



CONCERNING THE MARCONIPHONE

*Instruction Book for
Two Valve Model*

The MARCONIPHONE Long Range V.2

INTRODUCTION

THE object of this book is to explain in simple terms how to connect up and make the necessary adjustments to your Marconiphone, so that you will be able to handle the instrument with confidence, and so gain the greatest possible enjoyment from this wonderful invention.

The directions have been prefaced with a brief outline of the general principles of Broadcasting in order to assist the uninitiated to a clearer understanding of their Wireless Receiver.

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BROADCASTING EXPLAINED.

WHEN we speak to one another we set up vibrations in the air which differ according to the sounds we utter, and it is when these air vibrations strike against the sensitive membrane called the ear drum, that we hear what is said to us. These air waves that are set in motion by the human voice or by a musical instrument die out very quickly.

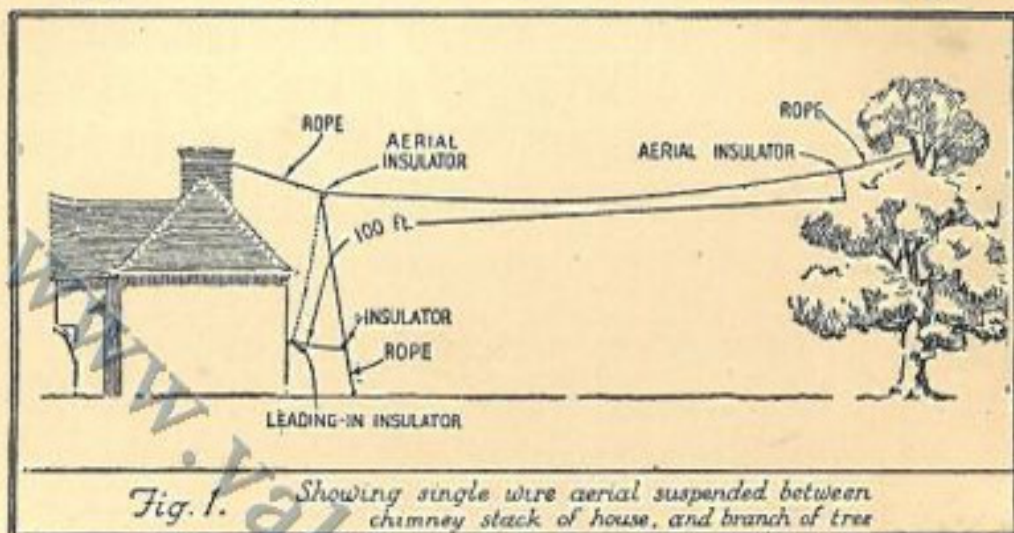
It was, however, discovered just over a quarter of a century ago that it was possible to set up *electrical* vibrations which travelled outwards for a vast distance through space at the speed of light, and that trees and buildings, mountains, and the great spaces of the ocean did not seem to interfere very much with the passage of these electrical waves.

It is this fact that is made use of in wireless broadcasting.

The vibrations in the air caused by the voice or by musical instruments at the broadcasting centre are made to modulate the electrical waves that are being broadcasted. These modulated waves travel outwards at a speed of 186,000 miles per second, and can be caught and converted back into speech or music by anyone possessing the necessary receiving apparatus.

A wire or wires suspended in the air catch the passing waves and bring them to your receiving apparatus. These wires are called Aerials.

A typical single wire aerial is shown in Fig. 1.



The receiver converts the electrical waves back into sounds, which you can listen to either with head telephones or by means of a loud speaking equipment.

To complete the installation a path must be provided for the electricity to run away after it has left the receiver. This is called an "earth." *(The erection of an "aerial" and the arrangement of an "earth" are fully dealt with in a special pamphlet which can be obtained on application.)*

THE THERMIONIC VALVE.

TO understand fully the working of these valves demands considerable technical knowledge, but all that it is really necessary to know is that by means

of batteries connected to the receiver an electric current is made to flow through the valve.

The infinitely small modulations coming from the distant broadcasting station cause identical but greatly magnified modulations in this current, and it is these magnified modulations that produce the sounds in the head telephones.

THE INSTALLATION.

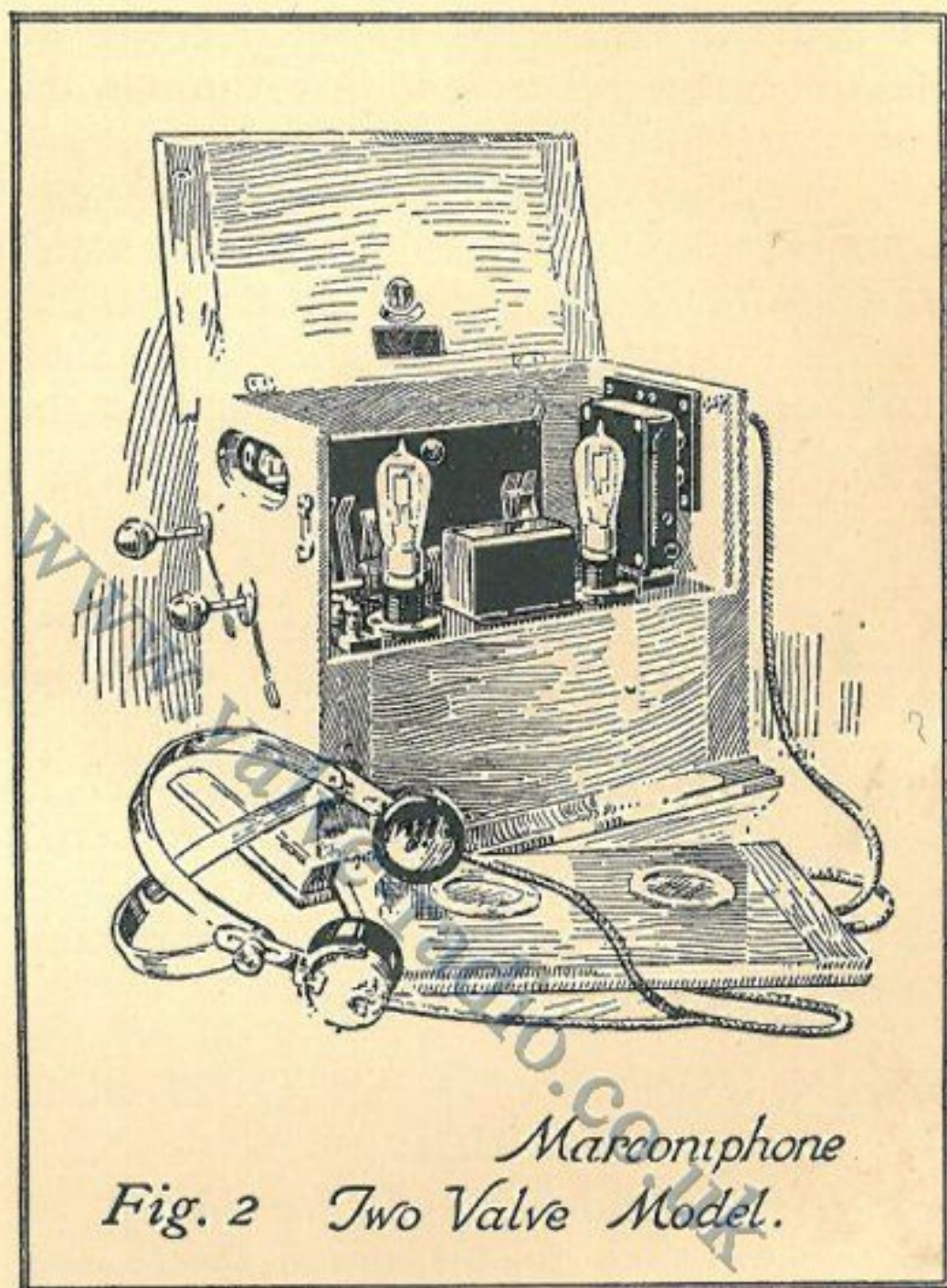
HAVING obtained the necessary licence you can proceed with the task of installation.

The Marconiphone two valve model is intended for use with an outdoor aerial when maximum range is desired, but at short distances it may be used with any convenient, efficient indoor aerial.

WHEN USED WITH AN OUTDOOR AERIAL.

The Marconiphone should be placed as near as possible to the point where the down-lead enters the building through the leading-in insulator, at the same time allowing for the attachment of whatever earth connection has been chosen.

Having decided on this place take a look at the instrument with a view to connecting up.



CONNECTING UP.

NO Wireless Receiver can work properly unless all connections are made correctly and are clean and firm. You will find that all the connections required in the case of a Marconiphone

are made with plugs and sockets, which are non-interchangeable, so that it is impossible to go wrong. If the plugs do not fit firmly in their sockets, open the slits a little with a knife.

A diagram of the instrument is shown in Fig. 3.

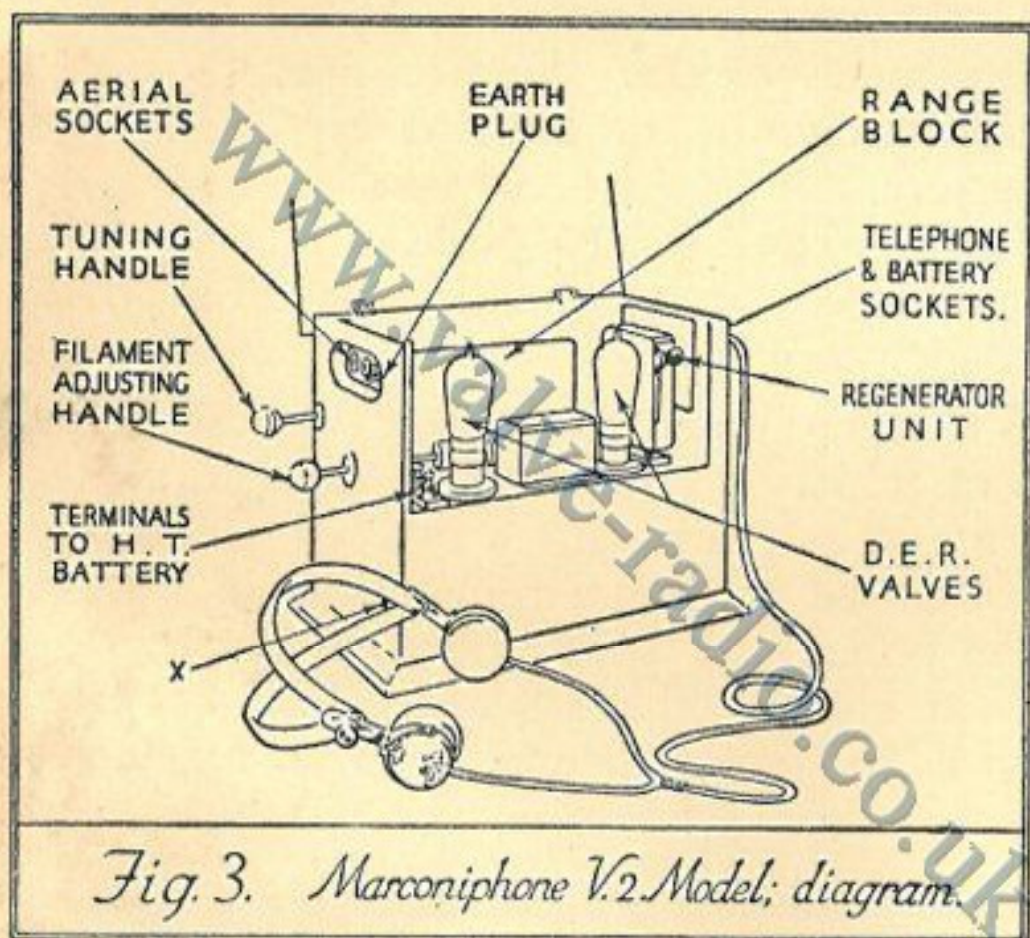


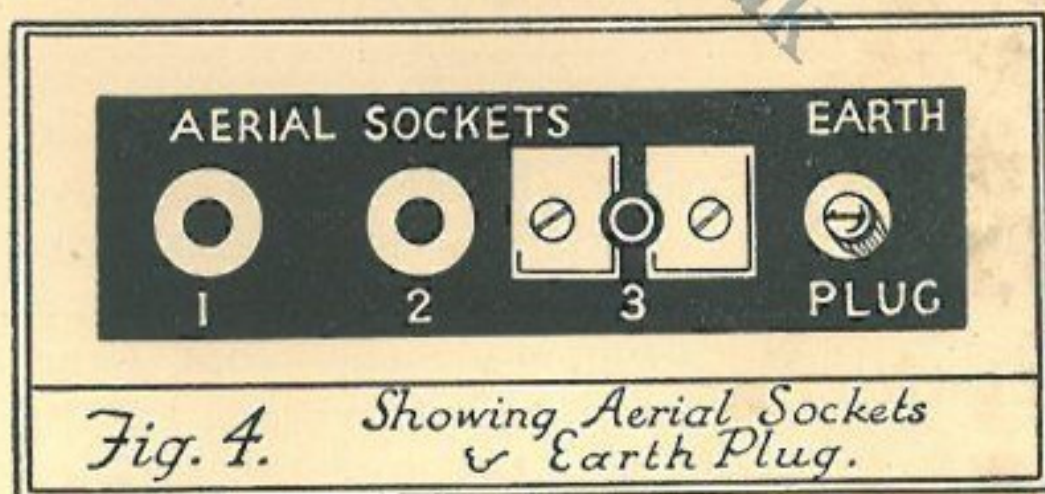
Fig. 3. Marconiphone V.2 Model; diagram.

The first thing to be done is to fit into its place the high tension battery that is supplied with the Marconiphone. To do this withdraw the screws on each side of the cabinet (marked X in Fig. 3). The front panel can then be removed and the battery inserted. Now push the wires up through

the slit in the left-hand end of the deck and connect their bared ends to the terminals marked H.T.

When connecting up new batteries you will find that the ends of the wires are always covered with rubber. The reason for this is that it is most important not to let the two wires touch or be connected by any metal object. Such contact is called a short circuit, and is extremely bad for the battery. It is just as well, therefore, to put the battery into place, and then strip one wire at a time and connect it to its proper terminal.

Whatever type of battery is used, the lead which is connected to the end of the battery marked with a red + should be connected to the terminal marked + and the other lead to the terminal marked -. Next connect the downlead and the earth wire to the instrument. The former is fitted with a plug, which should be inserted



in one of the aerial sockets (see Fig. 4) as follows:—

Into No. 1 if the total length of wire in the aerial is between 100 and 60 feet.

Into No. 2 if the total length of wire in the aerial is between 60 and 25 feet.

Into No. 3 if it is less than 25 feet.

These figures are given only as a general guide; you will find by experiment which socket gives the best results for your aerial.

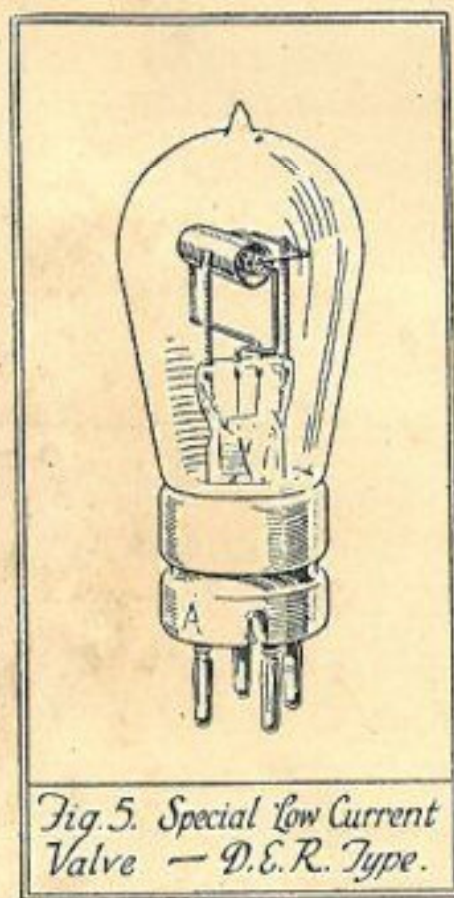
Next push the socket at the end of the earth wire on to the plug marked "earth."

Connect up the Low Tension Battery, or Accumulator, by inserting the three-pin plug attached to the accumulator lead into

the Battery socket marked L.T., but before doing so make sure that the filament adjusting handle is pushed right home.

Carefully unpack the two valves supplied with the Marconiphone, and insert them in the valve holders inside the instrument.

The pins are so arranged that it is impossible to insert them wrongly. The letter "A" on the



metal base of the valve should coincide with a similar "A" on the socket. There is no need to use any force in inserting the valves.

Next, the head telephones should be plugged into the sockets marked "telephones." If only one pair is used, its plug should be fitted horizontally into the lower pair of sockets, if two are used the plugs should be inserted vertically, side by side (see Fig. 6).

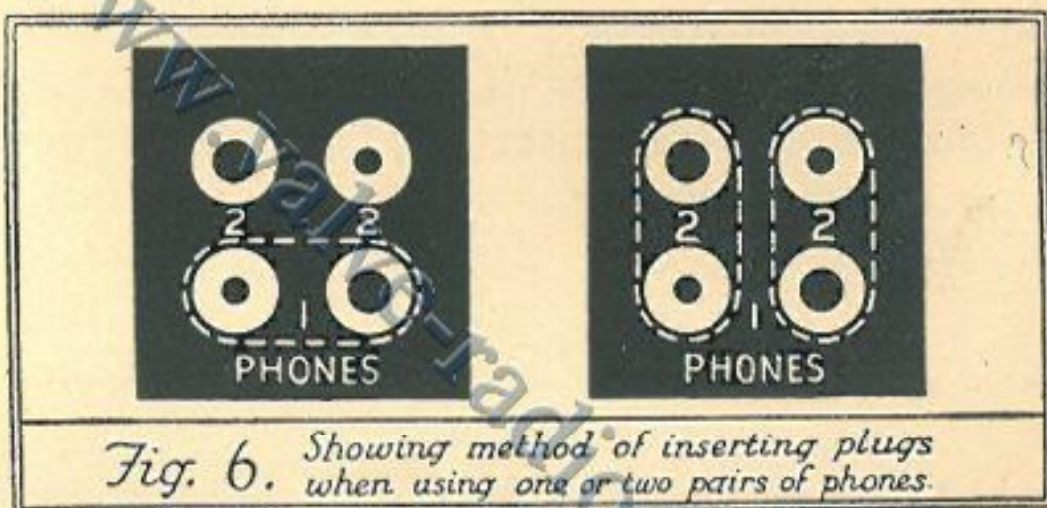
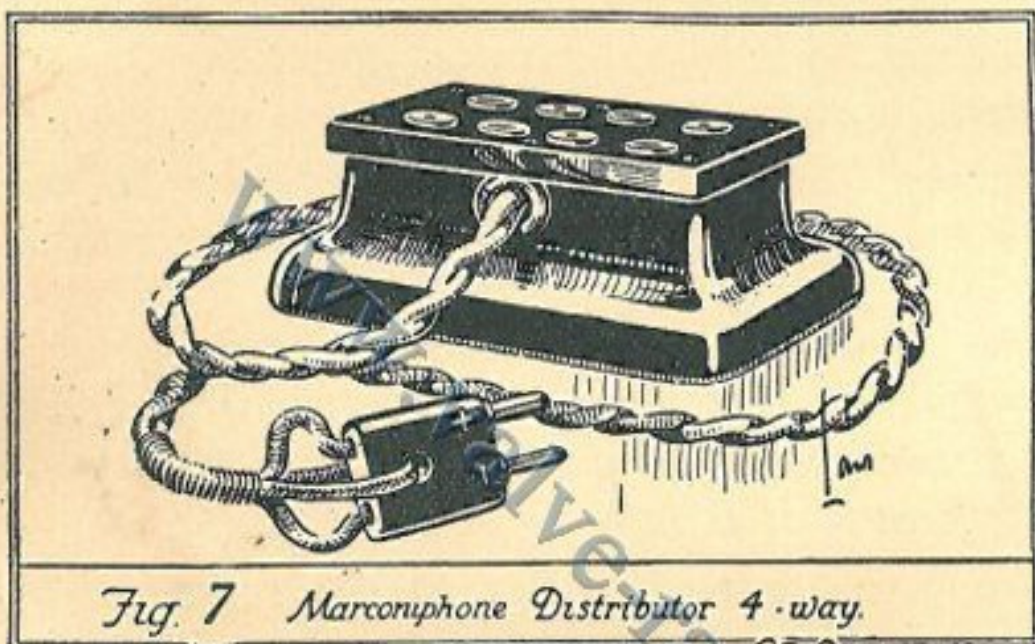


Fig. 6. Showing method of inserting plugs when using one or two pairs of phones.

TO USE SEVERAL PAIRS OF TELEPHONES.

If you want to use more than two pairs of telephones you must obtain a distributor, by means of which one pair of telephones can be replaced by several (see Fig. 7). The distributor must be plugged into the socket marked "telephones" just as if it were a pair of telephones, and the number of telephones you wish to use can then be plugged into the sockets in the distributor.

If, on the other hand, you prefer to receive broadcasting by means of a loud speaker, all you have to do is to plug the lead from the amplifier into the socket marked "telephones" as if it were a single pair of telephones.



ADJUSTMENTS.

THE necessary adjustments are very simple and few in number. First of all see that the range block at the back of the instrument is pressed well down, and that the four prongs of the clip are in contact with the metal studs on the range block.

Now pull out the filament adjusting handle until the valves light up.

The correct setting for the filament handle will differ according to whether a dry battery or accumulator is being used.

A rough guide for suitable settings of the filament handle for different batteries is as follows :—

When using a 2-volt accumulator the filament handle should be pulled right out. With a dry battery the filament handle should be about half-way out when new, but as the battery gradually runs down through use, the filament handle should be drawn proportionately further out so as to maintain the same brilliancy in the valve.

TUNING.

IT will be found that the most accurate tuning can be obtained by using head telephones, even if it is intended to use a loud speaker.

First see that the lever of the regenerator unit is depressed about two-thirds of the way down. Pull out both the tuning rods slowly and simultaneously until a howling sound is heard in the telephones; if this howling is not heard, press the lever of the regenerative unit down still further. As soon as the howling sound occurs raise the lever of the regenerator unit slowly until the howling ceases, when Broadcasting will be heard.

Now adjust both tuning rods separately until the clearest reception is obtained.

If the results are too loud or somewhat distorted, slightly raise the lever of the

regenerator unit until clearer and more perfect reproduction is obtained, when further minute adjustments of the two tuning handles will give the maximum quality of reception attainable.

Once you have identified a broadcasting station, make a note of the position of the tuning rods (by means of the graduation marks engraved upon them) and also of the regenerator unit lever; this will enable you to tune in this station immediately on future occasions.

After each alteration of the regenerator unit lever the tuning handles will require a further slight adjustment.

MICROMETER ADJUSTER.

IN order to facilitate the making of very minute adjustments of the tuning rods, and thus take full advantage of the high selectivity of the Marconiphone V.2, a micrometer tuning device for this instrument can be supplied as an accessory. (See page 16).

WAVELENGTHS EXPLAINED.

THE word means simply the distance between the crests of successive electrical waves radiating from the transmitting centre. It is usually measured in metres.

Now a receiver will respond only to one wavelength at a time and that is the wave-

length to which it is tuned at the moment. Therefore you can listen only to those stations which are transmitting on the wavelength to which your receiver is tuned, or on one very near it in length.

When several broadcasting stations are transmitting, the whole of space (or the ether) is vibrating with electric waves of different length, and by means of the tuning apparatus you can move through them and hear what is going on on each particular wavelength.

The range blocks supplied with your Marconiphone enable you to receive only on the broadcasting band of wavelengths, *i.e.*, 300-500 metres, but by means of alternative range blocks and regenerator units (*listed on page 16*), which you can obtain and interchange with those supplied, you can also listen-in on any band of wavelength up to 3,000 metres.

As the wavelength for the same broadcasting centre is always practically the same, the approximate adjustments for each individual station should be noted so as to facilitate quick and correct tuning on subsequent occasions.

CARE OF THE INSTRUMENT.

NOT even the most perfect machine will work efficiently without a certain amount of care and attention.

It should be remembered that an accumulator will need charging at periodical intervals, dependent on the amount it is used. The accumulator supplied with the Marconiphone should last for approximately 40 hours use, but it is wise to have it recharged before this point is reached, as the use of an undercharged accumulator is detrimental not only to the valves but also to the accumulator itself.

The life of an accumulator charged for the first time will be somewhat shorter than in the case of subsequent charges.

If a dry battery is used in place of an accumulator this must be replaced by a new one when run down, as it cannot be recharged.

The High Tension Battery for the valves, which is fitted into the base of the instrument, will last for several months at least. When this battery needs renewal you will find that when listening to broadcasting from a familiar station the sounds will be loud for a few seconds and will then fade away in the course of several minutes to a uniform weakness, and clicking noises will be heard even when the aerial and earth leads are disconnected.

If this happens and the valves remain brightly lit, it is the H.T. battery that is at fault.

These batteries, when they have once

run down, cannot be recharged; they are quite worthless and must be replaced.

Do not allow any metal object to connect the terminals of any battery or accumulator directly together.

CARE OF VALVES.

The valves supplied with the Marconiphone are delicate in structure, and you should remember that although they are as strong as it is possible to make such apparatus, a bad knock or jar may easily damage them internally.

These valves are Marconi valves which are acknowledged to be the most perfect and efficient valves obtainable both as regards performance and length of life.

Never let them glow more brightly than is necessary for best results, or duller than the particular brightness which gives the strongest signals. You will in this way considerably prolong their working life and maintain their efficiency at its maximum.

If the batteries and battery leads are in order and a valve does not light, it is obviously defective, but it sometimes happens that a valve goes "dud" and still lights up. If this should happen the reception will probably be completely interrupted or will at any rate be extremely weak and poor, and it will, of course, be necessary to replace this valve.

HEAD TELEPHONES.

These, too, must be handled carefully. They depend for their proper working on little magnets inside the earpieces, and blows and jarring will soon impair the efficiency of these magnets.

RANGE BLOCKS.

If you keep the spare range blocks in the clips provided, you should take it out while you are using the instrument.

MARCONIPHONE SERVICE.

IT is desirable that only Marconiphone spares should be used with the Marconiphone. If you are in any doubt or difficulty with regard to your installation, write to the nearest Marconiphone dealer, or if you do not know his address, apply direct to Marconi House, Strand, London, W.C.2 or the nearest Branch Office.

RANGE BLOCKS. REGENERATOR UNITS.
for use with the Marconiphone V.2.

Price 10/- each.

Price 15/- each.

	metres.		metres.
B620	- 185-250	B650	- 185-250
*B621	- 300-390	*B651	- 300-500
*B622	- 390-530	B652	- 450-800
B623	- 400-600	B653	- 800-1300
B624	- 600-800	B654	- 1300-2100
B625	- 800-1000	B655	- 2100-3200
B626	- 1000-1300		
B627	- 1300-1700		
B628	- 1700-2100		
B629	- 2100-2600		
B630	- 2600-3200		

*These are supplied with instrument as standard.

B117 Micrometer Tuning Device. (An attachment which can easily be made and permits of very fine adjustment of the tuning rods) each 2s.