

return, connections to a condenser reversed, and, failing all remedies place a 400-ohms choke or resistance in the grid leak of the first valve at the valve socket. Why not use s.g. amplification, and you would probably get over this trouble?

2. What gauge of wire is best to use in a coil of this kind with a 3in. former?—24 d.s.c.

3. Is a chart like the one in the "Guide" procurable to give data for shortwave coils?

A.: This chart can be used, but a special one was prepared for "Q.S.T." about 12 months ago.

4. Can you give me the specifications for aerial and secondary and secondary and tickler coils for plug-in coils, not valve base?

A.: See the last table of the list published in April 17 issue. Generally speaking, the aerial is about the same as the tickler. If anything, slightly less.

BROWNIE (Auckland): My B.D. after working for a while suddenly gives a plop and the volume diminishes, but can be brought back to full volume by detuning the detector coil.

A.: Either the condenser is slipping or the grid leak has outlived its useful life. Maybe you have a defective grid condenser.

F.W.A. (Christchurch): Is the Sparrow Hawk differential adapter as set forth in the "Guide" suitable for plugging into the detector socket of my 6-valve receiving set?—Yes.

2. Would the super. het. adapter be better?

A.: No; you have not sufficient r.f. amplification.

UNCERTAIN (Christchurch): Would you give me specifications for broadcast coils to tune from 200 to 550 m. to be wound on a 2 1/2in. former using 24 d.c.c. wire for the secondary, 27 d.c.c. for the tickler and the primary to tune with a .00035 condenser, and will use a .00013 condenser for regeneration.

A.: 70 turns on the secondary, 40 on the tickler and 30 on the primary.

2. The set will not bring in distant stations at sufficient loudspeaker strength. Am I using the correct valves—they are two 609's and one A609?

A.: The more efficient broadcast coil that you evidently contemplate making will certainly improve matters. You are using the best valves for the set and you should get good results with New Zealand stations. How are your batteries?

A.M. (Canterbury).—Could you supply details for constructing a resonator to tune my aerial?

A.: With your type of set it is not necessary unless you shunt a small value condenser across the aerial coil and tune with this.

HITENSHUN (Carterton).—There seems to be a scarcity of old valves with 5 pin bases. Is there any alternative?

A.: Yes, you can make them yourself by using circles of three-ply and valve pins. However, the Kestrel Three, which is due out shortly, will not use five pin sockets.

2. Is the "Eddystone" shortwave inductance unit obtained in New Zealand?

A.: We do not know, and we have not heard of it being sold here.

3. I have a wet cell "B" battery which is charged with a Tungar charger. When the current to the charger is switched off the resistance lamp and rectifying bulb light up. Am I doing any harm?

A.: Only short circuiting your "B" battery. When you cut it off at the main switch break the connection between the charger and your battery.

BROADOLA (Auckland).—Can you give me the coil specifications for .0001 variable condensers to tune coils on valve bases?

A.: You have omitted to say what type of reaction you are using, and what size of condenser. We presume it is a .00015. Furthermore, you have not stated whether it is secondary and tickler, or primary, secondary, tickler. As the former is the more usual, we advise you to try these specifications:—

35 to 60 metres—Secondary 14, tickler 12.

35 to 60 metres—Secondary 14, tickler 8.

20 to 35 metres—Secondary 5, tickler 5.

10 to 20 metres—Secondary 3, tickler 4.

The secondary coil should be wound with 24 d.s.c. wire or thereabouts, and the ticklers with 28 to 30-gauge d.s.c. wire. The windings should be separated by 1-8 in.

T.L.W. (Wellington): Why does my set work better without a grid leak than with one?

A.: Either your grid leak or grid condenser is defective. Try another valve.

2. Where could I obtain instructions for converting the Sparrow Hawk one into a two-valve set?

A.: Build the Night Hawk Two, instructions for which were given in the "R.R." a few months back.

3. I cannot get reception without oscillation, and when I tune below the oscillating point I lose the station.

A.: Try another grid leak as it seems that this is at fault. If you get to the bottom of the trouble previously referred to, you will no doubt get over this. Another valve may make a big difference. Ask a dealer to lend you one.

LIGHTNING (Auckland): I have two 30 amp hour accumulators and I run this in conjunction with a three-valve set and a cone speaker. I can only run the accumulator 30 hours without recharging and I am told it is due to the amount of current taken by cone speakers. Is this so?

A.: No, your speaker will not have any effect on the "A" battery current, or for that matter on the "B" as unless it is a dynamic cone type it draws power from the battery. Yours is not. Probably there is something wrong with your accumulator. Maybe there is an internal short circuit. It is possible that a sediment has collected at the bottom and the electrolyte wants drawing off and the battery washing out.

SHORTWAVE (Marton): I intend making a portable differential four. What is a good make of non-spillable accumulator and where could I obtain a miniature cone speaker for the above set?

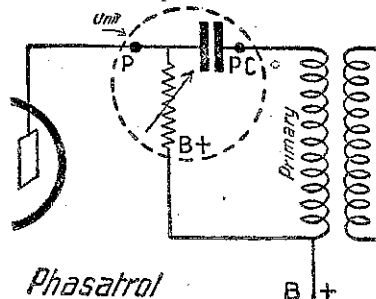
A.: Both these are questions you should refer to a dealer. If you cannot get satisfaction locally, write one of the city dealers, who will no doubt be able to do something for you.

2. Must double spaced tuning condensers be used for the set if operated on shortwave?

A.: No; while they would be an advantage they are certainly not necessary. They are undesirable if you wish to operate on broadcast.

AUSSIE (Frankton): I have BD formers and condensers and a phasatrol. Can you give me a diagram of a circuit?

A.: Yes, reproduced on this page is a circuit of a phasatrol showing how it is connected in a set. To operate, you



adjust to maximum resistance and then turn back so that the set will not oscillate when there is no reaction.

2. Can you give me the voltages on the fixed tapplings on the Philips 3002 power unit? I use two 201A's one 200A and DE5.

A.: Roughly you will have 160 volts on the last valve. We cannot tell you the amount you will have from the other tapplings unless we know precisely the drain from each one. The voltage is entirely dependent upon the drain.

ECONOMY (Hakataramea): I have a four-valve battery set for long and shortwave. I am a shortwave enthusiast, but dislike hum of any description. How can I best use the electric mains for my A, B, and C supply and introduce a minimum of hum?

A.: Employ a trickle charger for the "A" battery, use a good "B" eliminator, and if necessary employ a further choke and a 2 mfd. by-pass condenser in the detector plate supply. This will eliminate all trace of hum. It is advisable to use by-pass condensers between all the "B+"s and earth. These should be of as high a capacity as possible, and should not be less than 1 mfd.

2. Some of the latest electric sets are humless. Is it all smoothed out?

A.: The absence of hum is due mainly to high efficiency electrolytic condensers and chokes. However, much of it is got rid of by balancing.

W.D.K. (Southland): My set is a three-valver, and the "A" battery is composed of six cells in series parallel. It lasts about three months using the set about two hours a day. Would the Differential Three valve set be as economical as this?

A.: Providing you use the same or equivalent valves, yes. It is the valves that take the current, not the set.

2. Would DEL410 be suitable for the Sparrow Hawk differential adapter?

A.: Yes, it will be quite satisfactory.

S.H.J. (Waiuku): What ratio of output transformer is needed to match the Jensen 250 volt. a.c. speaker with two Osram 625A valves in push-pull?

A.: We do not know the impedance of the Jensen, but it will probably be that of the ordinary low impedance type, and will require a 25-1 transformer. If that is already provided use a 1-1 output transformer.

L.J.T. (Auckland): Concerning the L.W. with parallel output valves, why is the output transformer not placed in the main lead from the power pack?

A.: Because it was found to go better where it is. However, you can try it in the main lead if you wish, providing your transformer will take 60 m. amps. of current, which is really quite usual. Actually you are employing a system of parallel feed to keep this heavy current out of the transformer. It may be necessary to use a radio-frequency choke of 1000 turns of 34 gauge wire between the 2 mfd. condenser and the power supply.

2. Are Cunningham valves suitable without any circuit alteration?—Yes.

3. Is an r.f. choke necessary with the 245's?

A.: It will probably help to keep h.f. current out of the power supply, and should be placed where we indicated in answer No. 1. See the remarks published in last week's Questions and Answers. Your circuit appears to be quite in order.

JUMBO (Otago C.): What will be the inductance of a coil to tune to 600 metres using a .00015 condenser?—725 microhenries.

B.S.D. (Whanganui): In the layout diagram of the "Advance" a.c. shortwave receiver there are slight discrepancies in the accompanying diagrams. In the layout .01 condenser between the cathodes and the screen of the r.f. stages connects to earth, whereas in the theoretical diagram it goes through the 500 ohms resistance to earth. The resistor choke does not connect back to "B+" in the layout diagram and in the lead B+ to screen detector stage a condenser connects to earth. In the layout diagram this is different.

A.: Owing to the fact that diagrams had to be drawn before experimental trials were carried out, numerous minor alterations had to be made from time to time as found by experiment, and this has apparently led to one or two small

CORRESPONDENTS must attach this coupon to all queries sent to the Technical Editor (Box 1032) Wellington. Limit three questions, unless letter is accompanied by 1/- fee.

Name of set

Number of valves

Name

Address

.....

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Nom de plume

To be kept in subsequent inquiries

Date

Please Note:—

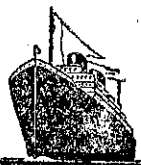
- (1) Be specific and brief, tabulating, if possible.
- (2) Write legibly, and on one side of the paper.
- (3) We do not design circuits but accept suggestions for feature articles.

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. Intricate and involved specifications cannot be supplied without a specialist's fee.

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