

pure zinc, and if the sulphuric acid is of the right density, as described in the "Record," it will work satisfactorily. Are you quite certain your zincs are amalgamated?

J. H. (Gisborne): Should my aerial come in directly from a 30-foot pole to the window, or would it be better to be guyed out from the chimney?

A.: We think it would be better guyed out from the chimney.

2. The set works nearly as well without an earth. Would the Pierce earth system improve results?

A.: Probably not. Many a.c. sets work better without an earth than with one.

3. Would the addition of galvanised iron pipes go satisfactorily with my present copper plate earth? I was told that they would not agree.

A.: We think their domestic troubles would not worry you. So far as we know copper and galvanised iron do not come to grief very often.

LYDITE (Tolaga Bay): You have not made your question at all clear and we cannot grasp your meaning. Sketch out for us the coil about which you are doubtful and indicate exactly what coil you want us to tell you the number of turns which are wrong there. We cannot grasp exactly what you want.

K. NEDY (Weston): Will you give me your opinion of the valves in my set?

A.: They appear quite satisfactory until we come to the last two valves which, although in push-pull, are of different makes. It is always preferable to have two valves of the same make in the last stage, and preferable that they be tested before they are put in the set. Usually this is done, and if you have not replaced them it is possible that the two valves, which are exactly of the same type, were matched before being placed in the set, but then valves of different makes age differently, so that it is not a wise plan to put two different makes in push-pull. Use the same type of valves throughout for best results. The type that you have most of is an excellent one and will be quite satisfactory.

2. Is this set subject to hum? What is the cause of it?

A.: As far as we know your set is not subject to hum, but if it is we should certainly advise you to get in touch with the agents who sold it to you. Try reversing the connection to the a.c. mains.

3. Is it necessary for a beverage aerial to follow the contour of the ground?—No.

4. What is the optimum length of a beverage aerial?

A.: That was very fully explained in an article which was published in the "Radio Record" of October 3, 1930.

5. Could my set pick up the hum radiated by an electric sub-station?

A.: It is quite possible that this hum is a form of interference. A filter such as described recently placed between the main and the set would minimise high-frequency hum. It appears, however, that the hum is in your set.

6. I have been troubled with a certain amount of noise on wet nights, but was told nothing could be done.

A.: Something can be done. If you are getting noise on wet nights it certainly shows that there is a defective insulator, and it is in the company's power and their interest to rectify this error, as power is being wasted in wet weather.

X. Y. Z. (Whangarei): With reference to connecting phones to an a.c. set as described in the "Radio Record," is it necessary to disconnect the moving-coil speaker when the phones are being operated?

A.: If you want quietness you can disconnect your speaker, but you must note that it is necessary to do more than pull out the plug connecting the set and speaker, for in nine cases out of ten the field coil is connected in that plug and you would be pulling it out preventing your set from operating.

2. Is any hum produced in the phones when the set used has a slight hum on the speaker?

DX Notepaper

DX'ers! Write for that verification on D.X. notepaper and avoid missing out important details. Takes a quarter of the time to write out, too. Obtainable from P.O. Box 1032, Wellington, in two-dozen lots (minimum order), price 1/6, or six dozen for 4/-, post free. Special paper for club members.

A.: Yes, it would be magnified on the phones.

3. Is there any danger if instructions are carried out carefully?

A.: No. The whole point to note is that the piece of brass that is slipped under the plate of the power valve does not touch the metal chassis. If it does you will short circuit one of the power pack, and cause it to burn out. If this precaution is observed there will be no danger.

TETRODE (Christchurch):—Would a tone control be of any use for DX work to clear up blurry stations?

A.: A tone control will certainly cut out some of the noise, but we would not go so far as say that it would improve DX work. Sometimes, when conditions are bad, it makes listening more pleasant.

2. Is my circuit suitable for DX work?

A.: Yes. You should get good results.

G. F. (Ohura):—Where are the "harmonics" of 2YA and 4YA nowadays? Do they come in anywhere in New Zealand?

A.: The tendency is in foreign transmitters to suppress the harmonics as they represent waste energy and also congest the ether. Every now and again improved filters are placed in the output circuit of transmitters and the harmonics suppressed. The harmonics of 2YA and 4YA can still be heard fairly close to the transmitters themselves.

DXT (Stratford):—If I increase the height of my aerial by 30 feet, and brought the lead in insulated through a pipe earth at both ends, would my reception be improved?

A.: You will probably improve your reception by raising your aerial, but it is a bad practice to bring it in through a pipe earthed at both ends.

2. Would my set operate as successfully with that amount of lead in (90ft.), or could you suggest a better way?

A.: It would be better to take your lead in direct to your house without it going near the ground level; in fact, it would

probably be better to do so than to take it through the pipe.

A. LADDIN (Auckland):—I have a 5-valve battery set. What are the correct valves?

A.: Four 221 and one B605 if you wish to use a 6-volt accumulator. If you are using a 4-volt valve those you have in at present are as good as any.

2. I have constructed the "Sparrow Hawk" adapter, but the set oscillates on only 20 points of the dial using the 80-metre coil.

A.: You need more turns on the reaction coil on the 80-metre coil. Add, say, another 3.

3. I wish to experiment with coils. Generally speaking, what is the ratio of the secondary to primary coil, or where can I get coil information?

A.: An article dealing with this subject appeared in the "Radio Record" not very long ago. Generally speaking, the following formula can be used on a rough basis, where:

$$P = \frac{T}{\sqrt{\frac{200,000}{R}}}$$

where P = primary turns, T = sec. turns, R = valve impedance.

RAIL (Huntly): When I switch on my set it works perfectly for a few minutes and then gradually decreases in volume until it reaches about half its ordinary volume; then it will not oscillate on the short-wave coils.

A.: Are you quite certain your battery is in good condition? To us it sounds very much like a defective accumulator. You should have told us more about your batteries, because it appears that the trouble lies in this quarter. It may be one of your valves, possibly the detector.

LEARNER (Lower Hutt): I have built a "Differential One," and have had good results, but 2ZW, instead of being below 2YA, is above it.

A.: Are you quite certain your dial is not back to front, or is not in harmony with the condenser?

2. Is the type of choke I mention suitable for both broadcast and short-wave?—A.: Yes.

3. Is A609 or 201A suitable for the "Differential One"? I notice no difference.

A.: Both these valves are quite sufficient and will do the job equally well. They would both do for the "Diff." too.

(You note that we have a limit of three questions.)

RIFLE (Enfield): Will a long aerial give better results than a short one with my five-valve set?

A.: If you are well away from interference and interfering stations the longer the aerial the better.

2. About what would be the correct length for such an aerial?

A.: As long and as high as you can get it, say 150ft. in all.

3. Can the lead-in be taken from any part of the aerial or must it be taken from one end?

A.: It is preferable to take it from the end nearer the set. It could be taken from the exact centre, but then the effective length would be that of the lead-in, half the length of the aerial.

S. O. S. (Dunedin): Which is the better set, the Differential One or the Sparrow Hawk One, and why?

A.: There is really no difference, as they both employ almost the same circuit. The Differential One was described in

such a manner that if it is built up it can be added to at a later date. The Sparrow Hawk is a complete one-valve set.

2. How long would a 45 a.h. 2-volt "A" battery last on a one-valve set?

A.: Six or eight weeks without being charged.

3. Why is the rheostat used in the Differential One?

A.: To control the filament voltage. It can also be used as a switch, for most rheostats are arranged so that the circuit can be broken when they are turned to their minimum reading. Many valves can operate better when the filament voltage is a little below the manufacturer's recommendation. For this reason a rheostat is incorporated in most sets.

SHORT-WAVE (Wellington): The output transformer is marked B+ and plate. Which one goes to the positive and which to the negative of the output terminals on the set?

A.: We cannot get the strength of your question. Your best plan would be to take your transformer into a dealer and ask him how to connect it.

DX600C: Why do we get more static from 900 k.c. upward than we do from that number downward?

A.: Because most sets are more sensitive as the higher frequencies are reached and consequently they bring in more static.

2. Are English valves good ones to substitute for the American ones now in my a.c. set?

A.: Yes, they are entirely satisfactory.

NOT SURE (Huntville): I am contemplating building the Kestrel three, and would like to be cleared up on the following points:

1. Which screen grid valve is the most suitable, U.X.232 or P.M.12?

A.: There is very little difference between the two valves. You must remember, of course, that the positions of the terminals is different in those valves, for in P.M.12 the plate is at the top, whereas in 232 the grid is at the top.

2. Is the three ohm. rheostat suitable for control of volume?

A.: In a set such as this with a valve taking a very small filament current, three ohms is not sufficient. A 30-ohm. would be better, and it will then act as a very suitable volume control.

3. Will it damage a B eliminator if the high voltage terminal is not used?—No.

E. D. G. (Christchurch): Why can we not get America on our set?

A.: Getting America very much depends upon your locality, and we think (Concluded on page 29.)

A. J. PARK & SON

Patent Attorneys

Routh's Buildings,
Featherston Street,

WELLINGTON

"The Valve With the

TRAIL BLAZER OF

Specially selected by
Manufacturers because

OBTAINABLE AT ALL GOOD RADIO DEALERS.



Life-like Tone."

THE INDUSTRY

America's Leading Set
of their reliability.

**JOHNSON'S WIRELESS
AND RADIO SCHOOL**

There is remunerative employment for qualified radio men on shore and ship. The up-to-date methods of instruction and modern equipment provided at the school enable the student to obtain a most thorough and practical course. All papers connected with the Correspondence Course are promptly corrected in New Zealand.

Day and night classes for Professional Certificates. Correspondence Classes for Professional Certificates. Correspondence Classes for Amateurs and others. Write for Particulars to Department A.
JOHNSON'S WIRELESS & RADIO SCHOOL,
St. George Buildings,
8-10 Brandon Street,
Wellington.

