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results when I added a further valve. Short-wave coils will not now oscillate.

A.: Are you quite certain that in re-winding your set you did not get the tickler connections reversed? If this is not the cause then we should imagine that the impedance of your transformer, which is most suitable for a detector valve of high impedance, is not suitable for the valve you are using. Consequently you cannot get it to oscillate on short-wave. Try the effect of a .0001 condenser across the primary.

2. Are the valves likely to be damaged when the detector alone or with a stage of radio frequency is used without grid bias and 90 volts on the plate?—No.

K.O.P. (Carterton): I am considering changing my three-stage r.c.c. amplifier to a two-stage r.c. and one-stage push-pull. What are the approximate of B+ and C- voltages required on the centre taps of the output and input push-pull transformers where two 608's are to be used?

A.: Use the highest B voltage you have available. If you can get 180 volts, so much to the good. If you are relying on batteries use at least 135. Try the double biasing idea; that is, by connecting to the centre tap of the secondaries 60 instead of 30 volts grid bias, i.e., you use 135 volts plate.

2. Instructions with my speaker state that where a single output valve is used a 1 to 1 transformer is to be employed, but where push-pull is used the centre tap of a speaker can be used, and the transformer done away with. Why should the current be passed through the speaker in the case of the push-pull valves and not in the case of the single valve?

A.: The only explanation we can offer is that where push-pull is intended the manufacturer had in mind the double biasing system, whereby a very small current only is passed through the speaker winding.

3. Would the fitting of an A630 valve to replace an A609 in R.F. of Browning Drake make any appreciable improvement?

A.: Fitting an A630 as R.F. is rather uncertain. You must wind a far greater number of turns upon the primary coil, but even then our experience has been that 609 is the safer valve for the first stage—615 if you like.

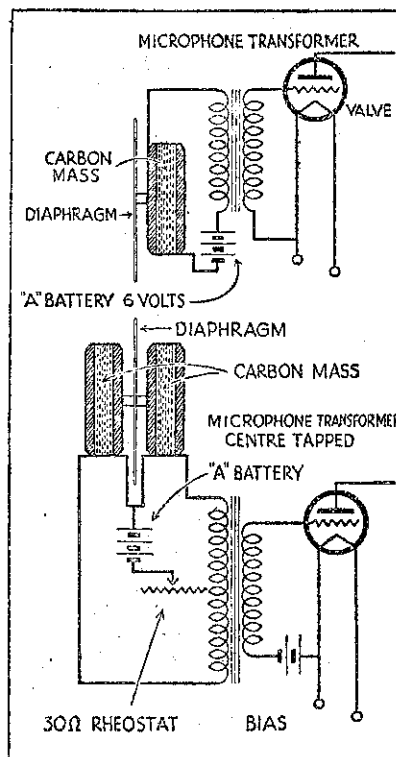
DX9MC (Christchurch): Will the diagram of the S.G. amplifier shown be practicable?

A.: Yes, but we think you will not get the results you are expecting. In the first place you are really constructing a booster, and this is not a satisfactory way of adding a screen-grid valve. If you wish to get power, why not pull your set down and use the parts to construct the "Outspan Five," recently described in the "Radio Record"? If you did not want to go to this trouble leave the detector and two audio stages of your set, but alter the existing aerial and grid coil of the first R.F. valve. Make the aerial coil entirely separate, and this then can be used for the primary of the intended first stage. The connections then would be as shown in the "Outspan Five." Look up the circuit of this set and you will see what is meant. Another good hook-up for a screen-grid valve was shown in last week's Questions and Answers.

CURIEUX (Napier): Thank you for sending along that circuit; we shall certainly try it in the laboratory when we get a chance. Some types of crystals will do better with a low potential applied to

them, but it is unusual for a semi-variable type to act in that manner. However, we shall try out the circuit and publish the result. Thank you.

DX30HB (Taradale): I have connected the microphones to my set by placing it in series with the pick-up. It did not work well like this, so I put battery in series with the microphone. Now it works fairly satisfactorily. Am I harming



ing my set through having the battery there?

A.: As far as we can see, no, but you should use the correct microphone circuit, which we publish herewith. You will note that a special microphone transformer has to be employed. One of these would not be very expensive, and to use it would be the safer method. You can connect the secondary of the microphone transformer to your set.

DEEKSE (Hamilton): I have a 5-valve commercial neodyne which I wish to convert to the "Radiogram Five." Would it make much difference if I used .0004 condensers and 3-inch formers?—No.

2. What would be the number of turns and the size of the wire using 3-inch formers with .0003 condensers?

A.: 52 turns of 24 enamelled or double silk wire.

3. What type of valves do you suggest?

A.: If you have to use batteries we should certainly use the new 2-volt type, 230, 231, and 232. Otherwise use 4 or 6-volt screen-grid valves, special detector, general-purpose first audio, and two 605 type of valve in the last stage.

4. What would be the B+ tapings—B1, B2, B3, etc.?

A.: B1 detector voltage, usually 22½ volts, B3 the second highest tapping if eliminator is supplied and highest if battery is supplied; B4 also the highest if

eliminator or battery is supplied; B2 is half of B3.

5. You could certainly use the short-wave choke mentioned instead of the one suggested.

6. Could I adapt a gramophone pick-up to a commercial super heterodyne?

A.: It could be done, but it is not the task for an amateur. You would take the risk of throwing the condensers out of alignment.

B.C. (Waitara):—I am considering building the "Sparrow Hawk Differential Adapter." Is it suitable for my set?—Yes.

2. Is there any particular size or power of the H.F. choke?

A.: No. You could either have them commercially made or build them. Specifications appeared in the 1930 "Radio Guide" and also in the "Radio Record" three or four months ago.

3. Which is the detector value in my circuit?

A.: We do not know the layout of your circuit, but the best plan would be to get someone who knows something about radio to tell you. You can usually tell by tapping the glass. The detector will cause a ring in the speaker.

RAW RECRUIT (Lower Hutt):—I am using a crystal set for a wave trap. Must I take the crystal out of the circuit?

A.: Not necessarily; you are not doing any harm by leaving it in.

2. I can pick up the local station on two wave lengths. Is this in order?

A.: Yes—the lower reading represents the harmonic.

TOM (Otahuhu): I recently bought a new B and C Eliminator and find that on various occasions the volume in relation to the aerial is not consistent.

A.: We simply cannot explain the phenomenal unless your eliminator is coupling back through the mains and using the high tension wires of the aerial.

2. I am putting 135 volts on the last stage, B406, but the valve warms. Am I injuring it?

A.: No, providing you have sufficient grid bias—i.e., 12 volts.

3. Is it necessary to install a separate earth for the eliminator?

A.: Theoretically you should have a separate earth, but generally the ordinary earth is quite satisfactory.

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