Why It Is Real Economy to Change Spark Plugs at Least Once a Year

Tests Show Why Replacement Should Be Made Every 8,000 to 10,000 Miles.

The Government has become vitally interested in the conservation of gasoline and has begun an educational programme which is to embrace the entire range of gas saving ideas. To the spark plug the Bureau of Mines has devoted a photoplay called "The Story of a Spark Plug." From this film come the illustrations and facts presented here.

A hot, intense spark means economy.
A hot, intense spark means power.
A hot, intense spark means a live engine.

When a spark plug loses intensity because of the great stress to which it is subjected in engine operation, it fails to give complete combustion of gas in the cylinder. These things then happen:

Power is lost.
The engine is sluggish.
Gasoline and oil is wasted.
The engine brought daily nearer to expensive overhauling and consequent loss of use of car.

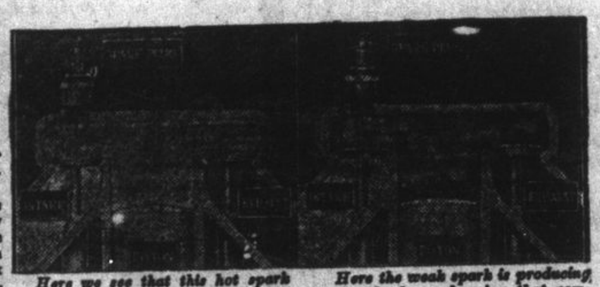
The lesson to be learned is: "Watch your spark plugs." They are vital to good car service. The best engine in the best motor car in the world is no better than its spark plugs. It is real economy to inspect spark plugs frequently and to replace them just as soon as they show signs of a weak spark—generally somewhere between 8,000 and 10,000 miles.

Most car owners have little real conception of just how their engine operates. It is a widespread belief that a series of explosions, taking place in each cylinder, makes the engine run.

This is not true. What really happens is:

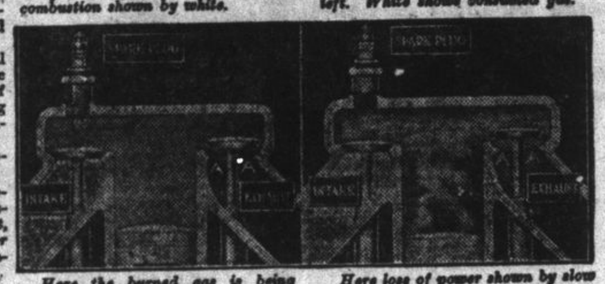
1. *As the engine turns over, gasoline passes through the carburetor where air is mixed with it, the mixture entering the cylinder in the form of a highly inflammable gas.*
2. *The valves close and the piston moves upward compressing this gaseous mixture.*
3. *At a certain point in the operation the compressed mixture is ignited by a spark leaping across the gap between the electrodes of the spark plug.*
4. *The gas burns with extreme rapidity and in burning expands, forcing down the piston and thus generating power.*

When your engine does all these things in full vigor, i.e., with a hot, intense spark, you're getting economy and power. When there is poor or incomplete combustion there is waste in power, gas and oil. Study the pictures.



Here we see that this hot spark has resulted in the cylinder mixture being entirely burned. Complete combustion shown by white.

Here the weak spark is producing so much slower burning that combustion is not completed, as at the left. White shows consumed gas.



Here the burned gas is being forced out through the exhaust valve (AA). Full power is shown, no live gas escaping.

Here loss of power shown by slow burning is confirmed because live gas is actually being expelled through the exhaust (AA)

SUZANNE AND HELEN.

May Meet Again on the Courts Next Month.

Paris, May 28.—There is a strong possibility that the second meeting between the two queens of the tennis world—Suzanne Lenglen and Helen Wills—will occur in the finals of the international hard court championships which begin June 2nd.

While no definite announcement has been made that Mlle. Lenglen has reconsidered her first decision not to play in the singles in any tournament until Wimbledon, it was learned that her health has improved so rapidly in recent weeks that she again is ready to enter the lists. Her long rest has so improved her game that her name probably will be included in the draw for the international event.

CHANGES COMING IN MOTOR DESIGN

The Future Has Much in Store in Motor Car Development.

In the light of modern car development the future would seem to hold many wonderful things. If we are to be guided in future designs by present tendencies it is possible to take a peep at the years ahead and be a 'first nighter' when the curtain goes up on the car of ten years hence," says an automotive expert, writing in the St. Louis Post-Dispatch.

What we reasonably can expect to see in this car will include:

A tiny engine of eight cylinders in line, each cylinder with a bore of a trifle over two inches and a stroke of about three inches.

A transmission with an infinite number of speeds wherein the 'shifting" is done automatically and in correct proportion to the engine load.

One brake, operating on all wheels and by which the driver can gauge the braking effort by the pressure he exerts on the pedal.

Driving all the road wheels instead of the rear wheels only.

Oiling all chassis parts from the engine.

An outside design such that a minimum of washing will keep it clean.

A stream cooking system for the engine, with steam available for warming oil in winter and heating car interior.

Body and frame a single unit.

A supercharger or agitator to run at constant speed to have its greatest effect at low speeds for better atomization and distribution of fuel.

Detachable upholstery.

A fabric covering on the outside of the body, such material needing no further finish in the way of paint or varnishes.

Drop base rims.

Metal spoke, disk or wire wheels in view of the failing supply of wood suitable for wood wheels.

"Culmination of Efforts."

A glance at the above specifications will show that there is nothing freakish about the car of tomorrow. Rather, the car that is to come will be a culmination of past and present efforts, because, after all, new designs are but a rearrangement of what has gone before.

The electric starter, for instance, was considered new a few years ago, but was only an arrangement of an electric motor, a set of gears and the law of inertia.

So the car of tomorrow will not unfold new theories, but rather will be a rearranging or distribution of parts according to laws of physics and chemistry discovered hundreds of years ago.

OILING SYSTEM DOES DIRTY WORK

Nine different builders of automobiles have adopted systems of central-source chassis lubrication in the last two years and between 600,000 and 70,000 cars using one of these systems have been produced in that period, asserted Fred H. Gleason, of the Bowen Products Company, at a recent meeting of the Milwaukee section of the Society of Automotive Engineers.

The incorporation of a central lubricating system in the chassis relieves the operator of the disagreeable and often neglected job of oiling the many dirt-covered parts of the chassis. Without leaving his seat he is able at any time to lubricate every bearing merely by giving an oil-pump plunger several strokes with his foot. Such a system, by elimination the dirty work and providing efficient lubrication of the various chassis bearings, said Mr. Gleason, results in longer chassis life, improved riding and handling qualities and the elimination of annoying squeaks and rattles.

Satisfactory results have been obtained with systematic operation and no trouble has been experienced from breakage of the tubing or the flexible connections. The best lubrication is attained by the use of the heavier engine oils which have great viscosity, stay in place in the bearings and prevent the entrance of either water or dirt.

Briefly, the central lubricating system is comprised of an oil reservoir carried on the dash under the hood, an oil pump that draws oil from the reservoir, a pump plunger operated by pressure of the driver's foot, or in some cases by hand, and tubing, flexible hose connections and channels in steering knuckles, wheel spindles and brake parts to carry the oil under pressure to all points on the chassis that require lubricating.

A push of 30 pounds on the plunger produces pressures on the oil of ranging from 300 to 1,000 pounds per square inch in the primary oil tubes. The quantity of oil delivered to each bearing is measured by a control device at each point.

Because of the skidding hazard on the sharp turns and 6 to 8 per cent grades, five and one-half miles of the 25-mile road to be built along the Merced river in Yosemite National Park is to be permanently paved with concrete instead of light bituminous surface as originally planned.

The National Park-to-Park Highway travels through 11 states, covering 600 miles. It takes tourists to America's most interesting parks.

The state highway department of Virginia is planning a 500-mile road to be known as the "Virginia Historic Highway." This highway will run from Washington through the many interesting spots of the state.

More than $9,000,000 were spent last year for improvements on the Lincoln Highway by the 11 states through which the continental motor route passes.

Few motorists know that a modern automobile, in proportion to its weight, is three times as high-powered as a warship or a locomotive.

The entrance fees to most of our national parks have been reduced by a recent government ruling.