

**RUBBER AND ITS USEFULNESS**

Writer Traces it from Plantation to the Tire Factory.

**GATHERING THE RAW PRODUCT**

Converting Crude Rubber from Its Raw State into an Automobile Tire is an Important Part in Motoring.

One of the features of the A. L. A. M. show number of the Automobile was an article entitled "The Reign of Rubber." The first installment of the article dealt with the growth of the giant industry comprised under the head of rubber production. The article in question recounted the first uses of rubber, noting that the first bit seen in England was brought there in 1779 and was named rubber because it proved useful in erasing pencil marks. In 1823 sailors from the Amazon valley brought the first rubber shoes into the United States. In 1840 Goodyear vulcanized rubber. It was transplanted from the Amazon to Ceylon, and in 1858 scientific culture was instituted on a commercial basis. The world's production last year was 132,872,000 pounds. The record high price was touched in April, 1910, when rubber sold in the market for \$2.12 a pound. The field is being constantly enlarged for the production of cultivated rubber, but the chief source of supply is from the wild plants. The Philippines, Guianas and the German tropical possessions are being added to the field as well as the East Indies.

The earliest record of rubber traces back to 1700. In 1818 Charles McIntosh, of Scotland, discovered that rubber was soluble in naphtha. The rubberized cloth used for raincoats was one result of his discovery. The practical use of rubber really began with the process of vulcanization which renders it more permanent in form and more applicable to commercial wants.

The world's supply of rubber today, exclusive of Guayule and Pontianac, is divided into three classes, namely para, plantation and other sorts. Plantation rubber refers to the product of the Malay and Ceylon plantations, the trees producing a quality of rubber which is dealt with as para rubber. The price of the two kinds of rubber is identical. The price of all varieties of rubber is based on upriver fine Para, the term Para being used to designate the rubber that is gathered along the Amazon river and its tributaries from specimens of the tree known botanically as Hevea Brasiliensis.

The Congo and Mexico produce inferior grades of rubber, considerable quantities coming from the latter countries.

The price of rubber is never based on the uncertainty of the outcome of the current year's crop. It can be estimated within 1,000 tons.

**Many Rubber Plantations.**

There are 865,902 acres devoted to the plantation rubber industry in the whole of Malaysia, where 234 estates are maintained. The plantation rubber areas in British India, Guiana, comprise 35,600 acres. The German colonies in Africa at the present time have about 2,500 acres planted in rubber.

The highest price to which rubber has mounted since it became a commercial commodity was \$2.12 per pound in April, 1910.

Under the influence of a sufficient output of plantation rubber, the price may be driven back to the basis of 1907 and 1908, respectively, when rubber was quoted at \$1.64 and \$1.35 per pound.

There is an export duty of 18 to 22 per cent on rubber, aggregating something like 26 to 40 cents per pound.

It costs only 15 cents per pound to deliver rubber in New York or London.

To embark in the industry of raising plantation rubber it is necessary, as in any other line of agricultural enterprise, to begin at the beginning. The first work to be accomplished is the clearing of the forest lands. The process is decidedly simpler than clearing for agricultural requirements. A directed corps of 300 or 400 skilled woodchoppers manage to do the work in a surprisingly short space of time. Except for the lopped branches the felled trees are left to lie where they have fallen. The heat of the tropic sun dries the branches very quickly and they are gathered together at various points in the clearing by the coolies and set on fire. The process of flame-clearing leaves the logs and stumps to gradual disintegration.

**Import the Stumps.**

Experience has proven that in the next step relative to planting rubber time is gained by importing "stumps" and setting them out. In the case of planting from rubber seeds it is imperative that the seeds shall be developed in a nursery and that the seedlings shall have nine months of growth, at which time they will be from one-half to three-fourths of an inch in diameter. Upon the other hand, if the saplings are taken at any time before they are 1 year old and the roots be cut off and the top looped, the "stick" upon being put into the ground, will root itself, and at the end of three months from a tree as vigorous as if it had grown where originally planted. These "sticks," which are about three feet long, are technically known as "stumps." When it is time to plant new areas of rubber the "stumps" are transported from Malaya, as has been the case where the Para rubber plantation industry has been inaugurated in Sarawak, South Borneo, certain sections of British North Borneo, up from Barica in British Guiana, on the Karimons islands a short distance from Singapore, or the Tig trees having been planted, the chief future care required is to keep the land free from weeds until the trees shall have reached such a point that their shade will prevent the growth of underbrush. If the ground is quickly covered with plants the growth of grass and underbrush will be prevented and the bother of weeding will be avoided. Throughout the districts where para rubber is being cultivated, and especially in British North Borneo, the hills of British Guiana and the Malay states, use is made of the sweet potato vine to prevent the coming up of weeds, and the system is proving a great success. Within a space of four months the vines form a thick mass, thoroughly covering the ground. It is the policy of the planters to let some of the potatoes remain on the ground, where they rot, thus constituting themselves into a splendid fertilizer to the soil, the plants meantime continuing to develop and form a fine covering for the trees until they are old enough to tap. Within four years from the time of planting the "stump" the para tree reaches a circumference of sixteen to twenty inches. A sandy loam is best suited to the successful growth of Hevea Brasiliensis, or para rubber. Rolling, elevated, loamy ground, at an altitude of from ten to 100 feet above the river level, lends itself most profitably to the industry.

**Sea Island Cotton.**

In preparing the rubber for its ultimate use the tire makers have been busy in the meantime in assembling cotton fabric of the heaviest and strongest kind of sea-island cotton. In the average tire the amount of this cotton cloth used varies from 25 to 33 per cent and as the tires weigh when finished all the way from ten to thirty-five pounds or more, the aggregate amount of cotton used figures out to an enormous total. In making the cloth ready for the tire manufacturer the workmen cover the cloth with a layer of "mixed stock" and by means of rollers associate the gum with the fabric with much completeness. This product is called "friction cloth."

**Collecting the Latex.**

The process of gathering the crude product of the rubber plantations is by collecting the milk or latex which flows from cuts made in the bark of the rubber tree. The process of coagulating follows. This is a very simple part of the work of getting the product into marketable shape. The caoutchouc, as the rubber element of the latex is known, is separated from the watery portion by containing the latex in shallow dishes. The latex, after rising to the top, very much after the manner in which cream rises on a pan of milk, is skimmed off and shaped into "biscuits" preparatory to being washed and packed for shipment. No expensive machinery is used.

Now that the United States government is interesting itself in the industry, 3,000 para rubber seeds having been transported from the Government Botanical Gardens in Singapore to the Philippines, the subject is getting near home. It will not be long before the North American colonies will be in the march with other countries which are raising plantation rubber. Men who have given their best thoughts to this subject have found out that nature is unable to supply the world's demand for rubber, the 1907 crop, omitting plantation rubber, having fallen 4,000 tons short of the 1906 production. These men have proven that the plantation rubber industry has most encouraging phases, as it readily lends itself to agricultural assistance.

**Convert to Tire Use.**

Converting gum rubber from its raw state into an automobile tire is a process that occupies an important part in motoring. There are a dozen steps involved in this branch of manufacture, each of which must be taken with the utmost nicety and precision in order to attain the best results.

American tires are generally based upon that grade of crude rubber known as pure Para, which is produced in the Amazon river valley in Brazil. This is delivered to the factories in semi-spherical bodies, weighing as much as 100 pounds each.

The first thing that is done to the crude is to wash it thoroughly to remove foreign matter. This is accomplished by rolling it in machines fitted with warm rollers and bathing it in water. Its shape is changed materially during this process, which breaks up the original mass so that the bath will reach every part of the rubber. The washing usually removes from one to four per cent of the bulk of the rubber and in the final stage of washing the mass is porous and sticky, looking strikingly like dark sponge. It is rolled out into thick, flat layers of spongy substance on the cylinders, when it is known to the tire-making trade as "crepe."

**Removing Foreign Matter.**

The effect of the washing is to remove not only the small sticks, stones, vegetable and animal impurities, but also to lighten the color of the rubber. This is because the action of the water and the rollers is to cleanse the rubber of some of the effects of the smoking that was given the gum in temporarily preparing it for market. The "crepe" is stored in masses, awaiting subsequent steps in the course of manufacture and while so stored, soon darkens on the surface from the effects of the oxygen in the air until it is even more opaque and deeper in hue than it was upon being received.

The next step is to dry out a certain amount of the original moisture contained in the crude rubber and to remove the water introduced in the washing. This is done by evaporation, and gentle pressure between warm rolls or in trays which are subjected to a moderate degree of heat.

The third step in the process of tire-making is to thoroughly macerate the washed and dried rubber in preparation for the addition of sulphur and other vulcanizing elements and to reduce it to a condition where it may be more readily handled in manufacture.

This is accomplished by converting the dried rubber into minute grains and shreds by means of friction rolls and mixing with it the sulphur and chemicals. The vulcanizing chemicals give the rubber a pale, unhealthy color, which does not leave it until the final step in tire-making has been finished. After being mixed, the mass is rolled out into sheets and still considered crude rubber, is called "mixed stock," on account of the addition of the chemicals.

The fifth step is the first actual process that is made in the making of tires. The sheets of "mixed stock" are taken to the making room where it is shaped into tires.

**Sea Island Cotton.**

In preparing the rubber for its ultimate use the tire makers have been busy in the meantime in assembling cotton fabric of the heaviest and strongest kind of sea-island cotton. In the average tire the amount of this cotton cloth used varies from 25 to 33 per cent and as the tires weigh when finished all the way from ten to thirty-five pounds or more, the aggregate amount of cotton used figures out to an enormous total. In making the cloth ready for the tire manufacturer the workmen cover the cloth with a layer of "mixed stock" and by means of rollers associate the gum with the fabric with much completeness. This product is called "friction cloth."

The making of the tire then commences. In the room are many moulds made of iron in the shape of the inside of a shoe. These are mounted so that they may be turned around with ease by the workmen. A foundation for the shoe is then laid. Next a layer of the friction cloth is placed upon the shaper and cut to meet the various curves of the tire. On top of this another layer of cloth is placed and another and another until the right degree of thickness has been attained. This varies from four to six pieces of "friction cloth," depending upon the style of tire to be made. Upon this strong shield of cloth and rubber a thick stratum of "mixed stock" is laid and it in turn is covered with another ply of "friction cloth." Over and around this body the main portion of the tire is built.

**FATE OF AMERICAN DRAMA IN THE HANDS OF FAIR SEX**

Leading New York Manager Finds They Form Nearly Seventy Per Cent of Attendance.

NEW YORK, Feb. 20.—At the request of the department of dramatics at Harvard university, a leading New York theatrical manager had accurate account kept at the door of five large playhouses last week to prove his contention that the predominance of women attending the theatres really places the fate of American drama in the hands of that sex. The general proportion of women at the nightly performance was between 65 and 69 per cent.

Every type of attraction save musical comedy was included. Even a farce, designed to appeal particularly to men, showed a percentage of 66 per cent in feminine attendance.

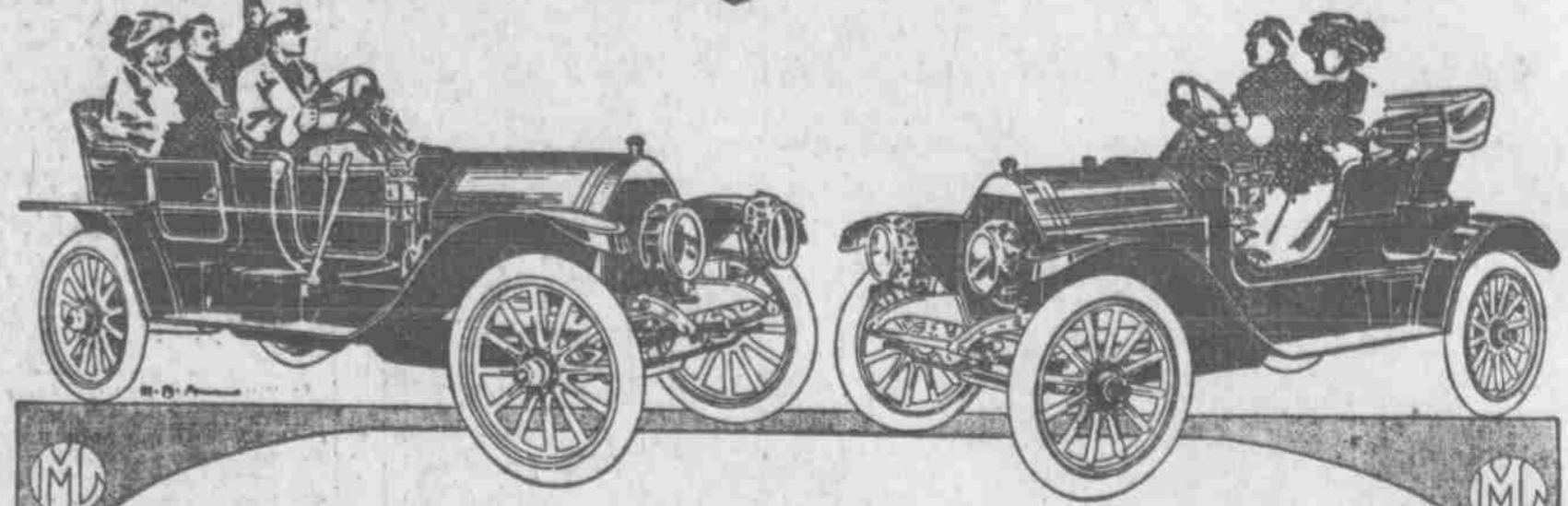
**Tipping Not Modern.**

Tipping is by no means a modern nuisance, and, in fact, seems to have been even worse in the good old times than it is today. The views of George I on the subject have fortunately been reported by Walpole. "This is a strange country," remarked his majesty. "The first morning after my arrival at St. James I looked out of the window and saw a park, with walls and a canal, which they told me were mine. The next day Lord C—, the manager of my park, sent me a fine brace of carp out of my canal, and I was told that I must give five guineas to his servant for bringing me my own carp, out of my own canal, in my own park."

One hundred and twenty-four years later the tip system reached such a state of perfection at Hampton court that persons who wanted to view the rooms were literally held up at the door of each apartment. If the tip was not forthcoming the victim got no further, and in one instance, when a lesser than the customary fee was given, the door was closed on the pennurious one, and he had ample time for reflection before he was released. In Italy many of the servants of the princely houses or of the palaces of the cardinals receive no wages at all, as the tips which time honored custom entitles them to claim from visitors are ample provision.

Many an American hostess pays her servants extra so that this evil of tipping will not go on under her roof. One, in defense of her extravagance, as some of her friends of foreign birth deemed this practice, said: "All my friends are not rich, and tips on the occasion of every visit would be a great drain upon their resources. Also, those able to afford only small tips would never have the attention that the more liberal would get. So I engage my domestics with the understanding that dismissal follows tip taking, and I make known to every visitor that there must be no gratuities."—New York Tribune.

# Mitchell



## The Mitchell Line

The Mitchell-Lewis Motor Company is not conducting any bargain sales this season. From the inception of its career it has carefully avoided the pitfalls of trade hysteria. The Mitchell Car was not excessively priced in the first place, therefore it has nothing to retract. It has always sold well and made good in the second place and its makers, therefore, stand before the public with a perfectly clean conscience, a good car and a most successful business.

We have nothing with which to reproach ourselves. We have no false explanations to make, no vain regrets to express. Where others have over-produced, we have hewn to the line of conservatism. Where others have spent fortunes in advertising, we have been content with modest and infrequent announcements. The Mitchell Car and the Mitchell service have done our talking for us and sold our entire product every year. Where others, who have yielded to hysteria, are now "dickering" and viewing the world through smoked glasses, we are optimistic and banking on an assured future.

We have taken the liberty this year of increasing our prices somewhat. That is due to the additional cost we have put in construction and modern development. Moreover, we have added a top to our equipment, besides gas lamps, generator, increased tire surface and other items which we considered necessary to increase Mitchell efficiency. The increased cost to produce is not entirely covered by the increased price, for, as a matter of fact, we are making less profit than ever before while giving you an improved car. We are more than satisfied over the outlook as we are aware at this hour that there is a greater demand for Mitchells than we can possibly supply.

Tell us what other company in the world is producing a high-grade Six-cylinder, Seven Passenger, 130-inch wheel base touring car that sells for as little as \$2,250. Show us the equal of the Mitchell Six for less than \$4,000 or \$5,000. Tell us what other concern is producing a high-grade four-cylinder, five passenger, 112-inch wheel base, 30 actual horse-power touring car that sells for as little as the Mitchell "T" at \$1,500. Show us a car that equals the Mitchell "T" under \$2,500 or \$3,000. Show us the factory that is making a high-grade four cylinder, four passenger, 30 actual horse-power touring car that sells for as little as the Mitchell "R" at \$1,200. Point to the factory that makes as good a car under \$2,000 or \$2,500.

### The Mitchell Service

The Company has stationed "Trouble Men" in various parts of the country whose sole duty is to look after Mitchell cars and make good everything that goes wrong without expense to the owner. This is a great asset to an owner.

The Mitchell Space in the Chicago Automobile Show is Section K, Coliseum

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On entering the Auditorium today turn to the left and proceed down the aisle. By the time you are half down, I will see you—You must see my new cars

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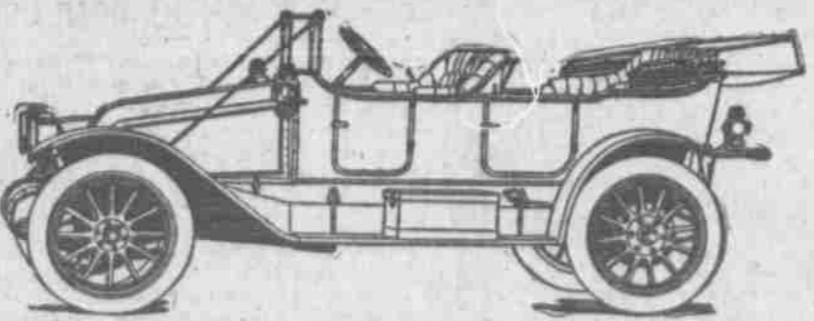
When you buy an Apperson Jack Rabbit car your money is invested in experience, not experiment.

Absolutely no car can climb a hill like the Apperson. Its endurance from one year's end to the other is unequalled. It will go longer without repairs. Cost less to operate and keep up than any car at any price.

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1102 Farnam St.

*Chas. J. Corbitt*  
Manager.



Model D, thirty-eight-horse-power, six-cylinder five-passenger touring car.

## FRANKLIN

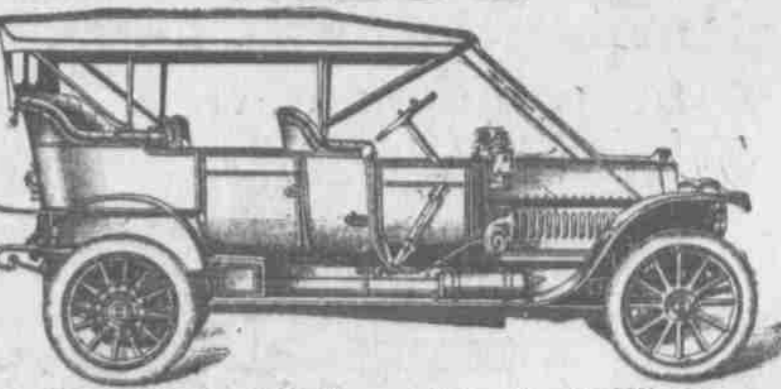
Blow-outs are the big item of tire expense. Tires on Franklins do not blow out, they wear out naturally. Service in excess of 10,000 miles is common.

The Franklin Model D is the first among all road cars. It is the fastest, easiest running and most comfortable car of its size built. It has only one superior, the Franklin Model H.

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