

to replace the crystal by a valve of the same type.

A.: It is possible, but it would require the alteration of the whole set. The tetrode valve has proved itself an excellent one-valve amplifier for a crystal, but when a wide voltage swing has to be accommodated, distortion takes place.

Overseas Reception.

WE cannot get any foreign stations, although the New Zealand and Australians are very loud, complains "Worried" (Oamaru).

A.: Reception of stations other than these is most uncertain, and very difficult in the case of an all-electric neutrodyne such as used by the correspondent. Almost invariably a reaction-using set is necessary, and aerial and earth conditions have to be favourable. However, if the correspondent wishes to do a little searching, he may find some of the foreign stations in the following places. JOFK, very close to 2BL; two other Japanese on either side of 4QG; an American on Auckland's wavelength; and one on 2FC's wavelength.

2. Should the lead-in wire touch the walls?

A.: No. Even if they are insulated they should be kept clear of the wall for insulation can be worn away and a short circuit take place.

3. What length should be the aerial?

A.: The aerial and lead-in should measure about 100ft. Beyond this, signal strength, static, and unselectivity are increased. Below this, signal strength is lost, selectivity sharpened, and static less severe.

Trouble With the Two R.F.

CAN you assist me to get the best from my two R.F. parallel feed Browning-Drake, writes "Constant Reader" (Blenheim). The R.F. valve (PM5) is controlled by a 30 ohm rheostat, and the detector (201A), by a 6 ohm rheostat which also controls both audio valves (PM6 and PM256).

A.: The detector being a 5-volt valve, should have a fixed resistance in series with its filament. It is being burned at 6 volts when it requires no more than 5. This would account for some of the trouble. If a 6-volt accumulator is used there is no necessity for the audio valves to be controlled by a rheostat.

2. I am using 90 volts "B" battery and 4½ volts "C" battery. Is this correct.

A.: No; double the voltage of the "C" battery.

3. There is a fixed condenser, capacity .0001 mfd. in series with the aerial. I have short circuited this, and find that I can get more volume on stations above 300 metres (10,000 kcs.). I cannot tune in the stations on the higher frequencies because the tuning condenser is right out.

A.: It is evident that there are too many turns on the secondary of the first transformer. If this comprises one tapped coil remove a few turns, otherwise take them from the secondary coil. The effect of a fixed condenser in series is to sharpen tuning and raise the frequency receivable.

By bridging it, sensitivity is increased, and the lower wavelengths (higher frequencies) can be tuned in.

Purpose of Shielding.

I AM building my set, writes "T.O.H." (Brooklyn). Would there be any advantage in using an old ebonite panel as baseboard?

A.: Yes, it would eliminate any tendency to short circuit, due to the dampness of the wood.

2. What is meant by, and what is the purpose of shielding?

A.: This question was fully dealt with in the issue of the "Radio Record" dated March 15, 1929. Shielding prevents interaction between coils, and results in greater selectivity and stability.

A Push-Pull Problem.

I CANNOT eliminate a high-pitched squeal which varies in intensity with the speech or music received, writes "E.S." (Waiau Pa). My audio amplifier consists of two valves in push-pull. The squeal can be silenced by touching one of the grids, but accentuated by touching the other. I have tried reversing the connections to the primary using by-pass condensers, and earthing the transformers.

A.: It appears that the valves are unbalanced, but try the effect of a ½ megohm grid leak in the grid lead to each valve. If this does not prevent the howl test the valves to see if they are balanced.

2. I reversed the tickler leads. Is this all right?—Yes.

3. Would connecting two speakers in series double the impedance?—Yes.

4. Can a "B.D." set be connected to the aerial without a condenser in series?—Yes.

5. Is the 171A a suitable valve for push-pull and what grid bias should be needed?

A.: It is quite suitable—with 180 volts use 40 volts grid bias, with 100 volts use about 20 or 22½ G.B.

Points Concerning the Two R.F. B.D.

SHOULD the sides of the box as well as the bottom of the transformer stage of this receiver be sheeted with aluminium?

A.: It is almost essential that this receiver be screened. Each R.F. stage and the detector stage should be encased in a complete shield. Screening boxes such as adopted as standard by the "Radio Record" are equally suitable.

2. Where is the best place for the 2000 ohm resistance and condenser?

A.: There is no such combination in the two R.F. Browning-Drake.

3. Should the R.F. chokes be evenly or jumbled wound?

A.: Jumble wound.

4. How far should coils be from tuning condensers?—At least one inch.

5. Would a 3-plate neutralising condenser be suitable for the R.F. stages?—Yes.

6. Does the metal tube for cable have to be earthed?—Yes.

7. Should the 13 turns for the tickler read 18?

A.: Try 13 at first and then if this is not sufficient increase to 18.

The correspondent asks for discrimination between two transformers, but there is very little difference between any two first-class pieces of apparatus used in the average set.

Neutralising Troubles.

I HAVE had difficulty in reneutralising my Browning-Drake, writes "H.R.S." (Taranaki).

A.: Try by-pass condensers between the B positive R.F., the detector B positive, and negative.

The correspondent has asked for a circuit of a D.C. battery eliminator. This will be sent to him within the course of the next week.

Meaning of G.B.

"J.P.B." (Pegone) asks the meaning of GB+ and GB-.

A.: This refers to the "C" battery. GB standing for "grid bias."

2. What ratio transformer could I use to add an extra valve, and what value do you suggest?

A.: A transformer with 3½ to 1 ratio is O.K. There are many valves suitable for this position. Your best plan is to consult a dealer.

Peculiar Voltmeter Effect.

WHENEVER the tickler is advanced to a certain point, the music stops, writes "L.C.S." (Trentham). When a voltmeter is placed across the "B" battery, everything is right again.

2. The set goes into oscillation with a sharp pop, and although I am using a variable grid leak, it does not improve matters. How can I make the set go into oscillation smoothly? I have 24 turns on the tickler.

A.: Both these questions point to a defective grid leak. It seems that the charge is being stored by the condenser and on the grid, and until a surge is set up by the current passing through the voltmeter, the set cannot function. The violent oscillation may be the result of too many turns on the tickler coil; reduce to 22. Generally speaking, variable grid leaks are unsatisfactory.

3. I cannot tune below 250 metres. Would a fixed condenser in series improve matters?

A.: A very few coils designed for the broadcast band will tune below 250 metres. A series condenser capacity over .0001 mfd. will certainly lower the tuning a little, but there is very little below this wavelength to tune in.

Eliminating the Local Station.

"REMUERA" complains that even with a wave trap he cannot cut out the local station.

A.: A loosely-coupled first radio transformer will greatly improve se-

lectivity. By loosely coupled we mean a transformer of two distinct portions. A small coil of about 25 turns is connected to the aerial and the earth. A secondary coil of about 50 turns connects with the grid and the filament. By arranging this so that the primary coil may be varied in its relation to the secondary coil, selectivity can be varied at will. A series condenser in the aerial lead will sharpen selectivity.

Use of 250 Type Valves

IT often seems that in their eagerness to be among the first to make use of a new valve, some radio engineers, enthusiasts and writers, do not give due consideration to the proper use of such valves. In some instances, this has been the case with the 250-type valve.

This valve type was primarily brought forth to satisfy the demand for power amplifiers for use in theatres and other large gathering places. When used in such connections, the use of an amplifier before the last stage capable of providing a voltage amplification sufficient to bring out the best in the power stage is required.

The use of a push-pull power stage using two 250-valves is not generally recommended, except for instances where extraordinarily large power output is required. Certainly such an amplifier has no place in the average home.

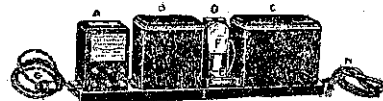
For ordinary home use, the greatest advantage of the 250 valve lies in the fact that it will give, with lower plate voltages, an output equivalent to that obtained with a 210-type valve at much higher voltages. For home use, therefore, the plate voltage used should not be higher than 300 volts.

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See page 40 for column of casual advertisements.

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