

The application of electrical impulses—whether due to the excitation of currents in the aerial or by electrical waves, or to any other cause—to the third electrode or grid causes a variation of the electron stream passing from filament to receiving plate or anode, and consequently delivered by the valve, which may exceed a thousand times or more the power which controls it. And this magnification or amplification can as easily be repeated by using the output of the first valve to control a second.

With this development radio was given a tremendous impetus and a steady beam or continuous wave could now be sent. This offered possibilities for voice transmission, and as early as 1909 a set, constructed under Fleming's patents, was used to broadcast music. The success of these early broadcasts led Dr. de Forest into further researches. He erected a broadcasting station in New York, and from there a few selections from "Carmen" over the real pioneer broadcasting station of the word were sent. Shortly afterward Caruso's voice was picked up directly from the stage of the Metropolitan Opera House in New York and broadcast, but regular broadcasts were a long way off.

The first outstanding success in radio broadcasting was obtained between Rome and Tripoli, a distance of 600 miles, in 1912, but long-range telephone

tests became a dead letter in Europe as soon as war broke out in 1914, when attention was centred upon radio telegraphy mainly from aeroplanes to earth.

The Americans, not harrassed by war troubles during the earlier periods, succeeded, on October 23, 1915, in transmitting speech to the Eiffel Tower station in Paris. In 1923 more tests were made across the Atlantic, and on February 27, 1926, two-way conversation was held for the first time between England and the United States. Exactly seven months later the trans-Atlantic wireless telephone service was opened to the public. It is interesting to note that this was 20 years from the time that Fessenden's voice in America was heard in Scotland.

Regular Broadcasting.

BY this time entertainment was being broadcast regularly. The American station KDKA was opened in 1921, but prior to this, and this is important, the Dutch had been broadcasting concerts regularly, and a time-table of them appeared in a British journal in June, 1920. Broadcasting in England started in the spring of 1922 with

20,000 licensed listeners. Now there are about 3,000,000. The public, who had killed Hugh's ideas, disregarded Marconi, looked on Fleming's and De Forest's inventions as suspicious, and who had generally retarded the progress of radio, had realised its value and radio advanced. More scientists, experimenters, and amateurs have been attracted to radio in recent years than to any other science. This no doubt, coupled with its endless possibilities, made rapid progress inevitable.

In the early 20's of this century, most of the broadcasts were taking place on a waveband higher than 1000 metres, and everything below 200 was left for the amateurs to "play round with," as it was considered they could do no harm if kept well down, but the amateur has shown that they can be used, and, furthermore, that they are more successful than the longer waves.

He has changed the whole character of broadcasts, and when driven from the 200 metre band, has been doing excellent work on the lower waveband, and it is due to him that commercial shortwave broadcasting as we know it, is now established.

The broadcast listener to-night owes a debt to the amateur, and everything that can be done to help these enthusiastic members of the community will ultimately help the science of radio. No doubt before long they will show us a way to utilise the ultra short-wave commercially.

When the valve was improved and found its way into broadcasting stations and receivers the development of wireless moved rapidly. Broadcasting proper had commenced. Armstrong had developed his famous regeneration circuit, Hazledean now patented a system of neutralised radio frequency stages, and other developments took place until the receivers which were used when broadcasting was first introduced into New Zealand were developed. During these last three or four years remarkable developments have taken place. The screen grid valve has made radio frequency amplification so stable that signals can be built up as strongly as atmospheric noises will allow, while pushpull and directly-coupled circuits, and moving-coil loudspeakers have brought reproduction nearly perfect. The mains set has made radio simple and reliable.

And so we bring our talk about the romance of radio to the present day.

The History of Broadcasting

(Continued from page 8.)

Edison Scholarship

Trying Character Test

MR. EDISON true to his role as a master-inventor, has put quite unusual punch into this year's series of posers to determine the recipient of his scientific scholarship. Ordeal by examination assumes a new terror when, in addition to having to answer highly-technical questions, callow youths are requested to look back on their lives from their deathbeds and to state by what facts they will then determine whether they succeeded or failed.

Mr. Edison apparently believes in testing his candidates' moral standards as well as their practical knowledge. We confess, says an exchange, that another of his questions intrigues us.

"If, on a year's expedition into the desert, you could only save three persons out of 10, leaving the rest to perish, which would you save: a brilliant scientist, aged 60; two half-breed guides; the scientist's wife, aged 39; her son, aged 6; the girl you are engaged to marry; your best friend, who is your own age; or yourself?"

It is reported that only one of the forty-nine competitors said that he would have himself, an answer which could hardly have pleased the inventor, who hopes to see the selected disciple blossom into Edison II. Personally, we should have felt inclined to reply: "Can't say. All depends what they look like, and how they behaved during the expedition." Such posers can never be answered honestly in cold blood, and the examination hall is the last place to choose for testing character.

Perhaps Mr. Edison secretly hoped that one of his candidates would be brave enough to say so. As a shrewd observer of human nature has remarked: "Nobody knows how he will behave in any given situation until the situation arrives."

THE Glasgow and West of Scotland Mission to the Outdoor Blind has been instrumental in installing over 250 wireless sets in the homes of invalids and lonely blind people in the district.

We have not spoken of picture transmission, of beam wireless, direction finding, radio drama, and a dozen other side-lines, each of which could demand a whole evening.

RADIO DIRECTORY

What to Buy and Where

CITIES

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|------------------------------------------------------------------------------------------|------------------------------------|
| ACE and HAMMARLUND SETS, | Johns, Ltd. |
| WESTINGHOUSE Rectifiers | Chancery Street, Auckland. |
| BROWNING DRAKE SPECIALISTS | F. J. W. Fear & Co. |
| | 63 Willis Street, Wellington. |
| BURGESS RADIO BATTERIES, | All Radio Dealers. |
| KING RADIO RECEIVERS | F. J. W. Fear & Co., |
| | 63 Willis Street, Wellington. |
| LOFTIN-WHITE AMPLIFIERS | Stewart Hardware Ltd., |
| | Courtenay Place, Wellington. |
| MAJESTIC RADIO RECEIVERS | Kirkcaldie & Stains, |
| | Wellington Agents, Lambton Quay. |
| MULLARD VALVES | All Radio Dealers. |
| PILOT 1930 PARTS—PILOT SUPER WASP KITS, GILFILLAN, KELLOGG and AT-WATER KENT SETS | Harrington's, N.Z., Ltd., |
| | 138-140 Queen St., Auckland. |
| | 40-42 Willis St., Wellington. |
| RADIOLA RECEIVERS and Expert Radiola Service. | Farmers' Trading Co., Ltd., |
| | Hobson Street, Auckland. |
| STEINITE RADIO | G. G. Macquarrie, Ltd., |
| | 120 Willis St., Wellington. |

COUNTRY TOWNS

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|-------------------------------------|--------------------------------|
| MAJESTIC | Radio House, Hamilton. |
| | G. S. Anchor. Manager. |
| PHILIPS VALVES AND APPARATUS | All Good Radio Dealers. |

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