

## Workshop and Open Road : Part 459

# Plugs v. The Present Petrol

FOR one week I am getting right away from cross-country riding tactics in order to discuss a matter that is puzzling many, namely, what to do about sparking plugs. Should you happen to be one of the lucky ones whose plugs are not being seriously affected by the present high-octane value, leaded petrol, there is no need to read farther, the aim of this article being to endeavour to help those who are encountering trouble, though I would suggest to all that at least they examine their sparking plugs periodically. Naturally, I am not relying on my own necessarily limited experience, but have sought information from others, including, of course, famous plug manufacturers.

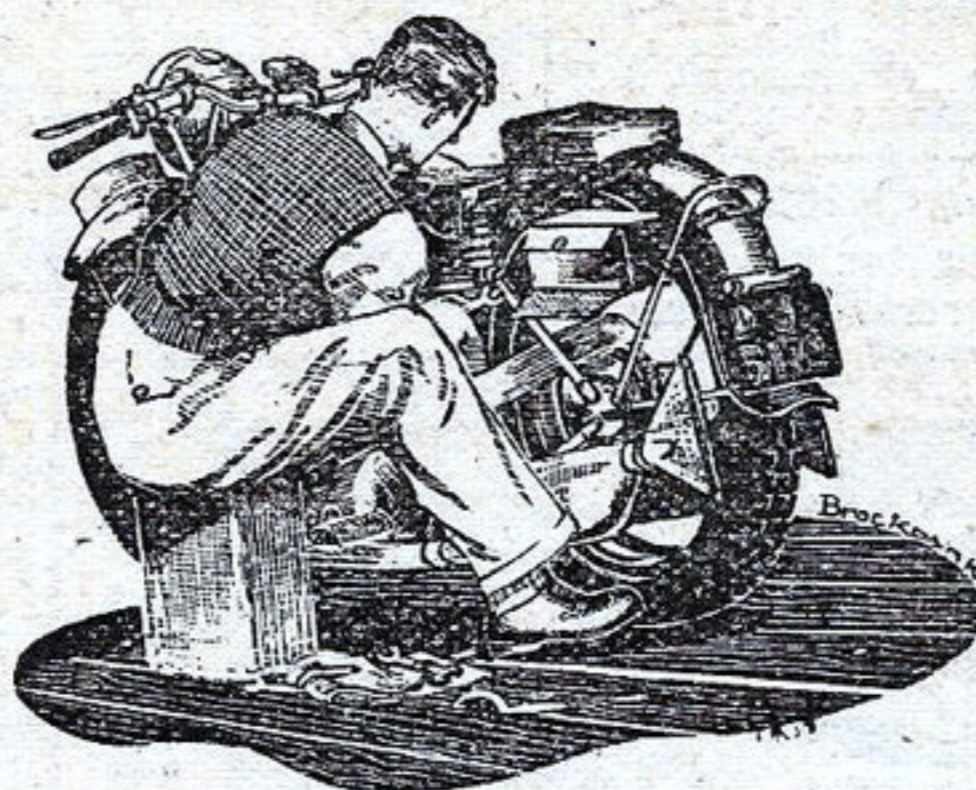
The present leaded "pool" petrol gives an exceedingly hot flame, and thus causes greater heating of the central and earth electrodes and of the sparking plug as a whole. There are also the lead deposits to be considered. The troubles that are being experienced are these: Metal of the central electrode overheating and very severe erosion occurring; lead attack on the central electrode, which may result in it dropping off; bridging of the gaps by lead deposit; fracture of the insulator due to the rapid expansion of the metal, and heavy lead deposits on the insulator causing the plug to cut out, the current being shorted by the lead.

First, then, suggestions for overcoming such troubles, and, secondly, a few words on the question of plug care.

## Fit a Cooler-running Plug

No doubt many of those who had plug trouble with ethylised fuels of pre-war days have a very shrewd idea of a suitable line of action to-day. The makers of Lodge plugs point out that, with petrol free from lead—so-called "straight" petrol—the most satisfactory operating temperature for the central electrode is between 700 and 750 degrees C., but if a central electrode is run at such a temperature on leaded fuel the lead attacks the nickel and there is either severe erosion or, in an extreme case, the electrode will drop off, usually flush with the insulator. The remedy, as in pre-war days, is to fit a cooler-running plug. K.L.G.s say: "It seems that in such cases a plug of greater heat resistance than usual can be used with perfect safety, provided the engine is in normally good condition and is not liable to pass a lot of oil when the throttle is shut rapidly."

That is Point No. 1: If you are in trouble, do not fit a more touring-like plug, but one that has more of a "sports" character than the present one. The



## How to Overcome the Troubles Caused by the New Leaded Fuel

By "TORRENS"

sparking plug wall-guides at garages will give many people a clue; alternatively, one can write to the manufacturer of the plug of one's choice and ask which "harder" or more heat-resisting plug he recommends. As you know, the more sports-like a plug the less oil it will stand and vice versa—hence the way a racing man warms up his engine on a "soft" or more or less touring type of plug, and then changes it for a racing plug before actually starting in the race; had he used the latter for the warming-up process he would probably have oiled it up.

Lodge Plugs point out that fitting a cooler-running plug enables the lead deposits to remain in bromide form, which is harmless. Do this and the only extra servicing required is more frequent cleaning of the plug than when using lead-free petrol. That covers the question of plugs cutting out owing to lead deposits becoming conducting. The cooler-running plug will also definitely reduce erosion, and experiments, they state, are proceeding with a special alloy which results in plug points being less prone to lead attack.

There remains, so far as actual troubles are concerned, the bridging of the points by lead deposit. This is stated to have been experienced chiefly on two-stroke engines, and it is in this connection—two-strokes of different makes and types—that I have experienced it. So far no definite cure has been found. (Do you remember how two-stroke manufacturers in pre-war days urged "straight" petrol for their engines?) My one positive conclusion is that if one has this bridging trouble the thing is to keep the plug spanner and a

penknife handy. Then, as occurred with me only last week, one's halt need not last a couple of minutes, it being only a matter of whipping out the plug, running the end of the knife blade between the points, and screwing the plug home.

There may or may not be palliatives. Had I been asked only a week or two ago I would have said that it probably paid to have the plug points set rather closer together than usual. With at least one type of plug I think it is an advantage to use a gap of only 12-15 thousandths of an inch. The data, it seems, is inconclusive. Some consider this scheme is probably the best; others suggest that opening up the points to a gap of 30 thou. can be an advantage if the magneto output is adequate—this with a plug that has a single earth electrode.

One thing is certain: If you are in trouble, obtain a plug capable of withstanding greater heat. The second item, namely, plug gap, must be left to you as a field for experiment in the event of bridging of the points occurring.

## Plug Care is Necessary

Now for the care of plugs consequent upon the use of the present leaded fuel. The first point is to examine one's plug or plugs frequently. You may recall in a recent leading article our mention of a plug which at the end of only 240 miles was encrusted and the points bridged. This, of course, was with a brand-new plug. I suggest that plugs should be examined at least every 500 miles to see how they are faring. A lump of central electrode in the engine may do a bit of no good. Secondly, of course, there is the point that with the present leaded fuel it is advisable to clean the plugs and not forget them, as is, I fear, the case with many of us. Plug care to-day is a phrase with fresh meaning. For the plug with a porcelain-like insulator that can be split, this means splitting, careful scraping with a penknife and maybe a little point polishing with emery. Similar plugs that are non-"detachable" require a plug-cleaning machine—the service which garages provide. Plugs which have detachable centres with mica at the business end can be scraped as regards their metal parts, but for the mica rubbing with a petrol rag is the scheme; the mica must not be flaked off and damaged with, say, a knife. I will end by suggesting: Watch and take care of your plug or plugs in addition to seeing that you have the type which has, in present circumstances, an appropriate heat factor.

