

but also increases the area over which interference of ground and reflected waves may occur at night. This characteristic probably accounts for the fact that some of the lower-power stations which are heard only weakly in the daytime, if at all, are quite free from distortion fading at night, as also are high-power stations at a distance when the receiver is beyond the range of the ground wave.

Observant listeners, therefore, if they experience distortion fading, will notice that there is always quite a definite relationship between meteorological conditions and the frequency or intensity of the fading.

The A.C. Receiver

Valve Protection

RHEOSTATS are not used in alternating-current receivers, because the filaments of the special valves are not sensitive to slight variations in temperature. In other words, though the filament temperature may alter, the electron emission remains approximately the same.

In the heated-cathode valves, this is due to the fact that the electrons are emitted by a small cylinder, which is indirectly heated by the filament. Naturally, once the cylinder has become hot, any slight temperature variation in the filament, unless constant, does not readily communicate itself to the cylinder.

In the directly-heated filament A.C. valves, a very low voltage and high current are employed by the filament, and this also tends to keep a steady emission, even though the filament voltage fluctuates slightly.

The life of any alternating current valve is materially reduced when the filament voltage is increased over the rated value, and, for this reason, it is beneficial to place a rheostat in each filament circuit, so that the applied voltage can be controlled, even though the line voltage fluctuates. In this way, by operating the filaments at a slightly lower value than that specified, the life of the valve will be greatly increased. This has a distinct advantage when an automatic line voltage control is not provided, especially if an A.C. meter be placed in parallel with at least the 12.5 remaining, or that supplying the greatest number of valves. The pilot lights employed in an A.C. set can be connected to any of the filament circuits with equal results. However, since the bulbs supplied with these lights are usually designed for a five-volt supply, it is considered desirable to connect the dial lights to the power valve, as this is usually operated from a five-volt filament supply. Alternatively, it is an easy matter to change the bulb to one which will operate from the lower voltages usually supplied to A.C. valves.

"Ham" Talk

"WATT are you doing here?"

"Eating currents," replied the apprentice. "Anode you'd catch me at it."

"Never mind, but wire you insulate this morning?" asked the boss.

"Leyden in bed."

"Can't your relay shunts get you up?"

"Amperently not, sir."

"Fuse going to do that every day, you can go ohm," said the boss, and the circuit was broken right there.

RADIO DIRECTORY

What to Buy and Where

CITIES

- | | |
|---|---|
| AERIAL MASTS | Domestic Radio Co., Ltd.,
300 Queen Street, Auckland. |
| ALTONA & HAMMARLUND-ROBERTS SETS. | Johns, Ltd.
Chancery Street, Auckland. |
| BURGESS RADIO BATTERIES, | All Radio Dealers. |
| CROSLEY RADIO | Abel, Smeeton, Ltd.,
27-29 Customs St. E., Auckland. |
| CROSLEY RADIO RECEIVERS | G. G. Macquarrie, Ltd.,
120 Willis Street, Wellington. |
| CROSLEY RADIO | Abel, Smeeton, Ltd. Rep.: G. MOSES,
James Street, Hangar. |
| DAYTON All-Electric Radio ... | Superadio, Ltd.,
147 Queen Street, Auckland. |
| EMMCO RADIO PRODUCTS | Johns, Ltd.,
Chancery St., Auckland. |
| EMMCO RADIO PRODUCTS | Thos. Ballinger & Co., Ltd.,
Victoria St., Wellington. |
| EMMCO RADIO PRODUCTS | L. B. Scott, Ltd.,
Worcester St., Christchurch. |
| KING RADIO RECEIVERS ... | F. J. W. Fear & Co.,
63 Willis Street, Wellington. |
| LISSEN RADIO PARTS AND KITS | All Radio Dealers. |
| LOUDSPEAKER AND TRANSFORMER REPAIRS | A. E. Strange,
404 Worcester Street, Christchurch. |
| MAJESTIC RADIO RECEIVERS | Kirkcaldie & Stains,
Chief Wellington Agents, Lambton Quay. |
| MULLARD VALVES | All Radio Dealers. |
| PILOT 1930 PARTS AND KITS, ETC. | Abel, Smeeton, Ltd.,
27-29 Customs Street East, Auckland. |
| PILOT 1930 PARTS—PILOT SUPER WASP KITS, GILFILLAN, KELLOGG and ATWATER KENT SETS | Harrington's, N.Z., Ltd.,
138-140 Queen St., Auckland.
40-42 Willis St., Wellington. |
| RADIOLA RECEIVERS | Chas. Bennett, Ltd.,
619 Colombo Street, Christchurch. |
| RADIOLA RECEIVERS and Expert Radiola Service. | Farmers' Trading Co., Ltd.,
Hobson Street, Auckland. |
| RADIO REPAIRS AND SERVICE | E. G. Shipley,
185 Manchester Street, Christchurch. |
| METRODYNE RADIO—7v. and 9v. Elec. | Royds-Howard Co.,
553 Colombo Street, Christchurch. |
| COUNTRY TOWNS | |
| CROSLEY RADIO | J. C. Davidson,
Main Street, Pahiataua. |
| CROSLEY SETS | Abel, Smeeton, Ltd. Rep.: C. BUSCOE,
409 Devon Street, New Plymouth. |
| CROSLEY RADIO | D. A. Morrison & Co.,
Victoria Avenue, Wanganui. |
| MAJESTIC ELECTRIC RADIO | Berryman's, The Home of Music,
Palmerston North. |
| MAJESTIC, ATWATER-KENT AND RADIOLA ELECTRIC SETS | Radio House, Hamilton.
G. S. Anchor, Manager. |
| PHILIPS VALVES AND APPARATUS | All Good Radio Dealers. |

What is Electricity?

DEFINITIONS from five dictionaries are as follow:—

- (1) The property of attracting light.
- (2) That power in bodies which attracts and repels substances.
- (3) The name of the cause of certain phenomena of attraction and repulsion.
- (4) Peculiar condition of the molecules of a body, or of the surrounding ether, developed by friction, chemical action, heat or magnetism.
- (5) A power in nature, a manifestation of energy, exhibiting itself when in disturbed equilibrium or in activity by a circuit movement, the fact of direction which involves polarity, or opposition of properties in opposite directions.

The last two are from the Oxford and Webster dictionaries respectively. A number of definitions from various eminent men have recently been published, and the three quoted below are much more reconcilable to present-day knowledge. The first, from "Modern Views of Electricity," by Sir Oliver Lodge, is as follows:—

(1) Electricity may possibly be a form of matter—it is not a form of energy; but the same is true of water, or air, and we do not, therefore, deny them to be forms of matter.

The second, a rather theosophically inclined definition, by the Borough Electrical Engineer of Aylesbury, states: (2) Electricity is a flow of negative electrons, just as wind is a flow of air particles. The negative electron is a vortex of ether, a helical streak of motion in the unpalpable glycerine of that primordial sea. The positive electron is a hole in space where the foetatic energy enters and orders manifestation, that transient streakiness of the ether matrix.

The third, from Hutchinson's "Past and Future Developments of Electricity," claims that:—

(3) The sun is the original source of all electricity, which is imprisoned light, heat, and power, and has momentum, mass and weight.

The first five definitions given, though now obsolete, are still used universally, and it is certainly high time that they were replaced by something more in accordance with present-day knowledge.

YOU CAN'T BUY A BETTER VALVE THAN

Mullard
THE MASTER VALVE