

into valve bases. The coils will cover a range of 14 to 100 metres and 250 to 520 metres. Condensers are .00016.

Metres.	Secy. Coil.	Tickler.
16-30	5-14	5-26
29-58	12-16	9-26
54-110	22-16	15-26
103-225	45-26	24-26
225-350	115-30	12-34
300-550	195-32	50-36

All turns spaced except tickler, which is close-wound, spaced a 1/4 in. from the secondary coil. The figure after the hyphen denotes the gauge of wire.

**PAPER (Dunedin):** I have a seven-valve a.c. set and although I am in an excellent position I cannot receive the American stations.

A.: We cannot really help you. If you could get your aerial up another 5 or 10 feet you might have a better chance. When your valves are beginning to drop off and you want to renew them, try standard "Radiotrons"—they might suit your particular set better.

2. Is an aerial effective if it has been cut and soldered?

A.: Soldering certainly decreases the efficiency, but not greatly.

3. When I tune the local station I get more volume with the control about half-way. Does this signify anything wrong?

A.: No. When the volume control is full on the set is overloading and choking.

### N.Z.'S OWN RADIO BOOKSHOP

The **TE ARO BOOK DEPOT**, Wellington.

**JUST ARRIVED**—Prices include postage:

"Collins' Wireless Diary, 1931," 4/- posted (Amateurs and Broadcasters—150 pages useful information).

"1001 Radio Questions and Answers, 1930," 2/9.

"Short-Wave Manual, 1930," 2/9.

"Radio Trouble Finder," 1/10.

Above published by "Radio News" Co.

"Radio Amateur Call Book," June, 1930, 5/3

"Projection Engineering"—a monthly, 21/- per annum.

"Radio Manual," by Sterling and Kruse, latest edition, 26/-.

"Elements of Radio Communication," by Morecroft, 19/-.

"Thermionic Vacuum Tube," by Van der Bijl, 26/-.

"Radio Receiving Tubes," by Moyer and Wostrel, 14/-.

"Practical Radio Construction and Repairing," by Moyer and Wostrel, 14/-.

"Electric Wiring," by Ibbetson, 10/-.

"How Radio Receivers Work," by Roberts, 8/-.

"Radio Physics Course," by Ghirardi, 13/-.

Also all leading English, American and Australian wireless magazines.

Mr. F. W. Sellens' list of Shortwave Broadcasting Stations, 7d.

Last year's "N.Z. Radio Listeners' Guide" still selling well, 2/9.

"Modern Wireless," 1/7.

"All About the All-Electric," 1/7.

"N.Z. Radio Handbook Annual, 1930," 2/9. (contains list of the World's broadcasting stations).

Blue prints and complete instructions on following—1/0 each:—

7-Valve Super-Het,

6-Valve Neurodyne,

5-Valve Neurodyne,

Batteryless Neurodyne,

Selective Crystal Set, 2-stage Audio.

All about Aerials.

Simple Wave Trap and Clarifier.

At 2/6 each.

Cockaday Receiver,

5-Valve Cockaday Receiver with

P.P. Amplification.

Tropadyne Superadio,

Amateur's Practical Design Data.

At 5/- each.

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Money refunded if unsuitable and returned in good condition. New stocks by every overseas mail. Write us.

### TE ARO BOOK DEPOT

64 Courtenay Place, Wellington.

**A.MATEUR (Port Chalmers):** During rain a drowning crackling noise mars reception.

A.: Try removing the aerial under such conditions and you will see if the noise is in your set or in the aerial. If it is in the aerial examine this and the earth very carefully for short circuits, for it is evident that the rain is making a good path to earth.

**W.A.T. (Wellington):** I have an a.c. set, but find the station distorts on all but three stations.

A.: As it is a commercially-made set, we cannot advise you to do anything other than have the two 250 valves tested. They may be unbalanced.

2. Where could I get particulars of a short-wave a.c. adaptor?

A.: Write Mack's Radio, Kent Terrace, Wellington.

3. My aerial is 100 feet long, 30 feet high. Would two wires or spreaders be better?

A.: No, your aerial is now at maximum efficiency.

4. Can I have my valves tested?

A.: Yes, any local dealer will test them for you.

**JINXT (Hamilton):** I have constructed a two-valve set, but I get better results from a one-valve.

A.: Probably the audio transformer is at fault. Are you quite certain you have it connected in the right way? Have it tested with the voltmeter and cell method.

**VOLTS (Motueka):** I find my electric plant seriously interferes with radio reception. I have connected two 2 mfd. condensers across the line, but it is still bad.

A.: See our article on interference published in the "R.R." of Sept. 13, 1929.

**H.E.H. (Wellington):** What value fixed condenser will be necessary to reduce .0005 to .00016?—.00025.

**J.E.W. (Lower Hutt):** I had in mind constructing the Loftin White, but note that unless the resistances are practically correct the results are indifferent. Will a circuit employing the screen grid valve transformer coupled to a 245 be better?

A.: You need have no worries about the Loftin White. If you get your resistances from a reliable dealer they will be quite OK. The only resistance likely to give trouble is the one in the grid circuit, and this can easily be replaced. It will be far better than the circuit you send along, which would probably distort and would not handle a great deal of volume. Note that the filament voltage on the 245 is 2.5 volts, not 5 as you have marked on your diagram.

2. Would the combination shown be better than 201A used with a 171?

A.: Yes, but it would not be particularly brilliant. You need push-pull or Loftin White for satisfactory gramophone amplification.

**NOSEY Parker (Christchurch):** We have been interested in your experiments with the pentode valve, and in a very short time will have a very comprehensive article on the subject which should interest you.

**RAY DEO (Waikato):** Concerning your diagram of a circuit using 2 s.g. and regenerative detector. Would it be successful if the three tuning condensers were ganged?

A.: Yes, but connect them on a shaft parallel to the panel and shield each stage.

2. Would it be necessary to have trimmers on two of the condensers?

A.: Not unless you want really maximum efficiency.

3. I have logged 60 stations on my present set, but it is unselective. Can I reasonably expect better results with two stages of screen grid?—Yes.

4. It appears that the reaction condenser would need to be insulated from the metal panel. Is this correct?

A.: In that circuit, yes. A better

way of controlling regeneration would be to make the tickler coil distinct and connect one end to the plate as usual. Take the other end of the tickler to the fixed plates of the reaction condenser and the moving plates to earth. Another lead from the plate to the valve goes through an r.f. choke to P of the first audio transformer.

5. I intend using a stage of push-pull. What would be the best combination?

A.: Out of the two mentioned there is very little, if any, difference. It is all a matter of choice.

6. Should I expect better results with this than with the Akarana Band Pass Four recently published?—Yes.

7. Could the coils be enclosed in a cocoa tin to assist in screening?

A.: If each stage is shielded there will be no need for the cocoa tins.

**L.J.B. (Otahuhu):**—I enclose a sketch of the property on which I intend to erect my aerial. As you will see, there are electric lines close handy. Would a length of copper wire earthed screen my aerial from electrical interference?—No.

2. Could the aerial be placed in a better position?

A.: The best position would be in the vacant paddock at the back of your house, at right angles to the power line. The fact that it passes over the 6 foot hedge will make very little difference. This is the position where there will be minimum pick-up from the power lines.

3. Would 90 to 100 feet of wire be about right?—Yes.

4. I have for an earth, copper plates about 9 inches square, buried about three feet deep, and kept down by a galvanised pipe.—Good.

**RADIO (New Plymouth):**—In answer to your and many inquiries, we are publishing next week details of an audio choke. Reprint from the 1930 "Guide."

**H.V. (Takapuna):**—When can I hear the short-wave stations?

A.: Usually in the afternoon and evening, but consult the short-wave page conducted by Mr. Sellens.

2. Should I have the dials of my broadcast receiver at minimum or maximum when using an adapter?

A.: As they are cut out of the circuit it does not matter how they are positioned.

**HONI (Gisborne):**—Would a high-impedance valve be suitable for the radio stages of my 5-valve set?

A.: It should be satisfactory, though it is generally safer to use general purpose valves in the radio stages, as the valve to which you refer is specially designed for impedance coupling.

2. Would three "B" batteries coupled in series run down quicker than two?—No.

**G.H.J. (Mangaweka):** In push-pull does the "C" battery have to be doubled or is it the same as an ordinary stage?

A.: The same as an ordinary stage, though it could be doubled.

2. Can two stages of push-pull be added to a set immediately after the detector?—Yes.

3. Would PM5 be satisfactory for a first stage and PM256's for the last?

A.: Yes, but one PM5 would be just as good, as it could overload the two 256's without itself causing distortion.

4. Can a transformer be obtained with a centre-tapped primary and secondary for use between two stages of push-pull?—Yes, as far as we know.

5. I have plenty of "B" supply to spare and I want to use a good amplifier for a hall.

A.: Under these circumstances why not use two 245's in the last stage? You could put a filament winding on to supply the current and you would have plenty of "B" supply. You could then use two stages of push-pull. Better still, why not construct the Loftin-White Amplifier?

**JAKA (Hataitai):** Can phones be connected to an a.c. without having to undo the shielding to get at the output transformer?

A.: Yes, you can take leads from the voice coils of the dynamic speaker, which is accessible. These would have to be light flexible wires, and although they would give less signal in the telephones than in the speaker, that would be an advantage.

**AUDIT (Auckland):** I have recently added an eliminator to my set and I cannot control a whistling noise.

A.: Are you sure the voltage is correct, that you are not applying more voltage than specified by the makers? You see by applying a higher voltage you may be causing oscillation and instability. It would not be a bad idea to have the eliminator tested in case any of the condensers are at fault.

**PEPPUNCH (Christchurch):** I enclose a diagram of a receiver. Is it a good one?

A.: Have you really thought, "Peppunch," how long it would take us to unravel your diagram? You should have sent along a theoretical diagram. However, the set appears to be standard.

2. What height, length and gauge of wire would you recommend for an aerial for the circuit?

A.: 70 to 100 feet long and 40 feet high, using 7/22 gauge enamelled wire. See the article devoted to aerials which appeared in our issues March 21 and 28.

3. Is my transformer a good one?

A.: Yes, it is one of the best of the lower-priced instruments.

4. Could an extra stage be added?

A.: Yes, but we would advise you to bias the last valve by inserting a "C" battery between "F" on the transformer and "E" of the valve.

**CAMERA (Hastings):** I wish to operate a loudspeaker from a one-valve set. Would one audio stage be sufficient?

A.: It is very doubtful as you are a long way from a broadcast station. Two stages such as that described by "Megohm" in our issue of July 27, 1928, would be better.

2. What "C" battery voltage will I require?

(Continued on page 29.)

**LISTENERS** must attach this coupon to all queries sent to the Technical Editor (Box 1032, Wellington). Questions arriving without it are likely to go astray or be delayed.

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.

Solving trouble, as different from advice, is difficult by correspondence and while letters are given every consideration, answers are not necessarily correct—they are only our opinion based on the matter supplied, which may be quite inadequate. Inticate and involved specifications cannot be supplied without a specialist's fee.