

Glossary of Wireless Terms

From week to week we give here a section of the glossary of wireless terms from the "Listener's Guide."

PICK-UP, ELECTRO-MAGNETIC.—

A device for attaching to a gramophone to enable the output from the record to be passed through the audio stages of a radio receiving set, and thereby amplified before issuing from the radio loudspeaker. The unit is, in itself, merely a reed type loudspeaker or phone unit with an attachment to the reed to enable gramophone needles to be held into position.

When the needle is vibrated against the surface of the record, the reed in turn is moved correspondingly as the action in turn alters, producing a flux in the iron of the magnets over which the windings are wound.

The flux introduces an alternating E.M.F. in the windings surrounding the magnets, which is of frequency corresponding to the vibrations activating the needle. The pick-up generates minute voltages which require to be stepped up before they are of sufficient magnitude to actuate the diaphragm or cone of a loudspeaker.

To increase the voltages generated in the pick-up, the ordinary audio amplifier is brought into operation, either as a separate unit or plugged into the broadcast receiver, so that two audio stages

or, in some cases three, are brought into operation. Mechanical means are used in the ordinary gramophone to amplify the sound vibrations produced in the sound box, and of course absolute fidelity of reproduction cannot exist in such circumstances.

Power valves will handle this volume without overloading, and the output will be much purer in consequence. Then the loudspeaker must be brought into consideration if perfect reproduction is to be expected. It should be capable of good reproduction of both the high-pitched and low-pitched sounds.

POLES.—The opposite ends of a magnet or terminals of a battery are spoken of as poles; in the former as north and south poles, and in the latter as positive and negatives; termed also plus and minus polarity, respectively.

POTENTIOMETER.—A compact device for varying the potential applied to different parts of wireless circuits.

POWER AMPLIFICATION.—A system of low-frequency amplification which makes use of valves and transformers specially designed to deal with considerable energy; is essential to efficient loudspeaker operation.

Modern Transformers in Sets Operating from B Battery Eliminators

WHEN some transformers, such as Ferranti, which have high efficiency and high inductance, are used in radio sets operated from alternating current battery eliminators, trouble may be experienced because of incorrect design of the B eliminator resulting in feedback from the audio transformers.

Troubles of this character are indicated by the presence of "bubbles" or a series of "put-put" sounds in the output commonly known as "motor boating."

There may also be a residual hum of a pitch corresponding to twice the frequency of the alternating current supply, and this is more to be expected when using audio transformers which are efficient over the entire broadcast range, as any residual due to insufficient filtering is amplified by the transformers in the same way a low note would be.

"Motor boating," when using a B eliminator, is usually caused by one of two things. First, the filter system may not be correct.

Second, the resistances may not be by-passed enough, resulting in feedback through the resistances. For any given frequency there is a relation between the values of inductance and capacity which must be obtained or the filter will not do its work properly.

If the filter is not working properly, a small low frequency voltage will be applied to the detector valve and this will be amplified by the transformers. If audio transformers used in the set do not give a high amplification of the low notes, motor boating may not result. The trouble in the filter system is generally due to the inductance.

The inductance of the choke coils varies with the amount of direct current flowing. For example, a choke having 20 henrys of inductance with

no direct current flowing in it may have its effective inductance reduced to 10 or even to 5 henrys with 20 or 30 milliamperes flowing through it.

If the resistance across the output of the eliminator is not by-passed with sufficient condenser capacity, there will be an alternating current voltage impressed on the plates of the valves ahead. If this voltage is large enough, regeneration will result, and if the impedance of the transformer is high, the oscillation frequency will be within the audible range.

The only way to locate such troubles is by experimenting, and the application of some of the following suggestions will usually eliminate them.

Try a larger choke coil or an additional choke coil in the filter system.

Increase the value of capacities used in the filter system. It may be necessary to increase both the amount of capacity and inductance used in the filter.

Try grounding the B minus of the eliminator, and if a short circuit results due to grounds on the lighting system, make the connection through a condenser of 0.5 mfd. capacity.

Try condensers of one of two microfarads capacity connected between the B minus and each tap of the eliminator, although an extreme condition may require as much as four microfarads across the tap connected to the first audio frequency transformer.

In some cases choke coils of 12 to 15 henrys connected in series with all leads running from the B eliminator to the set will produce results, although usually such a choke is necessary only in the detector lead. The proper value of the choke coils can only be determined by experimentation. The by-pass condensers must be connected from the B minus of the eliminator to the lead of the choke that is connected to the radio set.

RADIO DIRECTORY

What to Buy and Where

AUCKLAND

- ATWATER-KENT RADIO** . . . **Frank Wiseman, Ltd.**
170-172 Queen Street, Auckland.
- ALTONA & HAMMARLUND-ROBERTS SETS.** **Johns, Ltd.**
Chancery Street, Auckland.
- AMPLION LOUDSPEAKERS** . . **All Radio Dealers.**
- BREMER-TULLY RADIO** . . . **Superadio, Ltd.,**
147 Queen Street, Auckland.
- BURGESS RADIO BATTERIES,** **All Radio Dealers.**
- CE-CO VALVES** . . . **All Radio Dealers.**
- FADA RADIO** . . . **National Electric & Eng. Co., Ltd.**
Customs St.; Radio Supplies, Symond St.
- FEDERAL, MOHAWK, GLOBE** **Federal Radio House,**
8 Darby Street, Auckland.
- FERRANTI RADIO COMPONENTS** . . . **A. D. Riley and Co., Ltd.** Anzac Ave., Auckland, and all leading dealers.
- GILFILLAN AND KELLOGG** . **Harrington's, Ltd.,**
138-140 Queen Street, Auckland.
- GREBE RADIO** . . . **Howie's,**
Dilworth Building, Custom st., Auckland.
- MARCONI ECONOMY VALVES** **All Radio Dealers.**
- MULLARD VALVES** . . . **All Radio Dealers.**
- RADIOLA RECEIVERS** . . . **Farmers' Trading Co., Ltd.,**
Hobson Street, Auckland.
- RADIOTRON VALVES** . . . **All Radio Dealers.**
- RELIANCE BATTERIES** (N.Z. Made) . . **Reliance Battery Mfg. Co., Ltd.,**
96 Albert Street, Auckland.
- T.C.C. CONDENSERS** . . . **A. D. Riley and Co., Ltd.** Anzac Ave., Auckland, and all leading dealers.

COUNTRY TOWNS

- ANCHORADIO, BREMER-TULLY, RADIOLA, BROWNING-DRAKE, AND ATWATER-KENT RADIO** **Radio House,**
Hamilton. G. S. Anchor, Manager.
- BROWNING-DRAKE SALES AND SERVICE** . . . **J. H. Sinclair,**
Otane, H.B.
- CROSLEY ELECTRICAL AND BATTERY MODELS** . . . **The Forrest-Crosley Radio Co., Ltd.** Cuba Street, Palmerston North.
- GAROD, CROSLEY, RADIO AND ACCESSORIES** . . . **The Hector Jones Electrical Co.**
King and Queen Streets, Hastings
- GILFILLAN, FEDERAL, STAN-DARDYNE AND GARRARD ELECTRIC RADIO — ALL ACCESSORIES** . . . **W. M. Pitcher and Co.**
Hamilton.
- GREBE, CROSLEY AND RADIOLA SERVICE** . . . **E. Dixon and Co., Ltd.,**
Hawera.
- RADIOLA DEALER AND SERVICE** . . . **G. C. Carrad.**
140 The Avenue, Wanganui.
- ROLA CONE SPEAKERS** . . . **J. B. MacEwan and Co., Ltd.,**
Federal Radio Dealers, New Plymouth.
- PHILIPS VALVES AND APPARATUS** **All Good Radio Dealers,**