

112As would could use B605s, which are lighter on "A" current. We cannot understand how four valves are used in push-pull, and for this reason it may be better if you could get someone who knew a little about radio) to examine the set and see if changes could be made. Probably they could. Probably you would have difficulty in obtaining an "A" eliminator to deliver sufficient current. Generally speaking, a wet battery and a charger are better. It very rarely happens that in adjusting the valves any radical change has to be made to the circuit of the set.

DYNAMO (Waitomo Caves: Which would be the better adapter to use with my Outspan Five, the superhet, described last year or the first two valves of the Sellens Short-wave Set?

A.: The latter would be preferable, as you do not have sufficient amplification to work a superhet, satisfactorily.

2. How would I change the Outspan Five so that "A+" is earthed?

A.: Break the connection between the primary and secondary of the "Outspan Five." Connect "B—" with "A+" and connect the two to ground. Take the grid return of the second r.f. valve to the "A—" filament return of the detector, and two audio valves to "A—".

3. How does one arrive at the number of turns and size of wire for the primary windings of coils, as I intend to use 3in. coils for the secondaries?

A.: We think you are unwise using 3in. coils for the secondaries of the "Outspan Five," if that is what you mean. For broadcast purposes the ordinary primary varies with the valve preceding it, but as the calculation of the number of turns involves many factors that are likely to get the amateur into deep water, the best plan is to take one-third of the number of turns on the secondary and then adjust until the best results are obtained. For short-wave you can find out the number of turns by comparing the coils you intend to make with some already made, even if the size is different.

SIMPLEX (Waikanae): We cannot suggest anything else without seeing your set. Probably you are making some simple mistake which cannot be rectified by correspondence. We cannot get any line on to your trouble other than what we suggested in our previous answer.

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As far as a set is concerned, we would suggest a detector and two audio. There would be two dials, one for tuning and the other for regeneration. You would need a third control—a rheostat switch, but we do not know whether you could get the circuit you require, and if you cannot locate one, write to us and we shall send you one. We can only undertake, however, to send you the bare circuit with an idea of the layout.

CARNA (Auckland): My aerial is 30 feet high and 70 feet long, including the lead-in. Could this aerial be improved by turning it into a double wire one?

A.: In all probability, yes. Separate the wires by hard wood spacers and keep them six feet apart.

2. When replacing your valves use one well-known make only. You need four type-24 valves, two type-45, and one type-80.

3. What effect has a copper ball soldered on a short aerial?

A.: Very little; we do not advise the use of patent aerials.

C.D. (Katikati): My aerial is 37 feet high, passes over my house, eight feet higher than the roof. Does this affect reception and cause noises and attract static? My neighbours have comparatively little.

A.: No. The effect of the roof should be to diminish noises and signal strength, certainly not to increase them. The noises may be due to a power leak nearby, or it may be due to something in your set. Take off the aerial and note the effect. If the noise persists, then there is something wrong within your set. If not, we are afraid you have either a power leak nearby or there is a loose connection in the aerial. It may be shorting with the ground. Your aerial should run at right angles to a power line, not parallel with it.

SHORTWAVE (Temuka): I have constructed special s.w. coils for the Cossor Melody Maker and get good results on all except those below 30 metres, although on this band oscillation will take place quite readily. Why is this?

A.: Probably because your aerial is too long and you cannot tune below its normal wavelength. Try the effect of a midget condenser in series with the aerial.

2. I have shifted the rheostat control of the screen circuit, and placed it so that the control applies to all the filaments. I find this better.

A.: For shortwave it is generally better to have the filament control in the detector circuit, for that valve is very critical on the high frequencies.

L.P.H. (Dunedin): To further improve your earth try the multiple system, separating the units by several feet. Bring the leads together and take them into your set in a cable. However, it is possible that this is not the cause of the insensitivity. We do not know a great deal about your set, but believe it to be quite good. We would suggest that you balance up or have balanced up the condensers, and have your valves tested.

DX (Dunedin): As far as we can ascertain your condenser is a .0001. Coil particulars were given in the "R.R." dated April 2, 1931. To make your condenser into a .00015, you will require about three or four extra plates. To reduce it to .00005 you should leave two fixed and one moving, although, with plates so large as this, the condenser may not be satisfactory. Usually for very small capacities, midgets are used.

R.G. (Karoro): For the "Night Hawk Two" I have a coil consisting of a secondary of 88 turns, tickler 23, and primary 8. It oscillates quite well, but the stations are weak on phones. If I add to the tickler the set squeals badly. By adding to the primary, signals fade away and oscillation is patchy, particularly at the bottom and top of the dial.

A.: Probably your choke is at fault. You should be able to put more turns on the primary. The correct number is between 20 and 30. This would cause the weakness. Try another choke and then add more turns on the primary, and we think you will surmount your trouble. Are you quite certain you are not using an aerial which is too long? About 120-130ft. is about the most you should have. A midget condenser in the aerial will often shift dead spots, though the proper way is to adjust the number of turns on the primary. Your broadcast coil is of the right specification for the broadcast band.

THIRD GRID (Greymouth): How do the regulations concerning radio servicemen affect the amateur transmitter? Can they construct and use their own apparatus without passing the R.S. examination? Can the ordinary enthusiast construct his own apparatus where it is operated from batteries.

A.: The radio serviceman's examination prevents anyone without the certificate from interfering with any apparatus that can be connected directly with the mains. Even although you are an amateur transmitter you do not have a license to construct mains apparatus. Apparatus should be made and installed by licensed radio servicemen or licensed wiremen. There is nothing to prevent you constructing any other apparatus, however.

2. I wish to make a broadcast coil on a valve base extension without either increasing the diameter or making the coil too long. Can I get over this by winding the layers on top of one another?

A.: No; that is not an efficient way to make a coil. The best plan is to use very much finer wire than usual. You could calculate the number of turns and gauge of wire from the tables given in the "Radio Guide."

3. As putting valves in parallel halves the impedance, could a high actual gain

per stage be obtained by putting two high impedance type valves in parallel?

A.: The idea is feasible. Of course, there is the expense and you may have some difficulty with neutralisation. However, it would be an interesting line to experiment along.

G.M. (Auckland): Your connections are not quite correct. You should wind a separate coil on the high potential end of the secondary of your detector valve stage. This should be about 25 to 30 turns of No. 26-30 wire. The lower end is connected to the plate of the valve. The other end is connected to the by-pass condenser and the top of the transformer. A variable condenser of a capacity of .00025 should be connected to the top of the audio transformer; that is the point already referred to, and the moving set of plates to earth. You will be then able to control reaction quite satisfactorily. You may have to take the fixed condenser out of the circuit.

FIGARO (Glen Eden).—Would 18-gauge single cotton and enamel-covered wire do for chokes described in the "Radio Record"? If so, how much wire would be required?

A.: It would do quite well, and you would need slightly more wire than you would for the d.c.c., because more could be wound in the space provided. The more you can get in there the higher the inductance, and the better the smoothing properties of the choke. We suggest that you buy 1½lb.

2. It would be as well to try the condenser on either side of the choke to see which way it functions the better. We note with interest your comments regarding the "Guide."

COUNTRY (Frankton).—I wish to construct a small shortwave set. Should I make a one-valve or an adapter of the same circuit?

A.: We suggest you make the adapter. You can then use that as a one-valve set, or it can be connected with the audio system of your existing five-valve.

2. Would a rheostat be necessary? If so, where should I use it?

A.: Connect it to the filament circuit. It would take the place of a filament switch.

3. If of any advantage, give dimensions of an aerial tuner for a shortwave set.

A.: It is doubtful if an aerial tuner would be of much use in a shortwave. It may interfere with the oscillation of your set.

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