SIMPLE FAULT FINDING

A Sequence for Detecting Failure on the Road

THE object of this article is to give a simple and practical sequence for locating the cause of engine failure; it does not concern itself with an engine which is running badly, perhaps firing on only two or three cylinders, since it is usually possible under such conditions to limp to a garage.

Complete and sudden failure of a car engine most frequently results from two main causes: 1, Ignition Failure; 2, Carburation Stoppage.

Apparatus required: 1, Spare, clean sparking plug (tested by garage); 2, Small flashlight type of bulb of the same voltage as the car battery, screwed into a Woolworth M.E.S. holder, with two test prongs.

M.E.S. holder complete with flash-lamp bulb screwed into the apex. The prongs act as electrical conductors

METHOD

When Engine Stops Completely. Disconnect one high tension lead from one plug and connect it to the spare plug, which should be laid with the screw-thread portion earthed on some metallic part of the car free from paint or heavy dirt, care being taken to see that the insulated terminal is not also touching any metal part of the car.

With the ignition switched on, turn the engine over with the starting handle (as long as you have one!). If a reasonable spark can be seen, or heard, at the plug points, then you can completely rule out ignition trouble and look to the carburettor.

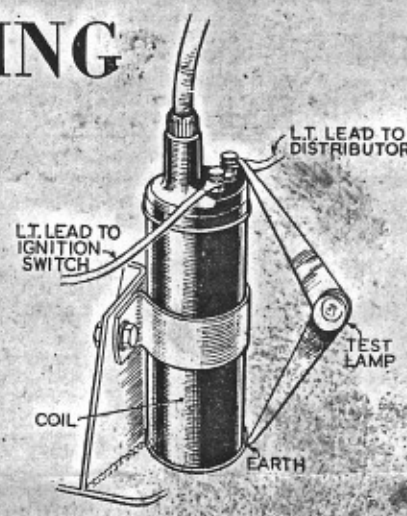
If, however, no spark can be seen or heard (in sunlight you may not always be able to see the spark, but a sharp crackling noise indicates a good spark) then you can rule out carburation trouble and start locating the ignition fault as follows:

Make sure that your test bulb is well screwed into the M.E.S. holder on your Woolworth tester. Place one prong of the tester on the terminal at the side of the distributor unit and earth the other prong on a clean metal part of the car or engine, free from paint or oil. Switch on the ignition and turn the engine over with the starting handle. On non-faulty ignition, the lamp should alternately light up and go out as the engine is turned over.

If the test lamp stays on all the time this indicates definitely that the points are not closing properly or that oil or some insulating dirt may have become lodged between them. After adjusting or cleaning, the trouble will be cured.

If the lamp will not light at all when the engine is turned over, it indicates that the points may not be opening properly, that the battery is faulty or that the condenser may have broken down and short-circuited the points. The latter fault is rare, but if it occurs you may be able to get the ignition to work by disconnecting the little tag lead on the condenser which connects it to one of the contact points; but a replacement should be obtained at the first opportunity. Before suspecting the condenser make sure that the thin low-tension lead from the coil to the distributor terminal is not broken within the insulation.

Test for this by placing one prong of the test lamp on the terminal at the coil end of this lead; connect the other prong to a clean metal part of the car free from paint or oil. Switch the ignition on. If the lamp lights up and stays alight then a new lead between the terminal on the coil and the terminal on the distributor will cure your trouble.

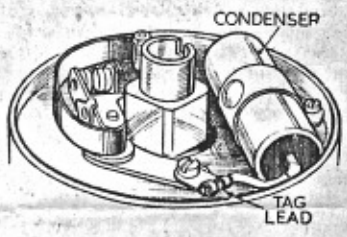


Testing to see if the lead from the coil to the contact-breaker is intact

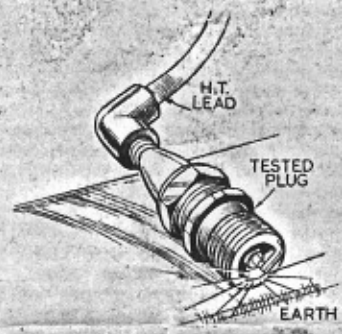
This is not an uncommon cause of ignition failure and sometimes may be the result of loose terminals.

If, however, the lamp fails to light at all on this test, then your trouble may be in the coil and there is not much that you can do; before abandoning the car make sure that the battery is O.K. by sounding the horn. Finally, if the horn works loudly, place your test prong on the terminal on the coil which carries the lead from the ignition switch; earth the other prong on a clean paint-free section of the car. If the test bulb fails to light, your trouble is situated in either the ignition switch or the leads from the switch to the battery or coil.

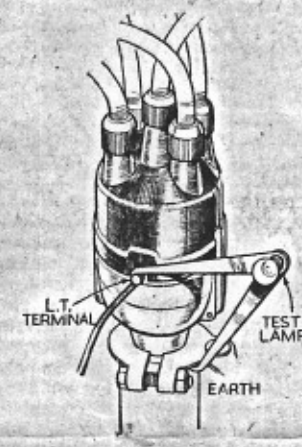
Your best road-side repair in such cases would be temporarily to connect a lead direct from the battery to the coil, short-circuiting the ignition switch. This will get you home—but don't forget to disconnect this lead immediately you arrive at



If the condenser is short-circuited it may be possible to restore the ignition in emergency by disconnecting the tag lead



Simple test for ignition at the plug points, the metallic body earthing through the cylinder head upon which it is placed



With the test lamp connected like this, satisfactory ignition will light the lamp and extinguish it again as the engine is turned over

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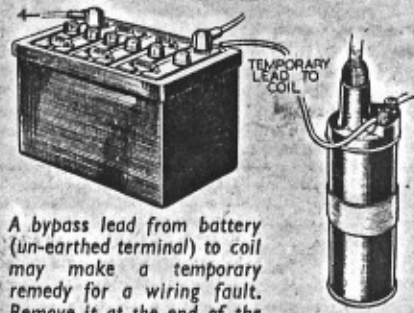
your destination, to stop the engine and prevent running down the battery and possibly damaging the coil. Carburettors vary so much in detail that individual fault-finding details are beyond the scope of this article, but there are elementary steps that one can take to eliminate some of the more common faults.

Make sure that there is petrol in the tank—this can be heard swishing about when the car is rocked. Check that it is being delivered to the float chamber by the petrol pump, and if an upper cylinder lubricant is added to the petrol or provided by a dispenser, ensure that the carburettor is getting adequate pure petrol and not too much lubricant.

Clean the carburettor jets, as indicated in the car manual.

Check that the strangler, choke or other cold-start enriching device is not shaken or stuck on the "rich" position, and that the linkage between accelerator pedal and carburettor has not become disconnected.



A bypass lead from battery (un-earthed terminal) to coil may make a temporary remedy for a wiring fault. Remove it at the end of the journey