

a great effect upon a receiving aerial. This has been fully discussed in the "Radio Listeners' Guide," and in our issue of December 11, 1928.

#### Indoor Antenna.

HOW can I set up an indoor antenna? asks "Robpuni" (Taranaki).

A.: These are by no means as efficient as outdoor antenna, e.g., aerials. There are several types of indoor antenna, the most efficient being three or four wires strung under the roof and above the ceiling. Separate the wires by the greatest distance possible, and insulate them well from the walls. Take a collective lead to the set, attaching it to the aerial terminal. Insulators are attached as is described in an article which will appear shortly.

#### Counterpoise Incorrectly Connected.

"J.I.C." (Rarawai) is troubled with interference from his electric light dynamo coming through the loud-speaker very harshly. By an attached plan he shows that he is using a counterpoise, but has unfortunately connected this wrongly. The counterpoise is in no wise connected to the earth, but to the earth terminal of the set with all other leads to the earth disconnected. This arrangement, in all probability, will decrease signal strength slightly, but should clear up the interference considerably. The aerial should be at right angles to the source of interference.

#### Making a Portable.

"J.M." (Mangonui) wishes to construct a portable wireless receiver which will give good phone reception from a small frame antenna built into the lid. He asks for a circuit.

A.: In our issues, December 11 and 18, "Pentode" described the "Rotorua Portable" which has proved most successful. This should suit the correspondent.

2. Would a screen-grid valve receiver give good reception from a frame antenna?

A.: It is most difficult to say. Three valves using a frame antenna is not doing justice to the signals available.

#### The Adapted Screen-Grid Browning-Drake.

HAS any listener tried out the adapted screen-grid Browning-Drake, described in the 1929 Listeners' Guide? If so, with what success? asks "Dials" (Napier). I am using "Pentode's" 1-1 transformer, but cannot separate 2YA from 2FC, nor 1YA from 2BL.

A.: Selectivity in the screen-grid receiver is difficult to obtain, but it should be able to be made sufficiently selective to separate these stations. The R.F. transformers should be wound on the low loss principle, that is, with fairly heavy wire well insulated and well spaced. A wave trap while decreasing the signal strength slightly would greatly improve selectivity.

#### Excessive Heat From Valve.

I HAVE an "A" battery charger, and find that the bulb becomes so hot that it turns the insulation from the transformer causing a short-circuit and burn-out. Do you know of any method to prevent this?—"J.S." (Auckland.)

A.: The correspondent has not stated the type of lamp used nor the voltage applied to its plate, and as these are essential in diagnosing a trouble of this nature. On the surface, it appears that the secondary voltage delivered from the transformer is too high, and a greater load should be placed on the charger while it is operating, e.g., another accumulator, but if the correspondent will furnish the details asked for, we would be better in a position to aid him.

2.: Is there any method of liquidising lump resin, so as not to lose its cleaning properties for soldering work?

A.: Dissolve it in ether, but BE CAREFUL. Ether is a dangerous drug, difficult to obtain, and dangerous to work with. Moreover, when working with a hot soldering iron, combustion is likely to take place.

#### The Exponential Horn Speaker.

"CONSTRUCTOR" (Stratford) in stating that he constructed the exponential horn speaker with which he has great success, asks:

1. Would the linen diaphragm speaker give better all-round results than the home-constructed exponential horn?—No.

2. Where could I procure a suitable unit for the linen diaphragm?—Rodger Importing Co., Christchurch.

3. Would the tone and volume be any different if I made the diaphragms the same size?

A.: Yes, it would be poorer.

4. Could a gramophone pick-up be connected to my set. If so, how?

A.: See the article on connecting the pick-up, in "Beginner's Corner."

### Beginners' Corner

#### All-Wave Sets.

ALL-WAVE sets are usually in great demand, for the average constructor usually considers that in one set he can combine the virtues of both broadcast and short-wave receivers. Not so; a sacrifice has to be made either to the long-wave or to the short-wave receiver. Regarding this, "Radio News," the world's largest and most popular journal, recently stated: "No large manufacturer has ever yet marketed a combined broadcast and short-wave receiver." The reason is obvious, and to use the simile quoted from a recently-published catalogue, "the rea-

son is that a Baby Austin and a Buick cannot both be built with the same engine."

The peculiarities of the short-waves or high frequencies demand that certain major alterations be made in the circuit to receive them. They are, briefly:

1. The coils have to be very much smaller.

2. The tuning condenser of very much smaller capacity than that used in the broadcast band.

3. High frequency amplification is rarely used except with the screen grid receiver.

4. The set is rarely earthed.

An all-wave set to be efficient on the short-wave must combine these features. In addition, provision must be made for tuning the broadcast band, and this usually by plugging in coils of greater length. But the tuning condenser cannot conveniently be altered, with the result that a coil of very great inductance requiring a very great number of turns must be used. This is not only inconvenient, but inefficient, and the all-wave set thus loses on the broadcast band. If a larger capacity condenser is used, it will be found that the tuning on the short waves will not be sufficiently sharp.

For tuning both short-wave and broadcast band the best arrangement is an ordinary broadcast receiver with a short-wave adapter, which can be plugged into the amplifier of the broadcast receiver. Such a combination has been described in the latest issue of the "New Zealand Radio Listeners' Guide."

Some constructors have had quite good results, though it is emphasised that the best results cannot be obtained from an all-wave receiver. However, to meet a

certain demand, "Pentode" will describe an all-wave receiver in a future issue.

#### The Gramophone Pick-up.

A CORRESPONDENT has asked if he can connect a gramophone pick-up to a Browning Drake. Certainly he can. It can be connected to the audio stages of almost any receiver. There are mainly two methods of connection: (a) Using the amplification of the detector valve; (b) plugging into the detector but losing its amplification. To make an arrangement of the "A" type take a wire from the G terminal of the detector valve to one side of a jack. Connect the other side to "A" fasten a plug on to each of the pick-up wires, and when the gramophone pick-up is required, just plug in.

The other method requires a broken valve base. Clean away the glass, and unsolder the wires passing down the legs of this. Decide which of the prongs goes to the plate and which to the filament negative, and pass one lead from the gramophone pick-up to each. All that is necessary when the gramophone pick-up is required is to remove the detector valve, replacing it with the base with the two wires attached.

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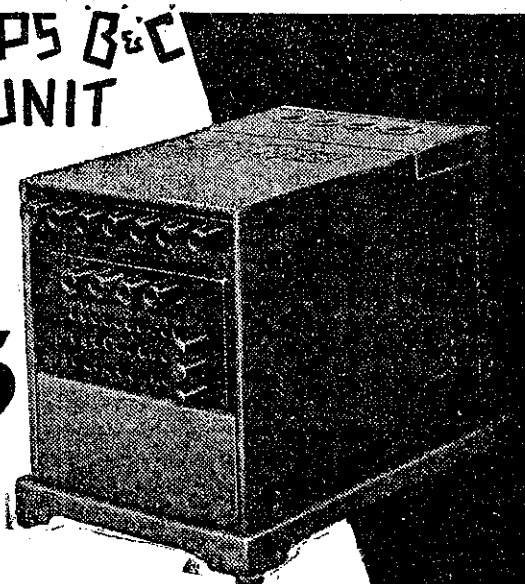
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