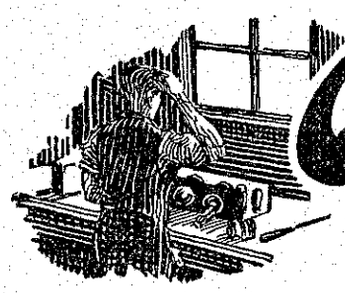

Questions and Answers

LIGHT (Christchurch): I have built the L.W. amplifier and used high quality resistances, but one of them heats, but does not smoke or show any visible signs of overloading. Is this in order?

A.: Normally, the resistances do not heat if they are of sufficiently heavy wire to carry the current. When a resistance heats it is apparent that it is not able to pass the current required. In your case providing the set works all right and the resistance does not smoke, it is quite in order.

2. I am using a crystal set coupled with a transformer and every time I make an adjustment the set squeals. Would a carborundum crystal be better?

A.: To be quite candid we have done very little experimenting with a crystal in front of the L.W. We tried it out and experienced the same trouble you speak of, and so on the local station we recommended the ordinary tuner, while, if extra power is required, an extra h.f. stage. We regret we really cannot help you much, especially if you are using a high grade transformer and a good crystal. Probably the carborundum would be the better.

SHORTY (Stratford): I have a 13 plate midget condenser with a capacity of .00025. If I remove the plate until I have 5 what will be the capacity of the condenser then?

A.: About .00001, but it is difficult to say unless you give the size of the condenser plate. The same applies to the other condenser you mention, though probably the capacity will be very near to .00001.

QUALITY (Devonport): I am planning a new s.g. 4-valve set, with quality as my main object. I was intending to use push-pull amplification, but after reading the pentode articles in your paper my attention has been directed toward the pentode valve. Which do you advise to work directly into a dynamic speaker—two 405's in push pull or one audio and a pentode?

A.: The two B405's in push pull would give a greater undistorted output than the pentode. If, however, you took the trouble to match up the pentode as described in the article you would probably get a greater amplification at less cost.

2. What are the disadvantages of using a trimmer with ganged condensers?

A.: None, except that the trimmer means an extra control.

V.R.H. (Auckland): I have very old bright emitter valves in my set. Would reception be improved by modern ones with 30 volts on the detector and 20 on the audio?

A.: If you are using true bright emitters your set is very old indeed, for these went out of fashion eight or nine years ago. Are you sure the valves you are using are not ordinary 201A type, the filament of which can be seen glowing through the clear glass of the tube? These should not be confused with bright emitters, although they take a ¼ of an amp. Modern valves would probably give you better results and you could still use 30 on the detector, but you will require at least 45 on the audio.

2. Please supply me with a formula for determining the capacity of condensers (a) in series, (b) in parallel.

A.: (a) $$\frac{1}{C} = \frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3}$$

etc., or for two condensers $$C = \frac{C1C2}{C1 + C2}$$

(b) C = C1 + C2, + C3, etc. In each case "C" is the total capacity and C1, C2, C3, etc., the individual capacities.

3. If I used Radiotron valves what would be the best for detector and audio?

A.: For a two-valve set, two 221A's or 201A's or their equivalent. Note that the 201A require a ¼ amp. filament current.

J.P.S. (Nelson): I have built the Differential One, but cannot get the set to oscillate. A .0001 fixed condenser on one side of the coil to earth makes the set oscillate, but does not improve reception. The set does not howl when passing a station. After the tuning condenser passes about halfway in oscillation ceases.

A.: How can your set oscillate and yet you are not able to pick up a carrier wave? If the set was oscillating properly you would get a whistle when you pass a station. It is quite evident that the number of turns upon the tickler coil is too small, and it will be necessary to rewind the tickler with a finer gauge wire so that more turns can be added.

2. The short-wave coils with or without the .0001 condenser bring in several Morse stations, and the set howls in the usual manner until the condenser is halfway in.

A.: It seems that you are not tuning properly. If you can receive Morse stations your set is oscillating, and you can never pick up broadcast stations in that manner. The set must be on the verge of oscillation. The .0001 condenser in the circuit and dialling must be done very slowly.

3. Could you tell me the number of turns for each of the four coils as given in the "Radio Record" to suit my .00035 condenser?

A.: These were given at the time of the article, and are repeated this week. Your difficulty, like so many others, seems to be arising through the smallness of the differential condenser, and the only satisfactory solution is to increase the number of reaction turns.

A.H. (Hokitika): Will you design coils for the Outspan Five to suite .0005 condensers?

A.: The number of turns on the secondary coils is 65 for your .0005 condenser and 75 as specified in the article for your .00035 condenser.

2. Could I incorporate push-pull amplification, and is there any great advantage in doing so?

A.: For really satisfactory tone on gramophone and local station push-pull or pentode is the only solution. The pentode requires a specially matched circuit as described in our recent article, but the push-pull could be used with ordinary push-pull transformers. The "Gramo Radio Four" in the 1931 "Guide" should help you in this direction.

3. For short-wave reception would you advise a short-wave adapter or making coils to plug in for long and short waves?

A.: The adapter. It is not easy to make plug-in coils for three stages, although it can be done. Switching in three extra fixed condensers and changing three sets of coils might make the operation of changing from one band to another a little unwieldy.

SIGMA (Auckland): I have recently tried out a crystal set for which great things were claimed. It consisted of a 35-turn honeycomb coil shunted with a .0005 condenser in the usual manner. Although I can get the local stations and have an aerial about 250 feet long with a good ground system I cannot get Wellington. The local stations come in well, and indeed louder than with an ordinary crystal set, but the condenser has to be full open to do this. Is it that a fixed condenser would do equally well in place of the moving coil or have extravagant claims been made for the circuit?

A.: The circuit is quite a usual one and it has appeared in our columns. It is really no better than the ordinary tapped solenoid coil. We think your good reception is due to your aerial and ground system, which is quite effective for a crystal set. The fact that the stations come in best with the condenser wide open indicate that the coil is too big. The number of turns should be reduced to 30, but you might, if this is not convenient, try the effect of a .001 fixed condenser in series with the main tuning condenser to reduce the capacity.

2. Have I gone to unnecessary expense with regard to the condenser, which is a first-class one?

A.: You would probably have obtained very good results with an ordinary condenser, though there is no question that it pays to install the best of components when a first-class job is desired.

3. Could you suggest any variations in the way of parts or a change in the circuit?

A.: No; you appear to be getting results as good as anyone can expect with a crystal set. It is possible to pick up Wellington on such a set, but much depends upon location and upon the aerial and earth systems, and indeed, upon the crystal itself. As a matter of fact, the crystal to which you refer is quite readily obtainable.

TYROIST (Auckland): I enclose the diagram of my set to which I wish to add another valve. What is your opinion of the circuit, and can I add the extra stage or would it be better to construct another set? Oscillation usually comes in with a decided click and hand capacity is bad when I attempt to adjust the midget condenser in the aerial?

A.: The circuit is the Reinartz type, but the Schnell is usually considered better as regards hand capacity and oscillation. The plate of the valve goes directly to L2, the reaction coil. The other end of the reaction coil, instead of going to earth goes to the radio frequency choke. From this point also a wire goes to the fixed plates of the variable condenser, the moving plates of which are connected through the small condenser C5 to earth. To prevent hand capacity the midget condenser should be placed at the back of the set and the aerial taken directly to it. You are probably introducing stray capacities by taking your aerial across the set to the panel.

2. Is there any way of overcoming harmonics?

A.: Unfortunately there is no satisfactory method of doing away with them, for they are omnipresent, as other waves, and are as liable to be tuned in.

KAITOA (Nuhaka): Which are the correct valves to use in my set?

A.: Four 201A's, or 221's, with a B405 type power valve.

2. Would I get more volume by using a power valve?

CORRESPONDENTS 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 Vales .....

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.