former consisting of 77 secondary turns and 25 primary, slot-wound. This coil should be shielded as described in last week's "Record."

2. How many turns should be wound on the primary to suit the impedance of 600?—A.: 11-14.

LOFTY (Dunedin). How many fixed and how many moving vanes of the type indicated are in the .0002 condenser?

A.: Either six of each, or six moving and five fixed.

QUERY (Te Awamutu). My Round the World Two, which has been functioning for the last two months, is now giving trouble. It will oscillate when first turned on, then stop. If the reaction is advanced, it will oscillate again and then stop.

A.: This sounds uncommonly like run-down batteries. Try renewing them.

BEGINNER (Mangaweka): How can I improve the volume of American stations? I have a good aerial.

A.: The reception of American stations very much depends upon your locality. The writer has an excellent set and an excellent aerial-earth installation, but can never get a whisper out of them, while the same set only a couple of miles away brings them in regularly at excellent strength.

2. Would a change-over to the valves recommended by the makers be any improvement when renewing valves?

A.: Yes; it should be a great improvement, especially with a.c. valves.

3. Does the use of enamelled wire give any advantage over the use of tinned wire?

A.: Enamelled wire is better—see the articles on aerials in this week's issue.

TRIPLE GANG (Mount Eden): My a.c. set violently oscillates. How can I prevent it?

A.: Shunt the bias resister on your detector valve with a 1mfd. condenser, use a 1 mfd. condenser instead of a .1 to by-pass the screen-grid voltage. Try the circuit without the pick-up and if this is any improvement take the pick-up into the other side of the detector. The 171's require a separate 5-volt winding, the centre tap of which is taken through a 1000 ohms resistance to earth. We cannot imagine the set working at all in the way you have it connected, as you are giving the 171's only 2.5 volts.

2. On stopping the oscillating, how can I trim up the condensers?

A.: Connect a midget balancing condenser across the first stage condenser.

3. Would a centre tap 2000 ohms l.s. for the push-pull be better than the choke?

A.: No; you should use condensers in series with the voice coil of your speaker, to prevent the flow of d.c. current. Are you quite certain your speaker does not require a 25-1 step-down transformer?

TRANSMISSION (Hawke's Bay): Why should the loudspeaker howl in the hand at least 2in. from the reaction condenser?

A.: Either the detector is microphonic or the set is being worked on the verge of oscillation. Try covering the valve with cottonwool or substituting it.

2. The speaker and the set was made in 1926. Would a first-class loudspeaker help me?

A.: Your set and speaker are certainly out of date. Probably a new speaker would help matters.

3. I pick up a great deal of noise from a transmission line although I have my aerial at right angles.

A.: Try the use of a counterpoise earth, that is, another aerial slung a few feet from the ground and immediately under the ordinary aerial. This is the lead-in and should be treated with as much care as an ordinary lead-in. It is connected to the ground plate.

NOTE: Your query should have been directed to the address given on the coupon.

KAURINUI (North Auckland): A so-called expert attempted to put my set right and after some interference the set was worse than before. He eventually found it was the speaker, but we cannot use the four valves. Both the third and fourth valves are power valves.

A.: This is where the mistake comes in. For the second last valve you should use a A409 (in Philips) and not B406, as directed. The amount of current from the power valve saturates the transformer and causes the roaring you refer to. There may be something else wrong with your set which we cannot tell unless it is inspected, but try this other valve and if it gives you further trouble pack it up carefully and send it to a reliable city radio house.

A.W. (Auckland): My eliminator was left on while the filament current was cut out and the valves now seem paralysed. Do you think they have been damaged?

A.: It is not altogether unlikely. When there is no drain upon an eliminator the voltage rises, frequently to double, because the resistances have now no effect upon the voltage. While it would be difficult to say authoritatively whether your valves are paralysed or not, there is every reason to suspect they are not in first-class order.

2. Would it be advisable to replace all eliminator condensers?

A.: Not without testing them. Connect a pair of phones with 150 volts from your eliminator and connect one side of the condenser to negative. The other side of the condenser is then touched on the free phone tag. There should be a good strong click. Take the phone tag away and then place a piece of wire across the terminals of the condenser. There should be a distinct flash. On replacing the tag from the earphones there should be another click, and if you replace the tag without first shorting the condenser there will be no further clicks. You can test it without phones by merely charging the condenser (placing the + on one side and the — on the other), then removing, say, the +, leaving the condenser for a few minutes and shorting it to get another flash. Absence of this flash would indicate that the condenser is leaking.

3. As a "B" and "C" eliminator my eliminator emits a fearful howl.

A.: Very likely the condenser across the "C" supply has broken down.

4. Would the a.c. neutrodyne in the 1929 "Guide" be suitable for construction?

A.: It is hopelessly out of date. Build the Loftin Four if you want a real good receiver.

5. If I sent you my circuit, would you mark the necessary alterations to convert it to a.c.?—Certainly.

DUCK (Te Kuiti)—Could a 90-volt wet "B" battery be charged from a 6-volt generator?

A.: Yes; you must split your "B" battery up into four groups, the individual cells in these four groups must be connected positive to positive, and negative to negative. The positive of one group is then connected to the negative of another group, and there will be a positive and a negative free. These are connected to the six-volts generator.

2. I am obtaining a 50-volt generator. Would it do to charge the "B" battery and 6-volt dry battery?

A.: That depends upon your rate of charge. We would need a little more information before we could tell you what resistances to use, but it could be done.

3. Can I better the valve combination in my 6-valve set?

A.: Use a power valve of the B406 type in the last stage.

DMM (Dunedin).—What are the best valves for my English set for all-round use?

A.: The s.g. and power valve of your present combination are quite good, but your circuit requires one h.f. as detector.

2. I cannot get the same results with one 99-volt battery as with two 45's coupled.

A.: We cannot understand that, unless there is something wrong with your 99-volt battery. Very little drain is taken by your set if it is properly biased.

3. Is a 50ft. aerial, excluding the lead-in sufficient for this set?

A.: It depends upon the height. For a 3-valve set you require at least 100 feet of aerial.

POWER TONE (Dunedin).—I connected the filaments of my two audio valves with 6 volts a.c. Reception is just as good as with the battery, except for a slight hum.

A.: We have heard of that happening although it is very rare. The set is usually most unmanageable when it uses d.c. valves in anything but the last stage.

2. Would a 227 be worth trying in the detector?

A.: Yes, you would not need to balance it.

JUNKBOX (Christchurch): Could .00032 midget condenser be converted into .00025?

A.: Yes, by removing some of the plates.

2. Is a .00025 grid condenser and a 3 megohm grid leak efficient for short-wave work?

A.: The condenser is all right, but use an 8 megohm grid-leak.

3. My valve will not oscillate below 45 volts.

A.: This is quite in order. Different valves operate at different voltages.

4. I can get only one coil to work and even then signals are mushy.

A.: We cannot advise you on this point unless we know something of the design of your set and the coils.

KOIL (Timaru): The specifications you ask for have already been published, but we shall reproduce them in a special table next week. We cannot be continually redesigning coils because correspondents wish to use different gauges of wire.

2. Would it be an advantage to have a midget condenser in series with a .00014 condenser to spread out certain bands?—Yes.

3. What would the value of the condenser be?—.00005.

4. Is a 60ft. aerial too long for short-wave work?—No.

MOKI (Westport): What is the best combination of valve for my battery-operated American set?

A.: Four 221's and one 112. The last should be suitably biased and may be of any make.

H.H. (Akaroa): I have had my set of valves blow out twice. What is the cause of this?

A.: You do not state the circumstances under which they blew out. A fuse between the "A" and "B" battery would prevent this happening again. A fuse could quite conveniently be the narrowest strip you could cut from a piece of tinfoil.

LISTENER-IN (Alfredton): I find a new transformer used in my set whistles when I put my hand on it. Why is this, and why, when the set was overhauled, was a different make of transformer used?

A.: A transformer will frequently squeal because the casing should be earthed. Try doing this, and you will have no further trouble on that score. The new transformer was used probably because it was better than the other one.

ALP. (Kakahi). A whistle has developed in my loudspeaker, and a slight howl on 2YA.

A.: Try replacing the grid leak, and if that is ineffective the following in order: Earth the core of the transformer, change the detector valve, examine your wiring very carefully for bad joints, and substitute the grid condenser. This whistling may be due to the complicated wiring caused through the first audio jack.

CONTROL (Gisborne). The information regarding the coils tuned with .000125 condensers on 2in. formers, will be published in a special table next week.

D.C.D. (Auckland). I am troubled by ground noise in the L. White.

A.: Probably due to a defect in the resistances. Follow the articles that will be appearing in the R.R., as very many things about the L.W. are going to be said. We suspect very much the .5 megohm leak. Either try another or have that one measured. Concentrate on

(Continued on page 29.)

LISTENERS must attach this coupon to all queries sent to the Technical Editor (Box 1032, Wellington). Questions arriving without it are likely to go astray or be delayed.

Name of set .....

Number of Valves .....

Name .....

Address .....

.....

.....

Nom de plume .....

To be kept in subsequent inquiries

Date .....

Please Note:—

(1) Be specific and brief, tabulating, if possible.
(2) Write legibly, and on one side of the paper.
(3) We do not design circuits, but accept suggestions for feature articles.

Solving trouble, as different from advice, is difficult by correspondence and while letters are given every consideration, answers are not necessarily correct—they are only our opinion based on the matter supplied, which may be quite inadequate. Intricate and involved specifications cannot be supplied without a specialist's fee.