

9. Would a 3-ply panel be satisfactory?

A.: Yes, if coated with Sapolin or some insulating paint of that description.

10. Would two shielding boxes as used for the old B.D. Five be satisfactory?

A.: Quite, only they are a little more cumbersome.

11. I have an r.f. choke of 1000 turns wound in slots. Is this satisfactory?—Yes.

J.H. (Auckland).—Would a low loss coil be sufficiently efficient for the wave-trap described by "A.H.H.?"—Yes.

2. Would the efficiency of either the set or the wave-trap be impaired if the latter were constructed in a cabinet?

A.: Yes; the wave-trap should if possible be shielded and away from the set.

3. What is the capacity of the variable condenser?

A.: .00035, but see our amended article last week.

4. Would you tell me the method of determining the capacity of variable condensers?

A.: The capacity in mfd. is equal to .0885 x N x S divided by 1,000,000. Where S is the area of a moving vane in sq. centim. D is the air gap and N the number of vanes.

5. Would d.s.c. wire do as well or better than d.c.c.?

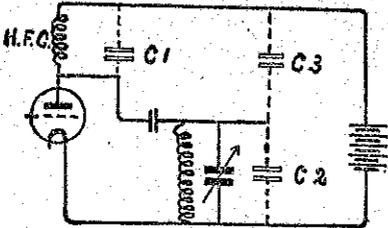
A.: The silk covered would be the better though, there is very little difference.

6. What is the best earth?

A.: We cannot do better than refer you to a very complete article which was published in the "R.R." on June 6, 1930.

IGNORANT (Johnsonville): I can get numerous stations on the higher wavelengths, but below everything seems distorted. I am using 5 201A valves.

A.: It seems that your set oscillates on the lower frequencies owing to there being no adequate means of controlling feed-back. Your set is evidently an old one, and should be taken to a reliable radio-technician for overhaul. Some type of power valve should be used in the last stage, and because of this the connecting link between the bias of the last two valves should be broken. If your diagram is correct then your C battery has been reversed. C—should go to the grid return, that is, the g.b. terminal of your transformer. A different amount of



Types of Condensers.  
C1, C2 and C3 are bypass, while the unlettered fixed is a grid condenser. C3 on page 16 is a blocking condenser.

bias should be placed on each valve, the last one having much more than the first.

2. Is it possible to alter the set to include a s.g. valve, and would this give better results?

A.: It is possible unless your set is awkwardly laid out. It would not be a very simple matter, but it could be done by anyone who knew something about the job, and it would improve your long-distance reception.

3. When I rotate the two ganged condensers I get a loud crackling noise in the loudspeaker.

A.: This is due, probably, to the moving and fixed plates touching one another. See that there is no dust between the vanes, and examine them very closely, at the same time moving the condensers.

4. Would a power valve improve quality from 2YA?

A.: It would very much improve the tone, but as we have pointed out before, would need to be biased correctly.

5. Is there any difference in the construction of the following fixed condensers: By-pass, grid, blocking, and between the following variable condensers: Tune, reaction, straight line frequency?

A.: Very little. It is really only a difference in their use. The term "by-pass" is used generally with reference to condensers that are between a high tension supply and earth to conduct any stray high frequency current that may be where it should not. Grid condensers are of small value, and are used in the grid circuit of the detector valve, in conjunction with a grid leak to cause the valve to rectify. Whereas the capacity of a by-pass condenser ranges from .25 upwards, the grid condenser ranges from .0001 to .0003. A grid condenser can be used in other parts of the set, such as across the transformer primaries. A blocking condenser might be anything, because any condenser blocks l.f. current. When the term "blocking" is applied it generally means that the condenser is placed in a circuit so that it will prevent the passage of low tension current, i.e., the current used for ordinary power work, having a low frequency, if a.c. On the other hand, h.f. current has a frequency of many thousands and is rarely measurable in volts.

As for the variable condensers, a tuning condenser is any condenser that is connected across the tuning coil to make it resonate at any particular frequency. In other words, it is the condenser which,

when used with a coil, enables a station to be tuned in. A straight line frequency condenser is a type of tuning condenser so named because of the shape of its plates. A reaction condenser is, in construction, the same as a tuning condenser. It is used to control the amount of h.f. energy fed back into the detector coil, this process making the set more sensitive. There are a few special reaction condensers that are not used for tuning. Outstanding among these is the differential condenser.

A.F. (Auckland).—I am using commercially made shortwave coils, and reaction is controlled by .0005 differential condenser. Could I replace this by a differential without alteration to the coils?

A.: In all probability, no. The tickler would probably be too small.

2. I wish to add another stage of amplification to my two valves. Would it be better with a s.g. as in the Diff. Three or a stage of audio?

A.: It would be better to use the s.g. h.f. stage.

3. I am using a 7 meg. leak. Would a 10 meg. be better?

A.: 10 megs. is the better for shortwave work.

AUSSIE (Wellington).—Interference from power leakages is completely ruining by reception. I am told a counterpoise improves matters. Could you possibly describe one.

A.: A counterpoise is a second aerial slung very carefully underneath the proper aerial. It is about 10 feet from the ground and every care must be taken to insulate it from anything grounded. By a lead-in it is brought to the set and attached to the ground binding post. The ordinary ground must be disconnected.

E.J. (Coleridge): Is it possible to purchase condensers "A," "B," and "C" eliminators?

A.: We do not know of any particular "A," "B" and "C" eliminators, though the Atlas people turn out a "B" and "C" eliminator and a trickle charger combined. This is arranged so that when the eliminator is switched off the charger is switched on. In reality, of course, this is an "A," "B" and "C" eliminator. If you can obtain a "B" and "C" eliminator you can always have an "A" eliminator made up, or can purchase one. You must use a voltmeter, and keep a fairly constant check to see that it is not delivering a voltage that is too high, otherwise your valve filaments will suffer.

OHM (Oamaru): Is the enclosed circuit suitable for shortwave?

A.: Yes, but substitute the C1 and C5 with a single small value condenser such as .0001.

2. What Osram valve do you suggest for the circuit?

A.: H410 and L410.

3. What is the difference between a differential condenser and an ordinary one?

A.: A differential condenser has two sets of fixed plates and one set of moving plates. An ordinary condenser has one set of fixed and one of moving.

NINETY-ONE M. (Otorohanga): I have been troubled with heavy interference which entirely blots out reception. A neighbour living about a mile away suffers equally badly. A high tension transformer runs right up to the house about a chain distant from the aerial. I have complained to our local power board, but they cannot offer any solution. Could you or any of your readers assist in identifying the interference?

A.: We suspect the transformer. If you have complained to the power board and do not get satisfaction, write direct to the District Radio Inspector and restate your complaint. Perhaps other listeners in that district seeing this note may care to write us on the subject.

FRESH (St. Heliers): Could you advise me where I could get a book dealing with the subject of radio right

from the beginning? I want to know something about the "How and Why"?

A.: Probably the best book in your case is "Wireless, the Modern Magic Carpet," sold by the Te Aro Book Depot, Wellington. The "Radio Guide," published by ourselves, contains a big section devoted to the elements of radio, but is not, of course, as full as the "Magic Carpet."

H.J.P. (Blenheim): Will the values of the fixed condensers, audio choke and variable resistances in the "Guide" be satisfactory for my valves?—Yes, quite.

2. What is your opinion of the s.g. as a detector?

A.: It is quite a good valve for the purpose, especially for shortwave reception.

MUG. (Mangapuroto).—My Daniells cell charger will not keep my six-valve set supplied with current. If sets the accumulator run down. The consumption of the set is approximately an amp and a half.

A.: This is far too much for the Daniells cell charger. It is only a ½ amp charger. It is not intended for a heavy current such as your accumulator will be called upon to supply. We advise you to keep it on your accumulator, though, now you have it in operation, as it will no doubt charge it slightly, and pay for itself. You, of course, will have to take it along to the battery charging house regularly. It appears that you have made it up quite correctly. If you want to use lower consumption valves you should try the new 221's where you have 201A's, and a B605 where you have the 171. You would find, then, that the charger will keep your accumulator charged for a very much longer time. Only the other day an accumulator was shown us which had been kept charged by Daniells cells for three years, and there was not a trace of sulphation upon the plates. The set, however, was drawing only ½ amp.

E.J.G. (Marton).—When I first bought my set a buzzing noise could be heard in the speaker when the grid leak was removed. Now it does not make any difference.

A.: You have omitted to tell us the essential fact. Is your reception any weaker now than when the buzzing occurred, and if not, the phenomenon need not worry you, as it is due probably to characteristics of the detector valve.

E.M.F. (Invercargill).—I have a seven-valve a.c. receiver, and I wish to build an a.c. shortwave adapter. Could I use one such as shown in the enclosed circuit?

A.: Not without introducing a great deal of hum. A.C. shortwave adapters have not proved themselves satisfactory. We have a good one in last year's "Guide," but it used a small "B" battery. The trouble generally is hum, as it is almost impossible to keep this out of shortwave reception unless special precautions are taken.

## TENDERS RADIO INSTALLATION

TENDERS for the above, endorsed "New Plymouth Hospital Radio Installation," will be received by the undersigned up till 12 noon on Wednesday, April 8, 1931.

Plans and specifications will be supplied upon payment of £2/2/-, which will be refunded upon receipt of a bona-fide tender.

The lowest or any tender not necessarily accepted.

W. H. QUICKFALL,  
Hon. Secretary, N.P. Hospital Radio  
Committee.  
P.O. Box 2, New Plymouth.

## N.Z.'S OWN RADIO BOOKSHOP,

The TE ARO BOOK DEPOT, Wellington.

LOOK AT THIS LIST:—

"Radio Str." 72 pages—Don't miss this.

7d. posted. Great value.

"Practical Radio Construction and Repairing," by Moyer and Wostrel, 15/6.

"Sound Pictures and Trouble Shooters' Manual," by Cameron and Rider, 33/6.

"Radio Times" (English weekly), 4d. per copy.

"Radio Retelling" (U.S.A.) monthly, 1/9 per copy.

"Radio Manual," by Sterling and Kruse, 26/-.

"Practical Testing Systems," by Rider, 6/3.

"Worked Examples of Electrical Technology," by Peasgood and Boyland, 18/-.

"Radio Physics Course," by Ghirardi, 14/-.

"Radio News Handbook, 1930," 2/9.

"Radio News 1001 Radio Questions and Answers, 1930," 2/9.

"Radio News 101 Hook-ups," 1/9.

"How to Electrify Your Set," by Osgood (U.S.A.), 1/9.

"The All-Electric Receiver," by "Listener-In" Publishing Co., 3/6.

"Radio: A Study in First Principles," by Burns, 11/-.

"Mathematics of Radio," by Rider, 10/6.

"Radio Operating Questions and Answers," by Nilson and Hornung, 14/-.

"Radio Amateur Handbook" (Handy's) latest edition, 5/3.

"Radio Amateur Call Book" quarterly, 5/8.

"Theory of Radio Communication," by Filgate, 12/-.

"Principles of Radio Communication," by Morecroft, 41/6.

"Elements of Radio Communication," by Morecroft, 29/-.

"Direction Finding," by Keen, 27/-.

"Radio Data Charts," by Beatty, 7/9.

"Seeing by Wireless" (Television), by Ralph Stranger, 1/6.

"Collins's Wireless Diary, 1931," 4/-.

"Thermionic Vacuum Tubes," by Van der Bijl, 26/-.

"Radio Receiving Tubes," by Moyer and Wostrel, 14/-.

"How Radio Receivers Work," by Roberts, 8/-.

"Radio Design," 1/- per copy.

"Radio Engineering" (a monthly issue), 21/- per annum.

"Projection Engineering" (monthly) 21/- per annum.

"Wireless, the Modern Magic Carpet," by Ralph Stranger, 4/9 (favourably reviewed by Editor "Radio Record").

"Radio Citizen's Call Book" quarterly, latest January, 1931, 2/9.

"1931 Radio Listener's Guide," 2/10 posted.

"1931 N.Z. Radio Handbook," 2/10 posted.

Write us Now.

TE ARO BOOK DEPOT,  
64 Courtenay Place, Wellington.