

Facts That Will Help New Chauffeurs

Disabled Automobile Can Frequently Be Repaired With Little Trouble If Driver Proceeds in Proper Manner.

THE man who can easily write out his check for thousands in payment for a car that his wife asked him at the breakfast table to buy, expects to employ a chauffeur and does not care to become familiar with the mechanism of his car. But the man who has to worry some to get together the \$200 or so with which to buy a car must drive it himself, and must know his car.

There are some very simple things involved in the structure of an automobile that are seldom considered or understood, and yet they are of prime importance to one who is to drive his own car, says The Automobile. Car-buretor construction and the reasons therefor are not often studied, and yet the carburetor is the heart of the automobile.

The large number of designs, all calculated to accomplish the same purpose, shows conclusively that the men who study this matter are not settled upon the best mechanism for feeding fuel to the combustion motor. We all know that we wish to get a uniform mixture at all speeds which will give the greatest power and least waste of energy in the form of heat that is possible. The driver should know how his carburetor is calculated to work to accomplish this purpose so that he may intelligently adjust it as may be required, and know what to do when it fails to work properly.

The in-rushing air produces a spray from the discharge nipple very much like that from a common atomizer used in medicine. The fine particles of gasoline are thus brought in contact with the air in a favorable way to be rapidly converted into vapor, and this vapor mixing with the air produces the explosive or combustible mixture.

If the discharge or spray from the gasoline nozzle is too free, the particles will not be all vaporized, and will be deposited on the inner walls of the in-take pipe as liquid gasoline, and the portion which enters the combustion chambers of the motor will be vaporized by contact with hot surfaces, and a too rich mixture will be formed to readily ignite or to give the best discharge of energy.

If it does ignite under these conditions it only partially changes to an elastic gas having a much larger volume, because there is not enough oxygen at hand to furnish the carbon atoms with their required portion. The results will consist of lack of power, production of black carbon-laden smoke and fouling of the cylinders, all undesirable and easily avoided if we know how to meet the condition.

It is well that we should understand that all substances are composed of unit particles called molecules, and the relative nearness to each other of these molecules determines whether the substance is solid, liquid or gaseous.

If a gas be compressed so that the molecules come in contact, the substance will no longer be a gas, but will take either a solid or liquid form.

If the molecules of a combustible gas be compressed until they are much nearer together than in the natural state, but not near enough to become a liquid, they ignite much more rapidly than before, because combustion heat can more readily pass from one molecule to another. Not only will they ignite quickly, but the liberation of energy will be greater in volume, and this is the reason we demand compression in the cylinders of a combustion motor.

One of the incidental features of this compression is greater facility for the ignition spark to follow other paths than the spark gap of the spark plug. This is an undesirable feature, and must be taken into consideration in securing perfect ignition of the combustion charge in the cylinder.

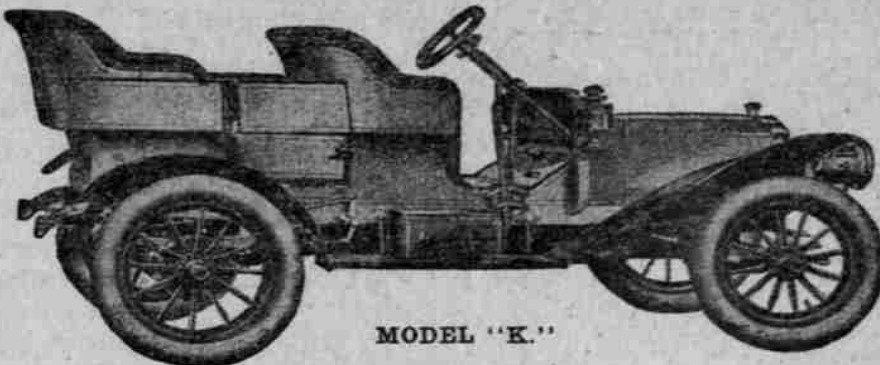
Trying the spark on the outside of the cylinder with no compression to influence it is not a correct explosion of its efficiency to producing desired results in the cylinder. It may spark beautifully when under observation, but when returned to the cylinder no perfect result may be attained.

The fault is usually due to the spark points of the plug being too far apart for anything but outside explosions. The points should be placed as close together as possible without being liable to fouling by small particles of carbon. Closeness of points not only favors production of sparks under compression, but it interposes less resistance to the current passing across the gap and thus makes it less liable to follow some other track, with absence of the ignition spark.

The adjustment of the vibrator on the spark coil is always a matter of serious ideas. The principle involved is that the primary current must be made and broken completely in rapid succession.

If it is so adjusted that when the points are apart there is still a flow of current from small particles between them, the indication is to increase the distance. If the points are in this close condition, which favors a lead across the gap, the battery will be partially short circuited, and dry cells or storage battery will quickly lose their charge. This is the explanation of much of the fault-finding of those whose batteries quickly give out. They think that if the

MITCHELL AUTOMOBILES



MODEL "K."

Four-Cylinder 30 H. P. \$1500, f. o. b. Factory.

The above price included Splitdorf Magneto, 32x4-inch tires, the motor is 4 1/4-inch bore, 4 1/2-inch stroke, exhaust valve in head which gives this motor 25 per cent more power than any of the other low-priced four-cylinder cars offered in Portland, while the car weighs less than most of them. If you want to realize the advantage of this, let them take you up the hills and then come and get in this car and ride up the same hill with the same load. This car also has a detachable tonneau which can be detached in a few minutes, making a nobby runabout. We have single rumble, double rumble and various seat combinations which can be attached to the rear of this car, making it a classy roadster.

This car sells, f. o. b. Portland, equipped with top, gas lamps, oil lamps, tail lamp, horn, generator, magneto, 32x4-inch tires, for \$1750.

HAVE YOU SEEN THE MITCHELL 20-H.P. FOUR-CYLINDER RUNABOUT? This is not one of the "little toys" which has been advertised to revolutionize the automobile industry, but is a REAL FULL-SIZED AUTOMOBILE WITH LARGE, ROOMY, COMFORTABLE SEATS, A SELECTIVE TYPE THREE-SPEED TRANSMISSION, AND SELLS FOR \$1000 F. O. B. FACTORY, \$1200 F. O. B. PORTLAND, WITH TOP, GAS LAMPS, OIL LAMPS, TAIL LAMP, HORN AND GENERATOR.

We have just received the 1909 40-H.P. Model "L," which sells for \$2350, f. o. b. Portland, with top, extra seats in tonneau, magneto, gas lamps, oil lamps, tail lamp, horn, generator and 34x4 1/2-in. tires in rear. Just stop and think of it, a large roomy seven-passenger, 120-in. wheel base, car for \$2350, f. o. b. Portland, fully equipped.

SEE US AT THE AUTOMOBILE SHOW.

FRED A. BENNETT

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buzzer does not buzz they do not need to turn off the switch when the car is not in use. And, furthermore, the current is continuous to some extent when the car is in use, when it should be perfectly intermittent.

These three points of adjustment are of prime importance in knowing how to run an automobile. The fuel discharge from the carburetor nozzle, the points of the spark plug and the points of the vibrator.

It is a mistake for a driver to ever try to correct an apparent fault in a coil. There are no reasons for a coil to refuse to work that can be remedied by an ordinary mechanic, except it be some outside connection. If the coil is so that a current will not pass through it, either the primary or secondary part, it is always due to burning out, and calls for a new coil at once. In the correction of all automobile faults the greatest and most common error is in not properly locating the trouble before trying to correct it. Indiscriminate and misdirected changing usually gets farther away from the correct condition than at the beginning, and makes the job more difficult for even an expert.

It is high time to look for the cause. It may be for no great reason, but lack of lubricating oil in the crank-case is a serious matter, and oftentimes it is just this absence of oil that is at the seat of the trouble.

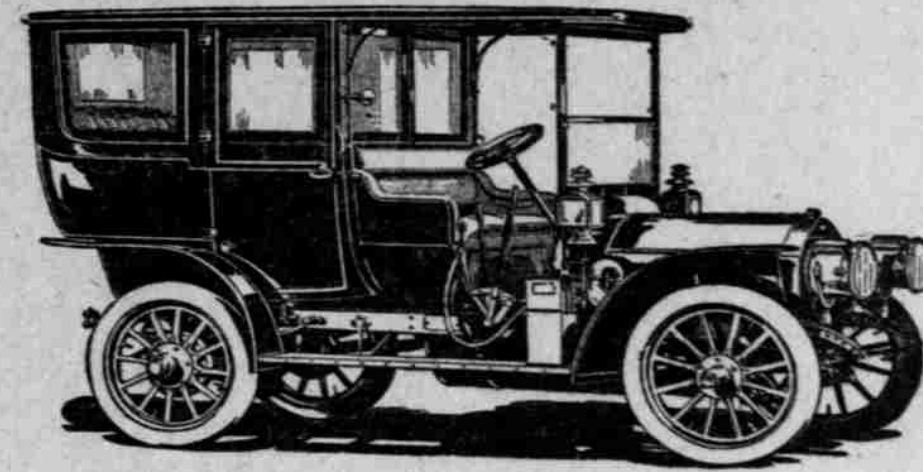
If the matter is not attended to on time and the motor stalls, it will be well to "crank" until the bearings cool down. If the bearings are allowed to "freeze," the trouble—for a road problem—will be beyond the ingenuity of the average autoist.

Sometimes it is kerosene oil—put into the cylinders—that seeps back into the crank-case and kills the lubricating qualities of the crank-case lubricant. In such an event, to drain off the oil and replace it with a fresh supply is the natural thing to do.

Types of Auto Bodies.

The early attempts by way of bodies for automobiles were along buggy lines, and before the introduction of the rear entrance tonneau the side-entrance survey

What Has Studebaker Done for 1909?



The Studebaker Model "D," 40 H. P., and the Model "C," 30 H. P. cars, driven by four cylinder water-cooled motors, with low tension magneto and hammer spark ignition, have been highly successful in previous years. The Studebaker Company is not looking for past approval for its present successes, but has improved and refined its former touring cars in many important particulars. On both the Model "D" and "C" the former rather intricate ignition scheme has been eliminated by the substitution of the celebrated Bosch magnetic hammer spark action. The appearance of this ignition device is that of great simplicity, and in this case appearances are not deceiving—it is one of the greatest improvements that the new cars show.

Both types of cars are equipped with platform springs. The "D" car has wheels 36 inches in diameter—the "C" car 34 inches in diameter. As is usual with the Studebaker Company, the fittings, trimming, painting and general details of these cars are as far ahead this year of the efforts of the ordinary automobile manufacturer as they have been in the past.

The Studebaker 1909 Models "D" and "C" are absolutely the best products of American or Foreign motor car builders, and we do not hesitate to say that for refinement and simplicity of mechanism, operation, class of design and stability of materials used, the 1909 model Studebaker cars are without an equal in this country.

Our exhibit at the Automobile Show will include these new cars, with three styles of bodies—the Limousine, the Touring Car, and our exclusive Suburban.

A half hour spent at our exhibit will convince you that the Studebaker Company have for 1909 out-classed in their production any other American or foreign manufacturer.

STUDEBAKER BROS. CO., NORTHWEST

330-336 East Morrison Street, Portland, Oregon

KANSAS FARMERS BUY CARS

Over 600 Machines Owned and More Being Bought.

The extent to which the automobile is being recognized as a necessity on the farms of the West is indicated by the fact that in Central Kansas alone more than 600 motor cars are owned by farmers. A dozen years ago the farmer in this region who owned an extra team and had a spring wagon had the standing of a man of means in

his community. Now those who then looked covetously upon the spring wagon are driving about in automobiles.

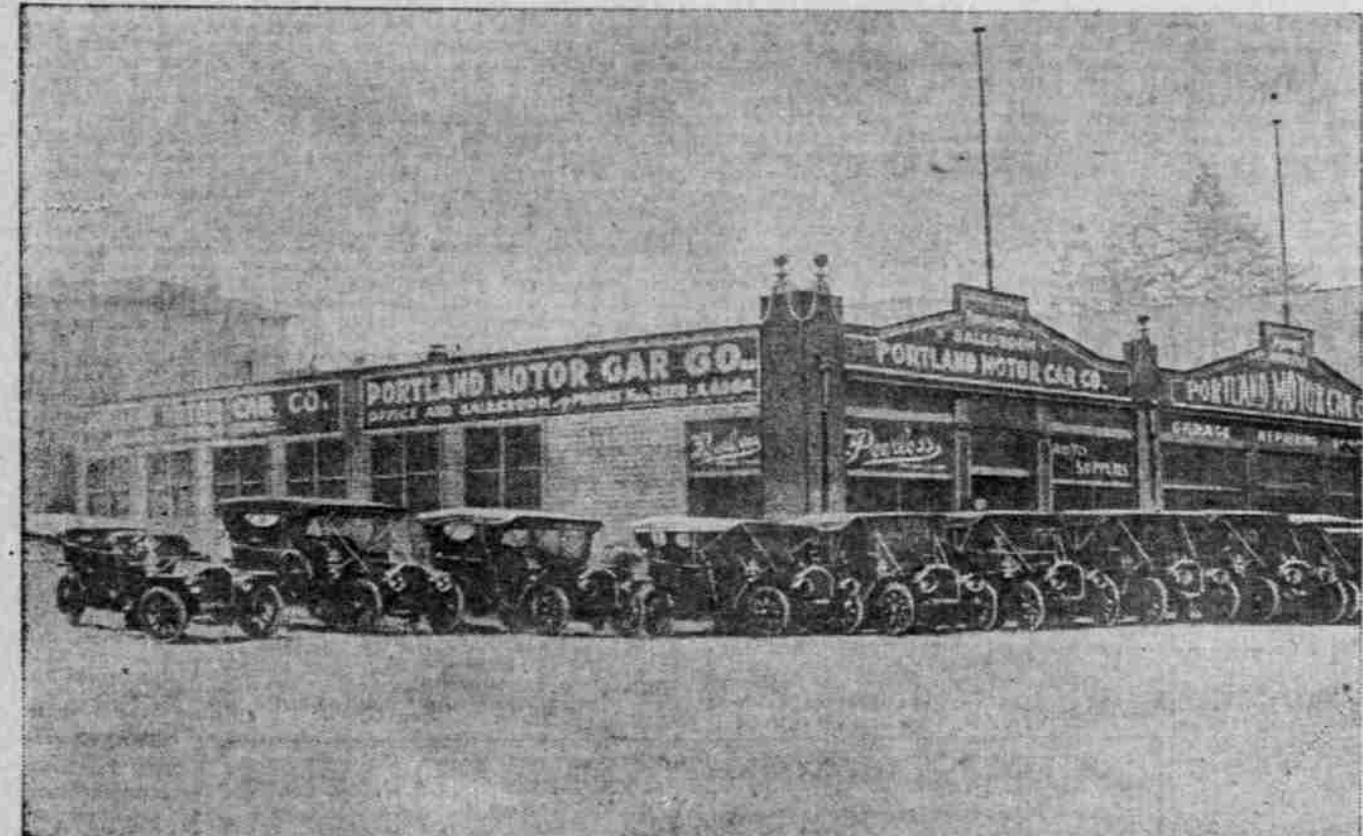
Orders for at least 166 of the gasoline vehicles for Spring delivery have been placed in Kansas City and Topeka.

It is estimated, and the tendency of the buyers is to favor air-cooled cars as the alkali in the only water available acts as a destructive agent upon the metal which it comes into contact in a water-cooled engine.

Kansas roadways are so level that they are a standing invitation to the automobilist, and this has contributed largely to the welcome given the automobile by those who live in the state.

So keenly is the automobile felt to be an agricultural essential that agitation has been started both in Kansas and

Missouri to have instruction given at the state agricultural colleges in the general uses and adaptabilities of the motor car. The agricultural school of Iowa at Ames has already decided to have a short Winter course of instruction of this kind.

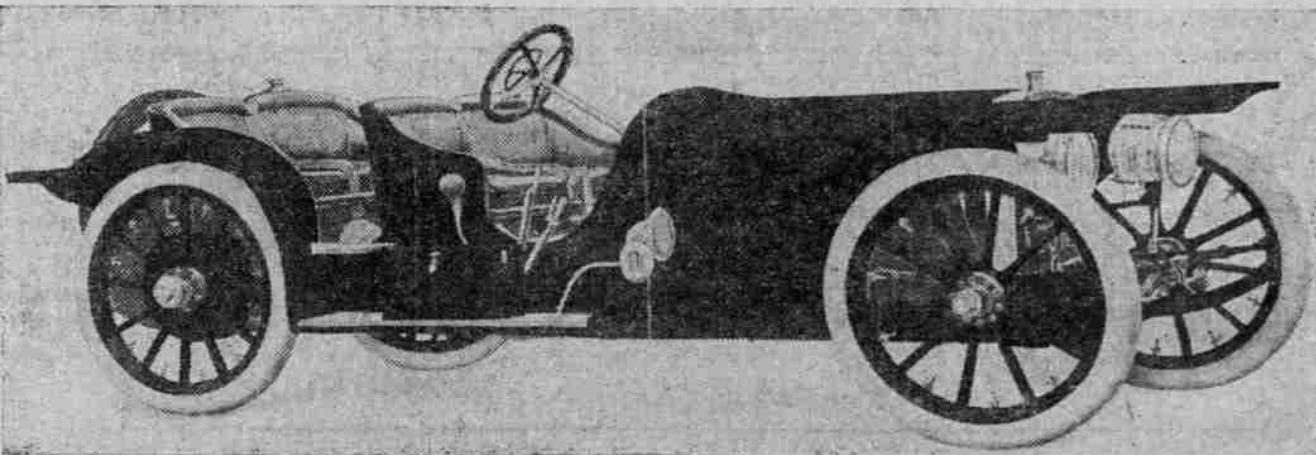


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