

for charging until it bubbles, or if you have an hydrometer, until it is registering full strength. It is difficult to estimate the length of time to charge a battery judging from the number of hours the set is used.

2. Can I improve on the valve combination by using a pentode?

A.: A pentode may strengthen up reception quite perceptibly, but the combination you have is a safe one.

3. What grid bias do the above valves require? I am using 120 volts B.

A.: PM2 at 120 volts requires 7.5 volts.

4. What is the most economical way to provide it? I use an eliminator with 180 volts.

A.: It could be taken from the eliminator, but for such a small quantity it is not worth while. By taking it from the eliminator you stand a chance of introducing hum.

5. The instructions say when using an eliminator a potentiometer must be used for regulating the potential on the s.g. valve. What does this mean?

5. If the taps on your eliminator are not variable a resistance should be connected in the lead to the screen and varied so that the best results are obtained.

6. Which would be the better earth, one going out the window 10 feet long, or one to a water pipe 15 feet long?—The former.

WINDARA (Dunedin): Can I use a .00035 condenser with 70 turns of 24 gauge wire on a 3in. former for a wave-trap?—Yes.

2. How would a triangular aerial function?

A.: It would be no better than ordinary L type.

3. Will the lead-in running parallel inside the house have a counter effect on reception?—No.

L. G. (Taupiri): Would you send me the Sellens A.C. short-wave adaptor circuit.

A.: It doesn't exist. An a.c. short-wave adaptor has been described in the 1930 "Guide."

2. Would there be any hum when used on a seven-valve set?

A.: Very little.

R. M.D. (Helsensville):—My A battery charger from the 1929 "Guide" will not function. When I connect the "A" battery to the terminal, the rectifier flares brilliantly. Without a load everything seems correct. I have measured the voltage, which is right.

A.: Are you connecting it round the right way, for it seems that when the load is applied there is no resistance be-

tween the terminals and a short circuit results. The positive of the charger, that is the lead coming from the centre tap of the filament coil must be connected to the positive of the battery. If you are doing this then try the effect of a series resistance in the positive lead. The value of this should be about ten ohms, and it must be capable of carrying the current.

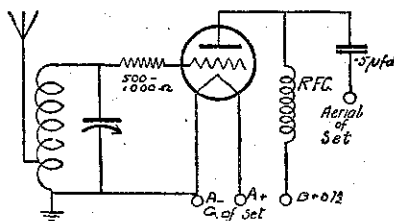
E.H.S. (Lower Hutt):—Is the rheostat in the R. the W. circuit to control the detector only?—Yes.

2. How are fixed condensers connected in series to variable ones, and where do the wires connect.

A.: You must connect a fixed condenser between either the moving or the fixed plates, and the external circuit. Say, in the R. the W. circuit you choose to connect it between the moving plates and the wire which connects to the low potential end of the aerial coil. You will lift this wire from the tuning condenser and attach one end of the fixed condenser to the now vacant terminal on the tuning condenser, and the connection removed to the free end of the fixed condenser.

SPANKER (Waihi): I have a three-valve home-made set and wish to make an h.f. adaptor using broadcast coils. Is the enclosed diagram suitable?

A.: No. You must use a .5 mfd. bypass condenser between the plate of your valve and the aerial terminal of your set. A diagram shows the connection. To



stabilise this stage a grid resistance of 500 ohms must be used in series with the grid of the valve.

2. How many turns would be required for the coils.

A.: You do not state the type of wire you wish to use. For a .00035 condenser and 24 d.s.c. wire on a 2 1/2 in. former without spacing you will require 68 turns.

KEN (Waverley):—I use four 201A's and one C 509. The tone is not good, nor can I hear distant stations. What would be the best arrangement of valves?

A.: The arrangement and the bias (16 volts) is impossible. You need a power valve such as B605 in the last stage, with 135 volts "B." Lower than this you will require 9 volts. If you are renewing, use the new UX221's in all stages but the last.

2. I have three four-volt valves. Can these be used in my set with a four-volt accumulator?

A.: Yes; but they would be no better than the present combination with a power valve.

3. The C terminals on my set are marked 4 1/2 and 9, but my C battery has no nine volts tapping. If 16 1/2 volts too much? I am using 135 volts B.

A.: With C509, 16 1/2 volts is far too much. You could use a resistance in series with the battery lead or the cheaper way would be to buy a 9-volt C battery and use the big block for the B.

HOW'S THIS!

If a rich relation said: "Tom, my boy. I'm going to give you a first-class trip around the world with a nice little salary each week to keep you going," you would jump at it. Radio operators don't have to depend on rich relations. If YOU want to be a radio operator, for full particulars write to

JOHNSON'S WIRELESS SCHOOL
BRANDON STREET, WELLINGTON.

BUNG (Waikato): Why cannot I get American stations with a powerful receiver and a good aerial?

A.: You may not have listened when the American stations were broadcasting, usually in the late afternoon or early evening, or you may be in a bad locality. Watch the DX columns and see if anyone in your district is receiving them. If they are do some careful dialling during the times mentioned.

2. Would an aerial the sides of which are at right-angles be better than the L type for directional purposes, and what length would be needed to make it equal to a 90ft. L aerial?

A.: With an aerial of the usual dimensions direction has little effect. Your best plan if you wish to experiment would be to erect two aerials at right-angles, each 90 feet long, and use a switch so that either might be used. You could then see for yourself which was the better. You could try combining them. Experience has shown that there is little to better the 100 feet L-shaped aerial.

3. Is the lead-in included in the length of the aerial?—Yes.

4. How should the lightning arrester be connected to the earth and the set?

A.: It should be at a point where both aerial and earth contacts can be easily made. Neither aerial nor earth lead necessarily has to run from the arrester, but both can, if convenient.

I. M.L. (Timaru):—I have built a one-valve amplifier for my three-valve set, and enclose the circuit. Can I use a switch to make the set work on three valves or four?

A.: Your circuit diagram is correct, although there appears to be a great tangle of wires. You should disconnect "speaker" and "B battery" terminals, applying a higher voltage to the one marked "speaker" than to "B battery." Put 60 on the latter, and the 120 on the former. The same applies to the "C" battery. Only three volts will be required on the now first audio, and 9 on the pentode. The valve to use in the first audio should be a general purpose one such as 210 L. You could obtain an inter-stage jack and connect this in front of the audio transformer, but it would make your wiring more complicated.

A JAX (Waihi): I have an r.f. choke and am wondering if it is satisfactory. If not, could you give me details of construction of a better one?

A.: In our issue of March 30 "Cathode" went into the question of choke coils very

fully. Obtain a copy of this issue and you will find all your difficulties cleared up.

2. I find my set operates much clearer and louder with the C batteries cut out and the leads connected. Is this satisfactory?

A.: You are probably using too much C battery for the valve in question. It would certainly be louder without a C battery, but seeing you will ruin it.

3. When I increase the "B" voltage on either detector or speaker there is a frightful howl which I cannot eliminate. How can I get rid of this?

A.: Do not worry about the detector voltage as the coils are designed for low plate voltage. Try reversing the connections to the last audio transformer, and if this does not cure your trouble, embody an output filter.

4. I am using PM4 in the first audio stage.

A.: This is incorrect. PM4 is a last stage valve. You should use PM3.

SUBSCRIBER (Timaru):—Who is the nearest dealer I can apply to for coils for my three-valve receiver?

A.: L. B. Scott, Ltd., Christchurch. State fully your requirements.

2. Can an a.c. dynamic speaker be worked from a battery set and a B eliminator?

A.: There are no a.c. dynamic speakers. Possibly you mean a high voltage d.c. type, but you cannot work these from eliminators.

3. Are rotary converters silent and satisfactory?

A.: Yes; but write Moore's, Ltd., Auckland, for further particulars.

D. W. (Masterton): What voltages are delivered from each tapping of my charger?

A.: When on load, the same as marked.

2. Could the charger be used in conjunction with an electrolytic condenser and choke as an A eliminator for three valves?

A.: If you had a suitable choke with a very low resistance, yes, but the safer plan would be to use the six-volt tapping with four-volt valves.

A. C. (Christchurch):—I have a four-valve set, and wish to make it all-electric. Will the tone be as good?

A.: Yes, it should be better, with the higher voltage available.

2. The s.g. valve will be indirectly heated, but I am undecided about the other three. Do indirectly-heated valves give any less volume than the others?

N.Z.'S OWN RADIO BOOKSHOP

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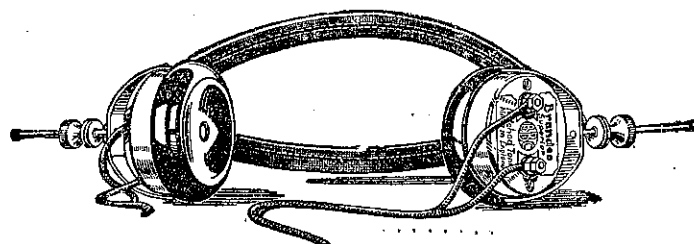
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