

Questions and Answers



The Super Set.

"H. F." (New Plymouth) has asked for the diagram of a set that will embody the following points:

1. Full range of A class stations (if possible, others) with regular undistorted reception on the loudspeaker.
2. Natural, undistorted tone.
3. Set to use screengrid, if feasible, pentode and three electrode valves.
4. Fading, atmospherics, reduced to a minimum without sacrificing tone, power and range.

...receiving the broadcast bands with ex-actness.

A. A set embodying these points has been the aim of radio engineers since wireless was. It is utterly impossible for any set to include all the points enumerated. The range of stations to be received is very uncertain, and very few sets can rely on receiving overseas stations at excellent strength under all conditions. Musical reproduction is proceeding at a pace, but it is impossible at the present time to get any apparatus that will give a natural undistorted tone. Distortion can in a good amplifier and speaker be reduced to a minimum, but it is ever-present, in some slight form or another. The nearest approach to perfect tone is obtained through the use of a push-pull amplifier with big power valves and a good moving coil loudspeaker.

The use of screengrid and pentode valves is yet only in the experimental stage, and the fate of them is unknown. Atmospheric conditions can in no way be controlled by the radio receiver. When the set is made more sensitive these extraneous noises are increased. A short-wave set with coils to receive the broadcast band, cannot be more than a compromise for reasons that have been explained in past numbers.

If "H.F." wishes to construct his own receiver, he will find the two R.F. Brown-Draught with a push-pull amplifier to be one of the best he can build. This, with a shortwave adapter, should suit his requirements. Both have been described in the last issue of the "Radio Listeners' Guide."

Direction of Aerial.

IS there any advantage in having the aerial east and west in preference to north and south? writes "J.H." (Mania).

A.: An aerial running north and south brings in the New Zealand stations well, but the strength of the Australians are sacrificed. An aerial running north-west to south-east will bring in the Australians at a slight sacrifice to New Zealand ones. An aerial east and west has little in its favour as far as direction is concerned.

Unidirectional Loop Antennae.

"DIOGENES" (Cromwell) has constructed several loop antennae, but finds although they are sensitive yet they are unidirectional. He found that the set could not be neutralised when connected with the loop.

A.: A circuit diagram showing how the loop was connected to the set should have been sent, as very many errors are made in this direction. The rules for frame antennae are:—

1. Use it to replace the aerial coil and tune as this coil would be tuned, by a variable condenser.
2. Screen the remaining coils, as the frame has a very large field.
3. The use of a separate earth is advisable.

Coils for the Peridyne.

"H.H.E." (Auckland) asks for full details to make the coils for a Peridyne set.

A.: These coils are almost invariably purchased ready made, as they involve delicate work and are nearly always shielded. If any reader has made them he might send details of his experiments to "H.H.E." care of us.

Eliminator Interference.

"ELIMINATOR" (Dunedin) has complained of interference which he considers to arise from his eliminator. A continual buzzing which is barely perceptible when the aerial is disconnected is heard in the speaker. Artificial static bursts in at intervals of five or ten minutes.

A.: The fact that on removing the aerial the buzzing decreases in intensity seems to indicate that the trouble lies not in the eliminator but in some local source close to the correspondent's aerial. A power leakage of some description would give symptoms similar to this. A defective eliminator would cause mild static, but this would be neither increased nor decreased with the removal of the aerial. One winding was burnt out the current arcing across this gap would set up a field which would influence the receiver.

2. What is the correct number of turns on a M.C. speaker for two 171A's in pushpull?—75.

3. What is the purpose of a series condenser in the aerial lead usually specified for the Browning Drake?

A.: A condenser in series with the aerial is equivalent to a condenser in series with the aerial tuning condenser. The sum of condensers in series is equal to the sum of the reciprocals inverted. This gives a final capacity less than the capacity of the aerial tuning condenser, with the result that the wavelengths received are lower or the frequencies higher. This condenser usually has the effect of greatly sharpening tuning, but of reducing volume slightly.

Adding Screen Grid to Reflex.

CAN a screen grid valve be added to a reflex circuit? asks "H.L.M." (Whangarei).

A.: No, the only form a screen grid valve can be connected to this receiver is by the use of a booster, such as has been described previously in the "Radio Record"—even then it is doubtful, if the result would be successful. The reflex has been made to handle relatively weak signals, and when they are stepped up, fresh difficulties are likely to be encountered.

2. Can a pentode valve be used in this circuit?

A.: Yes, a pentode can be used in any circuit by merely connecting the extra grid terminal to "B+."

3. Can resistance be used instead of transformers in this circuit?

A.: Yes, but all advantages of the reflex would by this be lost.

Concerning Push-Pull.

"QUESTION-MAN" (Wellington) in submitting a diagram for consideration asks:

1. Can two pentodes be used in push-pull as a final stage amplifier?

A.: Although the pentode is a power valve, it is not intended for use in circuits where a great deal of volume has to be delivered, and as this is the main attribute of push-pull amplification pentodes are not suitable. To obtain the best results from a stage of push-pull power, valves should be of the 171A type. The semi-power valve is not so suitable.

2. Would any advantage accrue by inserting an audio frequency choke after the output transformer?—No.

3. Can a push-pull amplifier be used immediately following the detector?

A.: No, an intermediate audio stage is necessary.

4. How many A.C. valves can be used in conjunction with a Philips PPP power pack? In other words, what is the amperage that can be drawn from the "A" transformer and the milliamperage from the "B"?

A.: From 4 to 5 valves can be used quite safely with this output, which delivers 30 to 35 milliamps at 180 volts. The "A" transformer will deliver about 2 amps.

Request for a Circuit.

"L.B." (Dunedin) has asked for the diagram of a circuit employing three stages of R.F., detector, and two A.F., using reaction with single-dial or two-dial control.

A.: The best we can recommend is the two R.F. Brown-Draught with a stage of push-pull. Single-dial control can be used with balancing condensers. Connect the moving plates of all the condensers to earth, remove the grid leak, and insert it between the grid and F plus terminal of the detector. By employing balancing condensers a certain degree of sensitivity is retained which would otherwise be lost.

Amplifier Trouble.

"RADIO FIEND" (Epsom) has had poor results through connecting an amplifier to a short-wave set. He finds particularly that when he places his finger on the "B plus" of the first transformer a high-pitched whistle results. When he first made the amplifier, volume was splendid.

A.: It is apparent that feed-back is occurring through the battery. The fact that a high-pitched squeal results on placing the finger on the battery terminal strengthens this view. The cause is no doubt due to the high resistance of the "B" battery, which is probably in a semi-discharged state and requires renewing. A 1 mfd. condenser connected across the batteries would reduce the trouble.

Linen Diaphragm Speaker.

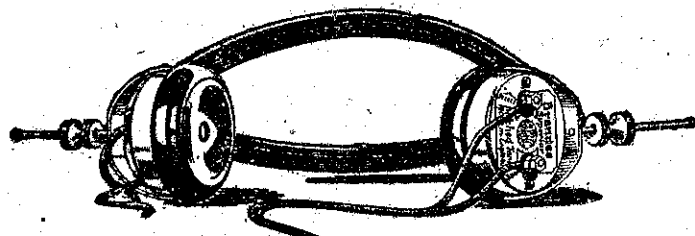
MY linen diaphragm speaker does not come up to expectations, writes "J.N.N." (Te Mata). Generally speaking, voices come through as though spoken into an empty tank. I used shellac as a dressing for the linen which was not of the highest quality.

A.: The wrong dressing has been used. The article stated Duco or Colloidin, and either of these should have been used.

2. Wishing to tone down the volume from 2TA, I am using a power valve (256) in the first audio stage, and an-

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