A Variable Grid Leak.

"GRID LEAK" (Blenheim) asks whether resistance is low or high when the pellets of a variable grid leak are compressed.

A.: The least resistance is obtained with the pellets compressed, in other words, with the compressor screwed right in.

Defective Cone Speaker.

I AM using a horn speaker, but have a cone speaker. When the horn speaker is tuned to the utmost volume, and then replaced with cone type, it is hardly audible—why?—"Cone," Auckland.

A.: If horn is good, we fear a defect in the speaker. Have it examined by an expert.

Speaker Connections.

I HAVE an A.C. six-valve set. Does it matter which way the speaker cords are connected to the set terminals? There is no indication on the set, although one of the speaker, asks Query (Te Awamutu).

A.: If there is an output filter—no. To make certain, screw the diaphragm to rattling pitch, and reverse connections. If music becomes smooth, replace connections as they were previously. On the other hand, if reception becomes worse or disappears, leave terminals as they are now, and readjust. If there is no difference it is immaterial, as this indicates an output filter.

Ground Wire.

WHAT is the best ground wire, writes A.E.B. (Auckland). I have my earth wire on to a water pipe, which runs under the house, about 40ft. before reaching the ground.

A.: The heavy single-stranded wire, 12 or 14-gauge single copper, or 7/029 stranded are suitable. You are wise in sinking a new earth, 40ft. is too far for the earth to run before entering the ground.

Life of Dry Batteries.

HOW long should a 4-volt 30 amp. battery last with three valves, the filament consumption of each being .06 amps?—"A.B.B." (Nelson).

A.: Does the correspondent mean a 4-volt accumulator? If so, it should be recharged after about 60 hours' use. If dry batteries, they should last approximately 100-150 hours, depending on the time used without an interval. The correspondent encloses a sketch of a series parallel arrangement which is correct, but the order of the batteries should be changed round to allow of an even drain.

Set will not Oscillate.

"R.H.R." (Wellington South) cannot get his three-valve screen grid set to oscillate.

A.: Add a few turns to the reaction coil, and if this will not bring about the desired result, increase the detector voltage. The set should oscillate quite readily for it is the adaptation of a well-known kit set.

Transformer Error.

IN constructing the power transformer described in the "Radio Listeners' Guide," "R.H.H." (Lower Hutt) brought out the taps of the side of the bobbin which will eventually be covered by the laminations. He asks if he might alter the width of these to 1½ inches and turn them round.

A.: This alteration is quite permissible.

Selection of a "B" Eliminator.

WHAT do you advise as a battery eliminator for a crystal set with a 2-valve amplifier? Do you think this would be preferable to a 3-valve all-electric receiver? I am quite satisfied with the local station, asks "W.G.S." (Miramar).

A.: The correspondent has this to keep in mind: Although he may be satisfied with the local station, the chances are he will want to reach out to other stations before very long. A three-valve all-electric receiver, while being an excellent proposition for the local station, is, except in certain cases, not well adapted to bring in outside stations. If an eliminator of a good make is purchased the correspondent will be able, at a later date, to increase the number of valves in his set without going to any further expense as far as the "B" supply is concerned. If, at a future date, he wishes to electrify his set, he may do so by either utilising the A.C. filament tappings on his present eliminator, or by the provision of an extra low voltage transformer. An eliminator for this purpose should have tappings to at least 180 volts with grid bias. The construction of an eliminator is not a difficult problem, especially as the transformers with A.C. windings may be readily procured for a very small sum. This, to us, seems the best plan for the correspondent to follow.

Loudspeaker Connection.

I FIND that by connecting my loudspeaker the wrong way, that is, the negative terminal to the positive of the speaker, I get a distinctly louder and clearer tone. Am I doing harm?

A.: It is possible that the connections have been reversed within the speaker. Tighten the diaphragh if it is adjustable until at the rattling point. Now reverse the connections. If the signals become further distorted or further disappear this indicates that the connections are now correct, and the diaphragm should be loosened until the music becomes clear again. If, on the other hand, the signals become clearer the connections are now wrong and should be reversed, the diaphragm being loosened. This will indicate whether the markings on the terminals are correct or not. If the speaker is non-adjustable it will be safe to assume that they have been wrongly labelled; that is, leave them connected to the set so as to get the best results.

Short-wave Adaptor.

"A.H.P." (Hastings) submits a diagram of an adaptor which he cannot get to work. It incorporates a one m.f.d. condenser between the plate of the valve and "A plus." This is the source of the trouble, as it is by-passing the signals. Remove it, and everything should be O.K.

A Question of Resistance.

"RADIO" (Hastings) states that the reading across his accumulator reads the same as that across his valve irrespective of the position of the rheostat. He asks if this is correct.

A.: A rheostat will break down voltage only when a certain amount of current is being taken from the source. This means that a load of definite value has to be placed in the circuit. Has the correspondent measured the voltage with the valve withdrawn? To measure the voltage on the valve a voltameter should be put across the terminals of the valve base, while the valve is in operation.

2. If my aerial is increased should I make any alterations in the coupling coil?

A.: Alterations are unnecessary, unless it is to tighten the coupling slightly.

Trouble with the 2-R.F. Browning-Drake.

"T.H.W." (Hauraki Plains) cannot neutralise the 2-R.F. Browning-Drake. He is consequently getting shrill whistles and finds difficulty in tuning stations in. The tickler has no effect on the volume.

A.: Incorporate 1mfd. by-pass condensers between "B"+R.F. and earth. This will no doubt solve the trouble.

"A.C. Reflex."

"L.B." (Auckland) wishes to construct a reflex to work from the A.C. Mains.

A.: Reflex sets are unsatisfactory. The correspondent should utilise his half-wave rectifier and A.C. filament windings to make a straight-out 2-valve amplifier, using the 227 valve as first audio, but see our special A.C. number, September 20.

Battery Charger Problem.

"A.G.C." (Te Aroha) has made the battery charger described in the "Listeners' Guide," but finds his rectifying valve lights a brilliant green instead of the usual blue glow.

A.: Disconnect the filament, and it will be found that charging will still take