton especially adapted to give long service in tires—due both to its long fiber and also to the extra large number of little branches or spurs which give a twisted strand of Egyptian cotton its ability to hold together exceptionally long, under the constant "flexing" of use.

The other, or second grade, is what is commonly known as American or "peeler" fabric—a material which costs factories 10% to 12½% less than Egyptian.

The total amount of Egyptian cotton imported into this country (after deducting amounts known to be used in other trades, such as fine hosiery, etc.) is so small as to indicate plainly that the great bulk of tires today necessarily must be using the cheaper or "peeler" grade.

The important point between the two grades of fabric is not that a fair tire cannot be made of "peeler" fabric, but simply that a tire NEEDS the extreme limit of DURABILITY—and this Egyptian fabric gives.

How Many Piles.

A tire can "get by" with only the number of piles of fabric used in tires sold at so-called standard prices which give you 3½-inch sizes made only 4-ply thick—4-inch sizes 5-ply thick—4½-inch sizes 6-ply thick and 5-inch sizes 7-ply thick.

Most tires are built to only the above number of plies and belong to what the trade call the regular or "nonextra ply" class, but gradually the tire company after another has been compelled by the exceptional success and exceptional mileage records of the "extra ply" tires to go to a higher schedule until today no tire is really in the extra quality, extra long mileage class unless it is built to the new schedule of 3½-inch sizes built 5-ply thick—4-inch 6-ply—4½-inch 7-ply and 5-inch 8-ply. Well-known tires of the definite extra ply class are—Kelly Springfield, Hood, Mohawk and the Nobby Tread tire of the United States.

In short, this "extra ply" construction gives the strongest fabric body that can be built in a tire and a durability which "one less ply" cannot produce.

It is not difficult to tell "whether" any given tire is built of Egyptian fabric and with one extra ply, or not, for you can safely "bet your old hat" that

if they are so made, the makers will let you know about it definitely and positively in their advertising.

There are, of course, many ways of "camouflaging," that cost much less than actually to use "Egyptian fabric and one extra ply"—such things as "wonderful service"—"finest quality fabric"—"enormous factory production," etc.—but when a jeweler sells you something that is "18 Karat Gold" you can count on it that he will take particular pains to show you the "18 K" mark—while if its only 14 or 12 he'll look out of the window, or show you the beautiful "engraving."

The Importance of Para Rubber.

Rubber is one of those few God given natural products, which like "untarnished" gold—like the "warmth" of wool, has certain properties peculiar to itself not found in any other article, and which therefore probably never will be successfully imitated or substituted.

In rubber this peculiar natural property is wonderful strength, combined with what we term its "elasticity" (or the ability to stretch to a wonderful degree—millions of times, and yet come back to its original length) and combined with this are the equally wonderful properties—that it is impervious to water and practically unaffected by any ordinary degrees of either heat or cold.

Some idea of the strength of Pure Para Rubber and its wonderful elasticity and also of the utter futility of trying to get true rubber merit by adding to it or substituting any other material, can be gathered from the fact that to pass Government requirements (which are always set high) a tube must stretch not less than 7½ times its length before breaking (in other words, 1 inch length must stretch to 8½ inches long)—while some idea of how fine rubber can be made when it is all pure Para and properly cured is gained from the fact that the U. S. Bureau of Standards test on our own Brazil Rubber Inner Tube shows that it stretched a little over 10 times its length before breaking.

In a "highest possible quality" tread stock (in which elasticity is needed to cushion the road shocks—combined with great wear quality) the best tread is made by using the highest possible percentage of pure Para Rubber combined with just enough of oxide of zinc to give extreme toughness against wear—the high Government requirement being that it shall stretch not less than 4½ times its length before breaking—our tread (Bureau of Standard test) showing a 6½ times stretch before breaking.

What "Rubber" Does in a Tire.

The first and one of the most vitally important uses of rubber in a tire is to HOLD THE PLIES TOGETHER—since we depend upon the united strength of all the plies to resist blowouts, and if "separation" occurs between any of the plies—the life of the tire will be greatly shortened.

There are three vital things in holding the plies together—the first being, that the rubber must be so thoroughly pressed down into the fabric from both sides that it will meet together in the intercises (or little holes between the threads) thus forming little rubber rivets which join the rubber on one side of the fabric to the rubber on the other side.

The extreme importance of getting these little rivets as large or fat as possible and of having them of the very toughest and strongest rubber can be understood when it is explained that separation between two plies of fabric almost invariably takes the form of simply pulling the rubber out of the fabric by the breaking of these little rubber rivets—due to their being too small or too weak.

To gain exceptional strength at this vital point we first obtain a greater than usual toughness in the rubber itself by making it all pure Para in place of mixing it with some softer, cheaper rubber, as is commonly done, to make the calendar work "easier."

Starting out with the greatest possible strength of the rubber itself, we have then developed a process of our own by actual test puts 17% more rubber right down into the fabric—thus making the little rubber rivets both very much larger and stronger—with the result that separation of the plies in AUBURN tires is practically unheard of.

The next important use of rubber in a tire is to form an elastic body between the plies, which will allow the necessary motion between the plies as the tire constantly "flexes," and here again the long life and durability of the tire and the holding of the plies together without separation are dependent entirely on using rubber having the very last notch of toughness, strength and durability—which again is obtained and can only be obtained by the use of the purest possible Para. Our sworn-to Government affidavit made at the time of soliciting war orders, shows that this rubber in AUBURN tires is 91% pure Para, which with the necessary sulphur to cure leaves practically nothing but pure Para rubber, and is well above even the high Government requirements of 75% to 85% Para.

The next step in rubber's use is to join and hold the tread of the tire to the fabric carcass. One of the hardest things in tire building and which has given all the factories some trouble, but which we have fully conquered by the use of a stock between the tread and carcass which combines a little of each, and thus joins perfectly with both—plus a certain carefully developed further refinement of our own which has given the remarkable result of more than twice the high tread strength required in the highest government specifications.

The final step in rubber's use is to make a tread so "live" that it will constantly form a resilient protecting

cushion to prevent damaging road shocks from reaching the fabric and that will outwear the tire itself.

Right here, a misconception on the part of owners (or perhaps it should even be called a certain unfairness) has acted to prevent factories from making a tread as tough as they could—for the simple reason that if the tread wears out about the same time that the fabric of the tire is due to give out, the customer is satisfied because his tire "looks worn out," and therefore feels that the fabric has lasted as long as could be expected.

While if the tread is made to that extreme toughness which a high percentage of Para rubber scientifically cured can produce, the tread will only wear off about 1-32 of an inch per thousand miles of normal use, with the result that tires which have gone 5,000 to 7,000 miles, WILL OFTEN NOT HAVE EVEN THE NON-SKIDS WORN SMOOTH—with the perhaps natural result that if something then happens to the tire the owner jumps to the conclusion that the fabric "must have been rotten"—although, he would have been fairly well satisfied if the tread had only been WORN OFF more.

Admitting the difficulty of overcoming this popular "impression," and that it gives an opportunity for the unscrupulous and unfair dealer or owner to demand unfair adjustments, we yet have the nerve to make our tread AS TOUGH AS WE KNOW HOW, because of the important point that one of the big purposes of a tread is to save the carcass of the tire from road shocks, and this vital "protecting of the fabric" result is only obtained where the tread is so tough and wears so little that it continues to keep a thick cushion of live rubber between the fabric and the road. The AUBURN TREAD BY SWORN GOVERNMENT AFFIDAVIT IS 81% pure Para, (the balance being oxide of zinc with necessary sulphur to cure), making the PUREST RUBBER tread we know of.

The Bead of a Tire.

There is a whole science in itself in the building of a tire bead, so that there will be no rim cuts no matter how long the tire is used—excepting that small to be expected percentage which is bound to occur where tires are run under-inflated or accidentally run flat. The secret of proper bead construction lies in doing the extra work, or in other words, putting in the extra cost of molding and semicuring each bead first before it is built in the tire, so that it is bound to be correctly placed and to keep its proper shape—most bead trouble being due to hasty factory methods of laying the bead in its raw or crude form, and then trusting to luck that it will form to "about" the right shape in the molding of the full tire. It's a practice, however, that is dying out, and because of it, rim cuts are becoming comparatively rare. In our own tire we have been particularly fortunate in this respect, with the reputation of having the bead right from the very start.

Methods of Building Tires.

There are two methods of building tires, which are commonly called "machine built" and "hand built." The "machine built" tire helps in the matter of making extreme large production practical—because less dependent on skilled labor, and therefore something which can be more quickly increased during the rush season and more readily laid off at dull times. As far as the article produced is concerned both methods can probably build a good tire, but just as a "hand built" shoe and tailored suit of clothes has never YET been excelled—if indeed it can be equalled by the "machine made" goods, so it is safe to count on the fact that a "hand built" tire is equally "unexcelled."

Different Methods of Curing Tires.

Practically all tires are made either by the "full molded" or "wrapped tread" process, there being in truth, no particular choice between the two, since a thoroughly fine tire can be built by either process, providing only the proper care is taken throughout, from the handling of the crude rubber up. Practical proof of which is found in the fact that among the best known tires—both of extra quality and of so-called standard quality, the tires which have shown best results do not belong either to the one class or the other—but are about equally divided.

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SHINY BAYONETS CALM THE CHICAGO RACE RIOTERS.

Race war terror and bloodshed had abated Thursday night after four days and nights of rioting, but violence continued to occur sporadically, notwithstanding a force of 6,500 troops and thousands of policemen who were on active duty in the south side negro district.

Three negroes died Thursday, making the official corrected list thirty-two, of whom eighteen were negroes. Only one of these was shot Thursday, though a dozen or more of both races were wounded in scattered disturbances, most of them of a minor nature. In the downtown district a crowd of white men attacked and severely beat a negro who was on his way home from work. The police rescued the negro and he was sent home in a patrol wagon. There was no shooting by the troops who were ordered on the streets last night by Governor Frank O. Lowden on the request of Mayor William Hale Thompson.

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