

AT THE SHORT-WAVER'S BENCH - 9

Summer Listening; A Special (3-valver) Set for Amateur Bands; An HF Unit for Short Waves; Conditions on Short Waves

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This is the second of three articles selected from Davey's 13-part series "At the Short-Waver's Bench", published in *Practical Wireless* almost every week from 20 April to 27 July 1935.

Summer Listening

Published in high summer, this article begins by cataloguing European short-wave broadcast stations heard at good strength when DX work was less rewarding.

A Special (3-valver) Set for Amateur Bands

Davey again recommends the 20-and 40-metre bands for their interest, and the three-valver in this article is designed for this range. No construction hints are offered.

Power supply

This is an all-battery set. A 2-volt accumulator powers the filaments. HT for each stage is taken from an appropriate voltage tapping on the HT battery with, as Davey suggests, care being taken in selecting that for the detector stage to ensure smooth reaction.

Coil

Although Davey specifies the tuning capacitor value, he leaves the reader to choose or make the coil by trial and error. Readers would have consulted published coil design tables if necessary.

RF stage

The aerial circuit is aperiodic (without a tuned circuit). It serves largely to isolate the aerial from the detector stage, allowing free use of reaction without fear of the set radiating.

Detector stage

Reaction is throttle-controlled, with the coupling capacitor from the RF stage as an additional selectivity control.

Output stage

Capacitive coupling carries the audio signal to the simple output stage driving headphones. The grid-bias battery +ve connection to ground has been omitted on the circuit diagram.

An HF Unit for Short Waves

This is designed as an "add-on" to a receiver having a detector-with-reaction first stage. The layout diagram indicates a solid foil-covered baseboard and front panel, with a metal screen to provide shielding between the unit and its host set.

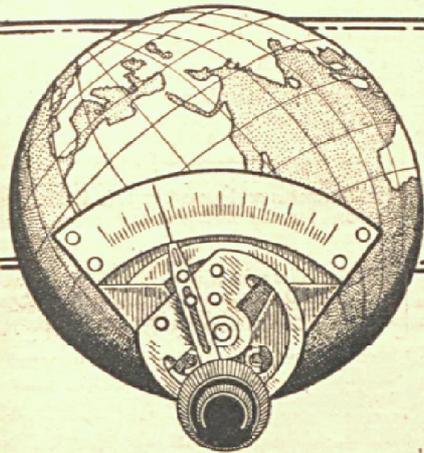
The unit is intended to be powered from the batteries supplying its host set.

It serves the same buffering purpose as the first stage of the three-valver, offering in addition some amplification thanks to its own tuned circuit. The coil would be chosen to cover the same band as that in the host receiver, and the two tuning capacitors would be operated roughly in step.

In the last line of text on page 431, for "present" read "pre-set". The adjustment of this aerial coupling capacitor is referred to in the text.

Conditions on Short Waves

The article ends with a note on the effect of the weather upon short-wave reception. Davey's advice that the novice should persevere if meeting little success at first still holds true.



SHORT WAVE SECTION

At the Short-waver's Bench—9

Summer-time Short-wave Work and an H.F. Unit are Dealt With in this Article

NOW that summer evenings are here, DX work is practically hopeless until about eleven o'clock at night. About the only American station that can be received before that time is W2XAD on 19.56 metres, although by one o'clock in the morning all the broadcasting and

can have been coming in extraordinarily well on the 20-metre band, and I consider that a set specifically designed to cover just this band and the 40-metre band would be particularly worth while.

The circuit shown in Figure 1 is adaptable for this purpose. The first valve is an H.F. pentode "buffer" stage, the advantages of which will need no further mention. This is coupled to the detector by a small condenser such as a neutralising condenser,

stage is decoupled and also given its own H.T. battery tapping. If this is adjusted carefully, reaction will be a delight to use. As the set is designed for headphone work, one resistance-coupled stage of L.F. is used to give a certain amount of L.F. amplification with a minimum of background noise. This set should prove ideal for the keen "fan," particularly if he is hopeful of one day owning his own transmitter.

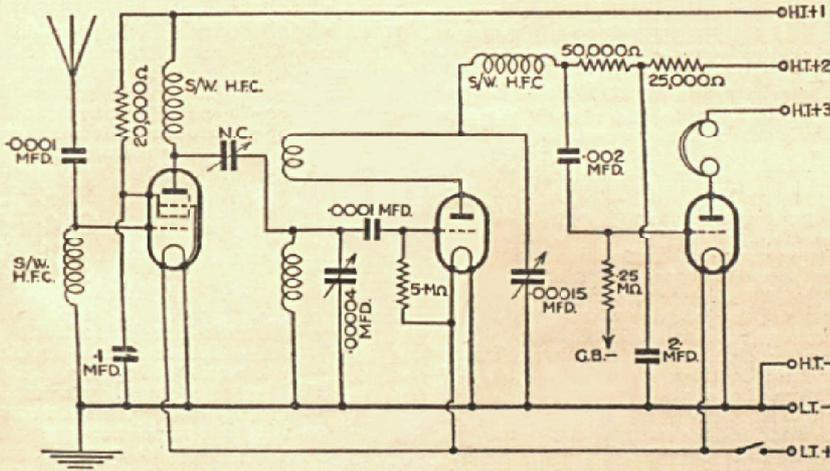


Fig. 1.—An adaptable set for the 20- or 40-metre waveband.

dozens of the amateur stations seem to come in at full loud-speaker strength. Because of the bad conditions generally, many amateurs give up short-wave listening altogether during the summer. This, I would suggest, is a mistake, mainly because of the excellent strength and good quality with which the Europeans can be tuned in at this time of the year. Rome, for instance, seems to improve in quality and continues as a first-class broadcaster during the summer. Recently Zeesen, Jelöy, Moscow, and Lisbon have also been heard, all giving programmes worth listening to, and of a volume and clarity worthy of a local station. Fading during the summer is less on these higher frequencies than on the broadcast band, static is less, and many announcements are made in English. For these reasons, therefore, the short-wave set should not be left idle, but should be used to provide programmes alternative to those of the locals during the summer, when broadcast-band foreigners are weak and scarce.

A Special Set for Amateur Bands

There is a special interest in listening on the amateur bands, for, apart from the "chatty" conversations heard, there is no knowing what distant voice will be tuned in next. Just recently the Ameri-

though one of the special components made for this purpose may be used, and mounted on the panel, if desired, as a selectivity control. The detector grid circuit is conventional, except that it is tuned by a .00004 variable condenser, which size is an ideal one for easy tuning over the whole of the two bands it is desired to cover. Coils must be chosen, or made by trial and error. To fulfil their purpose adequately, their sizes should be such that the 20-metre and 40-metre amateur bands should commence at, say, 20 degrees on the tuning dial, and finish at about 160. Reaction is "throttle-controlled," while the detector

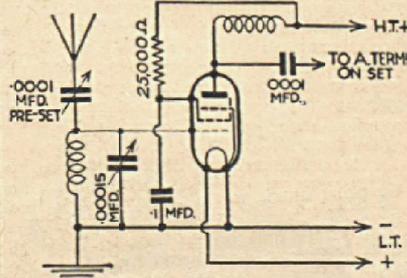


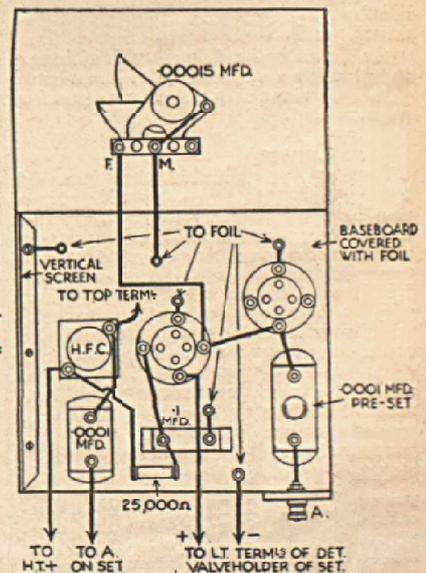
Fig. 2.—An H.F. unit for a short-waver. This employs an H.F. pentode and the diagram also shows the wiring for the unit.

An H.F. Unit for the Short-wavers

The "buffer" stage, as fitted to the set previously described, gives but little H.F. amplification, its main purpose being to isolate the aerial from the detector stage. If the grid circuit of the H.F. pentode is tuned, however, a very useful amount of pre-detector amplification may be obtained from it. Those readers whose sets do not incorporate an H.F. stage may care to make up the following H.F. unit to interpose between the aerial and the set. There is no need to worry about the additional tuning control, as this is very simple to use, the tuning being quite flat, as a result of which the condenser acts to a large extent as a volume control.

Details are given in Fig. 2, and the unit should be found easy to connect up and get working. It should be quite stable, but this is controlled to some extent by the aerial coupling. Normally, this should be as loose as possible, but if the unit proves unstable, the capacity of the present aerial

(Continued overleaf)



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condenser may be gradually increased until the loading of the aerial is sufficient to stabilise matters. It has been assumed that the unit will be used with the same H.T. and L.T. batteries as the original set.

If, however, one or other of these is not used, the unit being worked off its own battery or accumulator, a lead will be required to H.T., and also one to the earth terminal on the set. Both these should be joined to the vertical screen running down one side of the unit.

In using the unit, it will soon be found how the two dials "keep step." Tuning should be done principally on the set dial as before, the unit condenser being brought into tune afterwards in order to bring volume up to maximum.

Conditions on Short Waves

With reference to the remark recently made by "Thermion" regarding the improvement in "conditions" which he had noticed after a shower of rain. I also have frequently found this to be the case, and also have noticed that DX work is often excellent on a rainy or damp night. In particular, at my receiving location, the American stations always seem to come in well in such conditions. The varying conditions which are found on short waves are part of their charm, for it is due to these conditions that one never knows what is going to be received next. The novice, however, would be well advised not to pull his set to pieces if a huge "bag" of stations is not received first time of tuning in. It may be that conditions are bad at the time and that stations are not coming in well.