

IT may be taken for granted that d.x. enthusiasts will welcome any scheme that will strengthen the weak signals they are hunting. The idea of tuning the aerial itself to the frequency of the incoming wave is not new, but is more or less lost sight of because it is assumed that all the necessary tuning is provided for in the first stage of the receiver.

It is true that with the efficient multi-valve sets of to-day small losses or gains may be tolerated or neglected, but the owner of a small or medium-sized receiver and the d.x. who is stretching out after the faintest signals will be interested in the small and inexpensive unit here described.

Its use does not entail any alteration to the receiver, although the idea could be built into any set providing sufficient space was available. Not only will the device make faint signals more readable, but, acting as an additional tuned circuit, there is a considerable gain in selectivity.

Constructional Details.

IN its most convenient form the tuner consists of a .0005 variable condenser and solenoid, both in series and in series with the aerial. When placed in this way the solenoid has a much lower inductance than when tuned in parallel in the usual manner, and on that account about double the usual number of turns are required. In order to keep down the r.f. resistance, 22 d.c.c. wire was used, 100 turns on a 3in. former, occupying about 4 inches. Taps may be taken at 20 and 40 turns from the top, but are not essential; they can be used for low wave-lengths.

The aerial is connected to the top of the coil, and the bottom of the coil to the condenser stator. The rotor, which

is not earthed, connects to the aerial natural wave-length of 75 metres, and a terminal of the receiver.

A baseboard about 6½ by 4½ will take the solenoid standing upright behind the condenser, and for the panel ebonite or three-ply about 6 by 4½ should be used.

Method of Use.

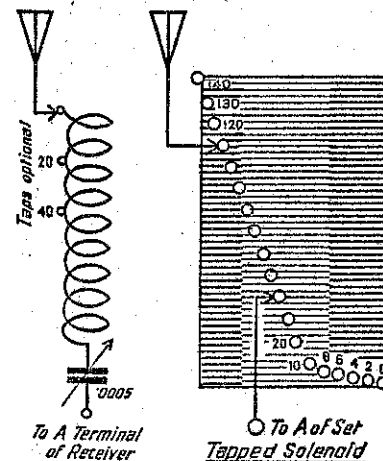
WHEN searching for a distant station pick up the carrier in the usual way, then bring the tuner into maximum position as nearly as can be judged, then tune receiver, finally adjusting the tuner if necessary. Then, by way of experiment, remove the tuner and see how the volume of signals is altered when the receiver is unaided.

Every aerial has its own natural or fundamental wave-length, at which the tuner would be of no assistance in reception, and on wave-length near to the natural little difference would be noted, but in actual broadcast reception the natural wave-length of the aerial is always much below any wave-lengths to be received.

The ordinary inverted "L" type aerial has a wave-length in metres approximately equal to 1½ times its length in feet, so that a 50-foot aerial has a

natural wave-length of 75 metres, and an 80-foot 120 metres.

Nothing in this article is intended to refer to the "Beverage" aerial, of which



Alternative Methods.

INSTEAD of the coil and condenser shown above, a variometer may be used, if one is on hand, though it would be more trouble to make than the solenoid. The one used for experiment had 40 turns on the stator and 36 turns on the rotor, 20 enamelled wire, outside (square) dimensions of stator 3¼ by 2 inches. A variometer gives less range than the previous method.

Another alternative, cheaper and just as effective, though slightly less convenient method, is a coil of 140 turns of 26 enamelled wire on a 2in. former, with a tap at every 10 turns. At one end a section of ten turns may be tapped every two turns to provide for fine tuning, so that any even number of turns may be used. Taps are taken in the usual way by cleaning the wire and twisting into a small loop. Two clips may be used to make contact with the taps, or they may be connected to sockets on a strip of ebonite, with two plugs to engage the sockets. One plug or clip is attached to the aerial, and the other to aerial terminal of the receiver.

All particulars given are to suit the average aerial of 70 to 80 feet. For longer dimensions a few extra turns may be required if coverage above 600 kilocycles (500 metres) is required. In practice, tuning is less critical on the higher wave-lengths, so there is little loss if the range of the tuner is a little short.

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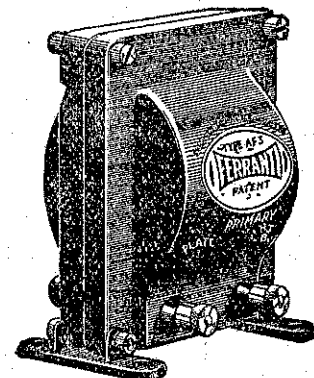
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