

could use your rheostat for the audio stages. It would be preferable, however, to use the rheostat for the r.f. stages.

**"WHISTLE"** (Wellington). Why does my set burst into oscillation when tuned to 3YA? Am I oscillating or is it someone else?

A.: It sounds very much as though you have a persistent howler on 3YA. Take off the aerial. If the howl is not there you can rest assured that it is an outside set. If it is, reduce the detector voltage. There is no reason why it should oscillate on 3YA and on no other station.

2. I am using a five megs. grid-leak. A.: Try reducing it to two megs., as this value should give you better overall results.

**INTERESTED** (Eastbourne): I can get excellent results from New Zealand and Australian stations, but am unable to get American. Do you think it is the locality or my aerial, which is below the roof of the house?

A.: Probably both. Your locality is notoriously bad, and your aerial is very poor if it is below the level of your house. It will possibly be shielded by the roof.

**H.L.M.** (Whangarei): Which is the most satisfactory for all-round work, the detector, screen grid r.f., and one stage of audio, or detector and two stages of audio? Both circuits are the differential three.

A.: For quality use the latter with a good power valve. For distance getting, the former.

2. I have at present a straight-out four-valve circuit of 1927 vintage. Would the Differential Three with a screen grid r.f. be better?

A.: That is rather hard to say, probably yes, or at least as good, but if you have a four-valve set on hand why not make the four-valve differential receiver?

3. Which is the optimum condenser to use in connection with the .0001 mfd. fixed condenser to reduce the combination for short-wave work?

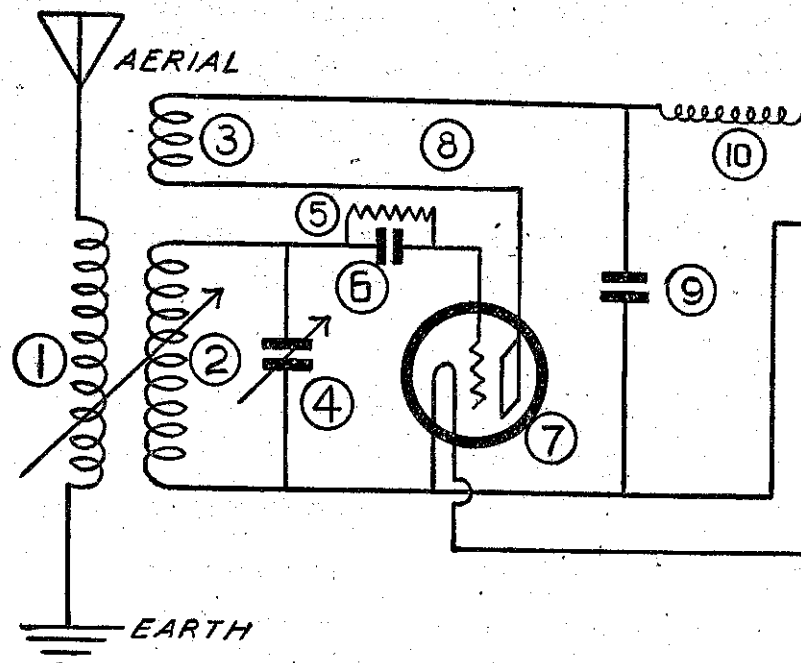
A.: .00035 would be better, as a lower resultant capacity can be obtained.

**F.G.** (Wanganui): I want to use a telephone wire which runs from one hill to another to hang my aerial on. It is 90 feet straight above me. I have permission to do so, but would the connection interfere with either the telephone or the wireless set?

A.: It is a little bit risky, for you might interfere with the telephone, and also you might pick up some of the conversation on your wireless. However, you could try it. Use as many insulators as you can between the telephone and your wireless aerial.

**C.H.W.** (Invercargill): Lately I noticed that the set worked better without the r.f. valve. I cannot get the "C" battery to work properly, although I have tried different values of bias and reversing the connection.

A.: It seems that your valves should be tested. Although the valve lights up it is no criterion that it works correctly.



A Typical Three-Coil Tuner. No. 1, aerial coil; 2, grid coil; 3 regenerator coil; 5, grid leak; 6 grid condenser.

Test the secondary of your last transformer and check over the grid return of that valve.

**"CONDENSER"** (Hamilton): What does it mean by saying a "three coil tuner"?

A.: A tuning device using three coils. The first connected to the aerial and the earth, the second to the grid of the valve and A+, the third to the plate of the valve and the choke or transformer or phones.

2. In my sketch there seems to be no B— connection.

A.: A— and B— are connected.

Note: Your exact requirements were not very clearly stated in your letter. If you intend to build this set let us counsel you to attempt something more modern, say one of the 'Differential' series. These old sets are quite out of date.

**KOIL** (Timaru): What number of turns must I put on a 2in. coil to be used with a .0005 condenser for a Differential Two?—64.

2. In the second instalment of the Dif. One are the specifications for a .0005 or .00035 condenser?—0.00035.

3. I intend building a four-valve version of the Dif. series. How far would a tuning condenser be from the left-hand side to balance the condenser on the r.f. stage?

A.: The reaction condenser should balance the r.f. condenser. Both these will be 4in. from the sides. If you desire to balance one tuning condenser against the other you must design a layout to suit yourself. It's easy.

**D.X.** (Dunedin): I have come into possession of a Super-sonic short-wave adapter. Is it any good?

A.: Super-sonic adapters are usually quite satisfactory, especially where the carrier wave is fairly strong. Where, however, it is weak it is not easily picked up.

2. What alterations, if any, would have to be carried out in the wiring to use English screen-grid valves?

A.: You could use English valves quite well by watching mainly the filament voltage and remembering that the plate is at the top of the valve.

NOTE: A full description of a superhet. adapter that has been tried by us will appear in the 1931 "Guide."

**C.C.T.** (Wellington): Is not an aerial erected in the same direction as 2YA's transmitting aerial the best for all-round reception?

A.: For the average "L" or "T" aerial direction has no effect. The only practical aerial that has directional effect is the Beverage.

2. What are the chief symptoms of the 280 type rectifying valve losing its emission?

A.: A general loss of power due to the voltage petering out.

3. A loud hum accompanied by a gurgly reception is experienced when my a.c. chassis is not earthed.

A.: This is quite in order, because when the earth is removed the set is on the verge of oscillation. The set is then noisy, but it is more sensitive than normally.

4. Is it not practicable to take out "B" voltage leads from my set to work the sup-heterodyne short-wave unit? Could specification be supplied for a power pack using the 201A as rectifier?

A.: You will need a separate power pack and could use the 201A as rectifier. The 226 would, however, be a better valve. These points are being fully dealt with in the 1931 "Guide," which is well under way.

**GRID** (Tamatua).—Would a car generator be quite satisfactory for charging a six-volt radio battery?—Yes.

2. Does the amateur reading at either slow or fast charge indicate the voltage is six?

A.: The voltage is really slightly more but as the car battery is practically the same as a radio battery, you need not worry about the voltage being wrong. Do not, however, attempt to charge a radio battery at a rate greater than 2 amps.

3. Why are American and English circuits unsuitable for New Zealand conditions, and why is it that there are so many American sets on the New Zealand market?

A.: American circuits are not really unsuitable for New Zealand conditions except where the aerial is directly coupled with the grid. As English circuits usually incorporate this feature, and as, too, they usually have a loading coil for the longer wavelengths, they are unsuitable. American s.c. sets are usually designed to operate from 110 volts, and as we are on 230 v. a step down transformer must be used.

**TRICKLE CHARGER** (Khandallah).—

Could you explain the band pass system and the B.P.F. unit in the "Record"?

A.: A B.P.F. unit was described when the Akarana Four was described about six months ago.

2. In the "Guide" you give the 373 A tifying valve as 2.4 volts. Is this not incorrect?

A.: Yes. It was such on the specifications that originally reached us, and consequently it was impossible for us to detect the error. We are, nevertheless, sorry it occurred. It should be 4.

**D.S.D.** (Wanganui): I have encountered trouble with the "L.W. Three." When trying the amplifier with a pick-up there is a loud popping sound in the phones which can be made fast or slower by adjusting the hum bucking potentiometer. The 100,000 and 5475 ohm resistances become fairly hot.

A.: It appears that your trouble is in the bias chain. Try different grid-leaks. The 100,000 ohms resistance should not heat. Try removing it. Some of the new circuits connect the half meg. grid-leak directly to the B plus terminal of the output transformer and try altering the value of the bias grid-leak. However, this should not be necessary as the set should, if made from our description, work perfectly. We experienced a little trouble, but experimenting and diligent search cleared these obstacles away. Have the screen-grid valve tested and if possible try another one in its socket, as they vary a great deal. We advise you to get the amplifier working perfectly before using a radio stage. No trouble should be experienced once the amplifier is in good order.

**"ION"** (Christchurch): I completed the L.W. Three and on the whole it gives good results. I have not been able to balance out all the hum.

A.: See our replies to the above correspondent. Your trouble probably lies in a defective grid-leak resistance.

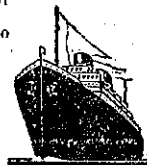
2. The selectivity and sensitivity seem poor. I have to use a wave trap to get

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