to make the crystal set selective. Selectivity with a crystal set has been fully discussed in the "Guide." In addition, it might be added that the writer has found the English carborundums to be very selective. In fact, using a plain coil it has been found that Wellington will disappear in about 10 degrees. This means that morse could most probably be tuned out.

Converting a Moving Coil Loudspeaker.

"F. H." (Dannevirke) wishes to convert a casting to make it suitable for "Pentode's" dynamic cone. From the diagram he submits, the following points occur:

1. There is not enough room for the wire of the moving coil.

2. The general shape leaves much to be desired. It tends to loss in the joins.

3. It would work, but not well enough to warrant the work proposed.

The number of turns on the moving coil for a 171 valve is about 800. For the pentode valve, any attempt at matching would mean the winding on of several thousand turns, so that the best plan would be to wind the coil for an ordinary power valve, and work the pentode with this.

"X" Coils Wanted.

F. W. ENGLEHART, of Tauraroa, asks if "X" coils are obtainable in New Zealand. He is wanting one with 250 turns and one of 60 turns for a wave-change set.

A.: As far as can be ascertained they are unprocurable, being unnecessary where the wavelengths are more or less low. In England, coils with such a large inductance are employed where stations on wavelengths of over 1000 metres, such as 5XX, Daventry, are to be received, as well as stations on the lower wavelength. Provision has to be made for a wave-change arrangement in order that either high or low inductance coils can be used at will. In New Zealand, there is no need for the high inductance coil, seeing that the only stations available on the longer wavelength are an occasional commercial station and Perth; this latter owing to the distance cannot be well-received here. However, if the correspondent wishes to construct his own coils, he could do so by winding 250 turns on to a 3-inch former, and tuning with a .0005 condenser.

The "Round the World Two."

"I. M." (Auckland), who is making his debut as a constructor, asks the following points regard the "Round the World Two":—

1. Oscillation: He states, "I understand that one has to search for stations just at the point of oscillation. This point is so sharply defined that I cannot hold the set in that state in order to search for signals."

A.: Reduce the "B" battery voltage on the detector. This must be kept low, if smooth oscillation is required. Increase the value of the grid leak.

2. Hand capacity: I am greatly troubled from hand capacity, which applies when I place the hand at the back of the set to adjust the neutralising condenser. The proximity of the hand to the coils causes the signals to disappear and the effect of the tuning of the neutralising condenser is lost.

A.: It appears that the panel will have to be screened, that is, a metal plate placed at the back of the panel and connected to earth.

3. Coils: "I am a little doubtful about the coils. I have been advised to use a third coil on the swivel—(a tickler). Would a ready-made set of coils improve the circuit?"

A.: Reaction is carried out in this receiver by an extra winding and controlled by a neutralising condenser. This has the same effect as the moving tickler. A set of ready-made coils could be used to save the trouble of making them.

4. Battery voltage: I have been using from 20 to 40 volts on the detector, and have varied "B+" between 60 and 90.

A.: Reduce the "B+" detector voltages and add more tickler turns if necessary.

Shortwave tuning is very intricate and requires a great deal of practice before a good log can be amassed.

Half-wave Rectification.

REGARDING the article on Power Transformers in "Listeners' Guide," "S W.B." (Oamaru) writes: I would like to know if I can use a centre-tapped transformer, say 250 volts, on each side with a half-wave rectifier, disregarding the second half?

A.: Yes, by winding the other end well out of the way, one half can be used with a half-wave rectifier.

To Log the Americans.

"H.A.D" (Levin), who owns a factory-made set, wishes some information on logging the Americans and Australians. He is using a good aerial which runs from north-west to south-east.

A.: Such a set and aerial should bring in the Australians. They can be logged at usually good strength after about 9 o'clock, and sometimes some considerable time earlier. As for the Americans, an aerial running from north-east to south-west would be the best. These stations can be logged usually before 8 p.m.

Would a magnetic earth tube make a more efficient earth than one soldered to the water mains?

A.: Providing these enter the ground at a short distance from the set—No.

Life of Valves.

"LISTEN-BUT-DON'T-TOUCH" has been using the same valves for 2½ years, and assures us that they are still going strong. However, from his log of stations we are inclined to think otherwise, particularly as his sets works best from 45 volts only, and as well without the grid leak as with it. The best way to convince the correspondent that his set is not giving him maximum efficiency would be to obtain a set of new valves, and bring his voltage on the audio valves up to 90, that on the radio valves up to 67½, leaving the detector at about 22½ volts. The fact that the set works better without the "grid" (by which we take it the correspondent means grid leak) would indicate that either the grid condenser has broken down or that the radio frequency valves are detecting. The condenser should be tested by the 'phones and cell method.

Transformer for A.C. Amplifier.

"T. C.E." (Auckland) in passing favourable comment on the "Crystal and Valve with Three Valve Performance," states that he now contemplates constructing the crystal and amplifier to work off the mains, but he would like to know where he could get the transformer ready made.

A.: The Dongan Power Unit (Abel, Smeeton), as reviewed in our columns, would be quite suitable. Other power units, however, should be equally suitable.

What thickness or quality of paper do you suggest for wrapping round the layers of the wire?

A.: Ordinary good quality writing paper.

Operating a Moving Coil.

"CAN I operate a moving coil speaker from a charger delivering .65 and 1.3 amps?—"C.R.A."

A.: Yes, select the rate that gives the best results. It will not overheat the coil of the speaker.

Power Interference.

"C.J.W." (Reefton) is in a rather unfortunate position as regards power lines. He is situated 300 yards from a power house, 25 yards from one set of power lines and about the same distance from another line at right angles. A picture theatre is 75 yards from him. Reception during the daytime is impossible.

A.: This is probably one of the worst cases possible as far as the location of the radio receiver is concerned. From a sketch he has indicated that his aerial is at right angles to the power house. The length is not stated. The following are suggestions that may help the correspondent:—

1. Fully shield the receiver. This would minimise the pick-up of interference on the coils.

2. Try a counterpoise earth. This probably would be effective, especially if used in conjunction with a shielded receiver. A counterpoise is merely a second aerial slung a few feet from the ground immediately below the usual aerial. It is fully insulated as is the usual aerial. This is connected by a lead-in to the ground post and all connection with the ground broken.

3. Reduce the size of the aerial and try shifting round in different directions.

4. A loop antenna may be used to replace the ordinary aerial if the set is powerful enough to operate from the loop.

5. See "Noises" and "Counterpoise" in "Listeners' Guide."

Shielded-5 Neutrodyne.

WISHING to construct the Shielded-5 Neutrodyne, "E.R.Q." (New Plymouth) purchased a set of factory-made coils, and discovered that the diagram was slightly different from that described by "Pentode." The main difference is that the neutralising is done from the secondary instead of from the primary as in our Shielded-5. Other alterations are that separate bias is applied to the last valve, and a higher voltage to its plate.

A.: The circuit diagram supplied is equally efficient as the Shielded-5, and "Pentode's" instructions can be followed with the small compromise regarding the neutralisation. Other alterations with regard to voltages should be followed.

An Audio Howl.

"G. F." (Putaruru) states that his set has developed a howl which obviously arises from the audio end. He has tried various voltages on both anode and grid, but finds that when he puts his hand on the audio fre-transformer, the howl changes from a deep note to a high shrill howl.

A.: Try ¼ megohm grid leak in series with the grid of the last valve, or a by-pass condenser or a resistance across the secondary of the last transformer.

Material for Condenser Plates.

"PUZZLED" (Wellington) wishes to know of which materials the plate of variable condensers are made—brass or aluminium.

A Loose Valve Socket.

"A. J." (Tauranga) complains that his set has a tendency of going out of operation on receiving the least jolt. It can be made to work again by pressing a particular valve hard into its socket.

A.: It appears that the connection to the valve socket is loose, or one of the terminals of this is not making contact with the pin of the valve base. This should be carefully examined for loose contacts. The set should be overhauled so that the operator can make certain there are no other loose contacts.

Please state exactly what type and name of valves to be used in the Round the World Two.

A.: It would be unfair to one maker to stipulate another's valves. By referring to the classified index in the Guide, the constructor can select any make of valve for any position.

What voltage should be used?

A.: About 22½ volts on the detector and 90 at least on the audio valve. This will require two 45 volt blocks.

How are the batteries connected to the set?

A.: Join "B"+45 of one to negative of the other. Take a lead from the free negative to the negative of the set. From the 22½ volt tapping on this same block take a lead to the detector from the free 45 terminal, take a lead to the phones.

Dial Readings Change.

"H.W.Y." (North Auckland) complains that the dial readings for several shortwave stations have been recently altered. The set is that described in the 1928 "Listeners' Guide," the coils of which are variable in their relationship to one another by a slider.

A.: It appears that either the wavelengths of the stations have changed, or that the dial has slipped in relation to the condenser. An alteration in relationship to the tickler could also have an effect on the tuning.