

distortion at times. Could I use a C battery and grid-leak?

A.: You should use a C battery on the last stage. Find the last valve in your set and break the connection between the grid return of the last transformer and A—. Take the grid return of the transformer, usually marked "GB," or probably, in your case, "A—," or "OS," to about 9 volts negative C battery. Take the positive of the C battery to A—. This bias is about right for a medium-sized power valve of the PM4 type with 90 to 135 volts on the plate.

W.H.B. (Wellington): Could you give me particulars of broadcast coils for the "Sellers" a.c. short-wave set?

A.: You will need two sets of coils for each stage. The secondaries for the first band will be approximately 80 turns of 24 d.c.c. wire wound on a 3in. former. The primary for the first coil will be about 30 turns, and the second coil will be about 28, both of 30 gauge d.s.c. wire. For the next coils the secondaries will be 155 turns of 24 d.s.c. wire, the primary of the first coil 60 turns, reaction coil 50 turns, both 30 d.s.c. wire. These are approximate only, and based on formulae. You may have to amend them to get the best results.

A.C.McD. (Eltham): If you want to know the cost of the "Cathode" super, why not write to one of the dealers who have advertised parts for this set in the issues in which they have been appearing? They could tell you more about costs than we can. Full particulars have been published in previous issues of the "Radio Record."

V.C.B. (Normanby): I am using three PM6's in my set. Are these valves liable to injure my transformers?

A.: Yes. PM6 should be used only in the last stage. By using them in other stages you are using extra current, and are also putting a greater drain on your eliminator than necessary and reducing the voltage.

2. Yes, your eliminator has ample power for your set.

3. What value grid-leak and condenser should I use? Would a variable one do?

A.: Variable grid-leaks are not satisfactory, as they are usually noisy. The value should be approximately 2 megohms, and that of the condenser from .00015 to .00025. Generally speaking, .0002 is considered to be the optimum.

DX19A (Waikato): Will the efficiency of the Pierce earth system be lessened if I connect up all the pipes with one wire?

A.: No, provided you make really good connections to each pipe and see that the connecting wire is continuous, you will then get quite as good results as by any other method.

2. Does it matter if the car radiator is left out? The soil round the pipes is damp.

A.: No. Provided the ground is kept damp; that is everything.

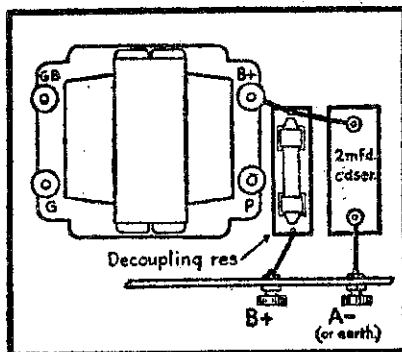
3. Dial readings of my set have shifted about 15 degrees, after replacing the two variable-mu valves. The dial has not been touched.

A.: This is a big jump. Are you sure you put in the right type of variable-mu valves? At the same time examine your

condensers and the dial to see that there is no slipping there. Drop a note to the New Zealand agents for your set and ask them about that short-wave adapter. They have had considerable experience and could make more sound recommendations than we could.

"NEVA" (Wellington): Oscillation and fierce motor-boating are prevalent in my "Radiogram" five. What is the cause and remedy?

A.: Try reversing the primary connections to one of the audio transformers—say the second audio (first push-pull). Place an r.f. choke between B+ of the second audio transformer and the common lead which goes to the r.f.c. in the plate circuit of the screen-grid valve and the battery. If necessary use a grid compressor, or an anti-motor-boating device in the connection in the first audio



stage. (See accompanying illustration.) To reduce the oscillation try reversing the connections to the tickler coil and reduce the detector voltage until oscillation is smoother, but if this does not cure it, try taking off a few turns from the tickler coil. It may be necessary to reverse the connections on the first coil, that is, making the top of the coil "E" instead of "G," and the bottom of the coil "G." Of course, you will join the top of the coil at "E" with the aerial coil as at present. This will reduce the field created by this coil and possibly get over your trouble.

M. (Seaton): Could you supply, through the "Radio Record," a diagram of a wave-trap using .0003 condenser?

A.: Accompanying is a suitable diagram. On the secondary coil you will require 80 turns of 26 d.s.c. wire wound on a 2in. former. For the primary coil glue about half a dozen match-sticks round one end of the big coil, and over this wind 22 turns of the same gauge wire, allowing a slight space between each turn. Then anchor the wire round the match-sticks temporarily and use gum to hold the windings in position. This is the primary coil. The top, that is, the more distant end of the larger coil, goes to the aerial, the other to the aerial terminal of your set. The larger coil is tuned with a .0003 condenser.

"TINY" (Auckland): My set performs erratically. Sometimes it goes splendidly and then volume drops, music and speech becomes thin, the sibilants becoming accentuated. After a time everything is normal again. I have been over the set, with a fine-tooth comb, as it were, and everything is splendid. There appear to be no defects?

A.: What about the speaker? Have you had that tested? Have you tried testing your valves by substitution. Often on a test bench a valve will appear quite nor-

mal, yet when put into a set it behaves in the manner you describe. When the set starts to distort then put your meter on to a different point of each valve and see if everything is all right. It may be that there is trouble in a transformer which shows up only occasionally, and when you test the set it may be all right. Carry out your tests, generally speaking, with the set in the unsatisfactory condition. It is not much use testing it when it appears to be quite normal. You would, of course, have to make your test with the set going, but with a little care you could probably do this. We do not think the trouble is due to outside interference. Have you had the lightning arrester out of the circuit to see if that is having anything to do with it?

"CATHODE RAY" (Invercargill): I wish to use a short-wave adapter with my set. Does the valve base coil used with a 227 require the same number of turns for reaction as is shown in the table in a previous "Radio Record"?

A.: You do not say which "Radio Record," but try the number given, and if any alterations have to be made, you can quite easily make them. If anything, put on more than required, as it is easier to take off than put on.

Should the cathode of the adapter be taken to earth, or connected to the cathode of the detector valve of the set, as in the diagram?

A.: Try both, and see which works the better.

3. Must the adapter be built on a metal chassis, or is a wooden baseboard permissible?

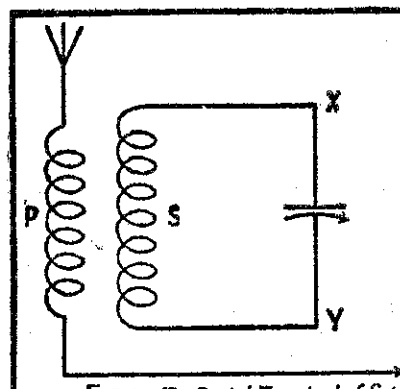


FIG. 1. To Aerial Terminal of Set

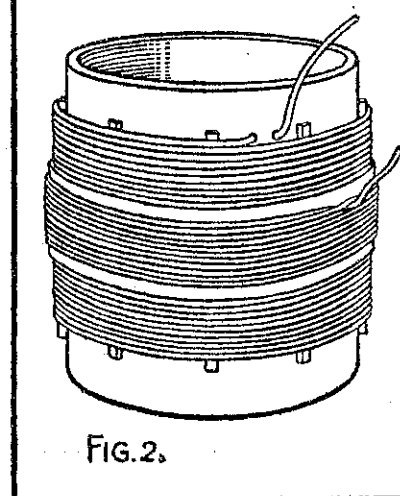


FIG. 2.

**BURGESS
RADIO
BATTERIES**

A.: A wooden baseboard is quite permissible.

F.H.W. (Taihape): The wire you enclose, which is 26 d.s.c., would be quite satisfactory for a coil. The value of the condenser is about .0002, but you do not tell us the size of the plates. They would be quite suitable for both tuning and reaction, although you will have to put a rather large number of turns on the secondary coil to compensate for the low capacity.

F.H. (Gisborne): Would the following valves do for the "Radiogram Five"? UY224, 227, first audio 227, push-pull 226?

A.: The 226 in push-pull would not really be satisfactory. You should have 245's. You could use them, of course, in exactly the same method as is shown in the diagram, but remember they are 1 1/2 volts filament. If this should not handle sufficient volume for you, you will know the reason why.

2. What size transformer stampings should be used for a filament transformer to supply these valves?

A.: Full particulars were given in the 1931 "Guide," which you have on hand.

3. Should I put on two filament windings, and what wire would carry nearly 5 amps?

A.: Two windings of No. 16 gauge would be satisfactory.

4. I want to use .00025 straight line capacity condenser and 24 s.c.c. wire. What number of turns should I wind on the coils?

A.: The secondaries will need 100 turns, the reaction coil about 35 turns, and the primary about 50 turns, but for this latter you must use a finer wire—say, 30 gauge d.s.c.

5. Do you make the weekly "Radio Records" into volumes and sell them?

A.: Yes. Drop a note to our accountant, and he will tell you all about it.

"GROWLER" (Christchurch): I am troubled with occasional growling in my set.

A.: This may be due to many causes. A defective battery, defective valves or speaker. Generally the first.

2. In the morning and afternoon the music and singing are not clear, but muffled.

A.: This is probably due to the same cause. We suspect either a defective valve, or a troublesome battery. It may be a burnt-out transformer.

3. What is the best kind of earth if one is not near a water-pipe or heater?

A.: One or more galvanised iron pipes driven into the ground and kept moist. The earth wire must be soldered or attached with a standard earth clip. A heater does not make a good earth.

WHEN using R.C. coupling in a short-wave set be certain to employ wire-wound resistances of reliable make, or you may experience a constant "mush."

Information Coupon

(To be used with all requests for information.)

Name of set

Number of valves

Name

Address

Nom de plume

To be kept in subsequent inquiries.

Date

Please Note:—

(1) Be specific and brief, tabulating, if possible.

(2) Write legibly, and on one side of the paper.

(3) We do not design circuits, but accept suggestions for feature articles.

T.C.C. Radio Condensers

for

Accuracy and Quality

N.Z. Representatives:

TURNBULL & JONES, LTD.

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