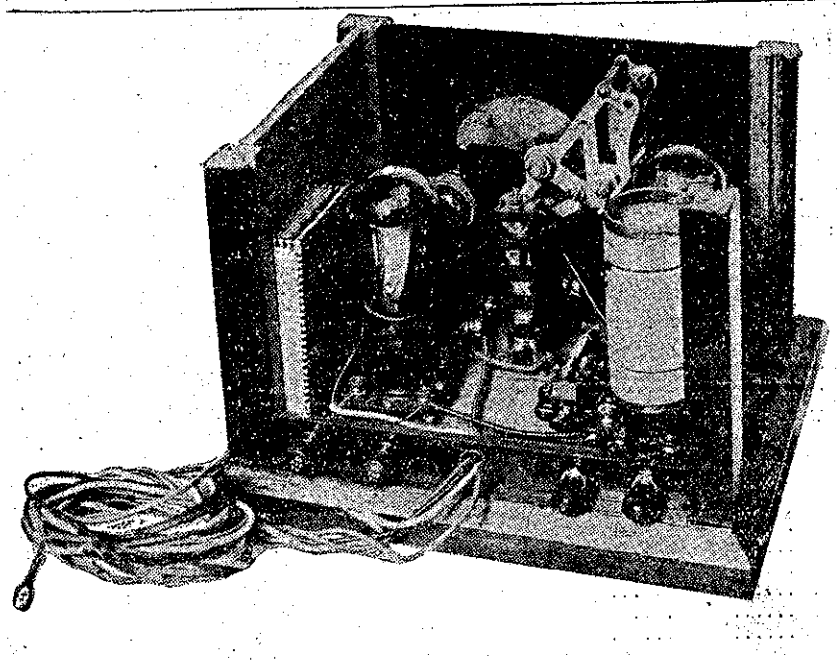
Friday, January 30, 1931.



The Best "Two" Yet

The "Night Hawk"

This is what we have called the complete two-valve di

By the TECHNICAL EDITOR

WELL, here we are with the Differential Receiver on one side, typewriter in front of us, and a pile of papers and diagrams on the other side. We hope to tell you in as short a space as possible how to make this wonderful little receiver. We are really very modest about it when we say it is a "wonderful little set," as we consider it by far the best two-valve set we have ever described. We have looked over quite a number of circuits and "picked the eyes out of them" so to speak, added a few ideas of our own, until we have a circuit which we feel fills a long-felt need.

In the first place it does not cost very much to build. For about £6 or so the constructor can be fitted up with everything except batteries and speaker. It is economical, requiring only 90 volts "B" battery and 4 volts "A." You could even use two volt batteries if you feel inclined.

It is compact, for the size of the whole set, as we have had it photographed, is not more than 8in. high by 10½in. long, by 8½in. wide, and that is including a very heavily built cabinet.

If you do not wish to build the cabinet or wish to incorporate some ideas of your own, the actual parts can be used upon a base board 8in. x 6in., and there is no crowding either. All the parts fit nicely into position and you can easily put the "C" battery inside your cabinet. We have done away with the big terminal strip, which is really expensive and more or less old-fashioned. A four wire cable runs direct to the points of battery supply in the set and four terminals connect with the aerial and earth and the 'phones or speaker.

A little while ago "Cathode" went to some length to explain the theoretical advantages of this type of reaction. We will not reiterate them here, but those who use differential after having used either swinging coil or ordinary condenser for some time will be amazed and delighted at the working of this new type of condenser. You must be careful, of course, not to make the set oscillate. When you hear it whistling immediately slacken reaction, as this whistling causes annoyance to your neighbours.

The Cabinet.

THE photograph of the complete set will give a good idea of the cabinet we have used in our laboratory model. The top and bottom is made of inch timber, 8½in. x 10½in., with a bevel cut along one edge. The uprights are 6in. long, and just under an inch square. The second photograph, that is the one looking down on the set, shows the novel idea we have used for the sides and panel. It will be seen that two grooves are cut into each, and into these slide the sides of three-ply. By this arrangement the wiring can be made accessible without any trouble. It is ever so much better to build a set like this than to build it into a box. At the back there is a strip of ebonite under an inch wide for the four terminals. The position of these can be quite easily seen in the photograph, and it will be noticed that there is a hole cut in the centre through which the four wire cable runs to the set.

If you do not want to make a cabinet, you will need a piece of ½in. timber 8in. x. 6in., and on to this the panel must be fastened by two screws, otherwise the lay-out is the same.

The Lay-out of the Panel.

SO much for the cabinet. Let us get to work on the actual construction of the set. First of all we need to get a kit of parts, which some firms are selling complete. We have given a list with all the separate parts enumerated The first task is to drill the panel and mount the components thereon. Our lay-out sketch shows very clearly where everything is to go. The tuning condenser, as will be seen is slightly at an angle, and is 2in. from the top, and in the dead centre. The differential condenser and the rheostat are each 4in. from the top, and 1½in. from the side. The switch is placed immediately under the tuning condenser, and about 1in. from the bottom.

When all the parts are in position mount the panel to the baseboard and lay out the rest of the components. The position of each will be seen very clearly from the photographs and from the wiring diagram. It is well before screwing anything into position to lay out all your parts, as the size may slightly differ from those used in our set, and some slight adjustment may be needed. Notice that we have kept our grid and plate wires particularly short, and if you wish to make any alteration in the lay-out you must do the same.

Further, it will be noticed that the old method of running stiff wires to each point has been done away with. As a matter of fact we use ordinary 24 gauge wire and cover it with spaghetti. Glazite, of course, would be excellent for the purpose and would need no extra covering. In the wiring diagram stiff angles have been retained, but this is only to show where each wire goes to.

If they were jumbled up as they are in the photographs, those who are constructing a set for the first time would have great difficulty in following them. Notice particularly the way the valve sockets are turned round.

The photographs and the sketch will indicate their positions very clearly, but make certain they are right before screwing them down.

The Tuning Coil.

THERE are very many ways of making the coil, but some prefer to do it on celluloid, as our own was wound. However, it is much more simple to wind the coil on a cardboard former, and we notice that a few firms are turning out the required length of former with the valve base already in position. This will save the constructor a good deal of trouble.