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HINTS FOR THE MOTORIST

ALBERT L. CLOUGH.

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Alcohol Anti-Freeze Proportions

The following facts, which have been printed annually, for several years, are here repeated as memoranda for experienced motorists and information for those who are not familiar with the detail of anti-freeze protection of cooling systems. The specific gravity of the denatured alcohol and of water, by volume, the specific gravity of the mixture as indicated by a hydrometer and the temperature, down to which protection from freezing is afforded, is given below for several different alcohol mixtures:

Alcohol %	Water %	Gravity	Freezes At Deg. F.
20	80	0.975	14 above
30	70	0.964	2 below
40	60	0.953	20 below
50	50	0.934	34 below

To fill up with alcohol anti-freeze, drain the system completely of water, close the drain cocks, pour into the radiator the amount of alcohol required, supply water to fill the system completely and then run the engine for a few minutes to mix the two ingredients. The total liquid capacity of any system can be found in the instruction book or determined by measurement. Assuming this to be 20 quarts, for example, and that it is desired to secure protection down to just below zero, which would call for 30% of alcohol. The amount of alcohol to be used would be 0.30 times 20 or 6 quarts.

A REAR END NOISE

H. W. S. writes: There is a crunching noise which seems to come from both ends of the rear axle of my car and which sounds as if the wheel spokes or rims were loose. I have tightened up the wheels but the noise still continues and have examined all axle parts, without finding anything wrong. Can this noise come from a misfit of the inner ends of the axle-shafts, where they enter the differential? If not where should you look for the cause of it?



Answer: We believe that the axle-shafts are "floated" in the gears of the differential and we should expect no noise from them, particularly as their movement is extremely slight. Suppose you try the following: Jack up both rear wheels, set the car running on high gear and then apply the brakes momentarily, sufficiently to place all parts under load. If the crunching still continues, you may be sure that it is not the wheels, but if it ceases, there will be a strong presumption that the wheels are still noisy and will have to be sent away and put into shape. A sound axle like this from the axle parts themselves might mean broken or over-tightened bearings or tooth defects in some of the gears. Of course, the fastening of the wheels to the axle unit, if not just right, may

BURNED OUT THERMOSTAT COIL



J. S. B. writes: I have lately been having the following trouble with the electrical system of my car. When the engine is first started and for a few miles "charge" the ammeter shows "charge", although the smaller amperage than it used to, but very soon the current suddenly ceases and does not start again until the car has been idle for a time. Can you explain this?

Answer: We believe that the generator on your car has a thermostat to regulate its charging rate, which acts to insert a resistance into the field circuit, when the generator becomes warmed up and thus to reduce the current sent to the battery, in order to obviate overheating it. It is probable that this resistance coil has burned out and that, when the generator becomes warm and the thermostat acts, the field circuit is opened and the generator, of course, ceases to generate. When things cool down and the thermostat returns to its original condition, the field circuit becomes closed again and the generator is ready to excite. You can readily replace the thermostat resistance, but before doing so, you better make sure that the connections are all secure and that the resistance of the charging circuit is not abnormally high.

Questions of general interest to the motorist will be answered by Mr. Clough in this column, space permitting. If an immediate answer is desired, enclose self-addressed, stamped envelope.

RADIO DEVELOPMENT

BY LIEUT. JOHN R. IRWIN
U. S. AIR SERVICE (RESERVE)

COMMON MOTOR AND GENERATOR TROUBLES.

Besides those of a mechanical nature there may be electrical troubles, some requiring expert attention, others easily found and cured if you know where to look for the trouble. The most common electrical faults are those caused by loose, wrong or missing connections, and dirt. Connections that allow current to pass by a piece of apparatus, instead of flowing through it, are called "short circuits" (usually accidental). They are a common source of trouble.

A systematic way to hunt troubles is as follows:

1. Make or find a circuit diagram, unless thoroughly familiar with the connections are positive they are right. In drawing diagram follow each branch of the circuit from its source (positive terminal of battery or generator armature) completely around (through the negative terminal)

2. Trace the wiring according to the diagram.
3. While tracing see that—
 - (a) Fuses are good, if any are in circuit.
 - (b) Connections are clean and good.
 - (c) Contact is not prevented by insulating caps of binding screws or insulation of wire.
 - (d) Wires do not touch, making short circuits.
 - (e) There are no breaks in the wires inside the insulation. This occasionally happens with old lamp cord. The broken place is very limber, and can be pulled in two more readily than a sound place.
 - (f) Look for defects in the apparatus itself.

(Continued in next issue.)

APPARATUS AND DEVICES

By RALPH BROWN, RADIO ENGINEER
MOTOR DRIVEN CHOPPER FOR C. W. TUBE TRANSMITTERS

Experience in the use of audio frequency buzzers to modulate the output of a tube set to produce damped wave trains has proved that this method is not entirely satisfactory, principally for the reason that the operation of the buzzer is not constant, necessitating frequent adjustments, also requiring the additional expense of vacuum tubes. A rotary chopper like that illustrated has been developed that is very satisfactory in use, and overcomes the above objections. The interrupter wheel is built with 34 conducting and 34 insulating segments, making 34 interruptions per revolution. The insulating segments are molded in a single piece, eliminating the possibility of these segments becoming displaced.



Will readers interested in these radio articles kindly communicate with the editor by mail?

MEMORIAL AT CRESSY.

Unveiled in Memory of the Late Rev. C. G. Cressy. The memorial service and unveiling of the monument in memory of the pastor, Rev. C. G. Cressy, on Sunday, Nov. 5th, took place at Cressy church, and was attended by a very large crowd. The present pastor, Rev. C. Brathen, gave a very eloquent address on the self-sacrificing life of the late Mr.

Renouf. Rev. Mr. Scott, who assisted, also gave many touching remarks. After the service, the monument which was erected by the Cressy Tuxis Boys, was unveiled by them and a very interesting address was read by Frater Floyd Carey.

To Have a Camp Site.

The Pictou Board of Trade is considering the opening of a camp site

for the young people desiring to go Beamish, Mayor Newman, M. K. Ad- to camp for a week or two during the summer. A. F. MacVannal, C. B. a committee to work out the details.

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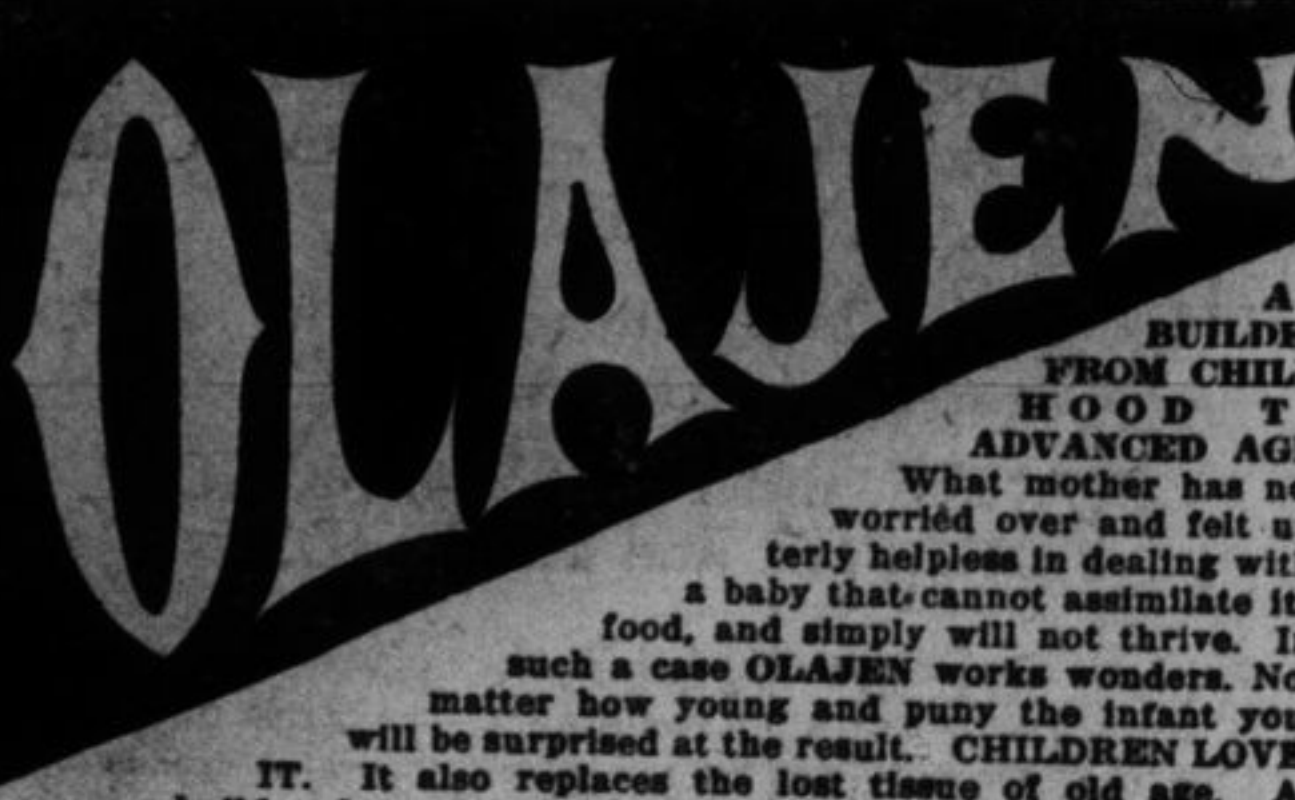
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May Return East. Lou Johnson, Saskatchewan, who left for his home. Mr. Johnson, who is a progressive farmer in the west county to reside.