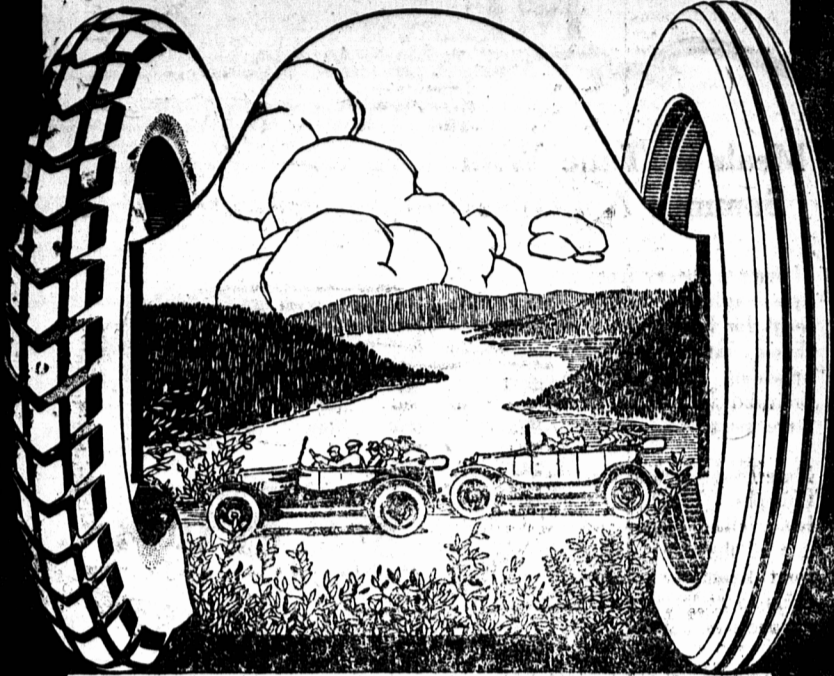


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Hints for the Motorist

BY ALBERT L. CLOUGH

Expensive To Correct, But More Expensive To Tolerate

One thing that is absolutely fatal to the successful operation of a car is the presence of ill fitting pistons, and this includes all the fitting of the rings as well as of the pistons themselves. In the hurry of quantity production, not a few cars are put into service with this initial defect and fail to give good results until it is corrected, but as a rule, loose and leaky pistons develop only after long usage or after a failure of cylinder lubrication which has resulted in the scratching or scoring of cylinder walls and pistons and perhaps the breaking of rings. A single failure of engine lubrication may work more harm to piston fit than years of normal operation and it is especially to be guarded against with the fuel now in use. The first indication of faulty piston fit is very often the oil-fouling of spark-plugs which, if it develops suddenly, without any charge having been made in lubricating conditions, is a fairly sure sign that piston-rings or even pistons and cylinder bores require attention. If a cylinder will not tightly retain its charge of gas, when it is hand-cranked through its compression stroke and both in let and exhaust valve are known to be tight, it is proof positive that the charge leaks past the piston-rings and piston, assuming that there is no leak at the spark-plug or around the head gasket. The leaky piston results in diminished power, waste of fuel and oil, rapid carbonization and ultimately in noisy and uneven engine operation. A cylinder with a leaky piston loses much of its charge before it is fired and the explosion pressure upon the piston is thus greatly reduced, with a corresponding reduction of power. The escaped fuel is worse than lost for it enters the crankcase and thins the oil, while the oil that passes the leaky rings forms deposits on the piston heads and elsewhere. After piston and cylinder wear has gone sufficiently far, enough looseness is developed so that the piston, instead of running smoothly, "cocks up" in the cylinder bore, striking its upper and lower edges against it and producing the peculiar rattling knock, known as "piston slap," which in most engines, is pronounced when they are suddenly accelerated.

BOILING RADIATOR

D. writes: After running five or six miles, my radiator water will boil and the engine will begin to miss and jerk. What is the cause of this? There is a little oil coming up through the cylinders. I have tested my cooling system.

Answer: The combination of overheating and oil-pumping brings to mind the possibility that your cylinder oil is not of a sufficiently good quality so that it retains its body under heat. If this is the case your overheating is due to excessive piston friction and your missing is caused by oil-fouling of the plugs in combination with poor compression due to the oil being very thin around the pistons and not making a good gas seal. If your oil remains properly thick when hot, the overheating may be due to weak fan action, too much retarded spark radiator passages clogged or rubber connections closed up internally. If there is any question as to the quality and quantity of your engine oil, this better be settled at once.

VALVE TIMING

H. E. N. asks: What is the right way to time a four-cylinder, high-speed engine? What makes an engine knock, when there is no carbon in it and the bearings and pistons are as good as new?

Answer: All that we can give you is a typical setting, used in high-speed practice. Intake opens 12 degrees past upper dead center, inlet closes 33 degrees after lower dead center, exhaust opens 55 degrees before lower dead center, exhaust closes 12 degrees past upper dead center. Under conditions such as you describe, the most common causes of knocking are the following: Too early spark, fine loose on frame, cylinder-block loose on crank-case, loose fly-wheel, timing-gears loose on shafts or some of their teeth damaged, loose pushrods, worn or loose cam or compression too high for the quality of fuel used.

AS TO SHOCK ABSORBERS

J. H. L. asks: Can you give me any advice as to shock absorbers? If they did not cost so much I should have a set of the air-cushion type put on but I thought that you might be able to suggest something more reasonable in price.

Answer: Very good results are obtained with shock absorbers of the snubber type, which permit the springs to deflect unhindered on the downward movement of the car, but check the severity of the upward motion or "rebound." These are comparatively inexpensive, are readily applied and withstand severe usage.

Questions of general interest to motorists will be answered in this column, space permitting. If an immediate answer is desired, enclose self-addressed, stamped envelope. Address Albert L. Clough, care of our office.

DEALING WITH THE LEAKY PISTON

It is a Matter of Accurate Sizing And Fitting

When loose piston fit has become serious in one or more cylinders, says to correct it properly. If a cylinder has become scored or if it has worn much or of round, it is of little use to try to fit a new piston and rings to it. A score can in some

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Sunday School Lessons

Continued From Page Nine.

Verses 12, 13. Absalom was entangled in the tree, yet evidently not dead. Job felt that he should be dispatched, but was unwilling to assume the responsibility. The soldier whom Job addressed refused to kill Absalom.

Verses 14. Just why Job was so anxious Absalom's death is a matter of conjecture. But to make sure of it, he did the deed himself.

Practical Points.

We have looked at David's strength but justice requires us also to look at certain elements of weakness which became manifest in his character:

1. Most noticeably we see his lack in family training—David's sons, like those of Eli and Samuel grew up unprincipled, ungrateful, wicked. Not strange among princes, reared amid the intrigues of a palace; with a goddess or idolatrous mother; a father busy with cares of the kingdom. Too many fathers are absorbed in business to the neglect of training in the home.
2. His parental affection was misguided—Even to the last he could scarcely find a fault in his worthless son; he cared more for Absalom's safety than for the interests of his realm.
3. Prosperity brought to David laxity of moral tone—Fleashy lust gratified led to guilt of murder, in the case of Bath-sheba and Uriah. He who takes the first step in guilty pleasure finds an easy descent to undramatic depths.
4. The early years of David's reign, active and enterprising, seems to have been followed by a period of careless ease.—In the pleasures of the palace David neglected his duties as ruler, ignorant of dangers menacing his throne.
5. While the outward forms of public worship were maintained in high state, David lost his personal communion with, and with it his righteous principles. Had he sought the prophet's counsel he would not have needed his rebuke—rebuke received humbly, as no other prince in that world would have submitted to it.

NOTES.—1. All sin is despising God. 2. Ammon's sword, David's murder. 3. Love and blood begot just and blood. 4. A great man is misfortune is a great man still. 5. David succeeds because of his virtues, in spite of his sins. 6. David's sins hampered him in his day. In our day they would be absolutely destroy his usefulness. 7. David made have repented more readily because of David. And tens of thousands have sinned more readily. 8. The battle's chances are God's provisions. 9. A father's fondness, a father's folly, a king's disgrace. 10. Disobedience is sometimes a subject's duty.

TOPICS.—1. Polygamy's inevitable fruits. 2. The long shadow of a single sin. 3. False and real "wisdom." 4. The career and character of Absalom. 5. The net influence of David's life.

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cases, be repaired by a special brazing and grinding process but boring or grinding it out may be preferable. In case a cylinder is badly ovalized, the boring or grinding operation must be resorted to and all cylinders of the block must be enlarged to the same diameter, new, "oversize" pistons, slightly larger than the original ones being then required. If upon inspection and careful measurement of the cylinder bore, no scoring or serious ovalization is found, it should be determined whether the pistons are seriously undersize and, if their diameter at the head end is less than that of the bore by more than two thousandths of an inch for each inch of cylinder bore, the fitting of oversize pistons should be considered. Cast iron pistons are here referred to.

It may be that the pistons are still of such size as to be usable and, in this event, the securing of tightness is a matter of new pistons, rings. Piston-rings wear much more rapidly than pistons—friction being quite severely concentrated upon them—and even after piston and cylinder bores outwear several sets of them. In inspecting rings, the correctness of their fit to their grooves and to the cylinder walls, is of much importance than the type of ring used and something on this subject will be furnished later.

CARBONIZATION QUERIES

V. Asks:—(1) Does carrying oil too high in the crank-case tend to cause carbonizations? (2) Does the use of oxygen to remove carbon injure the cylinders or pistons in any way? (3) Please explain the best method of removing carbon. (4) What is the best way of renewing leather upholstery?

Answer: (1) Yes. It may result in there being too great a depth of oil for the connecting rod ends to dip into, too much oil being splashed, a greater tendency for oil to work up into the piston heads and thus more likelihood of rapid carbonization. (2) There are some engines upon which the oxygen method should not be used, according to their manufacturers and we advise their warning to be heeded. Generally speaking however, we see no risk in using this method, if it is applied properly. A professional should do the job. The bad feature of the method is that the incombustible part of the deposits is not fully removed and works down into the engine. (3) Removing the head and scrapping all parts is the best method and the oxygen process is the next. (4) Clean it with a sponge moistened in mild soap suds and dry with a chamois. When it is perfectly dry a reliable leather dressing may be used.

AMMETER IN PLACE OF CHARGING INDICATOR

A. McB. asks: What is wrong with a generator that has been set ahead as far as possible, but won't deliver any more electricity to the car? Can an ammeter be put on my car in place of the charging indicator that came on it? There are three wires leading to this indicator.

Answer: The most common cause of insufficient output from a generator is improper condition of the commutator and brushes. If the former is perfectly clean and true and the latter bear on the commutator with sufficient pressure, the well-fitted to it, with their ends free from glazing or dirt, you ought to obtain the full

output, assuming that all connections are tight and there is nothing wrong with the winding. As a general rule, an ammeter can be installed in place of a current indicator. It would perhaps be well in buying the ammeter to specify the name and year of your car, when you order, so as to obtain an instrument suited to our needs.

WATER PUMP GIVES TROUBLE

A. E. M. Asks: Why is it that I cannot make my water pump tight? I have replaced it several times but water still escapes slowly along the shaft?

Answer: You may possibly find that the shaft, where it passes through the stuffing box is worn considerably out of round, if so

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Ponzi Gives Himself up.—BOSTON, Mass., August 12.—Charles Ponzi, bushel basket millionaire, who claims to have made his millions in operating in international postal reply coupons form ally surrendered himself to federal authorities here today. Ponzi's act came it was understood, when state authorities were about to place him under arrest.