

### SUBSTITUTE FOR GASOLINE

#### Cost of Motor Fuel Stimulates Variety of Experiments.

#### HOPE IN DENATURIZED ALCOHOL

#### Coal Gas By-Products Afford Some Prospect of Relief—Results of Investigations Are Reviewed.

Steadily increasing cost of gasoline, the rise in the last year being over 81 per cent, and the possibility of further advance, is creating great interest in possible substitutes for this fuel in automobile engines. Alcohol, kerosene and by-products of coal gas manufacture are being experimented with by carborator and motor manufacturers and by inventors, and although considerable progress has been made, it will doubtless be accelerated by the existing gasoline situation.

In England motorists have faced the question of high cost of gasoline, or petrol, as they call it, for a long time. There the increased price put on fuel by manufacturers and importers, has been aggravated by a government tax. Motorist associations have taken up the matter and given much encouragement to inventors and experimenters, the Royal Automobile club having appointed a committee on the subject. This committee reported that the chief hope for relief lies in substitutes for petrol or gasoline, rather than in any expectation of material reduction in its cost.

The possibilities of these substitutes are summarized by a British authority, who holds that the greatest expectations are to be found in denaturized alcohol. Writing on the subject he considers denaturized alcohol, benzol, a coal gas product, and paraffin which is the same as kerosene.

Alcohol, he says, resembles petrol in that it is a compound of carbon and hydrogen, but it contains also oxygen, which petrol does not. The supply is practically unlimited. The expression "denaturized" alcohol simply means that a certain amount of poisonous matter has been added to the alcohol. Tests made in America and in France show that, with certain alterations, any petrol engine can run on alcohol, and will give just as much power on the latter fuel. For this, however, it is necessary that the compression be increased from the usual figure of seventy pounds per square inch to about 110 pounds per square inch. This may be accomplished either by fitting plates on the top of the pistons, by the adoption of longer connecting rods or by means of a crank shaft of slightly increased throw. Alcohol burns more slowly than petrol, so that the ignition can be advanced without producing knocking, and arising out of this fact that the cylinder may be considerably hotter with alcohol than with petrol without any tendency to pre-ignition.

#### Some Drawbacks.

Alcohol tends to give very smooth and quiet running, and it has the advantage of forming an explosive mixture with air over a wider range than petrol; that is to say, the proportions of alcohol and air necessary to produce an explosion can be varied over a greater range than is the case with petrol, so that an alcohol carburetor should be less sensitive than one for petrol.

Against alcohol must be mentioned the fact that to cover a given distance with any car about half as much again must be carried compared with petrol. A journey demanding eight gallons of petrol will require twelve gallons of alcohol. The reason is that alcohol has a considerably lower heat value than petrol, and it is to this fact the common belief can be traced that an engine cannot give so much power on alcohol as on petrol. But alcohol burns more efficiently than petrol, also. It requires less air for its combustion, and, owing to these two facts, coupled with the higher compression, a cylinder of given bore and stroke will develop quite as much power on alcohol as on petrol.

The carburetor requires modification, generally speaking, a bigger jet and a smaller air intake. Though, as already stated, alcohol forms a wider range of explosive mixtures with air, the carburetion problem is not really simplified, because improper carburation gives trouble from another cause. If the alcohol is not very well vaporized, it tends to form a deposit on the inlet valves, and if the mixture be too strong, a certain amount of acetic acid is formed, which, as the engine cools after a run, is liable to corrode the exhaust valves and piping.

#### Starting Difficulties.

Finally, there is the question of starting. It cannot be denied that starting is not so easy with alcohol as with petrol, and, though an engine, when hot, will start readily enough on alcohol, starting on that fuel alone would be difficult or impossible on a cold morning. Even supposing mechanical starters to be brought to a high degree of perfection, it is probable that some means of preliminary heating of the carburetor would have to be adopted. In this connection a rather ingenious scheme has been tried in Germany. The alcohol, after being sprayed through the jet, passes over a tray of calcium carbide. Now, alcohol always contains a certain amount of water, which is taken up by the carbide, producing acetylene. The acetylene is very easily ignited, and the small amount entering the cylinder is sufficient to fire the alcohol. Another way out of the difficulty is to start up on petrol and change over to alcohol after the carburetor has become warm. There is, in short, no incontestable difficulty in using alcohol in place of petrol, and there need be no loss of power.

There remain benzol and the various grades of paraffin to be discussed. Benzol must not be confused with "benzene" or "benzolene." Benzol belongs to quite a different family. It is not a petroleum product, but is distilled from coal and is a by-product of gas manufacture. It herein lies its importance as a fuel. It is a home product and independent of the importing and distributing organizations responsible for the present price of petrol. I am informed that it can be used on any car without alteration of any kind, also that it may be poured into a tank already containing petrol and used with that fuel quite indiscriminately. At the present time the chief practical difficulty seems to be the lack of a suitable distribution system. Benzol cannot be obtained in many places, and the supply available is small. But a supply easily equal to any possible demand could be obtained by distillation of coal at any time. Benzol is a rival to petrol that is destined to make its influence felt.

New York World: If women had political rights in Mexico, Senorita Mercedes Madero, who denounced the Huerta people to their faces as cowards and assassins, might have superior quality.

### Not Daunted by Traffic

Mrs. W. G. Schaeffer is the first woman in Reading, Pa., to ride a motorcycle, this recreation following naturally Mrs. Schaeffer's fondness for all out-door sports. She is also known as an expert rifle shot.



MRS. W. G. SCHAEFFER.

The ease with which Mrs. Schaeffer "mastered" a motorcycle is shown by the fact that during her very first riding season, two years ago, she rode through the business streets in New York City without mishap, notwithstanding the great crush of traffic.

"I have been using a motorcycle since May, 1911, and the longer I ride the more fascinating it becomes.

"My first trip alone on a motorcycle covered about thirty miles and I was surprised to find how easily the machine was balanced and controlled.

"During the first season I went on a number of long trips, the longest of which was to Atlantic City, a distance of 120 miles. During 1912 the longest trip I took was to New York and Bridgeport, Conn. We rode from Reading through Philadelphia and Trenton, arriving in New York the same evening. From there we rode to Bridgeport.

"Returning, we made the trip from Bridgeport to New York in three hours, riding leisurely. At that time we had made a total of 200 miles in two consecutive days, the actual riding time being twelve and a half hours. Riding through the streets of New York at the busy hour of the evening was not an easy task, but I surprised myself as well as others, in being able to do it without mishap.

"I have been elected an honorary member of the Reading Motorcycle club and accompany the members on all of their runs. In July I entered the reliability run from Reading to Philadelphia, to Easton, to Allentown and thence to Reading, a distance of 124 miles. I arrived in Philadelphia thirty minutes ahead of my

competitors for office over a good many of the men thereabouts.

Washington Post: There's hardly any necessity for Vincent Astor to take up farming, as 'Fama' Jim Wilson's boy wonders of the south have already taught the world how to raise 400 bushels of corn to the acre at a cost of only \$36.

Springfield Republican: One of the prevailing uncertainties in domestic politics has been called by Mr. Wilson's announcement that the extra session of congress would be summoned April 1—all-fool's day. Other uncertainties will disappear now with considerable rapidity. An uncertainty, to many people, is a nightmare, and as such it is more of a terror than actuality itself. Philadelphia Ledger: Even that wide-

horizoned statesman whose eagle eye sweeps majestically over petty boundaries, Senator Newlands of Nevada, jumped up like Jack from the box when one of his local offices was about to be abolished. He delayed the progress of a great appropriation bill in order to save his bit of patronage. Thus it goes. They all do it.

Pittsburgh Dispatch: The building of "biggest" steamships having passed the size where the docks at New York are too small for them has now reached the dimensions where the Clyde is too small to launch them. The Cunarder Aquitania has been held on the stocks until they could deepen the river enough to float it. Which indicates that we are approaching the limit.

### POOR GRADE OF FUEL LEADS TO AUTO IMPROVEMENT

"Most of us who drive automobiles find ourselves complaining now and then, or oftener, about the low grade of gasoline now marketed," said J. F. Davis of the Pioneer Implement company, who looks out for the Jackson motorists here. "We may be justified, in a measure; but the very fact that gasoline has steadily grown poorer in quality has had much to do with motor car improvement, so here is the 'ill wind' saying illustrated again."

"No manufacturer who is alive to the situation is willing to see his car loaded with much of its efficiency by the fuel. Accordingly, the manufacturers have improved their cars; and the result is that the buyer and owner has a better car than he would if circumstances were different."

"The gasoline we are getting nowadays is heavy and hard to vaporize. Accordingly, motors are given greater power suction in order to get a full charge of fuel into the firing chambers. The more progressive manufacturers are at providing means of heating the carburetors, as heat makes the gasoline vaporize more easily. On the Jackson, the carburetor is heated by a hot-air jacket through which the exhaust is directed."

"This practice has been adopted by some makers, while others jacket the carburetor with hot water from the radiator. The hot-air system, I believe, is better for the carburetor begins to warm up with the first few explosions in the motor, but with the other system the water in the radiator must be heated, which takes some time, before the carburetor is affected."

### ADVANCED IDEAS ARE SHOWN IN THE OVERLAND

With the complete standardization of its two chassis models, an important factor in the principle of quantity production which has brought its product to the forefront in the automobile world, the Willys Overland company of Toledo, O., maker of Overland cars, has turned its attention to refinement as the next step toward perfection. The result of its efforts along this line is evident in the cars exhibited at the Omaha Auto show. In body building, especially, the Overland company has shown rapid strides in the last few years. Speaking of their exhibit, George Van Brunt of the Van Brunt Automobile company, said:

"Not only in line and finish does the Overland body show the advance of ideas. While progressive details of design and finish were being worked out, the engineers did not lose sight of the necessity for interior improvements, and with the 1913 models a thoroughly comfortable and even luxurious body is offered the automobile buying public."

### No-Rim-Cut Tires 10% Oversize

### Mark What the Meter Says

On the tire question, let your meter talk. Look at tire bills only.

Thirty makers say, "Our Tire is Best." But the verdict of meters, after 14 years, has given Goodyear tires the largest sale in the world. And that sale doubles yearly.

#### Reason Says This

A tire that can't rim-cut must save all that rim-cutting wastes. And statistics show that rim-cutting runs 23 per cent of all old-tire tires. An oversize tire, of equal quality, must outwear skippy tires. Our 10 per cent oversize, under average conditions, adds 25 per cent to the tire mileage. Reason also says that a tire which has come to outsell all rivals must in some way excel them.

Get the Facts Now isn't it wise to get the actual facts? Here is a tire which, through sheer merit, has become the sensation of Tiredoms. Men have used two million of them—on perhaps 300,000 cars. So many men could not well be deceived. Why don't you learn what won them? Make your own comparisons. No-Rim-Cut tires will certainly not cost you more per mile than others. If they do for you what they have done for legions, it means an enormous economy.

We Deserve It We deserve this test. For 14 years our experts have worked, in the ablest way, to cut tire upkeep. Year by year they have made these tires better—embodied in them a dozen strong features found in no other tire. They have saved motor car owners many millions of dollars. They have won over all the rest. Now we surely deserve your verdict on them.

Write for the Goodyear Tire Book—14th-year edition. It tells all known ways to economize on tires.



THE GOODYEAR TIRE & RUBBER CO., Akron, Ohio  
This Company has no connection whatever with any other rubber concern which uses the Goodyear name.  
Omaha Branch, 2212 Farnam Street  
Phone Douglas 4190

### THE OMAHA BEE'S DIRECTORY of Automobiles and Accessories

- Overland and Popo. Hartford
- VanBrunt Automobile Co. Council Bluffs, Ia. Omaha, Mo.
- Nebraska Buick Auto Company BUICK CARS  
Lincoln Branch, 13th and P Sts.—M. E. SIDDLES, Gen'l Mgr.  
Omaha Branch, 1912-14-16 Farnam St.—LEE RUFF, Mgr.
- Marion Automobile Co. Distributors of the Marion and Harmon Gas Cars and Standard Electric. 2101-3 Farnam St.



### Model 45-6 Cyl. 60 H.P. \$2750

### Electrically Started and Lighted—Four Speeds Forward—Left Hand Drive—Center Control—132-Inch Wheel Base.

Out of the most exacting and careful engineering experience has grown the Inter-State Six—Showing all of those tried and proven specifications—any one of which alone would characterize a car of higher price—Sound and sane manufacturing methods have made possible this splendid car—Attention to factory integrity and factory efficiency have produced the remarkable price of \$2,750—Read the specifications of "The Perfect Car." Read how we have built into the Inter-State Six those very essentials for car service and car convenience that you would demand in a car you built.

In 1912—1,500 Inter-States were sold to men alive to competitive improvements—30% of our 1912 output was sold to former Inter-State owners—Men and women who know they could pay more, but could not buy better—And who bought again the car that gave them dollar for dollar value through years of splendid service—Dealers: Why not write today for our Agency Sales Plan and convince yourself that you can better afford to handle the Inter-State than any other car regardless of price!

Models 40—41—42 Four-Cylinder 50 Horse Power, 4 1/2 x 5 1/2 Motor Fully Equipped	<b>\$2400</b>	Models 50—51—52 Four-Cylinder 60 Horse Power, 5 1/2 x 6 Motor Fully Equipped	<b>\$3400</b>
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**ARRANGE FOR DEMONSTRATION**  
C. S. McKEE, Western Branch Manager  
Factory Muncie, Ind.  
310-12 South 18th Street, Omaha.

#### SPECIFICATIONS OF "THE PERFECT CAR"

**THE LONG STROKE MOTOR**  
6 cylinders, cast on block, 4-in. bore and 5-in. stroke enclosed valves; capable of developing a full 60-horse power to the wheels. The longer stroke means a longer step on steep hills and lower consumption. The longer stroke means more power—steadier power—less effort—less heat—less oil—less gasoline.

**UNIT POWER PLANT**  
The unit power plant of the Inter-State Six centralizes the weight of the motor, transmission and clutch, thereby eliminating an uneven balance and an excessive number of universal joints. Clutch—multiple disc type; Raybestos against vibrations unit with transmission.

**ELECTRIC STARTER**  
The Apico Motor Dynamo Electric Starting and Lighting System, built specially for the Inter-State car, is used on this model. The continuous satisfactory service secured from this starting and lighting system on other Inter-State cars has warranted its adoption for Model 45, not as an experiment in any sense of the word, but as a time-tested, absolutely reliable starter of 100 per cent efficiency. The cranking of the gasoline motor is accomplished by the throwing of a switch which is conveniently located at the driver's left. It will revolve the motor continuously for fifty minutes if necessary or until the gasoline motor picks up under its own power, at which time the system is automatically disconnected as a starter and operates as an electric generator, furnishing and storing current in the storage battery, where it is at all times available for starting, for ignition and for lighting.

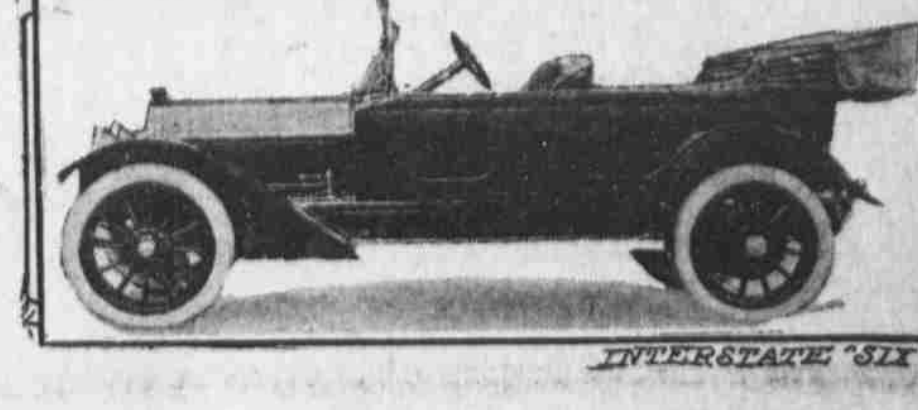
**ELECTRIC LIGHTS**  
The entire lamp equipment of the Inter-State cars is electrically lighted. The two powerful Apico head lamps with special Pyrex lens searchlight effect, capable of throwing their piercing rays 1,000 feet, two handsome lights, Flush Dash type, built in and flush with the dash, one tall light, illuminating the license number, one speedometer light. All lamps lighted or extinguished separately or together at the will of the driver by simply turning a button conveniently located at his left. Trouble lamps with flexible cord reaching any part of the car.

**MOTOR-DRIVEN TIRE PUMP**  
Every Inter-State is equipped with motor-driven tire pump, which sends clean, fresh air into the tires without any exertion whatsoever on your part.

**LEFT-HAND DRIVE, CENTER CONTROL**  
In building the Inter-State Six, we have adopted the left-hand drive center control because of the added convenience to the passenger in front, allowing them to enter or leave the car from the curb. For your greater convenience we have added a four speed forward and reverse transmission, direct drive on fourth speed.

**BODY DESIGN AND FINISH**  
The body is a special design straight line effect. Seats five passengers. The cowling effect in front and the windshield is built in as part of the body. Twenty-one coats of paint and varnish are applied to every Inter-State car. The appearance would be the same if we applied but eleven. The remaining ten are your protection against a shattered, blotchy car after its first trip over muddy roads or half a dozen washings. Inter-State upholstery is 11 inches deep, upholstered with the best leather we can possibly buy.

**EQUIPMENT**  
The Inter-State comes to you as "distinctively complete" as any automobile manufacturer knows how to make it. Mohair top, side curtains, ventilating rain vision type windshield built into body, speedometer and clock, complete kit of tools, gasoline gauge, are an example of what we consider fully equipped. 36x 1/2 tires, front and rear. Demountable Rims, at no extra cost. Double Ignition Magneto and Connecticut Timer and Distributor with coil for starting and auxiliary system. High tension magneto driven by extension of water pump shaft. Adjustable brake and clutch pedals. Pressure feed to carburetor. Splash and pressure lubrication. Your Inter-State is ready for you the day it leaves our factory without the necessity of further refinements or further expense.



INTERSTATE 'SIX'