

"Night-owl Three"

(Continued from last week.)

Operating the Set.

WHEN the wiring has been completed and carefully checked, and the front panel screwed to the base by means of three screws, the receiver is ready for operation. Two, four or six volt valves may be used throughout with very little noticeable difference in efficiency. Six volt valves are, if anything, a trifle more sensitive than four or two. The detector valve should be one of medium impedance of the type A615, the first stage audio valve should be of the A609 type, and the last stage a type B609, or, if desired, a power valve of the type B605. Equivalents of these valves in many other makes are, of course, also available, and if the constructor does not know them, any dealer would be only too pleased to give him the required information.

If the valves are of suitable low consumption type, dry batteries may be employed for "A" supply in this receiver. If two volt valves are used, four dry cells in series—parallel will give excellent results, but a suitable resistance—for example, a 30 ohms rheostat—should be inserted in the "A+" lead to break the voltage down to that required by the valves.

To Safeguard Your Valves.

AS valves are rather expensive items, and as everyone occasionally makes mistakes in wiring—even the Tech. Ed.—we have provided for the inclusion of a fuse in this set. This is clearly shown in the baseboard layout diagram and is connected between "A—" and "B—". It consists of base and flashlamp bulb, both of which may be bought very cheaply. When buying the latter, though, be careful that you do not get hold of a torch bulb, for these take anything up to a $\frac{1}{4}$ and $\frac{1}{2}$ an amp, and your valves would go long before it would burn out. On the other hand, flashlamp bulbs have very delicate filaments and will stand very little current.

Before inserting the valves in their sockets, in the initial try-out it is always safer to conduct preliminary tests on the wiring with an ordinary torch bulb, or one of the old bright emitter type valves. If a torch bulb is used, twist a piece of wire around the base and stand the bulb on an earthed portion of the receiver. Then connect the "A" battery up and touch the wire in turn on the "F+" terminal of each valve base. In each case the bulb should light up, and if it does not, the mistake in the wiring should be traced down and rectified before proceeding further. If the filament wiring has been found to be O.K., connect the "B"

battery up and repeat the filament test with the bulb. This is to ensure that the "B" battery has not been accidentally placed across the filament. If the bulb lights up in the ordinary way, the valves may now be safely plugged in.

The speaker or headphones are now plugged in and the set switched on. This should produce a definite click in the speaker or phones and the set should sound live. If this does not occur it should be switched off instantly and the wiring carefully re-checked.

In adjusting the set for operation, proceed in this manner. Use the 80 metre coil—for there are usually plenty of amateurs on that band and they are easy to tune in—and rotate the reaction condenser until the set oscillates. You will recognise this condition by a plop in the phones. Now adjust the rheostat, tuning it as you would an extra dial until the plop becomes more of a hiss. You will find that there is one point in the setting where the set reacts best; find this point and leave it at that. Now adjust the "B" voltage on the detector, trying all the while to get rid entirely of the plop, and to turn it into a smooth hiss. Next adjust the potentiometer grid return and it will be found that there is a position where there is absolutely no plop and where the set oscillates smoothly.

Everything is now ready for trying out on the reception of stations. If difficulty has been found with oscillation, first look to the midget condenser and see that it is actually in the circuit. It is not a bad plan to bend slightly the upper moving vane so that it can be brought into contact with the fixed vanes when fully meshed and so the condenser can be cut out of the circuit at will. If this is done, make quite certain that it is in the circuit when first trying out the set. Failure in this respect will often cause the set not to oscillate.

When the set is oscillating smoothly rotate the tuning dial, at the same time operating the reaction dial so that the set is "breathing" all the while. It will be noticed that as the condenser is moved from minimum to maximum mesh, more reaction is needed. On hearing a whistle, operate both condensers until it can be cleared up and the station tuned in.

Remember that in tuning a shortwave receiver very little movement is necessary to bring in a station and to tune it out again.

(Concluded on page 30.)

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