put out the circuit and they can probably give you advice based upon experience.

PHARLAP (Napier): I am erecting an aerial as per the sketch enclosed. I would have 50ft. masts separated by 80ft., but would have to carry the lead-in 70ft. to the set. I could shift the mast to within 25ft. of the set, but the staying would be more difficult.

A.: The aerial in its present situation would not be as good as it might be. A long aerial lead would have a detrimental effect upon the signal strength to be received. Your best plan would be to put the mast nearer the house and the more distant one in the position now occupied by the nearer one. You would find if you totalled out the length you would have just about 100ft., which is the maximum length for a set using eight or nine valves.

2. What gauge wire do you suggest?—7/22 enamel.

3. Would an ordinary insulated wire such as that used for house lighting be suitable for leads in and out?

A.: No, you should insulated 7/22. The enamelled would be quite satisfactory if you keep it away from the building.

J.B.G. (Lower Hutt): The short-wave adapter in the 1930 "Guide" does not work on telephone, but is quite satisfactory on Morse. Telephone carriers can be distinctly tuned in, but that is all.

A.: We presume you have read our remarks concerning short-wave tuning, and you will find further remarks appearing in next week's issue. Further than that we would suggest that you increase the "B" voltage. The set has been successfully constructed by quite a few and has been found to work excellently. The laboratory model gave no suggestion of any trouble.

HI-TEN-SHUN (Carterton): The volume is often cut down on my speaker, but a sharp knock on the back of the unit sometimes temporarily restores it.

A.: Your best plan would be to take the speaker to a dealer and have it repaired.

2. What is the life of a "C" battery? Would two such batteries aid reception?

A.: Some "C" batteries last as long as 18 months or two years. The number of such batteries must be determined by the voltage applied to the plate of the last valve and on the characteristics of the last valve itself. These you can obtain from the carton which accompanied or if you do not have this and mention the type of valve and your "B" voltage we can tell you the bias.

3. Would an earth taken through the floor to a cold water pipe which enters the earth some 12 yards away be as efficient as an earth wire of several feet long connected to a pipe driven in the ground?

A.: The whole point hinges upon the word "several." If it is a long several it would be little better than the cold water pipe. If only five or six feet away it will be much better. The principle in installing an earth is to keep the wires as short as possible.

4. Does the length of the aerial given in the "Radio Record" of November 21 include the lead-in?—Yes.

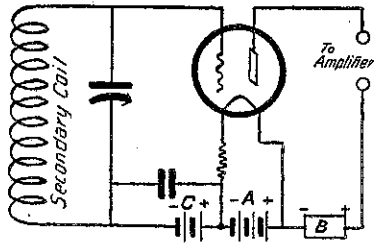
C.R.G. (Auckland): Your circuit is very ambitious and would be little better than the ordinary circuit. You would have a great deal of trouble with it, and we do not advise you to go about constructing it. If you want coils designed for it we would have to charge a specialist's fee of £2/2/-.

The Experimenter

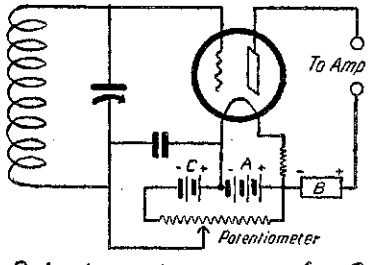
In response to several requests, we are opening a section devoted to the interests of the experimenting amateur. Tested ideas received from enthusiasts will be published and acknowledged. Experiences of listeners relating to points raised in our Questions and Answers column will be welcomed. We, however, cannot undertake responsibility for any of the ideas published.

Connecting a Pick-up

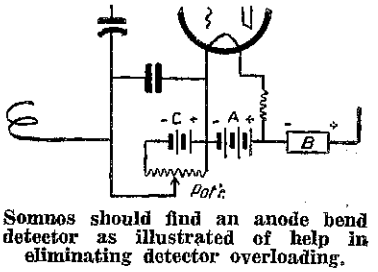
WHEN using a radio set as a gramophone amplifier, the pick-up may be brought directly into the grid circuit of the detector of the radio set. A volume control is necessary in practically every gramophone amplifier, and this is best included between the pick-up and the grid. If, however, the pick-up is not connected in the right way to the potentiometer (which forms the volume control), the tone may vary as the volume is regulated. The simplest and one of the best ways of including a volume control is to connect one end of the latter through a fixed condenser (of about .0005 mfd. capacity) to one terminal of the pick-up, the other end going to grid-bias negative, while the glider is connected to the grid of the valve.



Bias Variable by Tappings



Potentiometer across A & C



Somnos should find an anode bend detector as illustrated of help in eliminating detector overloading.

Earphones as Substitute on L.S.

THE following extract from "Dun's International Review" for September, 1930, may be worth a paragraph: "Disconnect one lead going to the loudspeaker (one of the leads to the voice coil in the case of the dynamic) so as to insert a table type clarostat in the circuit. The connector block of this device then takes the tips of the usual earphone cords. By turning the clarostat knob to decrease resistance the loudspeaker plays full volume and the earphones are inoperative. By turning the knob to increase the resistance, however, the earphones become operative while the loudspeaker volume is materially reduced to inaudibility." I have not as yet tried this method of providing earphone reception in combination with a set and if you consider it worthy of a test I would be interested to learn the results.—H. E. Chapman (Wellington).

Blocking Condensers

WHERE condensers of small capacities, but very high voltages, are required, such as "plate blocking" condensers in high-power transmitters are required, procure those condensers to be found in magnetos. They have to stand very high voltages and back e.m.f. Another "kink." Where a resistance is required to dissipate some considerable heat, procure from one's local electrician the porcelain element "formers" as to be found in heaters and radiators, and wind the required resistance on the same. One could have several to "plug-in" or screw-in bases, thus obtaining several values as required by various valves.—"Microamp."

Eliminator on Short-Wave

MR. SELLENS, our short-wave correspondent, writes:—For short waves "B" batteries are a thing of the past. I have a commercial eliminator but experienced a certain amount of hum which has been overcome. It was: (1) An audio transformer which has since gone "West" and been replaced by a first-grade article; (2) set wiring quite O.K. on battery, but attention required for mains working and, lastly, a B3 choke in detector lead bypassed with a 4 mfd. condenser. Result: Phones, after first audio, no sign of hum or background, with almost as much "kick" as two of audio before. Phones, second audio, some slight hum, but not safe for tuning by as morse stations come in at deafening strength, so I do all searching on first stage and plug in speaker on second—if signals strong enough.

An Improvised Choke

AN excellent home-made s.w. choke may be made by winding about a hundred turns of fine insulated wire around an ordinary test-tube. A dab of sealing-wax or of battery compound on the windings at each end will keep the winding in position. The precise number of turns to be included in the winding depends, of course, on the conditions under which the choke is to be used, but is, generally, not critical.

Drilling Precautions

BEFORE using a centre punch on an ebonite panel, care should be taken to ensure that there are no small screws or other obstacles on the bench beneath. If this precaution is omitted, it is quite possible that the panel will be split in half. When performing the actual drilling, it is a good plan to place several thicknesses of tissue paper underneath the panel to protect its surface.