Our Crystal Corner

By "Galena"

IF your reception is interrupted intermittently according to the position of your head or the position of the telephones, it is a sign that one of the leads is faulty and needs replacing.

An excellent test for sensitivity is to place the telephones over the ears in the ordinary way, put one of the tags between the lips and rub the other tag with a key, nail, or other piece of metal; if a rubbing noise is heard corresponding with the movement of the key you can be sure that the 'phones in question are sensitive.

As telephones are among the most sensitive instruments known to science that are in common use, we should always treat them carefully.

When telephones are not left connected permanently to the set, but are stowed away in a cupboard, make sure that they are kept in a dry place, as dampness will in time affect them.

If the telephones are incorrectly connected to the 'phone terminals in a valve set, it is only a question of time before they become demagnetised, owing to the plate current flowing through them in the wrong direction.

It is easy to damage telephones by dropping them for—apart from the effect upon the magnetism—their sensitivity depends upon the exact shape and position of the diaphragm. If a telephone diaphragm is discovered to be rusty, it can after careful removal be cleaned and slightly smeared with petroleum jelly before being replaced, in order to keep it in good condition. If, for any reason, the telephone diaphragm is taken from off the earpiece be very careful not to bend or damage it in any way. When replacing a diaphragm over a telephone earpiece, do not place the diaphragm straight down over the earpiece, so that the magnet exerts a pull upon it, but slide the diaphragm sideways over the rim of the earpiece so that it will not be bent or pulled.

Make allowance for use with the telephones, as very much enjoyment may be had by other members of the family when they can pick up the phones and listen when and where they like.

How the 'Phones Work.

THOSE who have unscrewed the ear cap of the telephones have seen a coil of fine wire wound around an iron stud. The latter is the pole of a permanent magnet. A permanent magnet will always exert a pull upon certain objects such as the metal of which the diaphragm of the telephones is constructed.

A coil of wire wound round such a magnet and carrying a current of electricity will influence the intensity of the pull of this magnet. The wireless waves are really variations in voltage impulses, and these variations make themselves felt in the wire surrounding the magnet, which in turn passes the voltage impulses on to the diaphragm, as it is either attracted or repelled according to the intensity of the signal passed. This fluctuation of current then causes a similar fluctuation of the telephone diaphragm which causes a variation in the air, and this variation is caught up by the ear and so the sounds are heard.

Galena Crystals.

GALENA, of which many of the detectors in crystal sets are made, is a natural sulphide of lead, crystallising in both cubic and octahedral crystals. In the massive form it occurs widely distributed throughout the world as primary metallic veins in limestone, or as irregular deposits. Almost all natural galena is radio-sensitive to a certain degree.

Hard specimens of this mineral are generally more sensitive than softer ones, and those with a slightly striated surface will be found remarkably so. The most sensitive spots are to be found at the very angles of cubic crystals or clearages or on minute octahedral clearage planes. The best results are obtained by connecting the crystal itself to the "ground" side of the circuit and the cat's whisker to the aerial side.

The Full-Wave Variometer Set.

"X.Y.Z." (Mahanga Bay) who has constructed the full-wave crystal set, writes:—"My results are decidedly poor, and by no means as good as what I am getting on my present set with one permanent detector. I have tested both carborundums and cannot detect the least difference in either. The aerial directional to 2YA is 200ft., and the earth two copper plates. In tuning, the rotor can be placed anywhere with little alteration in volume. What amount of wire should be on the stators with my long aerial?"

A.: It appears that more wire could be added to the rotor or the stator, for there is no doubt that the fields created by both the coils are not strong enough to sufficiently influence one another. Increase the coupling between the aerial and the stator.

Details of a Tapped Coil.

"S.H." (Dunedin) asks for details of a I tapped basket coil consisting of 60 turns. He has already one of 38 turns, and can tune in the local stations with very good results.

A.: As the inductance of the basket type of coil is very high, there is no advantage in exceeding 50 turns. Proceed in the same way as described in the "Radio Record" of December 14, 1928, and tap every 10 turns, that is, clear away the insulation, and solder a piece of heavy wire, say 18 guage, at this point. Shellac the joint or wrap insulation tape round it. Each of the tappings can be in turn connected to the aerial, while the condenser is connected in parellel across the whole length of coil. By this means, a great tuning range can be covered.

The correspondent has asked for a diagram, but if he constructs the basket coil according to instructions, he should have no difficulty. If trouble is experienced in connecting the different tappings of their respective destinations, he should refer to the description of the "R.R. Selective Crystal Set" described by "Megohm" some time ago. By substituting the basket coil for the plain solenoid coil, everything should be made clear.

The Speaker for a Crystal Set.

WHEN a one or a two-valve amplifier has been added to a crystal set, care should be exercised in selecting the speaker that will give the best results. It is indeed rare that a very great output has to be handled, so that capacity to handle volume is unnecessary: in fact, it is a distinct disadvantage. A small sensitive speaker, preferably of the cone type, gives greatest satisfaction.

Success of Double Grid Valve and Full-wave Crystal Set.

I HAVE made up a crystal set using pentodes system of dual tuning and "Galenas" double-grid valve for the amplifier described in article (crystal set and amplifier to work off 22½ volts. The volume was wonderful for a crystal set. When made it developed a whistle, and was very rough, but that was cured by shielding coils and putting .001 condenser across primary of transformer; the performance was equal to a two-valve set. I received 1YA, 2YA, 3YA, 2FC, 2BL, LZQ, 1ZB, 3AR, 3LO, on a 175ft. antena.—C. F. Mickle, (Auckland).

Radio in England

Model for Other Countries

REPRESENTATIVES from many countries in Europe—members of the Union Internationale de Radiophonie, the wireless parliament started 3½ years ago at the instigation of the B.B.C. to discuss broadcasting in all its aspects—have been in England studying the production methods of the B.B.C., and comparing them with those of their own country, says the "Daily Mail."

The side of the British work at which they have looked most closely is the dramatic and art side, and most of all the wonderful control board for dramatic productions. In this control board as many as seven independent studios may be linked up on one production.

Seated in control the producer warns each studio by a flickering light when it must come in, brings in perhaps a band to accompany the actors in another studio, starts the effects room and tunes all three so that the listener hears each in due proportion; then, a sudden quick movement, and all three are "faded out" to bring in another studio. This control board is considered to have no equal in the world.

Later in the year it is expected that a commission from Canada will arrive to study British methods. An official of the B.B.C., who was in Canada during the summer, said:—

"The whole broadcasting scheme of Canada is to be overhauled. It is not successful at the moment, and they will probably adopt a mixture between the English and American styles; that is, allow advertising for revenue purposes, but also have the tax on licenses as in England."

HUGO GERNSBACK, editor of the New York "Radio News," says: "So far, large radio manufacturers have turned out no radio set which can be sold to the public, capable of being tuned as readily on the short waves as it can be on the high waves. But it is safe to say that most of the large manufacturers are keeping a weather eye on the short-wave situation, and, if one or more break the ice and a good set that makes tuning on the short waves easy is developed, we will have another silent revolution in radio."

TRUE to type, Viennese listeners have decided that symphony is preferable to sport—at all events to those who from choice or necessity must spend their Sunday afternoons at home. Recently tests were made with a view to relaying commentaries from a well-known winter-sports centre in Austria. The idea of following these tests up by actual transmission was, however, dropped on representations being made that the minority who would be definitely interested would themselves probably be on skis or skates far from their receiving sets.

THE old proverb, that there is no telling where lightning will strike next, lost something of its application with the discovery of the lightning rod. It has been further limited by the discovery, according to a correspondent of "Wireless Age" (London), that French tests have shown that limestone soils are less visited than rocky or mineralised areas. This is attributed to the fact that the air over the latter is more highly ionised; and this may also have its effect on vagaries of radio reception at different locations.