

# The "Colvern" Centre-tapped Crystal Receiver

## A Set That Will Suit Everyone

(By Megohm)

**T**HE ever-popular crystal is always acceptable to a large section of the listening public, and even valve-set owners find that they can get a pleasant change by listening in with a crystal whilst the local station is on the air. The owner of a not very efficient valve set, listening to crystal reproduction, is struck by the fine quality generally, and the faithful reproduction of bass notes, however low in the scale—many notes that are suppressed in the average valve set.

This set can be made in a small and handy size not exceeding 6 by 7 inches, and may be used with a minimum of trouble if a carborundum permanent crystal is employed as the rectifier of signals. For distant reception some constructors will prefer to use a cat's-whisker-galena detector. In such a case the detector should be placed outside the front panel for ease of manipulation.

### AERIAL DISPENSED (WITH).

**I**N or near the main centres, listeners with electric light in the house may use the lighting mains instead of an aerial of any kind. This is done by purchasing a "Ducon" or "Antenna" connection made for the purpose. This is quite a small piece of apparatus that may be obtained at the dealers, and no objection to its use is made by the authorities. It must be clearly understood that no electric current whatever is consumed, as the construction will not let any pass through. But by means of suitable condensers there is a path for the high-frequency aerial current picked up by the overhead lighting wires. A two-way lamp-holder can be purchased for about 5s. 6d., enabling the attachment to be used without interfering with the use of the lamp. One terminal of the Ducon connects to the aerial terminal of set, and the other to the earth terminal, a piece of twin plex being used, though in the case of weak signals an improvement might be made by untwisting the two wires to allow them to separate. The Ducon is tried both ways round in the socket to determine which position gives the best reception. An advantage of this system is that the receiver can be used in any room with a minimum of trouble, a convenience for those who retire early and like listening-in whilst in bed. The receiver may of course be attached to an aerial and earth in the usual way.

**A** NEAT appearance is given to the coil by making it upon one of the handy "Colvern" formers that can be purchased. These coils, obtainable in two sizes, are

more often used in valve sets, but serve well for this receiver as shown, though any other kind of former may be used. The small size of Colvern former is 2½ in. in diameter, and gives a winding space of 2½ inches. Upon this are wound 52 turns of 22's s.w.g. double cotton-covered wire, and when the 26th turn is reached a tap is soldered on, passed through a hole drilled in the former, twisted round pin No. 2, and soldered. In the view of wiring, a hole is drilled at K, the end of the wire passed through from outside, down through hole in lower end, and soldered to pin No. 4 after cleaning the

careful that the soldered joints are good, and not an insulated joint in which the wire is only held by rosin.

**T**O suit the varied purposes for which these coil formers can be used, six pins are provided, but only three will be used, Nos. 1, 2, and 4. A coil base into which the B coil plugs may be used for the sake of neatness, or the wires from the coil may be left sufficiently long to continue to their respective connections, 4 to earth, 'phones and moving (M) plates of condenser, 1 to aerial terminal and fixed (F) plates of condenser, and 2 to crystal. If the base is used, the three connections are soldered to the numbered tags as indicated. The base is secured to the baseboard by two brass screws an inch long, and not thicker than No. 5 (G and H).

### PANEL AND BASEBOARD.

**T**HE panel may be of 3-16 ebonite, and if it is desired to make the case as small as possible, should be determined as to size after purchasing the condenser and 3in. dial. The dial should be centrally placed on the panel in relation to the sides, and as most condensers occupy more space on one side than the other, this should be taken into account. Measure condenser space with the moving plates in an upright position to give the height of space for free working. When purchasing the condenser be careful to note that the dial fits the spindle, and that the figures read the correct way, clock-wise or anti-clock.

The total height of coil and base is 3½ inches.

The baseboard should be made of 3-8 in. rimu, strengthened by a couple of 1in. strips of the same material screwed underneath as shown. The back strip is made 3in. short at each end, to allow for the base sliding into its cabinet on strips secured to the sides. Three-ply makes a suitable cover, size according to dimensions of panel and baseboard. Shellac dissolved in methylated spirits and rubbed on with a cotton rag gives a good finish to the woodwork with very little labour, which is well repaid by the appearance.

### WIRING UP.

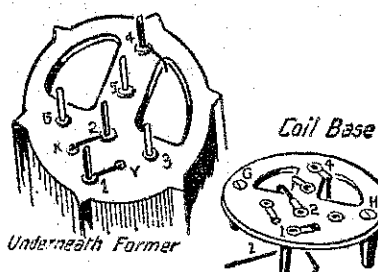
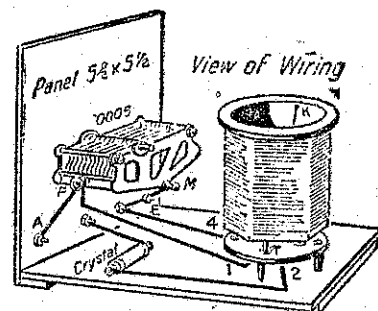
**T**HE wiring is clearly shown in the view of wiring. The 22's wire may be used. The leads running to respective sockets on coil base are numbered accordingly. The wire from No. 1 goes round fixed plate terminal of condenser, and without cutting, continues to aerial terminal. The wire from No. 4 goes similarly without cutting to 'phone, earth, terminal, and

moving plate terminal of condenser. Other end of crystal connects to remaining 'phone terminal.

Carefully clean wires at all points of connection with a small piece of glass-paper.

Resin-cored solder should be used for soldering coil connections. The cheapest soldering outfit for small work is a mouth blow-pipe, which can be purchased for about 1s., and the lid of a metal (Colgate) shaving-soap container. A piece of stiff wire can be put round this and the two ends twisted together to form a handle. Place a tuft of cotton-wool in the lid, soak with methylated spirits, and ignite. With the blowpipe in the mouth, the flame is directed upon the soldered

joint. If working on ebonite or bakelite, it must be protected from the flame by a piece of cardboard with a hole cut in through which the metal tag may be soldered to.



### AS A WAVE TRAP.

**T**HE receiver may be used as a wave-trap on a valve set by connecting aerial to A and E to aerial terminal of valve set. By means of a condenser the unwanted station is then tuned out. Great selectivity will be added to the receiver by its use. No connection is then required to the telephone terminals, but if the crystal is short-circuited by a piece of wire, the right-hand 'phone terminal then provides an alternative connection for the aerial, which might suit some locations better.

Any constructor desiring to listen-in to morse transmissions on 600 metres could do so by winding a separate former of the large size with 80 turns of 20's s.w.g. enamelled wire, tapping at the fortieth turn. The three connections to be made to the same numbered pins. All that is then required to change from broadcast to 600 metres would be to simply change the coils, as both sizes fit the same base.

### PARTS REQUIRED.

Variable condenser, .005 .....	12 0
Dial, 3in. ....	1 3
Colvern former and base ....	6 0
Carborundum fixed crystal ..	7 6
Ebonite panel (say) .....	3 0
22's s.w.g. d.c.c. wire .....	1 6
4 terminals (2 'phone) .....	1 6
Baseboard, screws, etc. ....	2 3
	<b>25 0</b>

**I**N many localities for some reason it is easier to receive wireless signals over longer distances north and south than when the direction is east and west.

**T**HE Hungarians are contemplating the erection of a station at Budapest with a power far greater than that of any of the British stations.

**I**N the ordinary plug-in coil, the inner end of the winding is connected to the plug of the coil, and its outer end to the socket.



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### QUERIES BY CORRESPONDENCE.

1. Every communication enclosing queries is to be addressed to "Megohm," Box 1032, Wellington, and must be accompanied by a stamped addressed envelope for reply by post, otherwise no reply.
2. Questions must be written so that a space is left in which the reply may be added.
3. Queries regarding articles that have appeared in this page will have first attention.
4. Owners of bought receivers and apparatus should communicate with the dealer or agent in case of trouble arising.

### OUR INFORMATION SERVICE.

**A**FTER nearly twelve months of this correspondence department, the writer has come to the conclusion that too much of his valuable time is wasted in replying to trivial questions or attempting to give advice where sufficient particulars have not been supplied. When the necessary details are not given it often means writing out several alternative methods of treatment to suit contingencies, and this takes time. The average owner of a factory-built set is not as a rule competent to undertake repairs and alterations, and in many cases they are only making more work for the radio doctor when he is called in.

### For Constructors.

The primary object of this service is to help constructors of receivers and apparatus that have been described in this page, and queries from such readers will always have careful attention. The writer wishes to make more time for experimental construction of apparatus that is constantly being inquired for, and strictness with trivial correspondence will help to secure this.

### Stamped Addressed Envelope.

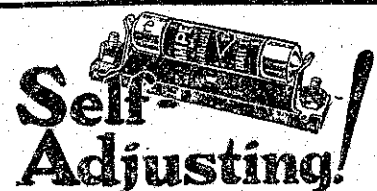
Every mail brings at least one or two queries in which the rule regarding the stamped addressed envelope is ignored. In most cases the missing stamp has been supplied and an envelope addressed, but in future non-inclusion will be looked upon as a good and valid excuse for consigning the letter to the waste-paper basket, so those who have

not read the paper since this rule appeared, or whose conscience does not allow them to provide stamps, will be left wondering when their reply is to arrive. One object of the stamped addressed envelope is the saving of time, which amounts to quite a lot in dealing with several dozen letters in a batch.

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