

# 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.

It was the dream of us broadcast listeners half a decade ago that in some dim and distant day, we would have radio sets which would be operated solely by plugging in to the house-lighting electric current. This we regarded as a distinct step towards the wireless millennium, but the thing sounded so wildly improbable in those days that the subject was never seriously discussed. But our dreams have come true, for a few days ago I had the infinite pleasure of operating and testing exhaustively a seven-valve neutrodyne, which operated solely from the house-lighting circuit. This, I understand, is the first electric socket set landed in Wellington. There is no battery at all, either "A" or "B," even the lighting of the valves being accomplished by the house-lighting circuit without trickle-chargers or separate eliminators. Everything is enclosed within the set, and it is so compact that I was able to carry it in my arms. The only thing necessary to "crank up" the set is to plug the attached cord-end into the lighting socket. All this seems unbelievable, but "facts is facts." The set under review is the new Freed-Eismann, Model NR-40, Electric Neutrodyne, for use with 230 volt, 50 to 60 cycle, alternating current supply. Through the courtesy of Messrs. Preston Billing, Ltd., I was enabled to test out this latest wonder on my own aerial. The set is enclosed in a luxurious walnut cabinet 10 inches in height, 22 inches in length, and 16 inches from front to back. It is fitted with four "328," one "327," and one "371" valve. There is also one "380" rectifier tube. There are three stages of radio, one detector, one audio valve, and one power valve. The walnut front panel bears a massive, gilt shield, through an aperture of which appears a sector of the tuning, calibrated dial, electrically illuminated from within. There are only three knobs to handle—a volume control, a knob for the single tuning dial, and a knob for vernier tuning. The tuning is the acme of simplicity. The electric current is switched on or off by a small brass handle protruding through the volume control. On raising the lid all that meets the eye inside the cabinet are the valves and gilt, metal shielding, no wiring being visible. The temperature of the valves is constant at the highest peak of efficiency; there are no rheostats. The control of volume is effected by the operation of a powerful resistance inside the set between the aerial and earth circuits. If the resistance is decreased portion of the radio frequency current entering the set from the aerial is permitted to flow to the earth lead without passing through the valves. At the rear of the cabinet is a face, safety fuse container. A spare

neat screw-in type, porcelain with mica goes with the set. Only one jack is provided, and there is a loudspeaker filter unit embodied in the set, so that there is no question of connecting the loudspeaker cords with wrong polarity. I was requested by Mr. Preston Billing to test out the set for several nights. During the first two hours I brought in fourteen New Zealand and Australian stations with good loudspeaker volume; indeed, the tremendous volume of the chief Australian stations was unbearable, so that I had to reduce the volume control to half. The overhead tramway wires run almost parallel with my aerial, at a distance of about 120 yards, and after exhaustive testing I have not been able to detect the slightest electrical noise from passing trams. This is most comforting to a city dweller, for tramcars are frequently spoilers of radio reception. I found at first that my 145ft. aerial and lead-in gave me broader tuning than is desirable, so that 2YA, Wellington, distanced only half a mile, was spreading over the dial. Next day I lopped twenty feet off my aerial, and the remarkable selectivity of the set became manifest, for I had no difficulty in silencing the "loud-voice" to hear 2BL, Sydney, although my aerial is so close to the Mount Victoria station. My aerial is now 125 feet in length, which is still about 25 to 65 feet too long, according to the instructions which accompany the set. Now, just a word about tone. There is no complete enjoyment, to the musically inclined, without natural tone, and in this attribute the set, connected to an Amplion R23 loudspeaker, gave the utmost pleasure.

## GRAMOPHONE PICK-UP.

THE Gramophone "Pick-up" is an electro-magnetic device by which the sound vibrations recorded on a gramophone record can be converted into electrical impulses. These electrical impulses are exactly similar to those given by an ordinary crystal receiver, and in the same way can be made audible by means of a pair of telephones connected across the terminals on the instrument.

If, instead of connecting a pair of telephones across the "pick-up" we connect the terminals direct to the grid-filament terminals of a low frequency valve amplifier, we can obtain sufficient energy to operate the largest type of loudspeaker. With a properly designed amplifier and loudspeaker, the results obtained are superior to the ordinary gramophone, not only with regard to strength, but also as regards quality.

There are many occasions on which it is desired to obtain more volume than can be obtained from the ordinary gramophone, and when a band or orchestra would not be available, or would be inconvenient. On such occasions this device, with a suitable

amplifier and loudspeaker, can be utilised to take the place of the band for the largest dance room or hall, also at garden fetes, entertainments, sports meetings, bazaars, etc.

The "pick-up" device is usually designed to fit on the gramophone tone-arm in place of the sound box. A needle of the ordinary type is fitted in the "pick-up" in exactly the same way as in the sound box, and, if not of a special type, of course requires changing after each record.

## THE NEW VALVE.

AT the present stage the constructor is probably more interested in what the new shielded grid valve does rather than in how it does it (says a Melbourne writer), so for the purposes of this article we may skip most of the underlying theory, and content ourselves with the observation that the two outstanding advantages of these valves are, firstly, the almost complete elimination of inter-electrode capacity, thus removing the necessity for neutralisation, and secondly, the remarkably high amplification factor. This varies from 100 to 250, according to type and conditions of use, enabling an actual radio frequency voltage amplification of from 30 to 50 per stage to be obtained with comparative ease. The internal feedback which in a normal valve causes instability, and has to be neutralised, is caused by the capacity between the plate and grid and their respective connecting wires. This capacity cannot be wholly eliminated, but, as is well known, when capacity coupling exists between any two bodies, it can be eliminated by interposing between the bodies a sufficiently large metallic shield, which is then earthed. This is what has been done in the screened grid valve. By carefully designing the valve so that the grid and plate leads leave the valve at opposite ends of the glass bulb, the capacity is reduced to that existing between the grid and plate. These are screened from each other by interposing a screen of wire mesh resembling a second grid. This grid is earthed through its battery. Having thus practically eliminated coupling in the valve itself, it becomes all the more necessary carefully to eliminate all couplings between the coils, condensers, and other apparatus comprising the grid and plate circuits, and to prevent back coupling through batteries and leads. To this end the respective circuits must be completely screened from one another by metallic screening boxes as well as to use by-pass condensers and chokes in the battery leads. With all precautions a certain amount of back-coupling remains, but provided it is not attempted to ob-

tain amplification in excess of 35 to 40 per stage, and construction is carefully done, there will be no instability.

Now for results. It will be found that the use of a short wave radio frequency amplifier employing one of the new shield grid valves opens up a tremendous new field, particularly in the direction of long distance short wave broadcasting. Tests conducted by the writer on the Siberian broadcaster RFN gave an idea of what might be expected with a properly-built amplifier unit. The station was very weak during the tests, being only R4-b, and with a standard detector audio receiver very difficult to tune in. On connecting the R.F. amplifier the signal strength went up to R8-3, a truly remarkable increase.

More important was the ease with which the station could be tuned in. There was no need to "jockey" the detector circuit by increasing the regeneration to a point where the set oscillated. The tuning resolved itself into the easy affair of the broadcast receiver. Tests in weak code stations proved the efficacy of the unit as a D.X. getter. Stations which were so weak as to be below the noise level of the receiver when the detector audio arrangement was used could be brought up to sufficient strength to be clearly heard.

There is no doubt that for the experimenter the UX222 and similar screened grid valves offers a wide field for investigation. As yet the average radio enthusiast knows but little about the new valve, and in this article only the fringe of its operation has been touched. However, as experiments reveal further facts about its operations these will be made available.

In any case, the points touched upon in the preceding article should help those who wish to experiment with the new valves as radio frequency amplifiers on wave lengths below 100 metres.

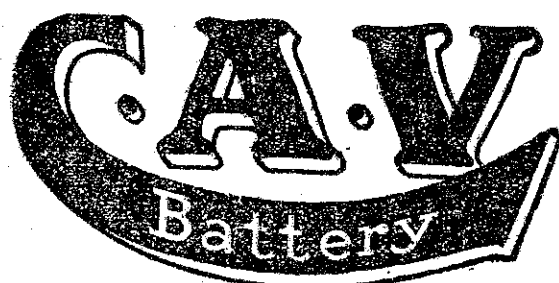
## SIX-VALVE PORTABLE SET.

THROUGH the courtesy of the Amalgamated Wireless (Australasia), Limited, I was able to test out one of their six-valve portable receiving sets under critical conditions on a recent afternoon. The set in question is the Radio Corporation of America's Radiola No. 26, a compact little six-valve super-heterodyne no larger than the case which contains the average office typewriter. The rotatable loop aerial forms portion of the hinged door of the cabinet, and a sweet-toned loudspeaker is built into the set. The valves used were Radiotron UX199's, operated by dry-batteries contained in the cabinet. The cabinet is of mahogany, and is fitted with a solid leather handle. For home use with an outdoor aerial, an antenna-coupler is provided, and the set is permitted by the P. and T. Department for use in this way. An extra bat-

tery-box and large-sized batteries for use at home are included with the set. The set has only two tuning controls, and requires no previous experience to operate it. There are innumerable listeners who have their motor-cars, launches, or "batches," who desire a receiving set they can easily transport. It is specially for this class of listener that the Radiola No. 26 is designed. The writer took one of these sets by motor-car considerable distances around Wellington, and good loudspeaker volume from 2YA was obtainable all the while, even when the motor-car was moving fast. A home test showed that the Radiola No. 26 is also a first-class performer on an outdoor aerial, bringing in the New Zealand and Australian stations splendidly on the loudspeaker. For portable purposes, the set weighs 40lb. complete with batteries and valves. With an antenna coupler for use with an outdoor aerial, and extra battery-box with large-sized batteries, in addition to the portable batteries, the set is retailing at £60 complete.

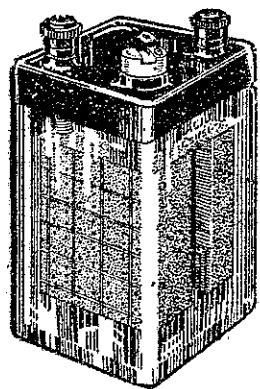
## TONE, NOT VOLUME.

Mr. C. C. K. Fear, of Messrs. Fear and Co., Willis Street, Wellington, remarks on the subject of loudspeakers:—Now that radio is recognised as a necessity in every home, it has been noticeable of late that the public are on the search for better reception; that is, improvement in tone, volume apparently being of secondary importance. During the rush of last spring, shortly after 2YA opened up, we sold a great number of speakers, the majority of which were of the cheap variety. Listeners did not seem to worry much about tone; volume was demanded, and, also, it must not cost too much. Now, however, we find the demand is for quality, not quantity, and it must be perfectly natural—no noisy background resembling the scratch of a needle on an old gramophone record. The full range of the human voice or any musical instrument must be reproduced with perfect tone and clarity—not a jarring note in the whole scale. These desirable qualities cannot be obtained on a cheap speaker, as many people have found to their sorrow, and there is no question about it, the B.C.L. have lost many a 80s. through a cheap and nasty noise producer. We now find the demand is for the large type horn speakers, such as the Amplion AR19, B.T.H., and Ethervox, as these models have a good unit and a large flare, and therefore are able to give good tone over the whole musical range, together with volume. The speaker unit is also in good demand, as these can be attached to the tone arm of a gramophone and give excellent results. Although costing anything from 17s. 6d. to 30s., the price of a cheap speaker, the results in many cases are equal to a speaker costing anything from £5 to £7.



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## ECHO OF CORINTHIA'S VISIT

SHORT-WAVE CONTACT MAINTAINED.

Writing from the R.M.S. Corinthia (Cunard line), at Alexandria, under date February 13, 1928, Mr. W. H. McAllister, chief wireless officer, in acknowledging a courtesy extended him by Mr. R. Leslie Jones, hon. secretary of the Wellington Amateur Radio Society, when the great liner was in Wellington on her last special visit, with tourists from overseas, gives some interesting information relative to short-wave work carried out by Mr. McAllister and his staff.

Mr. McAllister says in his letter, "I suppose wireless has made big strides in New Zealand since my visit; we are still carrying on the experiments with short-waves here, trying to get it down to a thoroughly commercial basis, and should be through in a few months now. After we left New Zealand, we had great success with short-waves, and worked New York nightly after that all the way home, including practically the maximum possible range, 12,200 miles. They made quite a fuss of it in America. All told, I believe there were something over a million lines of newspaper work over it. Of course, it was the first time a ship had ever been worked round the world. However, all that is over now, and we are just working on improvements now."

Mr. McAllister had the pleasure of a drive through Wellington's scenic wonderland with Mr. Jones, and stated he was amazed at the beauty of the district.

When the H.M.S. Renown was here during the visit of the Duke and Duchess of York, the Amateur Radio Society Executive entertained Mr. Rowsell, chief wireless officer, and staff, and also had the fortunate experience of being entertained aboard the Renown; and saw the wonderful wireless equipment. During the Renown's world tour, experiments were being carried out, and it was a daily occurrence for the Renown to be in touch with London on short-waves.

Mr. Jones recently received from Mr. Rowsell a special photo of H.M.S. Renown, accompanied by a letter of thanks for the wonderful hospitality extended to him and his staff during their visit to Wellington.

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