propose to construct the transformer of 1180 turns S.W.G. primary and 36 secondary. Is this all right?

A.: It should be quite all right, although your 112 will be hard put to supply enough rectified current; still, it should do the trick.

2. You were rather heavy-handed in advising me to make a 100 henry choke. It seems rather high after reading the Guide, etc.

A.: A high-inductance choke, although costing more to build, has more smoothing properties than a lower one, though probably the 30 henry choke that you propose to make will give you ample smoothing.

3. I am using a 2000 resistor for the 171 valve, and I cannot get the 2250.

A.: Get a 400 ohm potentiometer, then connect the moving arm and one of the sides in series with it. You will then have adjutsable bias over a certain range.

4. What voltage should be on the plate of the 171?

A.: From 150 to 180. Be on the safe side and put another 50 turns on the secondary. The voltage can be easily broken down if too high.

5. I am trying to get 17 watts output with 180 volts on the plate. Am I on the right track?

A.: You appear to be.

"PUZZLED" (Motueka) asks the following questions concerning a H.R. 4.

1. At certain places on the tuning dial a sharp click has developed which does not always occur.

A.: It sounds as if the vanes of the condenser touch at certain points. Examine these carefully for dust or lack of alignment.

2. The volume does not seem to be right. It comes in full with the rheostate half way on.

A.: Don't let that worry you, many valves operate at maximum efficiency with rheostat half way on.

3. Does the question of volume have anything to do with the loudspeaker?

A.: Not the regulation of volume, if that is what you mean, but, of course, some speakers will carry volume very much better than others.

4. I can get the Australians on the 'phones all right. There is no volume on the main stations.

A.: A dozen and one things might cause this. Look through our trouble tracking section in this year's "Guide." It is given on page 128.

5. When tuning to Wellington or Dunedin, neither squeal nor whistle are to be heard. All the other stations howl. Is the set not neutralised properly?

A.: Your neighbours will probably be quite happy because the set doesn't squeal on Wellington or Dunedin, but you are probably on the black list for all others. Don't let your set squeal, but immediately it bursts into oscillation cut back the reaction, and stop it. The fact that it doesn't oscillate on Wellington or Dunedin is nothing much to worry about. It means that these two are on higher wavelengths than the others and as the set is more insensitive to higher wave-lengths than lower, there is not enough reaction in the circuit to make the set oscillate. You might try increasing the detector voltage.

6. There is a little round thing called a Phasastrol. What is its business in the set?

A.: It is a method of neutralisation, and quite a good one, too.

"AMATEUR" (Te Kuiti) has a .00035 and .00025 variable condenser and wishes to use these, in "Round the World Two." Will there be any additions or alterations to the coils?

A.: If you place .001 fixed condenser in series with the .00025, you can use it for tuning instead of alterin; the coils. The .00035 can be used for reaction.

2. I have a 240/1 and a 24/1 ratio dial. Which would be the better for the tuning.

A.: Use the larger ratio for tuning and the smaller for reaction.

First Aid for the Interference Victim

An Efficient Device

(By "CATHODE")

THE following little device is offered as a palliative for interference arising from electric signs, tramways, leaky power lines, and the like. It is also of some service in reducing static, although the fact that it also reduces signal strength, somewhat lessens its usefulness, where long distance reception is aimed at.

The device is known as a resonance wave coil, and, where the receiver and batteries can be completely shielded, is of real service in reducing static. It is not usually convenient to completely shield the receiver and batteries, and,

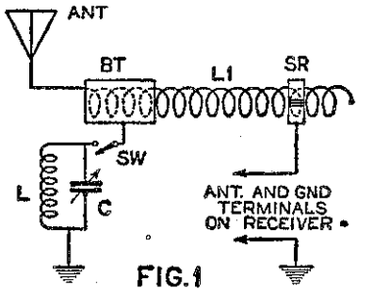

FIG.1

of course, an A.C. receiver will let noise in through the power supply. Even without complete shield, however, quite a worth-while reduction in extraneous noise can be obtained with proper adjustment. One must be prepared for a decrease in signal strength, however.

A practical circuit is shown in fig. 1. The resonance wave coil, L1, is a single layer of fine wire wound on a cylindrical former, one end being connected to the antenna, the other left open. BT is a stationary close-fitting brass or copper tube about one-third the length of L1. This tube is connected to a tuned rejector circuit L-C, and thence to ground. SR is another metal tube, which goes direct to the aerial terminal of the receiving set, and is movable over the unused portion of L1. This tube must be slit.

If the guard tube BT were directly grounded, all the signals would be removed as well as the interference. Between BT and the ground, however, a tuned rejector circuit L-C is inserted in such a manner that all frequencies except that to which L-C is tuned go to the ground. The device should not be regarded as an ordinary wavetrap, however.

When a wave strikes the aerial the effect is to put a number of voltage peaks along the resonance wave coil if this is properly designed with a natural period well above the broadcast band. By sliding SR along the coil, a point will be reached where the signal strength is at a maximum, provided the rejector circuit is tuned to the same wavelength as the receiver. At this point extraneous noise will be at a minimum.

If the resonance coil and rejector circuit can be shielded, so much the better, although quite good results can be obtained without this precaution. Where the mains are used for power supply, best results will not be obtained unless the transformers are provided with electrostatic shields between primaries and secondaries. Unfortunately, not many manufacturers make such transformers, although at least one New Zealand firm will make them to special order.

A RESONANCE wave coil for use on the broadcast band may consist of a three-inch cardboard tube twelve inches long and wound over its entire length with single cotton-covered wire of about 30 or 32 S.W.G. A layer or two of strong paper should cover the wire to protect it, and a copper tube four inches long may then be fitted snugly over the antenna end of the coil. The sliding tube is also of copper, but this should be only about one-half to one inch wide; furthermore, the two ends should not join, a quarter-inch separation being about right. This tube should slide easily over the coil.

The coil in the rejector circuit must be of low resistance. Sixty turns or so of 20 S.W.G. enamelled wire wound on a three-inch former will make a good coil, and may be tuned by a shunted condenser of .0005 mfd. maximum capacity.

THE operation of a resonance wave coil is as follows. During the initial tuning, the L-C circuit is cut out by opening the switch SW. The receiver is then tuned in the usual manner and the switch SW subsequently closed. Tune the rejector circuit by means of the variable condenser C for maximum signal strength and minimum noise. Then slide SR over the coil until the best point is found. SR must be changed for every different station received although when searching for stations it may be set at any position.

During periods of freedom from interference, the resonance coil and its associated apparatus may be cut out and the aerial connected direct to the receiver. A switch may be used to short out the whole installation.