

## Answers in Brief.

"B.J.B." (Onehunga): Your circuit is not of the best. Try the two R.F. Brownings-Drake with your own amplifier. The two R.F. was described in the "Radio Record" and the "Listeners' Guide," where full instructions are given.

## The Cockaday Receiver.

A REQUEST has come from "R.S." Nelson, for the circuit of the "Cockaday" receiver.

A.: We shall publish this with a few notes on its construction next week.

## Selling a Receiver.

COULD you supply me with any information regarding the private sale of a wireless set? writes a correspondent from Hawke's Bay.

A.: A wireless set may be disposed of by private sale without any restriction. As soon as there is any suggestion of making or buying wireless sets to sell or resell, a dealer's license of some description is necessary.

## The Crystal and Valve.

I SHOULD like to make the crystal and valve with 3-valve performance with condenser control reaction. Could you supply the circuit?—"H.A.S." (Morning-side.)

A.: This set, which has proved very popular, can be made equally well with reaction controlled in either way. As soon as possible we shall publish full constructional details.

## The R.F. Booster.

I WAS interested in the booster described in the "Radio Record."

writes "Inquirer," Ngaiio, "and built one to specifications, but find on reading subsequent article that it could not be used with my Brownings-Drake. I would appreciate advice as to whether the circuit of the booster could be modified so as to make it suitable for the Brownings-Drake.

A.: The simplest method is to rewind the aerial coil of the Brownings-Drake. On examining this first coil in the set it will be found that there are three terminals on it. One connects directly with the aerial, one with the fixed plates of the tuning condenser and the grid of the first valve, and the other to earth and filament negative. This coil has to be removed, and a loosely-coupled coil constructed to take its place. On a 2½-inch or 3-inch former wind 75 turns or 55 turns of 20-gauge (according to size of former) enamel copper wire, as described by "Megohm" in this week's issue. Leave a space of about ¼-inch and wind on about 25 turns of the same wire. Secure the ends and connect them as follow: One end of the smaller coil, the primary, is connected to the aerial, the other end to the earth. One end of the larger coil, the secondary, to the condenser and grid, and the other to the filament negative (or moving plates of the condenser). The booster may now be connected as was originally described. If results are not quite up to expectations, reverse the connections to

the primary (or the secondary, if this is easier).

## Electrical Interference.

"RADIO" (Bay of Plenty) has encountered a type of interference which will be very hard to check. A few doors from where his set is operating, a barber is operating an electrical hair-cutting machine, which travels along a wire stretched across the room, carrying current. Interference is very bad while the machine is operating.

A.: The trouble may arise from any one of three sources, direct radiation from the electric machine, through the ground connections or through the electric lighting system (the set in question is an all-electric). If a condenser of 1 or 2 mfd. is connected between the wire on which the machine moves and the earth, the trouble may disappear. If it is travelling through the lighting system there will be little hope of preventing it. If through the ground a counterpoise aerial would probably prevent interaction.

## Audio Howl.

"L.H.W." (Lower Hutt) has been troubled with an audio howl. He cannot put the full voltage on his audio valve.

A.: See reply to a correspondent last week. Another method is to reverse the connections to either the primary or the secondary of one of the audio transformers. If this cures the trouble it indicates that it has arisen through the windings of the transformers being in a different direction to the other. Quite frequently different makers wind their transformers in different directions, and the induced currents, being out of phase, set up a hetrodynamic note or howl.

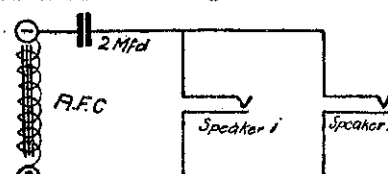
## Cannot Increase Voltage.

I CANNOT put more than 22½ volts on the radio frequency valve of my set, without reducing volume, write "N.W." (Rongotai). All my components appear to be O.K., but I cannot get the volume outside Wellington. Reaction makes very little difference.

A.: Test the valve used in the radio frequency stage, as this may have lost its emission. Renaturalise the set, as has been described in the "Guide" and in the "Record." This will be facilitated by the introduction of a by-pass condenser capacity 1 mfd. between "B plus R.F." and earth. Use a grid leak of lower value and trace the circuit out so as to make certain that it goes to "A plus." If it goes to negative, as is probable, if it is shunted across the condenser, break this shunt and connect one end of the grid leak to the side of the condenser nearest the valve. The other end is connected to "A plus."

## An Extension Speaker.

I HAVE an all-electric set, wires "G.J.H." (Invercargill), and I want to use a speaker upstairs as well as downstairs. How might I do this?



A.: A diagram is appended showing the connections. Where a long lead has to be taken, a condenser should be connected in both leads. It amounts really to purchasing or making an audio frequency choke and connecting this between the two speaker terminals, then, connecting each speaker terminal to one side of a 2 mfd. condenser. The other ter-

minals of these two condensers are connected to leads which can be taken to the set in the other room. By connecting them to a jack the speaker can be cut off at will. To use the speaker nearest the set take one lead from each of the terminals of the condensers farthest away from the set. Connect these with a jack, and the speaker may be used at will.

## "Round-the-World Two."

I Have just finished "Round-the-World Two," and have picked up PCJ RFN, and several amateurs, writes "D.J.C." (Petone). However, there are one or two points I would like cleared up.

1. The set is very unstable, for when I bring my hands close to the neutralising condenser, which I placed on the panel, the set bursts out into uncontrolled oscillation.

A.: The trouble is caused through the neutralising condenser in the aerial lead being mounted on the panel. It was placed in the rear so that it should not cause this interference. It would be well in constructing a set of this description to follow explicitly the instructions given.

2. Should the coils, when plugged into the sockets, be in. apart—mine are a good inch. Would this affect oscillation.

A.: The coils have to be placed just sufficiently close to make the set oscillate.

## The Screen-Grid Short-Wave Booster.

"MACK" (Johnsonville) writes:—I am building a S.G.S.W. booster described in the "Radio Record," and intend to use commercial valve base coils. Will the old coils made to the 1928 "Listeners' Guide" specifications do?—Yes.

Will an A635 valve be suitable, or what other one could I use?

A.: A screen grid valve will be necessary—A635 is then not suitable. At the present time A442 (Philips), PM12, 14, or 16 (Mullard), UX222 (Radiotronics), RF222 (Ce-Co.), S215 (Osram), are vertical mountings screen grid valves now readily obtainable. We have tested the Mullard and Osram valves, and reports will be appearing later.

Will the different make of valve affect the set?—If at all, only in signal strength.

I am using a .0001 tuning condenser. Will I duplicate or use another?—Duplicate.

## The Full-wave Crystal Set.

BECAUSE he cannot get good results from his full-wave crystal set, "Try Again" (Devonport) asks regarding this set.

(1) Should each condenser read the same on the same station?

A.: Yes, the fact that the condensers are not showing the same reading indicates that the coils are not matched. Add a few more turns to the secondary of the coil controlled by the condenser which has the higher reading.

(2) The coils of 60 turns secondary maximum strength is obtained at 0 degrees on both condensers. What does this mean?

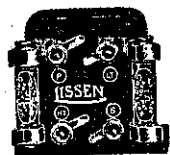
A.: It means that less turns are required on the secondary coil.

(3) A diagram indicates that the direction of the winding coils are different, and this possibly is the seat of all the trouble. If the coils are not wound in the same direction the induced current arising in the secondary circuit of the first coil will be neutralised by the induced current in the secondary circuit of the second coil. In other words, the effect of one crystal is being lost. Reverse the leads on one of the primaries or secondaries, and try the result. If then, the symptoms mentioned previously still persist, proceed with the suggestions made.

The correspondent has stated that he has used several combinations of crystals, and asks if we can advise him of any better combination. We cannot, his trouble no doubt lying in another direction, as has already been indicated.

## The Linen Diaphragm Speaker.

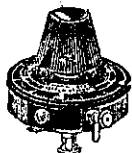
MANY correspondents have recently written in concerning the linen dia-



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