

chimney. We have already spoken of the need of avoiding trees and other earthed objects. Better to use a short aerial that is clear of these than a long one passing over any of them.

Gauge and Type of Wire.

A NUMBER of readers have written in asking what advantage enamelled wire has over bare copper wire, when used for an aerial. In districts near the sea, or in the thermal regions, salt spray in the first case and sulphurous gas in the second, have a corroding action upon the copper. This has no effect upon the electrical properties of the aerial unless it goes too far and increases the resistance of the wire. When it has reached this stage, the wire will have corroded to such an extent that a breakage will occur.

To prevent this it is advisable to employ enamelled copper wire. Unlike direct current, radio frequency electricity passes on the outside of a conductor. If the outside is insulated, either by corrosion or enamel, the current penetrates further into the centre. Practice has proved 7/22 or similar wire to be the most suitable.

Types of Aerial.

AMBITIOUS but uninformed enthusiasts sometimes erect most elaborate cage and multiple wire aerials. They certainly look imposing and awe the outsider, but the old hand merely nods—"He'll learn some day." For his

will have less effect on the magnitude of the received current. As an illustration, a single wire of 20 gauge was substituted for two-stranded wires of 3/18 gauge and there was no perceptible difference in the signal strength though the resistance of the former is about eight times that of the latter. The explanation is that the actual ohmic resistance of the aerial is only a very small proportion of the total resistance incorporated in the system. To be of effect an elaborate multiwire system must be supported with elaborate screen earths.

Cage aerials are used by transmitting stations and there is no advantage to be gained by using them for reception. In fact, the added capacity of the aerial system has a distinct disadvantage when coupled to a receiving set.

Summary.

HAVING now reached a convenient stopping point, the end of the theoretical considerations, we shall defer the remainder of our chat till next week, when we shall consider the practical aspects in erecting the aerial. However, in conclusion, we shall summarise this week's article as a refresher. The optimum aerial for the modern set is—

1. At least forty feet high.
2. 60 feet long.
3. Well insulated and clear of earthed objects.
4. Stranded insulated wire is preferable.
5. Multiwire aerials are only effective with an elaborate earth system.

Moving Coil Speaker Operation

Overloading Rectifiers

MANY moving-coil speaker users energise the field from a battery charger which includes a dry rectifier. The output of such a device is, of course, unsmoothed, but the heavy inductance of the field windings is generally sufficient to provide practically all the smoothing required.

In some cases, however, and particularly with moving-coil speakers which really go down below 100 cycles, there is still sufficient hum to be annoying, and it has been discovered that this hum can be removed completely by connecting one of the very high-capacity electrolytic condensers across the field windings.

What is not generally known is that the presence of such a condenser greatly increases the load upon the rectifier, and may in some cases seriously overload it. Take, for example, the case of a loudspeaker which, when connected to a dry rectifier, giving six or seven volts output, takes just under an ampere, which is not too much for the particular rectifier.

The connection of an electrolytic condenser across the winding will mean that the rectifier is called upon to give not only the one-ampere field winding, but a very considerable additional current, which will flow into the electrolytic condenser at each pulsation. In such circumstances the load on the rectifier may rise considerably above one ampere, and this point should be carefully watched by those who are running dry rectifiers near to their safe limits.

Laboratory Jottings

M.P.A. Speakers.

CUNNINGHAM, LIMITED, have sent two fine examples of the M.P.A. line of speakers, the popular cabinet (priced at £4 10s.) and the popular plaque (£2 10s.).

The popular plaque is a cone type speaker with unconventional wood-work. It has a fretted front, supported by an octagonal frame, and is in all a very neat and efficient speaker. For a light speaker it covered a remarkably wide range of frequencies. It will respond to the range of a piano up to about 3000 cycles with very little attenuation. This is probably the highest frequency used in piano music. The frequency limit of the speaker is much higher than this, as it brings in all the overtones necessary to preserve the quality of instruments such as the violin, flute, and piccolo. The bass is surprisingly strong, for it will go down into the region of the drums without difficulty. It will even reproduce, though somewhat thinned, the deep notes of the 'cello. Its sensitivity is very sharp, in fact we have worked this speaker with satisfactory results directly from a crystal set.

The popular cabinet is a much heavier speaker, using a bigger cone and unit. In its reproduction it is quite the best we have heard for cones. It is strong on the upper notes, bringing in clearly and crisply notes three octaves up from middle C. It will go down two octaves below C, and this brings us into the region of the 'cello, the bass clarinet, and the French horn. This speaker, too, is very sensitive, but not quite so sensitive as the plaque. It will handle a

Trade Personals

Messrs. Abel, Smeeton, Ltd., Crogley distributors, recently opened a retail branch in Bank Street, Whangarei. They have had a representative in this district for some time now, but this new departure seems to indicate that they have faith in the radio future of the North Auckland district. Mr. G. A. Temple is in charge.

Our nomination for the first radio man in New Zealand to receive an air pilot's license is Mr. E. R. Boucher, who, on the 1st February, passed his pilot's test in Auckland, and received his permit to fly. No doubt, in the conduct of his business, he will soon be planing over New Zealand.

Mr. S. E. Moe, formerly manager for the Selected Radio Co., of Auckland, has commenced business on his own account in the Civic Theatre Block, Auckland. He is handling the Silverstone line of sets.

Mr. C. R. Ralph, L. M. Silver and Co.'s, Ltd., of Wellington, manager, is at present visiting his North Island agents.

R. G. McCartney, manufacturers of the Coates water heater, has installed at the Wellington Botanical Gardens for the City Council a hot-water system keeping a regular temperature of 70deg. Fah. for the forcing of early blooms.

greater output, but both speakers can deliver ample for an ordinary room without overloading or blasting. Neither speakers are harsh or metallic, the cabinet particularly having a pleasing round mellow tone. It is finished in a deep shade of rosewood.

Messrs. N. R. Cunningham must be congratulated on these two very fine lines.

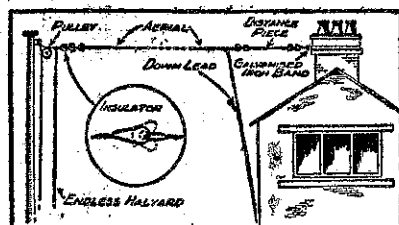
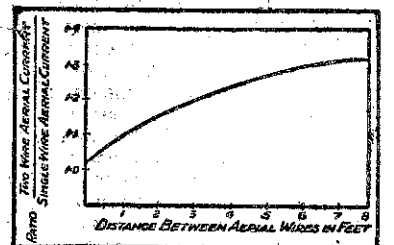


Diagram 2 (lower).
Diagram 3 (upper).

benefit we reproduce a curve showing the effectiveness of a twin wire aerial with varying distances between the wires. It will be seen that if two wires are used they should be at least six, and preferably eight, feet apart. Even with this spacing the increase in current obtainable over that on a single wire is not large, being about thirty per cent. in the case quoted.

Using the full eight feet, further measurements made with three or four wires arranged symmetrically showed that nothing was to be gained by increasing the number of wires in this way. The measurements were carried out with a fairly efficient earth screen, the lowest actual resistance of the aerial circuit being in the last case about 11 ohms. If as may be the case with the average aerial a much higher resistance were associated with the earthing system it is evident that any improvement in the aerial alone

First hear the M.P.A. Loudspeakers

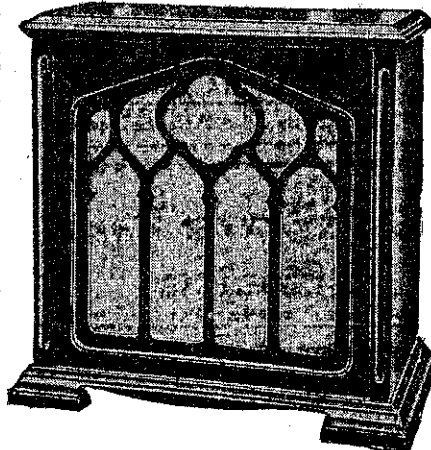
---A new standard in tonal perfection

MPA EXCLUSIVE features REVOLUTIONISE previous standards of reproduction! Fine, full, sonorous volume. Symphonic woods in construction give extraordinarily sweet and mellow cello-like tone. NOTHING LIKE IT HAS EVER BEEN HEARD BEFORE. Every MPA Loudspeaker is a thing of beauty. The Technical Department of the "Radio Record" states: "We have tested out MPA Speakers, and have found them most satisfactory."



Concerning the Popular Cabinet, the "Wireless Trader" Test Report says: "On the whole, it may be said that the instrument puts up a very creditable performance, and judging by the sample that was sent to us, we

feel justified in stating that it is one of the best speakers of its price that we have heard for some time."



Note these Prices:—

Popular Plaque	£2/10/-
Popular Cabinet (as illustrated)	£4/10/-
Table Grand	£7/17/6
Panavox	£9/10/-

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