Select Your Local Programme

The "Rejecta" Crystal Set

THE crystal sets of the Wellington listeners have, for the greater part, become obsolete over-night. With the opening of the new and relatively powerful 2ZW it has become a problem to isolate it from 2YA, and literally hundreds of listeners have communicated with both stations and asked them how it is possible to separate the stations.

Right from the onset, let us say that it is no easy task. For some sets it is impossible, and it will need nothing less than rebuilding the set, for it must be constructed along entirely different lines. It must be made "selective" and in considering selectivity another problem crops up, for when our sets are made selective they usually become less sensitive than they were before. Where we have only a limited amount of signal voltage available and no means of amplifying or strengthening it, we must take care of every atom of power that the aerial collects.

We must confess that we have had little time to delve thoroughly into the problem. Within a few days it has been necessary to devise a circuit, and a simple one at that, to differentiate between the stations.

The necessity of providing a sufficiently selective circuit was brought home to us forcibly one evening last week. We were listening to 2YA who had just announced the speaker for the evening when the familiar tune of "Colonel Bogey" burst in. It was no good trying to cut him out, he came in at all parts of the dial, for we were using the standard "Radcord" circuit, with an amplifier, and the set was operated in the "Record" office, which is next door to the new station.

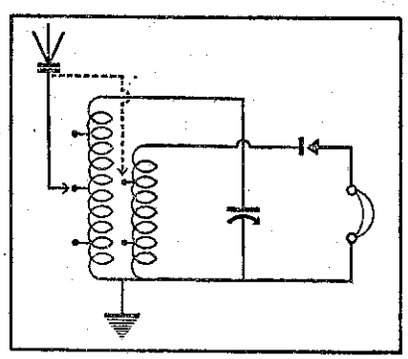
The Ideal Set.

SO we attacked the problem the next day and worked out details of the new circuit. Making up a suitable set from components already on hand we brought it to the office and, lo and behold, we could separate the stations—right under the shadow of 2ZW at that. It could be tuned out in a few degrees of the dial.

On communicating with the traders a day or so later, it was found that the parts could not be had. They had all been sold out through their being specified for the differential receivers—"Would not something else do?" So in a very short time we had to make a set, from not what we wanted but from what we could get. However, the set has now been made and we are satisfied with it. From our rather hurried experiments we derived several facts that should help listeners who cannot separate the station.

The first line of defence, or we suppose, attack, is to put a .0003 condenser in the aerial. These cost only 1/6 and if they do not remedy the trouble will certainly improve matters, and if the "Rejecta" circuit is later made up this component will already be in the junk box. If a small aerial is used this component will most likely be unnecessary, but as we work with a long one it is an essential. Strangely enough the condenser has little or no effect on the volume.

Unless the set is of the type using a variable condenser, there is little hope of it ever cutting out one station in favour of the other, and the set will have to be scrapped. Most unfortunately this applies to certain types of commercially-made sets. However do not discard them, as it is possible to make them more selective with a certain type of wavetrap that we hope soon to describe. But when the parts of the wavetrap have been bought the price of the components necessary for the "Rejecta" has been paid, so where



is the gain? Furthermore, the parts for this trap are not in the country at present and will not be for some considerable time.

On investigation we have found that in Wellington, at least, there is a dearth of 2-inch former and .00035 condensers, the parts we used in the original model. There appears to be plenty of 3in. former and .00025 condensers so we have used these. However, specifications are given for both combinations, just in case anyone happens to have a crystal set of the "Radcord" type on hand and wishes to convert it.

Our experience has been that in this hook-up at least, the .0005 condenser is not suitable. There is not enough separation between the stations unless volume is sacrificed to attain selectivity. An undesirable state of affairs. For this reason it seems that the best condenser for the job is the smaller .00025, but the coil must be designed with care else one of the stations will be pushed off the dial. With a well-designed coil, it is possible to put one station at either end of the dial and that is the ideal when stations are to be separated.

The first job in commencing the construction of this set is to decide upon the components to be used and obtain what is not on hand. Look over the accompanying lists and fill in the blanks; it will be found that the parts are not expensive. Do not pay fancy prices for extra special quality goods; they are not worth it in a crystal set of this type.

The Coil Construction.

THE coil is by far the most important part of the business, so we shall deal with it first. Upon a 4-inch length of tubing, drill two holes about 1in. from the bottom. These are only small holes to accommodate the ends of the wire and need be of no greater diameter than 1-32in. On the 3in. former measure off 2¼in. and drill another two similar holes. This will be for the top end of the wire that goes to the condenser.

If you have or can borrow a coil winder, winding the coil will be simple. If one is not available it will be more difficult, but by no means impossible.

Thread the 24 dsc. through the hole and commence winding, and for thirty turns allow a space between the wire. Not much, just enough to accommodate the 30, lying alongside. It will be found that it is better to err by leaving too much space than by leaving too little, as the wires can be pushed up tighter later, but it is a difficult business to pull them out to take in the finer wire. At the 30th turn clean about an inch of the wire and twist it about itself. It will be found easier if a sharp twist is made first at the base of what is to be the tap, and then twist the wire until all the bared part is twisted together. By making a sharp twist at the bottom, the tap will not pull out when the winding is recommenced.

Winding is now recommenced, this time there is no spacing. This is easy and it will take very little time to complete the coil. If a .00035 condenser is to be used, take a tapping at the 25th turn, after the close winding has been commenced. Finish off through the holes provided. If the winding has panned out as it should, this coil will end at the holes provided. If not, finish off through them in any case.

To complete the coil, the 30-gauge wire must be wound in the spaces between the turns of the lower half of the coil. When finished there is to be one thick wire and then one thin, and so on.

The lower end of the 30 wire is twisted with the end of the 24 wire, and threaded through the same hole. At the 12th turn make a tap as before, but be careful not to break the wire, as it is very thin. Make another tap at the 22nd turn. This latter will be the one most used, the first being the most suitable where extreme selectivity is desired. It is unnecessary to use this in most cases. When the tap in the main winding is encountered, give the fine wire a turn round this and cut off from the reel, leaving some 6in. of slack. Now liberally coat the last few turns of both windings with seccotine or other adhesive, and while this is drying set about laying out the remainder of the components.

The Lay-out.

ABOUT this part of the job there is little need to make comment, as the lay-out diagram shows all clearly. The terminals are arranged on the front panel, and the coil is to be mounted horizontally. This is easily the most satisfactory method.

THE crystal may be one of many different types. Experience has shown the variable cartridge type to be the best, although the catwhisker and galena is slightly more sensitive and the carborundum, less trouble than