

account for the noise complained of by the correspondent. If the detector alone were used with phones, this noise would not be present.

2. Should I get the Japanese faintly if I can get stations as 3UZ, 2GB, and 3ZM?

A.: It's rather difficult to state whether or not the Japanese can be received. Probably by judicious manipulation this is possible. The writer has often had JOHK at good speaker strength on three valves, but with a good aerial and earth. Japanese stations with a three-valve set. If the aerial were running in the north-and-south direction, the lead-in on the south end, there would be quite good prospects of getting these stations faintly.

3. Would a stage of tuned radio frequency bring in the above stations any louder and would it get the Americans? If so, could you supply a diagram.

A.: See the "Beginner Corner."

4. On the short-wave, below a dial reading of 20, the set breaks out into a whistle. Can I remedy this?

A.: As the wavelengths are descended the frequencies ascended the set becomes more and more enlivened, and unless detector voltage is reduced, it will burst out into oscillation with very little trouble. This is the case here. To remedy it, reduce the detector voltage.

Power for a Dynamic Cone.

"T.C." (Dunedin) states that when he is using his charger a humming sound is evident, and he wants to know whether this would affect his dynamic cone speaker if the charger were used to energise the field. Its highest charging rate is 1½ amperes.

A.: See our article in the "Beginner Corner" last week.

2. Can I get the impedances of valves from the local agent?

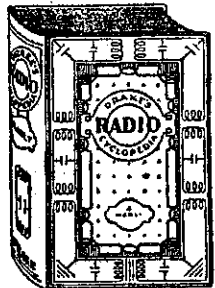
A.: They are usually marked on the cartons of valves, but in any case, all these details are given in the "Radio Listener's Guide."

Dry Batteries for "A" Supply.

"L.R." (Dannevirke) inquires whether dry batteries can be used for a six-valve receiver. He has difficulty in charging his A batteries owing to road conditions during the winter.

A.: See the "Beginner Corner."

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A Corner for Beginners

Radio Frequency Amplification.

A CORRESPONDENT has asked whether adding a stage of radio frequency will increase the distance-getting ability of his set. If properly constructed, it will. Audio amplification soon reaches a maximum, and adding further valves on this side of the detector introduces numerous troubles such as audio frequency howl, feed-back, etc. To overcome this difficulty a stage of radio frequency is introduced whereby the signals are strengthened up before they enter the detector. To increase the power of the set audio stages may be added until the state detector and two audio (V-2) is reached. Beyond this, further amplification should be accomplished only through an added radio frequency stage. Just at what point to add the radio stage is not certain. Some sets employing three valves use one radio detector and one audio (IV1) and others V-2.

An operator using this latter system who wishes to increase the power of his set can do so only by adding an R.F. stage. This strengthens up the signals before they are detected, but if these strengthened signals are by any chance fed back into the antenna system (aerial system) oscillation or howling valve results. To overcome this, the set must be neutralised so that capacity effect within the valve is prevented from reaching the antenna system by being neutralised by feed-back from the radio frequency coil.

Neutralisation is accomplished by any of three methods:—

1. Tapped secondary.—A lead is taken from the grid of the radio frequency to the fixed plates of the small condenser. The moving plates of this condenser are connected with a tap on to the secondary of the radio frequency transformer. This tap is usually about 18 turns from the filament end. By adjusting the neutralising condenser oscillation is prevented from causing trouble.

2. Split Primary Method.—The essential difference here is that

The Electrolytic Charger.

A CORRESPONDENT has asked in what issue "Pentode" described the electrolytic trickle charger.

A.: Volume 2, No. 13, November 11, 1928.

Concerning Portables.

IS it possible to get as good reception with a portable as an ordinary set?—"Portable" (Tauranga).

A.: Our issue last week dealt quite extensively with portables, and a report was published embodying our experimenting with the "Airzone" portable. When such a receiver is to be used as a household set a rechargable A battery should be employed, otherwise battery consumption is heavy.

2. Is there any reason why an all-electric portable cannot be made?

A.: No. In fact, we have advice that a firm will be introducing electric trans-portables shortly.

Screen Grid Connections.

"W.G." (Lower Hutt) asks for the connections to a horizontal mounting screen grid valve.

A.: At one end there are three pins, the two mounted side by side being the filament, the one below the alignment of the two filament pins is the grid. These three pins will fit into an English base, and in doing so will make contact with the correct terminals. At the other end will be noticed a ridge. Directly above this is a pin—this is the plate. Above this is the screen grid pin. If any English base is fitted on this the plate will go to the usual terminal and the screen grid to the grid.

the lead from the grid is taken to the fixed plates of the neutralising condenser, the moving plates of which are connected with the opposite end of the primary of the radio-frequency coil from the plate. A centre tap is taken to "B plus" R.F. By many it is claimed to be preferable to 1.

3. The Phasatrol.—The Phasatrol consists of a fixed condenser and a variable resistance. The plate of the radio-frequency valve is connected to the resistance and then to the condenser, the other side of which passes to the primary of the R.F. transformer, the other side of the resistance to the primary of the transformer from which the usual lead goes to "B plus R.F." It is usually found that a by-pass condenser of at least .5 m.f.d., connected between "B plus R.F." and earth will greatly improve stabilisation. The radio-frequency transformer has a similar function to the audio-frequency, but there is no core, the wire being wound directly on to an open former. The audio transformer has a metal core. With these exceptions, the connections for radio frequency and audio frequency amplification are the same.

Dry Cells for "A" Battery.

ANOTHER correspondent has asked if he can run a 6-valve set from dry batteries. He is going to be faced with a difficulty as well as expense. When the receiver exceeds three valves it becomes most uneconomical to supply the filament from dry batteries. The receiver in use is an American make, and is neutralised for American valves, requiring filament consumption of at least 1 amp. These in all but the power stage where say a ½ amp. valve is used, would result in a drain of .75 amperes. This is far too severe for the dry battery, and the

operator would find himself replacing his dry batteries every week or so. The only possible solution would be a wet "A" battery, and valves requiring but little current.

Take, say, six Leclanche cells, connect them together in two groups of three by joining zinc to carbon. This will leave a zinc and a carbon free in each of the two groups. Connect the two free carbons and the two free zincs (zinc to zinc and carbon to carbon). This is series parallel connection, and will stand the greatest drain. It would be advisable even now to use in the last stage a valve requiring none greater than 1 amp. The two zincs and carbons form the negative and positive of the A battery respectively.

Continental valves with a low filament consumption could be used, but these will seriously impair the functioning of the set, in that it will affect the neutralisation. UX199 valves in the radio-frequency stages would be a good compromise. Probably the best valve combination would be two UX199's, UX201A (or 200A, as detector), 201A as first and second audio, and 112A as power valve.

Dry cells could be used in the combination described for wet Leclanche cells. One point worth noting particularly with the wet cells, is that they should be used at the most for three or four hours at a time, and then left to recuperate, for about double the time.

Technical Tips.

THE basis of most of the crystals used nowadays for wireless receivers is galena.

REALLY high magnification in a valve is an advantage only where the input it is desired to handle is a small one.

A CRYSTAL detector can often be improved by attention to the tightness of the terminal contacts, and also, if of the swivel type, to the ball and socket.

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