

A: Yes, it is certainly correct, but it applies to the American valves—201A's, 199's, 171's, 210's and 200A's. The procedure, however, is not widely practised.

6. Will it harm valves that have a normal emission?—Yes.

7. Is there any method of finding the ratio of a transformer?

A: It can be done easily enough with instruments, but not with any degree of accuracy by an amateur.

KOWHAI (Christchurch): I cannot get the wave-trap described by "A.A.H." to work. How can the condenser make any difference when it is only connected with the 10 turns of 18 d.c.e. wire?

A: Unfortunately we told you in that article to connect them up to the wrong winding. It was a mistake that was corrected a week or so ago, and by making those alterations you should be able to get the set to work. The fact that you are using a .0005 condenser should not affect the results.

MYSTIFIED (N.P.): I am building the differential series for a short-wave set only. Are two .00016 tuning condensers satisfactory to work with the short-wave coils described in the "Record"?

A: It would be better to use a .0001, though you could use a .00016 with very little alteration in the tuning. The coils for this sized condenser were described a few days ago. Add a little to the tickler windings.

N.Z.'S OWN RADIO BOOKSHOP,

The TE ARO BOOK DEPOT, Wellington.

(Read this advt. weekly as new stocks arrive every overseas mail, which prevents us issuing a stationary catalogue.) We have the largest stocks of radio literature south of the line. We cater for engineers, wireless colleges, amateurs, broadcasters and beginners. Your money returned if books sent are unsuitable and sent back promptly in good condition.

LOOK AT THIS LIST:—

- "Modern Sets, 1931," 1/8.
- 2, 3, 4-Valve Battery and A.C. Sets, L-W Ampfr. and Special S-W Set, designed N.Z. conditions, by A. K. Box.
- "Radio Sir," 72 pages—Don't miss this. 7d. posted. Great value.
- "Practical Radio Construction and Repairing," by Moyer and Westrel, 15/6.
- "Radio Times" (English weekly), 4d. per copy.
- "Radio Retailing" (U.S.A.) monthly, 1/9 per copy.
- "Radio Manual," by Sterling and Kruse, 26/.
- "Practical Testing Systems," by Rider, 6/3.
- "Worked Examples of Electrical Technology," by Peasgood and Boyland, 18/.
- "Radio Physics Course," by Ghirardi, 14/.
- "Radio News Handbook, 1930," 2/9.
- "How to Electrify Your Set," by Osgood (U.S.A.), 1/9.
- "Radio: A Study in First Principles," by Burns, 11/.
- "Mathematics of Radio," by Rider, 10/6.
- "Radio Operating Questions and Answers," by Nilson and Hornung, 14/.
- "Radio Amateur Handbook" (Handy's) latest edition, 5/3.
- "Radio Amateur Call Book" quarterly, 5/3.
- "Theory of Radio Communication," by Filgate, 13/.
- "Principles of Radio Communication," by Morecroft, 41/6.
- "Elements of Radio Communication," by Morecroft, 19/.
- "Direction Finding," by Keen, 27/.
- "Seeing by Wireless" (Television), by Ralph Stranger, 1/6.
- "Collins's Wireless Diary, 1931," 4/.
- "Thermionic Vacuum Tubes," by Van der Bijl, 26/.
- "Radio Receiving Tubes," by Moyer and Westrel, 14/.
- "How Radio Receivers Work," by Roberts, 8/.
- "Radio Design," 1/- per copy.
- "Radio Engineering" (a monthly issue), 21/- per annum.
- "Projection Engineering" (monthly) 21/- per annum.
- "Wireless, the Modern Magic Carpet," by Ralph Stranger, 4/9 (favourably reviewed by Editor "Radio Record").
- "Radio Citizen's Call Book," quarterly, latest, January, 1931, 2/9.
- "1931 Radio Listener's Guide," 2/10 posted.
- "1931 N.Z. Radio Handbook," 2/10 posted.

TE ARO BOOK DEPOT,

64 Courtenay Place, Wellington.

2. Which is the better size for differential reaction, .00013 or .00027?—The latter.

3. Should the two h.f. chokes specified be a special short-wave type?

A: No, only the one following the detector.

4. Would an aerial of 90 feet be suitable for this set?—Yes.

5. Should I leave out the plug and socket arrangement?—Yes.

6. Do you know of anything else important I should do?

A: No, you seem to have lighted upon the special points that enter into the construction of a short-wave set.

TRANSMITTER (Kerepeeti): Could you give me the circuit of a good short-wave receiver employing pentode and screen grid valves?

A: The all-wave Kestrel three will be published shortly, and this will make up into a good short-wave receiver.

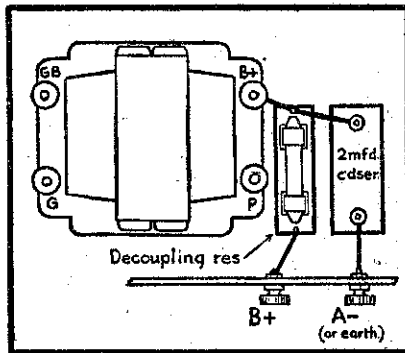
2. Where could I obtain a book on transmitting?

A: "Handy's Handbook" is a standard work which can be obtained at least from the Te Aro Book Depot, Wellington.

3. How can I work out the number of spaces required in a condenser to give it any given capacity?

A: That is not easy to do, but you will find the full information in "Handy's Handbook."

H.F.R. (Auckland).—I am using a three-valve set which oscillates smoothly, but I cannot control the audio oscillation, although the set may be a



long way from oscillation I get a continual squeak in the speaker.

A: Try reversing the primary connections to one of the transformers. If this is not effectual, use the anti-motor boat-ing device illustrated herewith.

BUNG (Waikato): Could I use audio amplification for my three-valve commercial set?

A: No, your set is probably a detector and two audio, in which case it is not easy to add another stage. If, however, it has one high frequency stage, an external audio stage can be added.

2. How many turns of 24 d.s.c. wire on a 3in. former are equal to 80 turns of 26 gauge wire on the same size former?—73.

3. Is a log of 50 broadcast stations good for my set, which uses an earth consisting of four pipes each driven 8ft. into the earth? The system is watered by a leaky car radiator.

A: Your log is quite a presentable one, and your earth system good. You are certainly getting all to be expected.

4. Would using a number of earth wires as illustrated in the diagram of the Pierce earth system put the oscillations out of phase if the wires were not of the same length?—No.

J.G. (Dunedin): What size of wire would I use in making a rheostat of 30 ohms when wound on an ebonite tube 2 1/2 in. in diameter and 3-3 1/2 in. long?

A: You could use 26 gauge Eureka wire, which has a resistance of about 1 1/2 ohms a yard, so you will require about 17 yards, or 85 turns. To get it into the 3-8 space you could not use sufficiently heavy wire.

2. How many plates of the size enclosed are necessary to obtain the .00035 aerial condensers?

A: 12 fixed and 13 moving.

3. Could you name a compound to immerse fixed condensers in after they are made so as to prevent moisture from interfering with capacity?

A: An ordinary wax is quite satisfactory.

4. Would the insulating compound, such as transformer wax, or other compounds used in transformers, be satisfactory?

A: Generally speaking, yes.

5. Which is the best for condenser plates, brass or aluminium?

A: There is very little difference, though the more expensive condensers use brass.

"MAC" (Johnsonville): My B.D. is very efficient. Would it be worth while changing it to the "Outspan Five"?

A: The "Outspan Five" is certainly the more sensitive set, though if your B.D. is giving you good results it is hardly worth changing.

2. How many moving plates would I have to remove to make my S.L.F. .0005, thirty-three plate condenser, into a .00035?—Seven.

3. Would this condenser be just as efficient as a straight-out .00035?

A: Every bit as efficient.

G.C. (Greymouth): I have built the "Differential Three," but have very little success. I have to add another 40 turns on the reaction coil before the set will oscillate, and now the s.g. valve makes very little difference.

A: Is the r.f. choke fully efficient, and check very carefully the connections to the first coil? Trace out the internal wiring of the coil, but be quite sure that you have brought out each wire to the correct pin. It is not infrequent that the number of turns on the reaction coil has to be increased. Very much depends upon the valve and upon the capacity of the reaction condenser.

"ABEND." (Wellington): How many turns of 30 d.s.c. wire must I wind on a valve base coil to tune between 200 and 600 metres to the .00035 condenser?

A: 140 turns.

2. Would the above coils placed in 3in. diameter aluminium shields be too close to the metal?—No.

4. What Philips A.C. valve is most suitable for the anode bend detector?

A: E415 or E409.

5. Is the circuit I enclose satisfactory?

A: It is not the best, as the audio and radio valves should be biased. Furthermore, the intricate tuning arrangement would probably give trouble. Your best plan would be to try the "Radiogram Five," described in the 1931 "Guide."

6. Would a .5 mfd. condenser do to bypass E415 cathode to earth?

A: In your diagram you have shown it connected directly to earth. If you mean to place it across the pick-up, then it is not needed. The pick-up would work quite satisfactorily in the cathode.

7. How should I proceed to balance the circuits using the three .00035 condensers ganged?

A: By trial and error. First of all work your three condensers together until the signal is at its maximum strength, then loosen the shaft and balance each circuit separately. If the condensers require any adjustments separately the coils must be altered. The condenser that is in farthest, controls the coil which has the least number of turns, and turns must be removed from the other coils until all three condensers are in line.

P.M. (Ponsonby): Would the s.g. valve overload the detector valve on the local?

A: Yes; especially if you are close to the local station. The best plan is to incorporate the system shown in the "Outspan Five" of connecting the aerial through a .0001 blocking condenser to the plate of the screen grid valve. For local work you can connect the aerial on here and turn out the s.g. valve.

2. Using a four volt s.g. valve, would I need to place a 15 ohms resistance in the negative lead if a six volt accumulator is employed?

A: Yes.

3. If a rheostat is also in that position, what must I do?

A: Do not take any chances. Connect the resistors in series with the rheostat.

4. Using the set mostly for shortwave, is it better to place a midget condenser of one fixed and one moving plate across the detector coil to make easier tuning?

A: No, tuning will not be difficult if the fixed condenser is employed as is described. For shortwave work, however, it will be preferable to employ a separate rheostat for the detector valve.

5. Which will be connected to "B—", "A+" or "A—"?

A: It does not matter which; preferably "A—".

6. I am not too sure about the coils. A: They will be described next week.

"GRID" (Dunedin): Reception has been continuously marred by a roar on all but the local station. I notice that when the cover was taken from the s.g. valve the noise diminished. Has static been bad generally recently?

A: It sounds as though one of the grid resistances in your set has broken down, and the set is now oscillating. We would advise you to have it seen to by a local radio technician. Your valve combination is a mixture. For your set we advise the use of either of the first two makes of valves enumerated in your letter.

2. The aerial is 50ft. long and 30ft. high, using iron poles. The earth passes about a foot below where the lead-in enters the house, and is connected to a waterpipe. Would this arrangement have a detrimental effect upon reception?—No.

3. Would the Pierce earth system be of any use here? If so, how far apart should the pipes be placed, and of what use is the car radiator?

A: In our opinion the Pierce earth system to be of definite value, must be installed with the pipes 6ft. apart. The leaky car radiator is provided to keep the ground moist.

4. What is the best lightning insulator for the lead-in?

A: Your question is not quite clear. We speak of lightning arresters, and insulators, which have nothing to do with lightning. A good lightning arrester should be installed outside, and because of this must be moisture proof.

5. How can the wavelength of a station be determined from the dial setting?

TENDERS

RADIO INSTALLATION

TENDERS for the above, endorsed "New Plymouth Hospital Radio Installation," will be received by the undersigned up till 12 noon on Wednesday, April 8, 1931.

Plans and specifications will be supplied upon payment of £2/2/-, which will be refunded upon receipt of a bona-fide tender.

The lowest or any tender not necessarily accepted.

W. H. QUICKFALL,

Hon. Secretary, N.P. Hospital Radio Committee.

P.O. Box 2, New Plymouth.