

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.

THROUGH the courtesy of the National Electrical and Engineering Co., Ltd., Wellington, I have been enabled to test one of their Fada 415 B cone loudspeakers with an electro-magnetic drive, which, it is claimed, reproduces all frequencies faithfully. It has been my experience to test over a dozen different makes and types of cone speakers since the advent of that type of reproducer, and I have been unconvinced from my preference for a high-class standard large loudspeaker of the horn type. My preference was not due to any prejudice, but was always based on a desire for faithful tone reproduction. It came, therefore, as a surprise to me to discover in the tone of the Fada cone a remarkable approximation to fidelity right along the whole gamut. The deep tones of the bass were mellow and resonant, and the shrill treble tones were clear and true in timbre. The operating principle of a cone speaker is widely different to that of the horn type, which depends upon the vibrating medium of a small disc. The cone type of loudspeaker depends upon a distinct principle of sound amplification. The loudness of a sound, at a given distance from its source, may be increased by increasing the amplitude of the vibration (increasing the actuating forces), or by increasing the area of the vibrating object. The cone accomplishes its object by substituting its larger surface for the small diaphragm, which is the source of sounds in the horn type of speaker. Such a large vibrating surface disturbs a much larger volume of air than is possible with the diaphragm, so that the amount of energy reaching the ear is increased without the use of amplifying horns. The material of the cone must vibrate in numerous irregular segments if it is to amplify all the elements of the complex tones. The higher the frequency of a note sounded, the smaller must be the vibrating segment. Since the factors of texture and elasticity, generally speaking, establish a limit to which the segments may be reduced, such a vibrating cone cannot usually amplify sounds whose frequencies pass a fixed upper limit, if it is at the same time to amplify the bass notes, for which it is especially suitable. The absence of the upper partials in sound reproduced by some cone speakers gives them the peculiar "empty-barrel" effect. The Fada Company, however, employ a special fabric which is evidently of a texture and elasticity which overcome the general infirmities of many cone speakers. The Fada cone also proved decidedly sensitive, which is a virtue in New Zealand, where reception of the long-distance stations of Australia is so much

in vogue. The Fada 415 B cone speaker is retailed at £12 10s.

MAGNAVOX COMPANY RECOVERS.

THE Magnavox loudspeaker of the electro-dynamic type made quite a hit in New Zealand when it was introduced a few years ago, for it certainly marked a new departure in radio reproduction. The Magnavox Company, which is a Californian concern, however, experienced a rather precarious existence for reasons not apparent at this distance. The merit of their goods was undisputed, but evidently business is not always won solely on the merit of one's wares. News has just arrived from San Francisco that according to a published report:

"Magnavox is staging a real comeback. This little company that was a sensation several years ago, and which subsequently fell by the wayside, has fought its way back to solid footing, and an inspection of the company's returns revealed one of the most interesting bits of pluck that Western financial history has recorded."

"The story is told in the fact that Magnavox, in the last six months of 1927, earned at the rate of 25 per cent. on par despite the fact that it was being reorganised, had not attained its momentum, and was still suffering from previous errors in judgment."

The semi-annual report, just released, shows a current position of 4 to 1, with net liquid assets of \$58,892 dollars. Current assets totalled 477,197 dollars, compared with current liabilities of 118,304 dollars on December 31, 1927. Sales of the company in the last half of 1927 were 498,507 dollars; expenses, including all charges, were 347,938 dollars, and net profit available for surplus totalled 90,568 dollars, or equal to 12½ cents for the half-year period on the one dollar par value stock.

The company is manufacturing 600 loudspeakers daily, in six weeks behind in its orders, is shipping to every point on the globe monthly, is providing its loudspeaking units for the finest receiving sets manufactured, is employing 250 people, and has more than 500,000 dollars in unfilled orders on hand."

OVERLOADING VALVES.

A LARGE percentage of the distortion, in most radio receivers, even when a "C" battery is employed, is caused by overloading the valve in the last stage of audio amplification. When valves of the 201A or 112 type are used, the only ways to reduce the distortion may be to substitute a larger valve or to decrease the volume; but with valves of the 171 and 210 types, the distortion can usually be remedied by correctly adjusting the grid-bias voltage ("C" battery) on the last stage. The instruction sheets, which are packed with the valve, give approximately values of grid-bias voltage suitable for use with various plate potentials; but, in order to make sure that the valve is not being overloaded, it is necessary to connect a milliammeter in the plate circuit of the last valve. If there is no appreciable movement of the needle of the milliammeter when loud signals are being received, the grid is correctly biased. On the other hand, when the needle of the meter oscillates as the intensity of the signal is increased, the valve is being overloaded, and the bias must be increased or decreased, as the case may be. If it is impossible to prevent the needle from oscillating by any adjustment of the grid bias, this fact indicates that too much volume is being obtained from the amplifier.

The meter used for this purpose should have a range from 0 to 25 milliamperes, and the maximum fluctuation of the plate current should not be greater than 10 per cent. of the total current. In the case of the 171-type valve, the plate current should be 20 milliamperes with a plate potential of 180 volts, and the correct grid bias is approximately 40 volts.

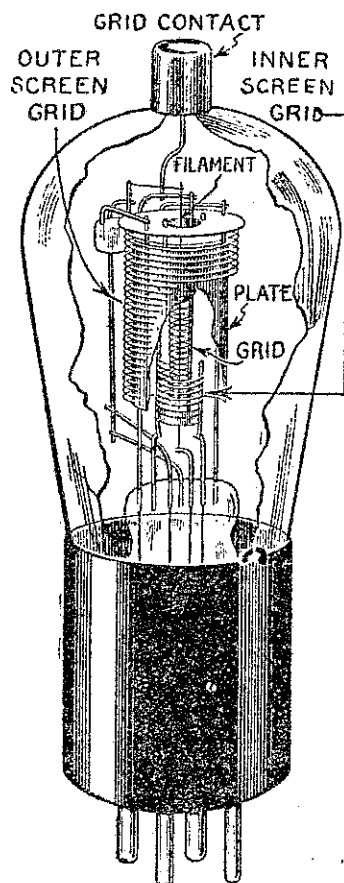
THE "HUM" BOGEY.

OCCASIONALLY traders are called upon to answer the question whether such-and-such a "B" battery eliminator causes a hum to emit from the loudspeaker, and the same question as to the audibility of hum from electrified sets and A.C. valve sets is now current. While there are efficient eliminators, electrified sets and A.C. valve sets which do give out the very faintest hum I have interested myself to the extent of ascertaining just how much a vestige of a hum affects broadcast reception. I have found by several experiments that the faint hum disappears completely when a broadcast station is tuned in, no matter how weak reception is. This peculiarity has been obtained with equipment of different makes submitted to me for testing. Further, testing with an ordinary battery-supply set I found I got more hum from the "carrier" wave of certain Australian stations than when I operated the new equipment which works without batteries, but obtains its electrical supply from the house-lighting system. This is a phenomenon which must not be ascribed to the greater sensitivity of the battery set, for the battery-less equipment proved doubly sensitive. No, this talk of hum is easily silenced by actual demonstration. On the other hand there are, of course, certain lines which

are inherently bad offenders where humming is involved, but, speaking generally, the radio trade in New Zealand are wide awake to these infirmities, and are displaying good discretion in selecting their lines. Anyhow, private persons who feel disposed to be caught by enticing advertisements appearing in American radio journals lauding the alleged efficiency of certain low-priced "B" eliminators should hesitate before sending their good money abroad on a sheer gamble. One of these low-priced "B" eliminators recently imported by a Wellingtonian drowned all distant reception with its hum and had to be discarded. In contrast the better quality lines recently tested by me proved an unqualified success, and, as previously stated, the hum never once obtruded.

THE EXPONENTIAL HORN.

RADIO traders in New Zealand should sit up and take notice of the "exponential horn" type of loudspeaker which is now in the boom stage in the United States. I have lately put this type of loudspeaker through prolonged tests, and it has emerged from them triumphantly. There is no patent covering the exponential horn, which is merely indebted for its remarkable volume



This sketch shows the internal construction of the shielded grid valve which is now exciting so much interest.

and delightful tone to its shape, the expansion of the horn from the loudspeaker unit to its large bell being made according to scientific principles. It is truly astonishing to hear how faithfully this horn reproduces all pitches of musical notes. The rumble of a grand organ deepest note and the high-pitched piping of a piccolo receive equal expression. One can only describe the experience of hearing one of these exponential horns as "thrilling." A brass band playing at the 2YA studio seems by magic to be transferred from the studio to one's sitting room. The timbre of the instruments is reproduced with striking fidelity and neighbours were deluded into believing that the band was in the vicinity. Now, this is a lot to say for a loudspeaker which comprises only a large composition horn curled up somewhat like a bugle and fitted with a regulation loudspeaker unit of a type which has been in vogue for years. "Meter" ventures to prophesy that the "exponential horn" is going to have a big run in New Zealand, and radio traders will advisedly make inquiries about them. A few of the larger type, which "Meter" prefers, have been snapped up in the Wellington market, and at the moment buyers will have to wait some weeks before a few more will arrive. And I know of other types of loudspeakers, which are of the electro-dynamic type, and of a make quite new to the New Zealand market, now on the water so that connoisseurs of good tone will have more than one new type from which to select. For my part, if the good name of broadcasting is to be preserved, I would condemn all inefficient loudspeakers to the corporation destructor. More harm to broadcasting than anything else is due to "tin-pot" loudspeakers. It would seem that many people in a community are as "tone-deaf" as others are colour-blind, judging from the satisfaction they profess to obtain from their loudspeakers. One of the saddest experiences imaginable is to hear a listener proclaim the supremacy of his own "tin-pot" loud-

distorter over a loud-speaker which is acclaimed by the world. This has been my experience on more than one occasion. I feel sorry for these people, and I feel sorry that they are able to inflict an injustice to broadcasting on their guests whose appreciation of the difference between good and bad tone is quite normal. There is room for good missionary work in the loud-speaker department.

THE ETHOVOX LOUDSPEAKERS.

The British loudspeakers of the horn type have a well-deserved reputation for purity of tone, sensitivity and freedom from distortion, and in these characteristics the Ethovox stands out prominently. I have heard several of these speakers lately under varying conditions, and coupled to sets of various types, and I can safely state they were a pleasure to listen to. The deepest tones and the tones of the highest pitch were reproduced with a distinctive mellowness which must make a strong appeal to lovers of music. The Ethovox is a triumph of British faithfulness of workmanship, and one need not wonder at its popularity. This speaker is about 26in. in height, and the bell has a diameter of 15in. There is a system of adjustment for extra sensitivity on weak signals or, on the other hand, for prevention of "chattering" when the volume is considerable. The Ethovox horn is of metal with mahogany colouring, and the swan-neck is gracefully curved from the base to the flair. There are rubber pads on the feet of the Ethovox to prevent them scratching polished surfaces. This speaker is made in two types—2000 ohms and 750 ohms—though identical in outward appearance. The latter type is more suitable for use in conjunction with power valves. Both lines are retailed by Messrs. Tolley and Son Ltd., Wellington, at £5 5s., and at that figure are exceptional value.

TO CURE DISTORTION.

RADIO dealers and service men have many opportunities of performing "missionary" work in the course of their business. The position would not be exaggerated if one said that there are thousands of radio sets in New Zealand which are utterly out of date, yet these sets could be modernised by a relatively small expenditure. Small, obsolete audio-frequency transformers are not capable of faithful reproduction, and many of the complaints that reception is distorted are due to this cause. The substitution of only one transformer—in the last stage—would work wonders providing the new transformer is of high-grade and of correct ratio. Then, also, many sets are being operated without a "C" battery, an omission which is fatal to good reproduction. No wide-awake service man should pass over a receiving set with these deficiencies without explaining to the owner the urgent need for reform. Not only does reproduction under these disabilities do an injustice to the broadcast station, the vocalists, and the instrumentalists, but to radio as a whole, and, so, indirectly the trader is affected. Not long since an English lady vocalist took successful action against a gramophone company for marketing a record of her singing which, owing to the poorness of the record, was a travesty of her vocal art. Her reputation was involved, and the Court decided in her favour. One can easily conceive the annoyance and disgust which some broadcast vocalists would express if they heard the reproduction of their voices from some of the archaic radio sets sprinkled around New Zealand. There is a crying need for reform, and it is in the interests of the trade and the owners of these sets that the position should be explained to the latter.

A.C. OR BATTERY SETS.

LAST year many people hesitated to buy light-socket sets, because of the contention that this type of instrument was in the experimental stage. Those who visited the recent Sydney Radio Exhibition found about 30 per cent. of the new sets were electrified (says the Sydney "Wireless Weekly"), and the other 70 per cent. designed to operate with batteries. The exhibitors say that those desirous of purchasing batteryless receivers need not fear that the 1928 circuits are in the experimental stage, or that this type of set will require too frequent servicing. They contend that the development of new alternating current valves, and improvements made in rectifier valves, have made practical the building of dependable light-socket sets.

"However, it would be well for radio purchasers to be guided by the advice of a merchandiser's oracle which recently sounded a warning to dealers, advising that they should proceed with utmost caution in stocking alternating current receivers. 'Consider the system employed, the construction of the unit, and the integrity of the manufacturer,' is the suggestion. This is excellent advice to follow, not only for dealers, but for the public buying any type of radio set, whether it be electrically or battery operated."

"It is expected that next year the percentage of electrical sets will be greater. However, there is no doubt that there will be a large demand for battery-operated receivers for many years to come, because the electric facilities are not available in every

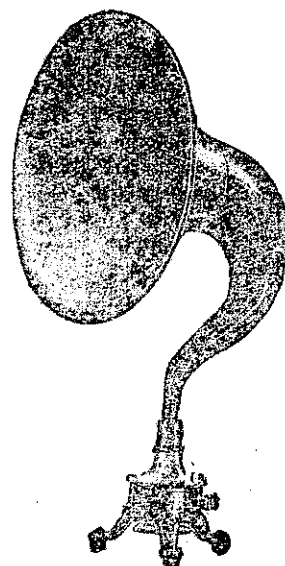
home. The great advantage of the light-socket set is in the fact that its power supply is available by the snap of a house lighting switch. Furthermore, there are no batteries to charge or replace, and the power supply is constant. The advantages pointed out for the batteries are "pure direct current, steady, quiet, noiseless, uniform operation, taking nothing from and adding nothing to radio reception—no line troubles or blown-out fuses can stop reception—you need never miss a single concert from a battery-run receiver."

CAUSES OF NOISES IN A SET.

If a client complains of excessive noises in his set, the service man should not forget to go over all soldered connections, and valve prongs should be examined for corrosion. The first important factor for getting the best results from a receiving set is soldered connections. Every point should be carefully cleaned and then securely soldered. Aerial joints should be carefully soldered and a proper earth or earth clamp installed. There are at least twenty-two contacts in a five-valve set which cannot even be soldered. Twenty of them are valve prong contacts, and the other two are the battery switch and the rheostat. Dirt on any one of these will be a fruitful source of noise. Many valves have solder (lead alloy) on their base prongs. This solder rubs off on to the socket contacts, oxidises, and makes a high-resistance noisy connection. The battery switch is often liable to "dirty up" after continued switching, and must be cleaned. The same with the rheostat. A dirty switch or rheostat contact causes noise in a receiving set.

COMPLAINING of the extent of jazz programmes sent out by broadcasting stations, United States Senator Smith, of South Carolina, declared he was tempted to offer an amendment to the pending radio measure to ban jazz music over the air.

THE CELEBRATED ETHOVOX LOUD SPEAKERS



This is the well-known Ethovox Loudspeaker which has become so popular because it reproduces speech and music with such remarkable purity and freedom from distortion. Its tone is deep and mellow, and it will deal with considerable volume. The demand for this model is so great that we have been able to effect economies in manufacture, and so reduce the price. The instrument is 26 inches in height, and the diameter of the flair is 15 inches. The magnet-system is adjustable. Rubber stands on the feet prevent the loudspeaker damaging delicate surfaces on which it is placed. The graceful mahogany-coloured swan-neck and flair give the Ethovox a handsome appearance.

Ethovox 2000 ohms, with Metal Horn
Price £5 5s. 0d.

Ethovox 750 ohms, with Metal Horn
For use in conjunction with
Power Valves.
Price £5 5s. 0d.

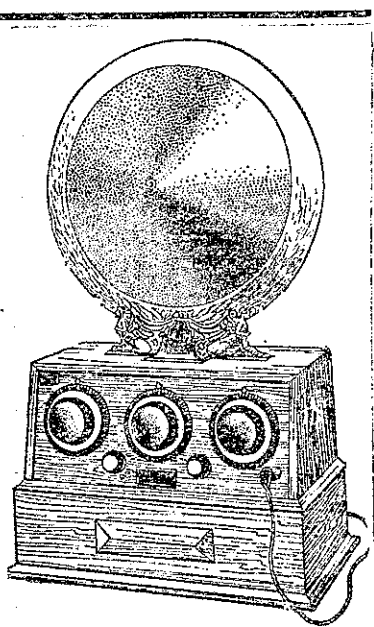
The Ethovox is manufactured by Messrs. Johnson & Phillips, Ltd., Charlton, London.

If not obtainable at your Radio Dealers please write to the New Zealand Representatives—

TOLLEY & SON, LTD.,

Electrical Engineers,
26 HARRIS ST., WELLINGTON.

Branches at:
Arauc Avenue, Auckland; Water Street, Dunedin; East Litchfield Street, Christchurch.



High or Low by the Flick of a Switch!

No troublesome plug-in coils; simply press a switch and your "Courier" Set is changed over in a second from broadcast wavelength to low wave reception! Here is a marvelous 4-valve set well built of the finest parts obtainable and guaranteed by the makers.

The "Courier"
"Brings tidings from afar."

The "Courier" 4-valve set sells for £27 10s. 0d. complete with accumulator; dry B and C batteries, phones, aerial, valves and 15-inch diameter O'Neill cone speaker. The results of the "Courier" will delight you.

Obtainable at your Radio Dealers, or if you cannot secure, write the makers who will see that you are supplied.

Wholesale only from:
J. Wiseman & Sons Ltd.
MANUFACTURER.
ALBERT ST., AUCKLAND.