

A New Cable Invention

AN improved telephone cable which is said virtually to eliminate static, has been perfected in the Bell laboratories in America and will be in operation for trans-Atlantic communication within a year. The new cable employs a single copper conductor, and will be installed so that at intervals of sixty miles or thereabouts, transmission will be revitalized and fading minimized, thus giving a steady and continuous service.

The inventor claims that with the aid of this static-eliminating cable the entire field of trans-Atlantic cable communication will be revolutionised. He predicts that within a few years inter-telephonic communication between practically every country in the world will be an accomplished fact.

Australian Topics

A HUGE radio display, the most comprehensive that has yet been staged in Australia, opened recently at Sydney. Almost every radio manufacturing company in Australia has co-operated to make this exhibition completely representative of the many recent advances in the most romantic of modern industries, wireless telegraphy. A feature of the display is the miniature broadcasting studio, which is completely glassed-in to prevent any possibility of sound interference.

SINCE the Australian Broadcasting Company commenced operations at 3LO and 3AR it has conducted 3122 auditions or tests in its continual quest for new artists for the broadcasting programmes. These tests take place almost every day under the direction of William G. James, and an elaborate loudspeaker system is installed throughout the administrative offices of 3LO in order that the manager, studio manager and programme directors may hear the tests and select any voice that is suitable or shows promise with training of becoming suitable for broadcasting.

Summer-Time Radio

Portables for Picnics

(Continued from front page.)

the aerial to act as a safeguard. As a matter of fact there is a clause in the rules of the Fire Underwriters' Association which tightening danger. Actually, this is very remote, but nevertheless a lightning-arrester should be placed in series with the aerial to act as a safeguard. As a matter of fact, there is a clause in the rules of the Fire Underwriters' Association which protects fire insurance companies against fire caused by induced charges from an aerial. In other words, if a fire occurs and it can be proved that an aerial leading into a radio receiver was not equipped with an arrester, the owner of the property has no claim for insurance money.

Another bugbear of summer-time reception is the prevalence of static. In sultry weather one often hears so many crackles, crashes, and other delightful noises that distant reception becomes painful, if not impossible. Quite frequently, too, the programme from the local station is marred. Atmospheric are due to waves of no particular frequency set up by lightning discharges often very many hundred miles away; the louder crashes are often produced by local static charges collected by the aerial and discharged through the set.

THIS brings us to the point where we diverged. The use of a frame antenna for summer-time reception minimises static and does away completely with the lightning question. There is a very much quieter background, selectivity is sharper, reaction usually smoother, and the receiver may be used even when a thunderstorm is overhead. Apart from use of portables, frame antenna may with advantage be used in the home. Details of such an antenna will be found in our special number next week. When conditions are good an aerial can be used with advantage with the portable receiver to replace the frame which then acts as an ordinary grid coil. Signal strength is strengthened, with the result that stations that could be heard on the 'phones can now be put on the speaker, and very many more brought on to the

'phones. Almost every portable receiver is designed so that an aerial may be attached. Well-insulated wire such as "electron" may be purchased very cheaply in 100ft. rolls, and a single roll of this wire and an insulator or two, a copper earth tube with a wooden mallet to drive it into the ground and a small wireless set will entertain quite a very large circle of holiday makers.

In reception of this nature where rapid changes of location are necessary a few refinements should be made to the aerial and earth equipment. Tie an insulator into the centre of a fairly long piece of cord, pass the insulated wire through insulator and secure it by a convenient knot to the aerial itself. This may now be suspended from any convenient tree or other support. The particular merit of this device is that the end of the aerial can be quickly attached to any convenient point, while the same end of the aerial is well insulated from the object to which it is attached.

The fact that the wire is insulated does not always dispense with the use of insulators. The insulation of the aerial wire, while excellent, is thin, as if this wire is bound round, for example, a metal post considerable leakage of wireless current can occur from the wire to the post. The insulation here acts as a dielectric of a quite large condenser.

Aerials may be slung from tree to tree, and a lead-in provided, or one end may be hoisted in the air and the other direct to the set. The aerial may be slung over a convenient support, and although both ends may be resting on the ground provided they are insulated from it good results will accrue.

A wire fence makes another very good aerial, for in very few cases are the wires earthed. It is advisable, however, in cases where either this or any other large object is used as antenna to connect a variable condenser of small capacity between the aerial terminal of the portable set and the aerial. This can then be adjusted so that the best results may be obtained. Such a condenser built into a box is an essential to any complete portable outfit. The body work of a motor can be brought into commission and makes a really useful aerial. It is wise, further, when using a motor-car in this manner to keep the set either well away from it or place the set so that the car is not between it and the station that is to be received. This shielding effect of a motor explains why a portable set may not work when inside.

A motor may be used for another useful purpose when holiday making with a portable receiver. The American cars are provided with 6-volt batteries for the lighting and ignition system, and by plugging into the nearest socket power may be taken off for the A battery, which is the greatest bugbear of portable receiver design.

OBTAINING an earth occasions very little difficulty, but to obtain a good earth requires a little thought and preparation. An earth tube driven into the ground is excellent, but to drive some of these into hard soil and pull them up again often militates

against the enjoyment of an itinerant picnic party. A nail driven into a living tree so that it connects with the sap makes an excellent connection with the ground, while a copper or metallic mat thrown into a stream makes a both convenient and ideal earth. Two water-pipes driven into the ground at some distance from one another may be used for aerial and earth. This is possible because the ground potential at different points varies.

Earth mats (large sheets of copper and bronze gauze or netting) were largely used during the Great War. When these are unrolled on the ground they can be used as counterpoises, and will often give much better earth effect than a varied plate, particularly if the latter is small. An earth mat may be a mattress spring, can be rolled up and tucked into the back of a car, and one should certainly be obtained if any serious effort at outdoor reception is contemplated.

WHEN a wireless set is designed the enthusiasm immediately thinks of screen grid and pentode valves. With the enormous amplification factor that these possess, it would appear that these are the perfect valve for portable receivers, but there are one or two points to consider. Both valves require high voltage to operate them successfully, and the screen grid requires very complete shielding. The pentode does not operate successfully, if supplied with low voltage, and even when adequate voltage is forthcoming, then a very large current drain results. The object of portable receivers is to keep both these to a minimum, so that we consider it unwise unless adequate battery power can be provided to incorporate these valves in the summer set, at least in the smaller set. The total current drain for economical use should not be greater than ten milliamps.

The power valve should be biased so that it will accommodate a fairly wide grid swing, although it need not be efficient as the power valve in the radio receiver used for home use. Good reception is required, but that supplied by a sensitive speaker is to be preferred to good quality and a lower volume level supplied from a good cone, for this reason, a horn speaker is better than a cone for outdoor reception. Microphonic trouble often arises. A ringing will start in the speaker, and gradually build up until the noise is unbearable, and the set has to be shut off. Most detector valves are microphonic to some extent, but this is not noticed in the home where good conditions may be secured. When, however, the set is frequently moved or the surrounding objects moved, the trouble frequently becomes acute. A good preventive is to cover the valve with plasticine, which, although effective, is unsightly. The screen grid valve occasionally causes trouble in this manner, but nothing so usual as the detector. The use of the detector makes these precautions unnecessary.

The unforgivable sin—allowing the set to fall through flat batteries—should never be committed. There is no excuse for it, although it causes probably more disappointment than any other factor. No matter how well a set may be going the day or the night before, put the voltmeter across all batteries before setting off, and replace any that are at all suspiciously low. For "A" current, the use of dry cells is usually resorted to, but an accumulator is preferable, and should be used

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