

"DIOGENES" (Cromwell), writes:—

(1) The coils of my B-D. 4 have an impedance of 20-30 thousand ohms. As a radio frequency valve I have used a 609, which has an impedance of seven thousand ohms, and an amplification factor of nine. This produced good results. I have now a 635, which has an impedance of 20 thousand ohms and an amplification of 35, and the results are somewhat improved, but not so much improved as I would expect. I am wondering if the low plate capacity of the 635 requires any special wiring or any special condensers?

ANSWER: The 635 valve is most unsuitable for high frequency amplification, so this accounts for the correspondent not getting the results he expects. The 630 should be used if Philips valves are to be used in the radio frequency stage of the Browning Drake.

(2) I have put a gramophone pick-up on to my set, plugging it to the detector socket. I find that with the

ANSWER: No. The crystal is unsuited to the detection of high-frequency signals.

#### Power for Broadcasting.

WHAT would it take to work a small broadcasting station, and what is the least amount of power necessary? —NIDRAY (Bay of Islands.)

ANSWER: The cost is a matter for a radio dealer to decide, but before an amateur can experiment with a broadcasting station or even set one up, it is necessary that he pass an examination and obtain his license. It is difficult to say just what is the amount of power required to transmit. The story is told of an English transmitter, who, with a torch battery, succeeded in establish two-way connec-

coil for the "Pentode 3" should consist of 65 turns tapped at the 18th. The correspondent asks if he can use his own coil as it is.

ANSWER: Yes. This arrangement should be quite O.K., but if the set is difficult to neutralise this different type of coil can be blamed, and the one actually described should be used.

"Also, can a movable condenser be fitted upright instead of in a horizontal position?"

ANSWER: Yes. The movable condenser can be fitted in any position that is suitable providing the moving vanes do not foul any wires.

The Use of an Output Transformer. N. C. WINSTANLEY (Picton) asks if an output transformer of a certain make can be used with a moving coil speaker; about 200 volts "B" battery are to be used.

ANSWER: No. An output transformer is not necessary with the particular make of moving coil, as one is already incorporated in the set, and an extra one is liable to cause choking.

## Questions and Answers

IN the next two issues "Pentode" will describe the construction of

"A Moving Coil Speaker."

This will be followed by

"The Shielded Five Neutrodyne."

detector B+ plugged out of the elim. I get good reproduction, but when I put a small voltage, even three, on the detector league, the volume is increased fully ten times, but is accompanied by a slight squeal, which can only be counteracted by increasing the grid bias on the first audio valve to 20 against a B+ 90. I have not been able to reckon out the whyfor of this—could you explain?

ANSWER: The pick-up wires should be kept well away from the speaker wires, as induction will take place and spoil the tone. If a variable resistance is put across the primary of the first audio transformer, the slight squeal should disappear.

(3) Given all necessary data, how do you calculate the required value of a reaction grid leak?

Exactly what does the correspondent mean by a "reaction grid leak?"

(4) How do you account for the following circumstance? I noted with one particular radio valve I got a double resonance. With one condenser at, say, 40 on the dial, I got a resonance at 25 and another at 19 on the other condenser. Forty and 25 brought in the station, but 40 and 19 squealed and howled fit to beat the band, and I think they would have brought in the station had I troubled to alter my neutralising.

ANSWER: When a set is not properly neutralised, it will squeal on the higher frequencies, so that this would account for the noise on the harmonics mentioned. The use of the wrong valve would probably have much to do with this.

A question regarding impedance is answered in another section of the paper.

#### The Crystal on Shortwave.

"CAN a crystal set pick up short-wave signals?" asks "NIDRAY" (Bay of Islands).

tions with another station some miles away.

The question is not a matter of volts, but of watts, which is volts multiplied by amperes, and it is in watts that all stations are rated. For example, a station may go on the air with an output of about 15 watts for one hour, using during that time, one dry cell such as used for the A battery. That is, if the cell is rated at 20 ampere hours, and allowances are made for lack of full efficiency because of the very sudden drain.

"P.M.A." (Greytown) writes complaining that since he has changed over to a B eliminator his set squeals when he tries to get a station. He notices also that before installing the eliminator he could run the set with rheostats nearly off, but now they have to be nearly full on. The dial readings have been changed as a result.

ANSWER: It is probable that the new valves and the new battery voltage have caused the set to become de-neutralised. The course is obvious: re-neutralise the set. It may be, too, that the re-action coil has too many turns and some should be removed. Then, again, the detector valve may have an impedance that is too high, and the voltage on this may also be greater than that specified. The voltage on this valve should always be kept low. Then, again, the bias may not be as specified. High frequency current may be escaping into the low frequency side of the set, so that a by-pass condenser and radio frequency choke should be incorporated as suggested in the article on regeneration, Vol. 2, No. 30.

#### The Aerial Coupling.

"F.C." (Carterton) writes re the "Pentode 3" recently described in the "Radio Record." He has an aerial coil which is loosely coupled to its secondary coil; the number of turns on the aerial coil is 18, while on the secondary there are 50. The aerial

## RADIO DIRECTORY

### What to Buy and Where

#### CITIES

- ALTONA & HAMMARLUND. Johns, Ltd.  
ROBERTS SETS. Chancery Street, Auckland.
- ATWATER-KENT RADIO ... Frank Wiseman, Ltd.  
170-172 Queen Street, Auckland.
- BREMER-TULLY RADIO ... Superadio, Ltd.,  
147 Queen Street, Auckland.
- BURGESS RADIO BATTERIES, All Radio Dealers.
- CROSLEY RADIO
- CROSLEY SETS ... Lewis Eady, Ltd.,  
Queen Street, Auckland.
- FERRANTI RADIO COMPONENTS ... A. D. Riley and Co., Ltd. Anzac  
Ave., Auckland, and all leading dealers.
- GREBE RADIO ... Howie's,  
Dilworth Building, Custom st., Auckland
- MULLARD VALVES ... All Radio Dealers.
- PREST-O-LITE. Car and Radio Battery Service ... L. J. Purdie & Co., Ltd.  
97 Dixon Street, Wellington.
- RADIOLA RECEIVERS and Farmers' Trading Co., Ltd.,  
Expert Radiola Service. Hobson Street, Auckland.
- RADIOTRONS AND MARCONI VALVES All Radio Dealers.
- T.C.C. CONDENSERS ... A. D. Riley and Co., Ltd. Anzac  
Ave., Auckland, and all leading dealers.

#### COUNTRY TOWNS

- ANCHORADIO, BREMER. Radio House,  
TULLY, RADIOLA, BROWN. Hamilton. G. S. Anchor, Manager.
- ING-DRAKE, AND AT-  
WATER-KENT RADIO
- CROSLEY RADIO ... J. C. Davidson,  
Main Street, Pahiatua.
- CROSLEY RADIO ... F. H. Jellyman, Ltd.,  
Devon Street, New Plymouth.
- CROSLEY RADIO ... D. A. Morrison & Co.,  
Victoria Avenue, Wanganui.
- PHILIPS VALVES AND APPARATUS All Good Radio Dealers.
- SIEMENS BATTERIES, RAD- G. C. Carrad.  
IOLA DEALER AND 140 The Avenue, Wanganui
- SERVICE