

done to the unit. If a cone of the free edge type is used, it is well worth the time and trouble taken to make a baffle. A hole cut in a piece of wood, four-ply is quite suitable, the size is the outside of the cone, and the speaker fastened with either side of the cone on opposite side of the baffle. The tone is at once noticed to be richer, and the individual instruments of an orchestra come out in their true colour.

WHEN a tuning-coil is used inside a screening-box it should be placed centrally, not only as regards its distance from the four sides, but also from the top and bottom, or otherwise there will be unnecessary damping.

IN running a long length of wire from the set to the loud-speaker, be careful to keep this a considerable distance from the aerial lead-in, as if the two are too close together a persistent and annoying howl may develop.

Useful Tips and Jottings

Big B Batteries Pay.

IT pays best to purchase the large sizes of B batteries, where several valves are in use, for as a rule the battery of double milling ampere capacity will last more than twice the time of the smaller one on the same work, as the larger the battery the less will the strain of a given demand be felt.

Holes in Sheet Metal.

DIFFICULTY is sometimes experienced in drilling holes in sheet metal used for interstage screening, especially if the material is thin. As a rule it will be found easier to punch the hole; provided a soft metal such as copper or aluminium is used there is no need for any special tool, as a rod of steel or even brass with one

end filed square will serve quite well. It is essential, however, that the sheet in which the hole is to be made should be rested on the end grain of a piece of hard wood or similar material.

Regarding Screen Grid Valves.

WHEN designing a receiver using the screen grid valve as a high-frequency amplifier, make sure of the connections to the small cap on the top of the valve. In the UX222 American valve the control grid is connected to the grid pin on the base. With the A442 valve manufactured by Messrs. Philips, Ltd., the small cap is connected internally to the plate electrode. The plate pin on the base corresponds to the screen on which a positive potential is applied. Reference to the specifications given by the makers is the safest way, before starting on the construction. This will also act as a warning to those who contemplate changing from one make of valve to the other.

Burning Soldering Iron.

YOU will find that the soldering iron soon becomes burnt if left too long in the gas flame, and all the tinning becomes oxidised. If this has happened badly, it is necessary to remove the coating with a rough file, and this soon destroys the iron. If, however, a "tin can" be used as a small "furnace," the burning is, to a large extent, avoided. The tin can is placed over the gas flame, and becomes red-hot, the "iron" being inside. Two iron wires can be placed across the can for the purpose of supporting the soldering iron. The tin can should not be too large, or the iron will not get sufficiently hot. It should be, roughly, a very loose fit for the iron.

Stopping Noises.

AS a rule, it is usual to employ a variable condenser on the short waves for controlling reaction. It is impossible to keep such a condenser completely free from dust, and any small particles which become lodged between the two sets of plates will cause a crackle and scraping noise as the condenser spindle is turned.

This trouble may be removed by inserting a fixed condenser in series with the variable one. The value of this fixed condenser may be in the neighbourhood of .001, although a much smaller one can be employed if the variable reaction condenser is found to be too large. Incidentally, such a condenser acts as a safeguard for the valves in the event of the variable condenser becoming shorted, in which case it is possible for valves to be burnt out. As a matter of fact, it is desirable to insert a series condenser for the above reason even on sets intended for reception on the higher waves.

Regarding Power Valves.

THE writer has many times had invitations to hear a friend's receiver since he installed a power valve, only to find that the new valve has been inserted with no other alterations to the battery connections. The limit was reached when a commercial receiver, with no provision for a C battery at all, was fitted with a large power

valve in the last stage, and 180 volts applied from B batteries. The interesting point in this case was a burnt-out speaker, as a result of the excessive current taken by the valve. These little incidents are surely done in ignorance, but writers must be excused for apparently making mention of the same hints week after week.

When using a power valve, consult the leaflet always supplied with the valve, and do not depart from the use of grid bias, as specified, for the particular B voltage available.

ALTHOUGH the well-known and satisfactory form of grid leak holder is used on nearly all valve receivers, it is admitted by most listeners that, if inaccessibly situated, it is often very difficult to remove cartridge types of leaks from these holders. At the recent British wireless exhibition an improved form of grid leak holder was shown. This consisted of a small ebonite base, into which one end of the leak was slipped, and supported by the metal contact end in a vertical position. A light metal spring cap, connected by a short flexible wire to the second terminal of the base of the grid leak, is fitted over the free end of the leak to complete the circuit.

Loose Parts.

MECHANICAL parts which have become worn often cause noises in receiving sets. The vernier drive shafts of condensers often become worn; sometimes this also happens to the bearings of the vernier plates. When this occurs the contact between the shaft and the condenser may seem to be perfect, yet the set when critical tuning is necessary will not respond properly. There is a scraping noise or scratching sound heard that is often wrongly blamed on a loose connection in the wiring. Condensers having proper "pigtail" connections do not suffer from this trouble.

Gramophone Pick-ups.

NOW that the Igranic pick-up has been reduced to £2 10s. complete with volume control and plug adapter, it brings this accessory within pocket range of all. And it certainly is a very efficient little component. The manufacturers of the well-known Lowe radio devices have recently put on the market the Lowe gramophone pick-up. This costs £2 2s. and on test reproduces a wide range of frequencies. The small rubber ring attached makes it readily adaptable to any type of tone-arm. Being light in weight (barely 4oz.), it is extremely light on records.

Converting a Pocket Voltmeter.

THE ordinary pocket voltmeter may be easily made into a panel instrument by first removing the back cover (which, with the aid of a screw-driver, will slip off easily), and boring a hole through it. A metal thread screw is passed through this, and the lid fastened on again. If necessary, the head of the screw should be filed down, so that it does not make contact with the moving arm, or with the electro-magnet inside the meter. A hole is now drilled in the panel, to take the instrument, and, if desired, the leads from the voltmeter may be taken to two convenient terminals.

RADIO DIRECTORY

What to Buy and Where

CITIES

ALTONA & HAMMARLUND-ROBERTS SETS.	Johns, Ltd. 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	Abel, Smeeton, Ltd., 27-29 Customs St. East, 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 Expert Radiola Service.	Farmers' Trading Co., Ltd., 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-TULLY, RADIOLA, BROWN-ING-DRAKE, AND ATWATER-KENT RADIO	Radio House, Hamilton. G. S. Anchor, Manager.
GREBE, ROGERS, CROSLEY, RADIOLA AND KING SERVICE	E. Dixon and Co., Ltd., Hawera.
SIEMENS BATTERIES, RADIOLA DEALER AND SERVICE	G. C. Carrad. 110 The Avenue, Wangarua.
PHILIPS VALVES AND APPARATUS	All Good Radio Dealers.