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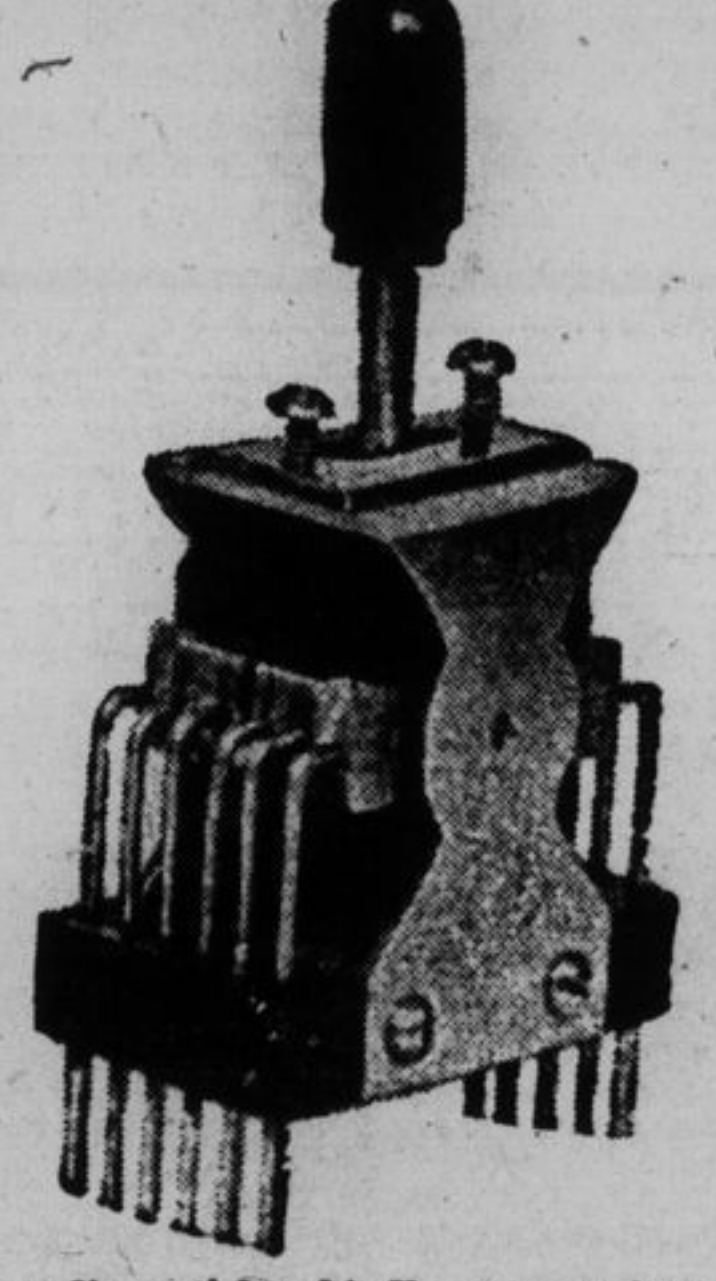
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RADIO DEVELOPMENT
 BY LIEUT JOHN R. IRWIN
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DRY CELLS.
 Dry cells for telephones and bells are generally made smaller, delivering about twenty amperes upon short circuiting but lasting longer than ignition cells. Sometimes they are useful for over a year.
 Miniature dry cells for vacuum tube work and for flashlights are made in varying sizes and put up in various capacities, but they lose their effectiveness quickly, of course depending upon the period the vacuum tube or flashlight is used.
 The emf. developed in an unused dry cell is from 1.5 to 1.65 volts. In purchasing new cells the reader should know that any new dry cell having a less emf. than 1.4 volts indicates a defect or deterioration through long "shelf life."
 The amount of energy delivered from the dry cell increases with increasing temperatures, but the higher the temperature the faster does the cell deteriorate when not in use. It is therefore best to keep them in a temperature below 23 centigrade.
 Owing to various causes, due to compactness of manufacturing and its comparatively rigid polarization, dry cells are not useful for delivering a steady current for a long service, and hence only be used in radio or any other work when an intermittent current is required or when a very small, steady current is to be employed, such as the plate current in a receiving vacuum tube. When heavier duty is required, it is much more preferable and economical to utilize "storage" or secondary batteries, described in the following articles.
 (Continued in Next Issue.)

APPARATUS AND DEVICES
 By RALPH BROWN, RADIO ENGINEER
ANTI-CAPACITY KEY SWITCH.

In the assembling of a home made set this will be found a very desirable unit. It was primarily designed for wavemeter work where a switch possessing a large distributed capacity was a great detriment. It consists of a telephone key lever to which is fastened a cylinder of bakelite containing four contact blocks. Mounted on each block are three phosphor bronze contact clips which mesh with phosphor bronze contact fingers, according to whether or not the switch arm is in a certain position. Perfect contact with the clips is maintained by making the springs long and rigid. This is a three position key which will replace a switch of the ordinary four-pole double-throw type.



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

HINTS FOR THE MOTORIST
 BY ALBERT L. CLOUGH

Don't Let Your Battery Freeze
 A Fully Charged Battery Contains Its Own Antifreeze Liquid
STORAGE BATTERY LIQUID is a mixture of sulphuric acid and water, in proportions which vary with the state of charge of the battery. Sulphuric acid is proof against freezing, but water freezes at 32 deg. Fahrenheit. The addition of sulphuric acid to water lowers the freezing point of the mixture very greatly as the proportion of acid is increased, and if sufficient is present to raise the specific gravity of the mixture to 1.260, by the hydrometer, it becomes safe against freezing down to 60 deg. F. below zero, which is a temperature lower than any battery is likely to be subjected to in this country. This specific gravity corresponds to that of the liquid in a battery which is about three-quarters charged, so that any battery which is kept at near full charge as this is safe against freezing, but in order to be well on the safe side it is best always to keep a battery completely charged, with its liquid testing 1.275, if it is to be subjected to extreme cold. As a battery discharges, the acid which was in the liquid leaves it and enters into chemical combination with the material of the plates, thus reducing the proportion of acid in the liquid and raising its freezing point, so that it will freeze at a higher temperature. At one-half charge, enough acid will have left the liquid, to bring its gravity down to about 1.210 and its freezing point up to 20 deg. F. below zero. When three-quarters of the charge has been exhausted, and the gravity falls to 1.160 freezing will occur at zero F.—a degree of cold possible in the case of cars left outside for long periods in severe weather. The greatest risk, however, is in the case of the completely discharged battery, left in an unwarmed place in cold weather, for there will be so little acid left in its liquid that it will freeze at 20 deg. F. above zero—a very common winter temperature in unwarmed buildings. The freezing of a battery usually results in putting it out of service through the cracking of the cell jars and the escape of the liquid. If it is not immediately repaired, the box and plates may be destroyed. Practically speaking, when a battery is sufficiently charged to do its work properly, the danger of its freezing is not great, but the battery that is stored in a cold place and becomes discharged, is in serious danger of freezing damage. Fortunately, the fully charged battery is immune to damage by exposure to cold.

USING HIGH TEST GAS IN WINTER
 H. V. writes: One of the filling stations in my town is advertising high test aviation gasoline and selling it at about 8 cents per gallon more than ordinary gas. They recommend it for use during cold weather. Do you think it would pay me to use it?
 Answer: You can best settle this point by making a trial of it, and we suggest that, sometime, when your tank is nearly empty, you fill up with it and note the results. If this gasoline is as represented and has a decidedly lower end point than average gasoline, that is, if its components will vaporize at a considerably lower temperature, it might pay you to use it, despite its high price, especially if your car is kept in a cold garage and you have trouble in starting your engine and difficulty with the thinning of your oil and are otherwise bothered in using the ordinary grade of fuel. Anyway there will be no harm in making a trial of it.



STEERING COLUMN ADJUSTMENT
 H. B. asks: How can the slack be removed from the steering wheel of my car? It can now be turned several inches without working the steering gear.
 Answer: In so far as this lost motion is due to wear of the worm gear teeth with which the worm is most usually in contact it can be removed by substituting unworn teeth for the worn ones. This is done by removing the pitman arm which connects with the drag-link and which is squared onto the worm-gear shaft, turning the steering wheel so that the shaft is rotated one-quarter turn and replacing the pitman. This puts the worm into contact with teeth of the worm wheel which have previously been very little used and you should find that most of the slack has been eliminated. However, if this method of adjustment has ever been resorted to before, care must be taken that the pitman is not replaced in its old position, as nothing would be gained by so doing.



Questions of general interest to the motorist will be answered by Mr. Clough in this column, space permitting. If an immediate answer is desired, certain well-addressed, stamped envelopes.
 The globe fish, an inhabitant of tropical waters, is said to be the only member of the finny tribe that swims on its back.
 At the foot of Niagara Falls the surface of the river is 20 feet higher in mid-stream than at the sides, owing to the pressure of water.

To-day's Radio Programme.

Thursday, November 23.
 12.30 p.m. Noon stock market quotations.
 12.45 p.m. Weather forecast on 485 metres wavelength.
 6.00 p. m. Produce and stock market quotations, news collettus.
 7.45 p.m. Radio drama, "Madame X"; six musical numbers.
\$500 For 20 Eggs.
 Tacoma, Nov. 23.—A record price for eggs in this section was established when H. H. Lewther, of Woodlana, sold 20 eggs from Lady Jewell, his champion white Leghorn hen for \$500. Lady Jewell laid 635 eggs for the year ended Nov. 1st, at the official egg laying contest conducted by the Washington Experimental Station.
After Match Factory.
 Sault Ste. Marie, Ont., Nov. 23.—The E. B. Eddy Company, Hull, will consider the Sault when it takes up the matter of establishing a branch factory for the manufacture of matches, the Sault Board of Trade is advised through a letter from George H. Millon, president and general manager of the concern.
Calgary Editor to Contest.
 Calgary, Nov. 23.—W. M. Davidson, editor of the Morning Albertan and formerly a member of the provincial legislature, has definitely announced his candidature to contest the Calgary seat made vacant by the death of R. C. Edwards.
 A female alligator will lay as many as 100 eggs at one time.

Dressed Spruce
 New stocks of select grades from the best mills in Quebec and New Brunswick.
ALLAN LUMBER CO.
 VICTORIA STREET. Phone 1042.

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"SHELL MOTOR SPIRIT"
 THE LAST WORD IN GASOLINE
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NOW READY TO DELIVER
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OLD CHUM
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 The Largest Sale of any Brand in Canada
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Ask for Dominion Rubbers

Of course you should wear Rubbers; they are essential to your health in winter.

It certainly would be poor policy to go all day with cold, wet feet when good DOMINION RUBBERS mean so much to you in health, comfort and economy.

DOMINION RUBBERS have the sturdy toughness that means long, satisfactory wear—and there is a style and shape to fit comfortably every shoe for men, women and children.

By all means, ask for DOMINION Rubbers.

In Norway there is a law which makes girls ineligible for matrimony unless they can show certificates of skill in cooking, knitting and spinning.
 Praise has different effects, according to the mind it meets with. It makes a wise man modest, but a fool more arrogant, turning his weak brain giddy.