

to use the set for broadcast only why not build up the "Radiogram Five" with an extra stage of s.g. r.f.?

RECTIFIER (Te Aroha).—Is the accompanying circuit correct for an electrolytic rectifier?

A.: Yes, your circuit is correct, but if the fire underwriters happen to see you using it, there will be trouble. Such rectifiers are prohibited, consequently we cannot give you any details.

BOOZY (Hikurangi).—Crystal sets have been fairly fully dealt with in the "Radio Record" recently, and we regret that we cannot send you any further details by post.

G.H.B. (Auckland).—The "Rejesta" Wavetrap was a great success until I altered its frequency. Should I now take off some of the turns and stop double winding at the 27th turn?

A.: Yes, that would be your better plan, and you would possibly then get better results. We note your request for a reprint of the d.c. article, but we cannot do this as space these days is very much at a premium. Copies are still available from our office.

RADIAN (Dunedin).—My set develops a very audible humming noise, which persists for three or four days. It then becomes so silent that one does not know it is operating. The rectifier has seen about 4000 hours' service.

A.: We should certainly renew the rectifier, as troubles such as you complain of are very frequently caused by an aged rectifier. Failing this, communicate with the local agents of your set, whose service department will adjust it.

2. Which would be the better in the Loftin White amplifier, pushpull or a power pentode?

A.: The pushpull would give you a greater output.

3. Would the combination of the No. 2 Selectra Crystal set and a L.W. type of amplifier give as good a tone as is possible to obtain at present, providing all impedances were correctly matched and a good dynamic speaker used?—Yes.

W. H. (Wanganui).—Could my set be made into an all-wave one; if not, could it be altered to give better results on distant stations?

A.: From the plan you have sent it appears that it would not be easy to make your set into an all-wave one. If you wish to have one of these, pull the set down, using the parts to build up the "Differential Four," which was described in the "Radio Record" early this year. This should give you better results on distance. It would be better, too, for you to use different valves. Your detector valve should be a special detector, such as 2DX. The third PM1 and the fourth PM2 does not have a high amplification factor, with the result that you are not getting the kick you should.

2. When I am listening to a distant or weak station, the set can be made to oscillate by a burst of static.

A.: This is because you are working your set too near the point of oscillation. When a burst of static or a strong signal comes, the set goes over the verge of oscillation. It is very difficult to stop this other than working a little back from the oscillation point. This, of course, would give you less sensitivity, but the set would be stable.

3. How is it when I am trying to bring in a distant station, I pass a certain point on the "volume" dial the music or speech becomes loud and harsh?

A.: Your set is oscillating and you must never use it in this condition. Up to a certain point a "volume" condenser strengthens the signal, but past that point the set commences to oscillate and music and speech become rough. Work just on the other side of this point.

J. M. J. (Auckland).—I have inductively coupled the loop aerial of my set to an outdoor aerial, which is approximately 80 feet in length. Reception of distant stations has improved 75 per cent., but I have some trouble in separating 1YA, 2BL, and other stations. Shortening the outdoor aerial does not appear to have any effect, while tuning is no finer by using the large aerial coupled with the loop than when the loop aerial alone is employed. How could I obtain greater selectivity?

A.: The trouble appears to be in the set itself, for all loop sets should tune sharply. We presume you have tried the loop at different angles, even though it is coupled with the aerial. If you wish to use a wave-trap, couple it between the aerial and the loop, for the loop is really an enlarged coil of your set.

NOVICE (Whangarei).—I have a .0005 condenser and ample 28 and 22 s.w.g. d.c.c. wire. How many turns for the aerial, grid, and tickler coil would I need to put on a 3in. former, for a one-valve set?

A.: Secondary, 65 turns of 22 s.w.g. wire. Primary, 22 turns of 28 s.w.g. wire. Tickler (if you intend using a .0005 for regeneration), 20 turns.

2. How many plates would I take out of this to make a .00035?

A.: Four moving and four fixed.

T. A.C. (Morrinsville).—I have logged 25 stations. Can I expect any others on a one-valve set?

A.: Good gracious, no! You have had excellent results—far better than the average one-valve set is capable of.

2. I have connected an extra pair of 'phones to my set and find it difficult to tune out the howl. How can I remedy this?

A.: Try the effect of a small condenser across your 'phones—say, .001. If this fails,

you will have to put in an output filter, such as was shown in last week's diagnosis.

3. I get better reception without the grid-leak than with it. Why is this?

A.: This happens often because of a faulty grid condenser or grid-leak holder.

J. S.T. (—).—I am building a five-valve neutrodyne, but I cannot follow the diagram, as it is very small. Could you advise me where I could obtain a modern lay-out of this set?

Valve Base Coils with .00005 Tuning Condenser and .00015 Regeneration.

R.F. Coil. Detector Coil Waveband

Aerial.	Grid.	T. Anode.	Reaction.	Metres
3½	3½	3½	3½	9-12
5½	6½	6½	7½	12-19
8½	9½	8½	10½	19-28
10½	12½	12½	12½	28-40
15½	20½	18½	15½	40-65
20½	27½	25½	18½	80-100

A.: There are no modern lay-outs of a five-valve neutrodyne, as this set went out of date about three years ago. However, you will find that we described one, complete with diagrams, on March 15, 1927.

RAY DIO. (Eltham).—I have built the "Sparrow Hawk One" and have added two audio stages. The set has a great kick on code, but when I get on to phone stations the carriers are very loud, but the percentage of modulation low and weak. The reaction condenser has a very bad detuning effect, and it is almost impossible to listen to a distant station.

A.: The capacity of your reaction condenser is rather high, and it would not be a bad plan to use a .0005 fixed condenser in series with the moving arm and earth. You may then have to increase the numbers of turns on the reaction coil, but generally we think you would get better results. With a differential condenser, detuning is not strongly marked. It is possible you are troubled with a mild form of hand capacity, in which case it would be advantageous to use a metal panel.

I. G.R. (Takaka).—I have a six-valve set, which has been functioning excellently until recently, when it has become very mushy. What is the remedy for this fault?

A.: It is due probably to the voltage of your "C" battery falling off, or the power valve coming to the end of its useful life. Have you checked over your other batteries, just to make quite certain the trouble is not there? Another trouble could be a break-down in the secondary of one of the audio transformers, but this is not very likely. The trouble is most likely a flat "B" battery.

VIC. (Foxton).—Where may I procure the 1929 "Radio Guide"?

A.: From most bookstalls. Failing them, you could apply to our office.

2. Which would be the most suitable valve to use in the short-wave adapter described in this year's "Guide"? The 201A or C509, but 221 is best.

A.: They are both exactly the same.
3. What value grid-leak should I use?
A.: For short-wave, about 8 megohms.

POWER TONE (Dunedin).—When the secondary of a power transformer is wound in two separate halves, what leads are joined to give a centre tap?

A.: The end of one and the beginning of the next. These are the two adjacent ends.

OMEGA (Oamaru).—I propose building the "Sellens Short-wave Set." Would a pentode valve be of any advantage in the last stage?

A.: Yes, a pentode could be used in the last stage, but unless these valves are specially matched to the following transformer, the results are not always quite satisfactory.

2. In the "R.R." you give the diameter of the radio coil and not of the detector coils. What should this be?

A.: The same as the radio coil.
3. On the broadcast band, will this set bring in the main New Zealand and Australian stations on the speaker?—Yes.

H. G.T. (Brooklyn).—I am troubled by H. cross-modulation, as described in a recent issue. Would a wave-trap be of any use?

A.: Cross-modulation is very difficult to eradicate. For this reason the multi-mu



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