

**RUBBER FROM TREE TO TIRES**

Was Found Practical for Commercial Purposes in 1839.

**SUPPLY IS ENORMOUS ONE**

Most of It Comes from the Amazon, Where There Are Unmeasured Forests that Can Be Made Yield Raw Product.

Centuries ago, long before the discovery of America by Columbus, rubber, or "caoutchouc," was known to the South American Indian. As far back as 1500 Pincon, the Spanish explorer, told of these Indians of the dense forests bordering the banks of the great Amazon who tapped the caoutchouc trees, and extracted a milky fluid. He did not explain its use. Columbus noticed natives playing ball with a curious substance grown in the primeval forests and prepared according to native ways.

In 1771 Priestly, an Englishman, found that this milky white fluid, when hardened, could be used in erasing pencil marks, and in the early part of the nineteenth century Hancock discovered that caoutchouc could be used in the manufacture of articles of dress. A few years later Charles Mackintosh, a Scotchman, rendered two fabrics waterproof by uniting them with a solution of rubber in coal naphtha, hence came the name "mackintosh" for the waterproof coat.

**Discovery of Vulcanization.** Not until about 1820, however, ten years later than the advent of the mackintosh, did Charles Goodyear, an American, discover the method of vulcanization and make rubber fit to take its place among the most important commercial products of the world.

Then in 1858 the price of crude rubber owing to the demand created, suddenly advanced. Some years before it had been foreseen that possibly the supply of South American gum would run out, and through the effects of climate, and cultivated rubber trees were grown with success. The best rubber, however, still grows wild in the forests on the Amazon, and according to F. A. Scherling, president of the Goodyear Tire and Rubber company, Akron, O., who made an extended trip down the Amazon two years ago, the supply will more than equal the demand for some years to come. In the meantime rubber plantations are springing up in many tropical countries. Some of these are already large producers of high grade gum, and the future of the supply of raw material seems to be assured.

The number of tires manufactured annually for the commercial truck is increasing by leaps and bounds. Rubber men are certain the development of the truck industry in the next few years will be fully as spectacular as the development of the pleasure type of automobile has been in the last few years.

**Para is Finest Quality.** Rubber-producing countries, etc., are found mostly in northern South America, Central America, Mexico, central Africa and Borneo. The finest rubber obtained is fine Para, gathered in the Amazon regions of South America. Selecting a rubber tree, the natives cut "Y" shaped grooves in the bark with a special knife made for this purpose, these grooves being cut in herring-bone fashion diagonally around the tree, with a main groove cut vertically down the center like the main vein in a leaf. The latex of the tree, from which the rubber is taken, flows from these veins and down the center vein into a little cup at the bottom of the main vein.

When the cups are filled they are collected and brought into the rubber camp, and there the latex is coagulated by means of smoke. This is done by the use of a paddle which is alternately dipped into a bowl of the latex and then revolved in the smoke from a wood or palm nut fire. This smoke seems to have a preservative effect on the rubber, as well as drying it out and causing it to harden on the paddle, each successive layer of the latex causing the size of the rubber ball or biscuit to increase. When a biscuit of sufficient size has been thus coagulated it is removed from the paddle and is ready for shipment to various countries where rubber products are manufactured.

Crude rubber as it is received at the factory is more or less dirty. Hand-leaves and twigs sometimes constitute as high as 40 or 50 per cent of the weight.

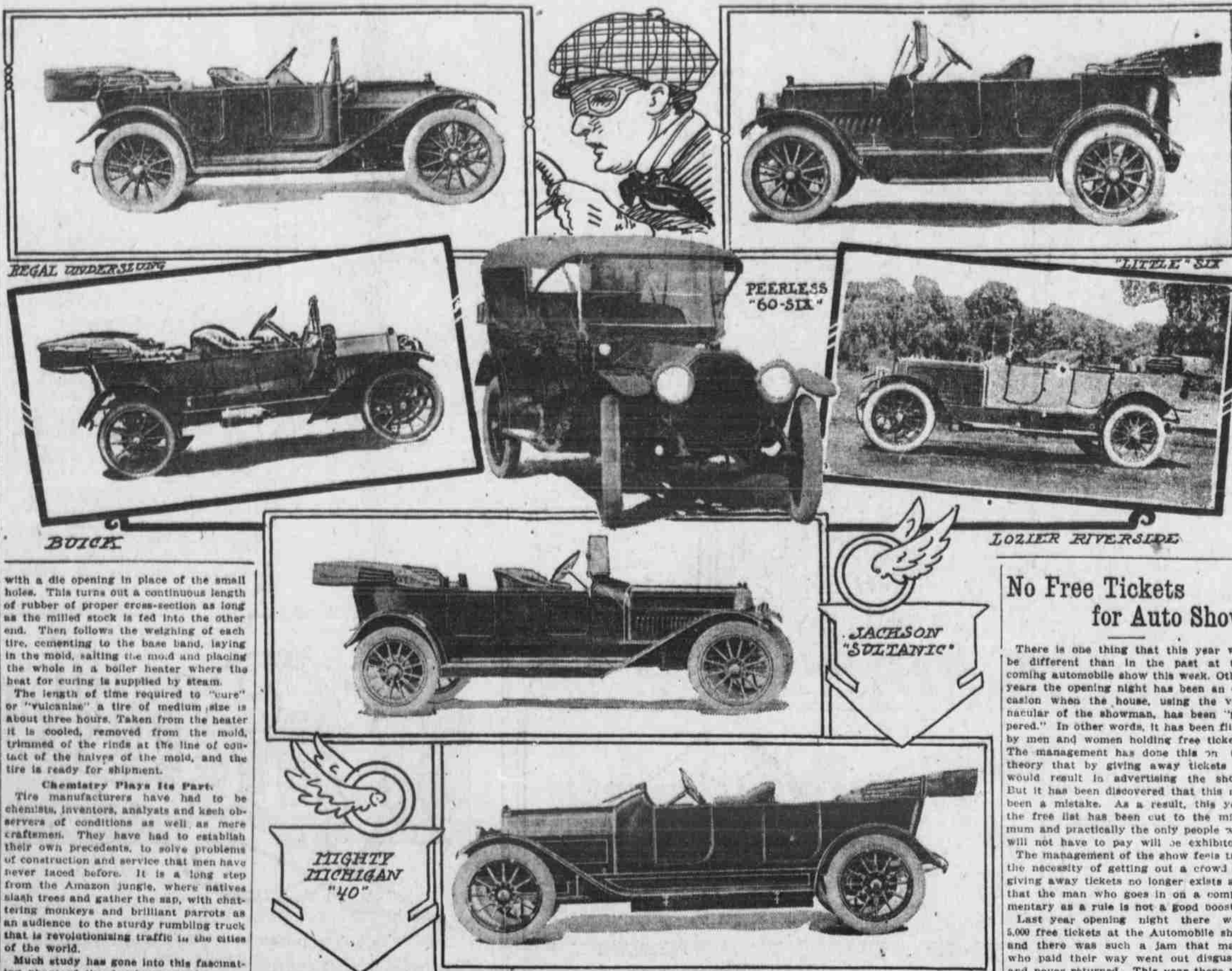
**How the "Cracker" Operates.** These foreign substances are removed by washing the gum; one or two tons being soaked in warm water and then taken to a machine called a "cracker." The cracker consists of two large rolls covered with pyramidal projections which revolve very close together at different surface speeds. It is a powerful machine, and as the gum is fed between the rolls the projections tear it in pieces. During this process a continual flow of water from perforated pipes plays on the rubber, and as it goes through these rolls repeatedly the water gradually washes away most of the foreign substances.

After this the gum is shoveled into boxes and taken to a machine known as a "washer." This also consists of rolls, but the projections are relatively small and the rolls are nearer together. The work of removing the foreign matter is completed here, and in addition the gum is "sheeted out." Sheetting is accomplished by using warm water as the washing finishes. The heat is just enough to make the gum sticky so that from fifteen to twenty-five pounds of rubber, a sheet about eighteen inches wide, several feet long and 3-16 inch thick results. These sheets are then dried.

**Mixing the Ingredients.** Mixing the crude rubber with the compounding ingredients is the next step. Each of the constituents of a 100-pound "batch" is carefully weighed and taken to the mixing room. Here the rubber is warmed and softened before the compounding is added by passing it between the warm rolls of a machine similar in design to the washer, but much larger and with highly polished walls. The front roll revolves more slowly than the back one and the gum soon forms an envelope around this. The compound is sprinkled on the gum, a little at a time, and is gradually worked in by the constant kneading effect of the rolls on the softened gum. Finally, the rolls are opened a little and the stock cut away in slabs about one-half inch thick.

Once again it is allowed to rest—this time forty-eight hours—when it is ready to be shaped for the rolls. In the case of rubber heels, pieces of suitable size are cut from the milled stock, but in making auto tires, where the length is many times the other dimensions, it is necessary to make use of another machine. This is done by running through what is known as a tubing machine. This resembles a meat chopper on a large scale,

**Latest Designs of Auto Construction Seen at the Show**



**BUICK**  
with a die opening in place of the small holes. This turns out a continuous length of rubber of proper cross-section as long as the milled stock is fed into the other end. Then follows the weighing of each tire, cementing to the base band, laying in the mold, salting the mold and placing the whole in a boiler heater where the heat for curing is supplied by steam. The length of time required to "cure" or "vulcanize" a tire of medium size is about three hours. Taken from the heater it is cooled, removed from the mold, trimmed of the rinds at the line of contact of the halves of the mold, and the tire is ready for shipment.

**PEERLESS "60-SIX"**  
**JACKSON "SULTANIC"**  
**MIGHTY MICHIGAN "40"**

**LOZIER RIVERSIDE**  
**No Free Tickets for Auto Show**

There is one thing that this year will be different than in the past at the coming automobile show this week. Other years the opening night has been an occasion when the house, using the vernacular of the showman, has been "battered." In other words, it has been filled by men and women holding free tickets. The management has done this on the theory that by giving away tickets it would result in advertising the show. But it has been discovered that this has been a mistake. As a result, this year the free list has been cut to the minimum and practically the only people who will not have to pay will be exhibitors. The management of the show feels that the necessity of getting out a crowd by giving away tickets no longer exists and that the man who goes in on a complimentary as a rule is not a good booster. Last year opening night there were 5,000 free tickets at the Automobile show and there was such a jam that many who paid their way went out disgruntled and never returned. This year there will be nothing of the sort, and if there is a crowd, as undoubtedly there will be, the members of that crowd will be persons who have paid the regulation admission fee. Thousands of letters from the country and from states other than Nebraska have been received by Manager Powell during the last week and the majority indicate that the writers are coming to the show. They say they want to see the latest and best things in automobiles

**Chemistry Plays Its Part.** Tire manufacturers have had to be chemists, inventors, analysts and keen observers of conditions as well as mere craftsmen. They have had to establish their own precedents, to solve problems of construction and service that men have never faced before. It is a long step from the Amazon jungle, where natives slash trees and gather the sap, with chattering monkeys and brilliant parrots as an audience to the sturdy rumbling truck that is revolutionizing traffic in the cities of the world. Much study has gone into this fascinating phase of the development of a commercial age. Motor trucks are really locomotives. They run without permanent steel tracks (and are therefore practical) only because the rubber tree grows in the tropics, and its blood, coagulated and compounded, finally makes a cushion for wheel rims thousands of miles away. Without rubber tires trucks could not succeed.

**Electric Cars Are More Practical as Around Town Autos**  
"Electric automobiles are destined to be the logical and practical town car for both men and women," says Sales Manager Wordhull of the Ohio Electric Car company. "Not only is it most easily handled in traffic, but its expense of operation is very low as compared with high-powered cars, requiring expert attention, chauffeur and pneumatic tires, to say nothing of the amount of the original investment and the relative depreciation. Depreciation is much less rapid in the electric, because it is far more simple mechanically. There is not nearly the number of parts to get out of order or require replacement. "Electricity is the cheapest form of power. Electric garages are scattered throughout the city and our power com-

pany is serving current at a very reasonable price."  
**PROPOSED HIGHWAY TO BE OF IMMENSE BENEFIT**  
INDIANAPOLIS, Ind., Feb. 22.—That the Ocean-to-Ocean highway, now being projected, and which has aroused automobile and accessory manufacturers and dealers the country over to a pitch of

enthusiasm never before equaled, by any other good roads propaganda, will result in immense good for all the people is the opinion of Henry B. Joy, president of the Packard Motor Car company. This company is one of the heavy contributors to the fund which is now being raised for the purchase of materials and the construction of the highway. Mr. Joy, in the course of a recent interview, expressed himself fully on the subject.

**A Car You Can Afford to Run**  
Franklin Six "38" \$3600  
A Light, Full Size, Touring Car  
"Buy a light car" is the advice of automobile owners everywhere. Tires and gasoline for a heavy car cost too much.  
Tire expense is not a burden with the Franklin Six "38." Light weight and resilient, it goes twice as far on a set of tires as a heavy car.  
You do not have to carry spare tires. This saves expense and weight.  
You get twice the gasoline mileage of a heavy car. A light car does not require a great big engine. Fuel consumption is small.  
Four-hundred miles to a gallon of oil and no smoke is another advantage.  
The Entz Electric starting and lighting system used on Franklin cars is simple and direct. Like other starters the Entz starts the engine. Unlike other starters it prevents stalling. The engine cannot go "dead" in tight places. This means certain control and simplifies driving 50%.

**GUY L. SMITH—Omaha**  
Space 17 at the Auto show

**1893** **Follow the Trail** **1913**  
of the **"Jack Rabbit"**  
You can find it easily when you reach the show. It will lead you to the exhibit of the **FAMOUS APPERSON "JACK RABBIT" MOTOR CARS** which commemorate the Twentieth Anniversary of the American Automobile. **TWENTY YEARS AGO** America's first gasoline motor car was built down in Kokomo, Indiana, by the Apperson brothers, Elmer and Edgar, who now personally supervise the building of all Apperson cars.

**SEE THIS CAR** **Then Read the 41 Reasons**

**Apperson "Jack Rabbit" Touring Car for Five.**

**The e Are 41 Reasons Why You Should Own an Apperson**

V-head cylinders cast separately.  
Big valves.  
Hollow crank shaft positive oiling system.  
Tire bearing aluminum crank caps.  
40 per cent of the crank shaft length is bearing surface.  
Sliding valve water pump.  
Honeycomb radiator.  
The coolest motor in the world.

The most powerful motor in the world for its size.  
The motor actually develops 32 per cent more power than any formula will give credit to any other motor with a like piston displacement, proving its remarkable reserve power and flexibility.  
Apperson Brothers and only one other manufacturer in the world use the contracting band type of clutch and they jointly control all patents, making it impossible for competitors to use it for years to come.  
The loss of power by friction is less in Apperson cars than in other because the construction is such that fewer bearings are required.  
A greater per cent of net power is delivered to the rear wheels than in any other car.

We will furnish the other twenty-eight on request. Get our 41 Reason folder—also the De Luxe catalogue.

**THE "JACK RABBITS"**  
"4-45" Touring Car for five ..... \$1600  
"4-45" Roadster for two ..... \$1600  
ELECTRIC CRANKING, ELECTRIC LIGHTING—if desired.

"4-55" Touring Car for five ..... \$2000  
"4-55" Touring Car for seven ..... \$2250  
These prices include regular equipment.  
Be sure and see us before you leave.

**Apperson "Jack Rabbit" Auto Co.**  
1206 FARNAM ST., OMAHA, NEB.

and that this is going to be the place to get their ideas and place orders for machines before going home. Every man connected with the show is enthusiastic. Salesmen and manufacturers' experts who are on the ground and that the show gives promise of being one of the best ever held, fully up to those of New York and Chicago and that the exhibits will be of the same high class as those seen in those cities.

**AN AUTOMOBLOGUE.**  
W. D. Nesbit in Colliers.  
The auto stood beside the road—all mournfully it stood.  
With wheels a-limp and sorrow in the drooping of its hood.  
"O woe is me!" it gasped and wept, and "Woe is me!" once more.  
"Injustices of many sorts have cut me to the core."  
They take me out to have a ride—and suddenly, alas!  
They find that through an oversight I haven't any gas.  
Who owns the gas? Do they themselves? That's how the case should be.  
But on the other hand, they hoot and howl and curse at me.  
"Ahead of me I see a place where glass is on the path—  
A puncture comes, and instantly there is a time of wrath  
Instead of cursing the one whose duty 'twas to see,  
They curse the tire man, curse the tire, and double-dash-blank me!  
"Transmission troubles will occur, unless ere they commence  
My owner exercises care and likewise common sense?  
But what cares he? The clutch gives out and all that he can see  
Is just another chance to put the guiltiness on me!  
"My carburetor gets choked up, a cylinder will miss—  
My owner tears his hair and yells, "What do you think of this?"  
He yanks me with a monkey wrench and hurls aloud that he  
Has never seen a bunch of junk that ever equaled me!  
"He lets me skid; he will not feed me a puncture with oil;  
He overlooks the water and then I begin to boil—  
And goes he then condemn himself?  
He uses all his curs words in some brief remarks at me.  
"I wish I were a horse or mule, for then I'd get some care,  
But autos have to stand for all the evils they can bear."  
The auto wept again and said: "Here comes my owner—he  
Is stuck because of his own fault. The blame will come to me."

**Republic Black Line**  
Red Down Side  
Are the longest, most durable, and most satisfactory inner tubes made. This tube is now packed in a red bag, handy and safe from its many enemies in the auto tire box. Get Powell Supply Co. 2119 Franklin St. Tell you all about these tubes