valves have been tested. The agent thinks the trouble is caused when the lightning arrester gets damp.

A.: Take out the lightning arrester and see if reception improves. Again, a defective transformer may be causing the trouble; also, ask your local Power Board to test the line voltage for fluctuations. Otherwise, communicate with Frank Wiseman, Queen Street, Auckland.

W.G. (Petone): Power interference is very bad on my a.c. Would it be as bad on a battery set?

A.: Probably not, unless the battery set were as strong as the a.c. set. Power noise is caused not because the set is a.c. (unless it is being brought in through the mains), but because it has so many stages of amplification.

2: Would I get the trouble on a short-wave set?

A.: Not to the same degree as with a broadcast set.

I HAVE added another valve to my three-valve set, but the "B" batteries appear to run down too quickly.

A.: Are you sure the bias is correct? You should have about 4½ volts in the last valve. Just check your connections to see that there is not a broken-down connection or any other fault.

2: The set plops in and out of oscillation.

A.: This points to some trouble in the set other than in the last audio stage. Try a different value grid leak, say 5 megs. and a .00035 grid condenser.

3: Could I employ a pentode in the last stage?

A.: A pentode is not particularly satisfactory for a circuit such as yours. A high gain power valve of the B605 type would be better.

4. Could I use another stage of h.f. screen grid?

A.: It would be better if you wanted to do this to construct the five-valve screen grid set we are describing shortly. You could use the parts in your kit set in this receiver.

5: Could I use Mack's short-wave adapter with this set?—Yes.

H.S. (Te Awamutu): Write to Fear & Co., Willis Street, Wellington, who may be able to help you.

"HAMROD" (Northcote): When a short-wave adapter is plugged into my four-valve set I get a hum in the loudspeaker, and it is impossible to tune in any stations.

A.: Examine the grid circuits of the amplifier and see if the "C" battery is not dead. Try another value of radio frequency choke, otherwise everything seems quite in order, except that you may use a 1-mfd. condenser between A— and B+ detector.

2: I am using a twin aerial of the L type. Is it O.K.?

A.: Yes, it is quite a good aerial, though you are not gaining a great deal by having it twin wired, as the single wire amounts to 100 feet.

3: Would a two-stage amplifier and a separate unit be better than altering the present broadcast set?—Yes.

4: Could any additional screening be used on the broadcast set to make it more selective? I cannot cut out Brisbane and get Japan.

A.: Your only chance of making the set more selective would be to use a smaller aerial or a .00025 condenser in the aerial. Another method would be to couple the aerial more loosely.

J.W.D. (Timaru): Can I use a speaker field to break down 480 volts to 433?

A.: No, the speakers require a bigger voltage drop than this. Use a 1,500-ohm resistance.

2: Could I wind a choke upon the iron, a sample of which I enclose?

A.: No, it is much too small.

"OMAR" (Wellington): I have a 1.3 amps charger. How often will I have to charge my "A" battery running a two-valve set using 201A type valves on an average of 30 hours per week?

A.: Every three weeks, but as you have a charger, every week would be safer.

2: Could I overcharge my battery?

A.: No; the accumulator will bubble when it is fully charged.

3: Would the charger keep my "A" battery charged using a moving coil 6-volt speaker and the two-valve set on an average of 18 hours per week, the "A" battery to supply the speaker with field current?

A.: Yes. The charging time will depend upon the speaker used, but on the average for every hour the set is in use the battery should be charged for 1½ hours. It should be charged after use each day, if possible.

K.S.J. (New Plymouth): I have a commercially-made six-valve set, oroginally designed as a battery model. Prior to purchasing it, however, it was converted to an all-electric by the use of an eliminator. When purchased the set was fitted with American valves. After a time I replaced these with another make and then discovered that I could not control volume. I have since been using the following combination: four 201A's, one A615, and one C603. Is the above combination harmful to my set?

A.: No. Have you correct bias on the C603?

2: I recently replaced a failing 201A with an A609 and volume improved appreciably. Would this alteration be harmful?—No.

"KAREHANA" (Wellington): I am having difficulty with the coils of my four-valve short-wave set, which works very well on wavelengths from 100 down to 22, but does not operate with the coils intended to work below that wavelength. The present coils are in accordance with the given specifications.

A.: For the 15-28 metre band reduce the turns on the aerial coil from 5½ to 4, and increase those on the reaction from 5½ to 6. Otherwise cut out the aerial coil and use a midget condenser (.000015) in the aerial circuit. This, however, is not usually needed when the aerial coil is used.

2. The 50-100 metre coils and the upper parts of the 31 to 54 metre coils work on 22½ volts or less, but the lower wavelength coils require between 22½ and 45 volts.

D. YOUD,
a very pleasing 4YA soprano.
—Photo by Torquist.

A.: Use as high a voltage as is consistent with good control of oscillation.

3. I use a 20,000 ohm variable resistance in the B lead to the detector.

A.: This should be 200,000 ohms.

4. I have made up the coils supposed to give 9-15 metres in accordance with specifications. These will not oscillate at all except over part of the detector dial when using 90 volts plate.

A.: Reduce the turns on the aerial coil from 2½ to 1½, those on the tuned anode from 2½ to 2, and increase those on reaction from 2½ to 4. Try placing the aerial wire close to the set (after disconnecting it from the aerial terminal), about 4ft. away, as coupling is evidently too tight. Advance reaction full on and leave for five minutes or so, when the set should oscillate.

Note: You did not state the size of your grid condensers.

6. I have made up the coils for 320 to 550 metres band described in the issue dated September 26, using extensions four inches high, which come up to the lid of the receiver. The diameter of the extension is 1½in. I cannot obtain the specified wire, but have used 30 d.s.c. for the upper coils (aerial and tuned anode) and 40 d.s.c. in the lower. I have made both r.f. and detector coils alike, using 181 turns of 30 d.s.c. for the aerial and tuned anode coils, to allow for the difference of wire, and 50 turns of d.s.c. for the grid and reaction coils.

A.: This should read grid and tuned anode, and aerial and reaction.

7. There is hardly any room on the formers to wind them all flat, so I have wound the 181 turns in three layers of 60 turns each, and the 50 turns in the usual way.

A.: Wind the tuned anode and the grid coils flat. The reaction and aerial jumble or bank wound. Keep the aerial away from the grid. Tuned anode and grid coils wound with 30 d.s.c. will measure out at 66 turns per inch, and aerial and reaction wound with 40 d.s.c. 142 turns per inch.

8. These coils will oscillate on all wavelengths except the highest and should therefore receive some stations, but I could find none. There is not even a sound from 2YA, so there must be something radically wrong.

A.: Rewind the coils, as indicated above.

9. I notice that you will shortly be publishing data for .0001 condensers for this set, but I expect these will be different from those already calculated for the .00015 condensers.

A.: No, there will not be much difference.

Amateur Electricians

B350 writes: Referring to paragraph commencing "The Underwriters' Regulations," page 12, in the issue of Friday, 16th inst., reference is made to "an expert" making dry joints, etc., etc. As a suggestion, why not have followed it up with something like this: "Listeners would be well advised when requiring any electrical work done to secure the services of a registered electrical wireman and not the local grocer or garage mechanic." A registered electrical wireman's license is at stake should he do anything in the way of "rough work." By securing his services the purchaser of a radio set is guaranteed a proper and safe electrical job.