

QUESTIONS: ANSWERS

FRANK KEE.



The Technical Editor will, through these columns, be pleased to help readers experiencing trouble with their sets. Queries are limited to three—for more than this a shilling fee is charged, and a similar fee is payable for queries answered by post. Supplying layouts, circuits and solutions of intricate theoretical problems is beyond the scope of this service.

A coupon must accompany all requests for information. Non-appearance of the coupon in any issue cannot be regarded as a reason for its not being used.

Address all queries, The Technical Editor, Box 1032, Wellington.

"CICERO" (Dunedin): Why does biasing the cathode in an indirectly-heated a.c. valve equal direct bias in the grid circuit of a d.c. valve? I cannot understand how negative bias in the cathode lead should affect the electron flow from cathode to anode in an a.c. valve.

A.: The bias on the grid of any valve is determined by the voltage difference between the grid and the filament or cathode of the valve, irrespective of the remainder of the circuit. Examine an ordinary d.c. bias circuit and you will find that the grid is negative with respect to the filament, or, alternatively, the filament is positive with respect to the grid. Examine now the bias circuit of an a.c. valve, forgetting in the meanwhile about the electron stream, and consider the current as flowing from the plate to the cathode in a conventional manner. In that resistor between cathode and earth or B—there is the plate current flowing from the cathode to complete the circuit to B—. As this current is flowing from the cathode portion of the circuit, the cathode is positive with respect to B— or earth. It will be seen that the grid is connected to earth also, therefore the cathode is also positive with respect to the grid, thus giving a negative potential to the grid (with respect to the cathode), of a value determined by $E = C \times R$, where "C" is the plate current of the valve, and "R" the resistance between cathode and B—.

2. I am so disgusted with the overwhelming preponderance of heavy classical musical from 4YA that I am seriously considering not renewing my license in March. Should I do this, what action, if necessary, can the authorities take?

A.: Should you operate your set without a license you will most certainly be

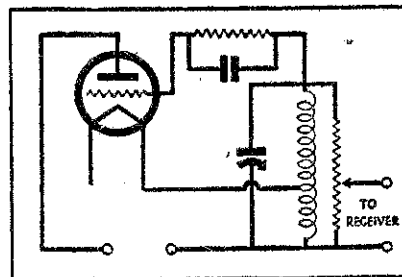
prosecuted and fined. If you do not wish to listen your installation must be dismantled.

3. Is there any license fee payable on a short-wave receiver? If so, why?

A.: Yes, and for reasons too obvious to outline.

UX (Te Kuiti): I wish to couple the output of an oscillator direct to the aerial terminals of receivers, and also to use an attenuator.

A.: We would suggest the use of a potentiometer as attenuator in the manner shown by the accompanying diagram.



2. What size coil should I use in my oscillator with condensers as specified?

A.: A 250-turn honeycomb coil answers this purpose quite well.

3. Some time ago a description of the Loftin-White amplifier using specified parts appeared. If I halve the value of the resistors in the main chain can I parallel the output valve with another 245?

A.: This change is not advised, as it would necessitate numerous other changes to provide for the increased load.

4. Can you give me the plate current limits of the better-known American valves when tested with the usual a.c. set tester?

A.: This depends on the make of tester, and for full details you should apply to the agents.

5. Will brass gauze do for shielding the oscillator or will I have to use aluminium or brass sheet?

A.: You will probably find metal sheet necessary for screening, although it might be worth while trying the gauze if you have this on hand.

(N.B.—You appear to realise that the maximum number of questions which can be answered without payment of a shilling, is three, as you have successfully kept your number down to this by including extra questions as sub-clauses, etc. Play the game.)

PM16 (Otago).—Would the enclosed circuit radiate? The wiring is shielded as in the super six.—No.

2. Can I couple a dynatron oscillator to a screen-grid first detector in a battery operated super-het?

A.: Coupling to the grid coil of the detector by means of a pick-up coil is likely to be the most effective method.

3. The I.F. is to be 175 k.c. Would semi-variable .0003 mfd. condensers tune

the grid coil of the I.F. transformers?—Yes.

4. I propose making this receiver an all-wave one by cutting the stators of the .0005 mfd. variable condensers into two sections, say, .0001 and .0004 mfd., with means of coupling both sections in parallel. Plug-in coils will be used for both bands.

A.: This is a good idea if the separation and mounting of the sections of the condenser can be done satisfactorily. The switching could be automatic by using the contacts of the plug-in coils to effect it.

5. My t.r.f. screen-grid set has one stage of resistance coupling after the detector. After switching on there is a time lag as with a.c. receivers, which is not present with the stage of r.c.c. cut out.

A.: This trouble may be overcome by reducing the value of either the coupling condenser or the grid-leak. Use a mica

condenser. R.c.c. amplifiers are subject to this fault.

6. I use 90 volts on the plate. What is the best plate resistor to use?

A.: Not higher than 100,000 ohms. Wire-wound types are best.

"OIDAR" (Auckland).—I am forwarding a sketch of a dynatron oscillator which I propose using for servicing. What would be the approximate number of turns, and gauge of wire, wound on a Pilot "super-wasp" coil former, required to cover (a) the 1300 to 550 k.c. band, and (b) to cover the 185 to 120 k.c. band?

A.: (a) 100 turns of No. 32, d.s.c. (b) You will have difficulty in accommodating enough turns on one of these formers for intermediate frequencies. If you are pre-

(Concluded on page 22.)

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