

"THE BIGGEST PROBLEM IS JUST STARTING THE BLASTED THING!"

Nearly half of this winter's car problems will be caused by failures in the automobile's ignition system. The Automobile Club of Michigan says the actual figure is 44 per cent.

The heart of the ignition system is the battery. But a battery may be in reasonably good condition and still fail to start the car. When electricity leaves the battery, it must travel a complicated route before it is converted into a spark within the cylinders of the engine.

This route includes wiring, distributor points and spark plugs. If any of these are in poor condition, the chances of "battery failure" are increased.

On a car more than a couple of years old, insulation on the wiring, often gets dried and brittle and has minute cracks. In very damp weather, when there is a thick fog, for example, these cracks can admit enough moisture to cause a short. The result is that the battery is putting out electricity that never reaches the spark plugs.

Once you get the car started, usually by a tow truck, the cure is to take the car to a service station and have the wiring sprayed with one of the commercial products that puts a light protective coating of plastic on the wires. It would be far better, of course, to have it done now and save the tow truck fee.

Some new cars have electronic

ignition systems that don't utilize distributor points. But most cars have a distributor that is actually a series of small switches. These deliver electricity to the spark plugs one at a time in the proper firing order.

The distributor is a very busy little apparatus. The points open and close about 100 million times every thousand miles. Eventually, they become worn. Too much wear and they can't deliver adequate power to each spark plug, especially during cold weather.

Installation of distributor points is a simple matter and the cost is low. Why not have them checked and maybe replaced now, rather than wait for the inevitable failure that is certain to come if the points are too long neglected.

The spark plugs are the end of the line in your ignition system. Here the electricity leaps across a small gap. The spark ignites the mixture of air and gasoline inside the cylinder. The small explosion that results provides the power that makes the wheels go around.

Spark plugs lose their effectiveness in two principal ways. In old plugs, the metal points between which the electricity must leap are slowly burned away. The gap widens until the electricity can no longer make the leap. Or the points can be fouled with sludge that results from improper combustion.

If only one plug fails, the engine

will still function, although roughly and with a loss of power and gas economy. When more than one plug fails, the engine may not run at all, or at best, very feebly and roughly.

But a plug doesn't have to fail completely before it can cost you money. An improper spark in a fouled plug can waste gas and reduce power. Chances are you won't notice it, but it can be happening anyway.

The solution to worn spark plugs is, of course, to replace them. But sometimes, if the wear and tear is not too severe, the functioning of the plug can be improved by adjusting the gap.

The best answer is to have them checked by a reliable mechanic.

All the above gadgets can be functioning perfectly and it won't mean a thing if the battery isn't putting forth adequate electricity.

A car battery operates in a dilemma: The more power it needs, the less it is likely to have. This is because a battery loses power as its temperature drops. On the other hand, an engine gets stiffer and requires more power as it gets colder.

Eventually, a point is reached where the engine's demands exceed the battery's output. The result is a car that won't start. The trick is to keep this no-start point at as low a temperature as possible.

The chart illustrates the unfortunate relationships between power, engine demand and temperature.

Note that at zero a battery has only about 60 per cent of the power that it has at 80 degrees. But at zero, the engine needs 2 1/2 times the power that it needed at 80 degrees.

That's why almost any battery will get you through the warm summer months. But come the first really cold spell, watch out!

"We have more service calls on the first day the temperature drops to zero than any other day of the year," says Robert Smith, emergency road service manager for the Automobile Club of Michigan. "At below - zero temperatures, a weak battery usually fails."

Batteries have a fairly predictable life - span in normal driving and there are only a limited number of things you can do to prolong it. The first of these is to maintain the proper level of water. Ideally it should be distilled water.

Tap water contains contaminants that can reduce efficiency. But when the level is low, adding tap water is preferable to no water at all.

A second point to check are the two cables that lead from the battery. One is a ground; the other introduces electricity into the car's ignition system. These connections should be kept clean. In time, deposits of corrosion can build up around the cable

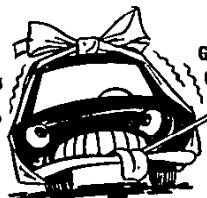
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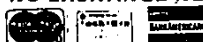
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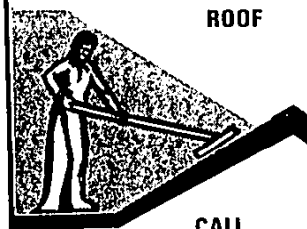
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