

New Points For Listeners and Dealers-- By "Meter"

The aim of this section is to give listeners information of new and interesting devices and sets on the local market. It is free of advertising intent or influence and to the best of our ability will convey only absolutely reliable statements. Names, prices and sources of supply are mentioned for the benefit of readers and to save individual inquiry.

ON my rounds among the radio traders, I have received unwavering endorsement of my oft-repeated contention that the multi-valve receiving set to sell in New Zealand must, under average conditions, be capable of bringing in the chief Australian broadcast stations with ample loudspeaker volume. A receiving set of four or more valves which cannot accomplish this is bound to remain in stock. This is a stiff proposition as compared with America, England and the Continent. In other parts of the world where broadcast listening is popular the radio public are content to reach out, on the average, not more than five or six hundred miles. New Zealand is an insular country with a somewhat restricted population and resources for broadcast entertainment, while at a distance of about 1300 miles lies Australia with its population of six and a quarter millions and broadcast services of an exceptional character, due, of course, to the liberal financial support of the listening public. Now, 1300 miles is a goodly distance to span when entertainment from stations of only 2500 watts aerial power is sought for. This entertainment is demanded nightly, although it is unreasonable, for, apart from static interference, the natural and unpreventable "fading" under adverse conditions on certain occasions renders absolutely consistent loudspeaker reception impossible. However, an efficient multi-valve set can be relied upon to give many programmes from Australia each month. It is doubtful whether any multi-valve set buyer in New Zealand has yet made his purchase without stipulating that the set must "bring in the Australian stations." What would the American and English manufacturers say if they were told that every multi-valve set they turned out was expected to give fairly consistent loudspeaker reception over a distance of about 1300 miles? Seeing that the majority of buyers in America do not expect such a performance, it speaks well for the vast majority of imported sets that they actually do accomplish this feat fairly regularly. Anyhow, as reception of Australian programmes is a powerful aid to the popularity of broadcast listening in New Zealand it should not be discouraged.

A £120 ZENITH MODEL.

THE extraordinary development of the broadcast receiving set during the past few months is exemplified wherever one goes to see the latest in imported productions. The crude-looking apparatus with several tuning coils is just a memory nowadays, and in its place is the elegant, handsomely finished model, in which simplicity in tuning is one of its outstanding features. The prices sometimes, too, have soared, in

keeping with the many expensive refinements, and the superbness of the console models. This week I had the pleasure of examining Zenith Company's "Ten, De Luxe" model, stocked by Mack's Radio Co., Ltd., Kent Terrace, Wellington. This magnificent console set has five stages of radio-frequency amplification, a detector, and four stages of audio-frequency amplification. The circuit is one of the Zenith Company's own design, and, seeing that it is a remarkable long-distance getter, operated by only one tuning dial, the makers have achieved an undoubted triumph. With the one tuning control, 2VA, Wellington, is completely cut out, and 2FC, Sydney, brought in with full loudspeaker strength, in a city location. So its selectivity is definitely established. The set is thoroughly shielded within, and there is a neatness about the workmanship which is the hall-mark of superiority. The cabinet is made locally, and is a replica of the most costly imported article. The four audio stages are a combination of transformer and impedance amplification. The tuning dial is well illuminated with a little electric bulb. The set has a wavelength tuning range from 80 to 540 metres, and in combination with a short-wave adapter, can operate down to 10 metres. The set is operated with an external "A" battery, fitted with a trickle-charger, a "B" eliminator, and dry-cell "C" battery. This De Luxe model sells at £120, complete with all batteries and accessories ready for operation. Mack's Radio Co. also stock other models of the Zenith, including a particularly successful DX performer—the Model II. This is a 6-valve set, in which every valve works, the Zenith Company having their own valveless method of aerial-coupling, so that no loading valve is required for that purpose. There is a single-control electric lighted dial, with four condensers permanently balanced on one shaft. The set is battery operated, and it is wired for a power valve in the last audio stage. But there is an ample range of Zenith lines, ranging in prices from £36 to £750.

THE NEW "SCREENED-GRID" VALVE.

THE new radio amplifying valve, Radiotron UX-222, belongs to the "Tetrode" or four electrode class. The Radiotron UX-222 is a four element screen-grid valve particularly designed for radio frequency amplification. The experimentally inclined amateur will find that with proper shielding of the radio frequency circuit, neutralising and stabilising devices are unnecessary, the introduction of the shielding "Screen-grid" between the usual control or "Control grid" and plate, not only decreases plate to grid feed-back capacity, but also increases the mutual conductance of the valve.

Radiotron UX-222 may also be used in a totally different role, as an audio frequency amplifier, in resistance coupled circuits. Higher overall amplification at audio frequencies is possible with this valve without greater plate resistance than that of three element high mu valves.

The filament of the Radiotron UX-222 operates at 3.3 volts, and the filament consumption is .132 of an amp, but with a series resistor of 15 ohms., it can be connected in parallel with 5 volt filaments.

CHARACTERISTICS.

(When used as a radio frequency amplifier with special shielding.)
Type of base, Standard American UX.
Maximum overall height 5 1/2 in.
Maximum overall diameter 1 13/16 in.
Fil. volts 3.3
Fil. current132 amps.
Plate volts 135
Grid volts, inner-grid 1.5
Grid volts, outer-grid45
Plate current 1.5 m/a
A.C. plate resistance .. 850,000 ohms
Mutual conductance 350 m/o
Amplification factor 300
(When used as an audio frequency Amplifier in resistance coupled circuits.)
Fil. volts 3.3
Fil. current132 amps.
Plate volts 135
(Applied through plate coupling resistance of 250,000 ohms. grid volts).
Grid volts—
Outer-grid 1 1/2
Inner-grid25
Plate current 3 m/a
A.C. plate resistance .. 150,000 ohms.
Mutual conductance 400 m/o
Amplification factor 60

PROMPT AND GOOD REPAIRS.

A PROMINENT American radio service man says:—"The appreciation of an instrument lies in the ability to use and enjoy it. It is evident that no radio set could ever be built which would not, at some time or another, require some repairs. When these repairs will be needed is something which cannot be foretold. But the value of the radio set, its prestige and that of the industry, may be greatly strengthened if the service given and the repairs made are of such quality of workmanship and materials that the owner will have confidence in his set."

"With the keen interest shown in radio, many inventions covering the entire field have been brought out, and it is now possible to determine the trouble in any set with apparent ease. There have been several types of troublefinders placed on the market, and it is an easy matter to build one which will answer the purpose. The real value lies in using them, and in following up the trouble when it has been located, and staying with it until it has been thoroughly cleared up."

"One of the features offered through our service department is same-day service. If an owner brings in his set during the day, we are in a position to offer him immediate attention, and get it in shape—unless there is some major trouble—so that he can use it that night. We have a complete stock of repair parts on hand, and, with a proper knowledge of construction, it is a simple matter to rush the order through."

"Co-operating with this repair service should be an iron-clad ruling that all spare parts and materials used in this work should be of the best. I doubt if there is anything which will do more harm or will do more to break down confidence in radio, than for some mechanic with limited ability to inject some cheap or used parts into a set which has cost quite a sum of money."

TELEVISION RECEIVING SETS.

A REPORT of a recent successful test of television was published in the "Radio Record" of March 9.

A New York writer says:—"At last television has become something more than mere theory. Demonstrations in Schenectady recently proved most successful, pictures of announcers were sent through the air, the eventful images being seen in a cabinet. The device is not complicated, and resembles an ordinary broadcast receiver. The sets (as reported recently in the 'Radio Record') were designed and demonstrated by E. F. W. Alexanderson."

"Television in the home is an accomplished fact. It has been done, as a large group of newspaper men can verify. True, it is only a laboratory development as yet, but 1928 doubtless will see the installation of television transmitters in more than one broadcasting station, and the marketing of television receivers at a price within the reach of the average home."

"It is now a problem only of refinement of apparatus, and bringing the cost element down—not so difficult as it may sound—to a commercial basis." "Dr. Ernest F. W. Alexanderson, chief consulting engineer of the Radio Corporation, and also a consulting engineer of the General Electric Company, designed these sets. Dr. Alexanderson, a blocky, square-faced, unassuming scientist, who discusses radio marvels with a noticeable Swedish accent, insists that his work involves no new principles. It is a simplified application, he says, of principles previously known and founded upon the contributions of many pioneers."

"If you look into the cabinet at the heart of this wonder the immediate impression is surprise at the absence of a complicated collection of gadgets

and electrical whatnots. You see scarcely any apparatus more than is found in a good commercial broadcast receiver. There is nothing inherently expensive about it. A reasonable guess is that it could be sold in volume for around 290 dollars.

Real Motion Pictures.

"The human eye holds an impression one-sixteenth of a second. If varying impressions are conveyed to the eye at the rate of sixteen individual impressions or more per second, the result is a moving picture. Each impression is made up of light and dark shadings. When a face is broadcast by television its lights and shadows have to be translated at the transmitting apparatus in terms of electrical impulses. This has to be done on an instalment plan, shipping one small square of the face at a time. A moving beam of light is played upon the face through a spinning disc, which has holes punched into it. What is glimpsed through each hole is a separate unit of the image."

"The variations of the light beam, as caused by the varied shadings of the face, are translated into electric current through the now familiar photo-electric cell. Thus, the image takes the air. Its wave impulses are picked up by the receiver as in the case of sound and are amplified, as is sound by a loudspeaker. The impulses next travel to—and vary the intensity of—a neon lamp. No screen is used. By increasing the number of holes in the disc, a more clearly defined image will be obtained. In the sets of the future, and images far larger than three inches square will be possible."

"There are two alternatives to the spinning disc—a mirror drum or a disc with lenses."

"The spinning disc is used by Alexanderson because holes cost less than mirrors or lenses."

THE BROWNING-DRAKE CIRCUIT.

THE old three-coil regenerative set received its hardest knock probably from the Browning-Drake circuit. This is as it should be, for the old so-called "Armstrong" (rightly De Forest "feed-back") circuit, if carelessly or stupidly handled, is one of the most vociferous "howlers" yet devised by radio inventors. But there is always this much to be said in favour of the three-coil regenerative circuit, owing to its reaction it is a great distance-getter and has many wonderful performances to its credit. It was a set of this type which first brought KGO, Oakland, California, in to Wellington on the loudspeaker, and a similar set was second to accomplish this feat, both outfits having only three valves. This performance took place some four years ago, and power valves were not the vogue in those days. But the old three-coil set had to go. It was a disturber of the ether and, although a fair proportion, unfortunately, still linger with us, some hundreds of listeners have scrapped them or altered their three-coil circuits into more modern circuits. The first essential was a set that would not "howl" and which had reaction, if the three-coil circuit was to be supplanted. The next requisite was a set which was easy to build and easy to operate. Now, if a Browning-Drake circuit is correctly neutralised, it is as silent as the tomb, despite how carelessly you operate it. The reaction of the Browning-Drake is one of its distinctive features. It is not so difficult to build as a three-coil set, and it is incomparably easier to operate. Another factor which places the Browning-Drake far ahead of three-coil circuit is that its one stage of radio-frequency amplification is considerably more efficient than any known means of adding a stage of radio-frequency to the three-coil circuit. The ordinary Browning-Drake set excels in long-distance performances with only four valves, so that it is not substantially more expensive to construct than the

three-coil circuit. Then, the Australian stations, excepting only 6WFL, Perth, all had their wavelengths reduced to below 550 metres. This nabbed the three-coil set, with its handy plug-in coils to adapt it to any wavelength, of one of its greatest recommendations. The Browning-Drake circuit can take in all the wavelengths commonly used by the broadcast stations, now available to New Zealand listeners. So now, like Othello, its occupation gone, there is no particular reason why the three-coil regenerative circuit should continue to exist. One of Wellington's leading authorities on the Browning-Drake circuit, Mr. C. C. K. Fear, of Fear and Co., Willis Street, Wellington, informed me the other day that he is working at full pressure to cope with the demand for the conversion of obsolete sets into Browning-Drake circuits. Mr. Fear has made a special study of this circuit and is a regular encyclopaedia on it. He builds the Browning-Drake regenerators and aerial tuning coils for standard new sets, or to match customers' own condensers and valves. He also finds a constant demand for the correct neutralising of clients' home-built sets, and he does this for 2, 4 and 5-volt valves. There is not a little skill required to neutralise the Browning-Drake circuit, and many home-builders find this a stumbling block. The correct neutralisation of the Browning-Drake circuit is essential to obtain the best results, not to mention the desirability of preventing it from being an even more ferocious "howler" than the obsolete three-coil regenerative set.

TEST YOUR VALVES.

IT is a good plan to have the valves in a receiver tested after every three or four hundred hours of service. If a receiver is in use an average of three hours per night for instance, it will be worth while to have a service man test the valves about once every four months, and to replace any that are found to be wearing out. This is particularly important where the receiver makes use of rheostats for the adjustment of the valve filament supply, because if a single valve starts to wear out there will be a tendency to make up the decreasing volume by turning the other valves up higher, and the usual result is that several valves are prematurely worn out. Replacement of the one poor valve would save the others.



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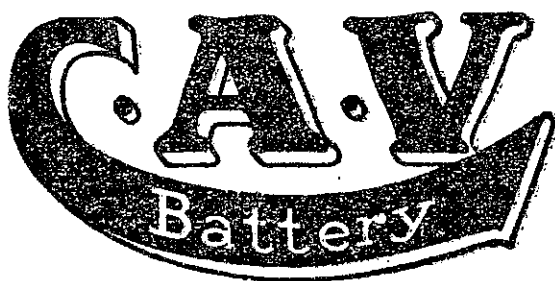
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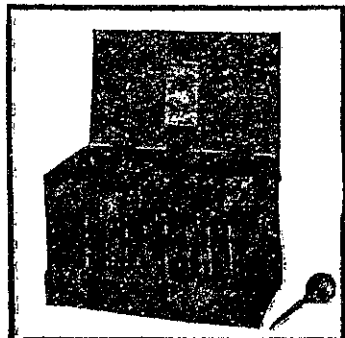
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