

A.: 100 feet would tend to make the set quite selective, but by reducing it you would get a still greater separation between the stations. As far as signal strength is concerned, you can have almost any length, up to several hundred feet. Generally speaking, however, a 100-foot aerial, such as we have described, would be the best for all-round results.

L.T.J. (New Plymouth): I have successfully constructed the 2 r.f. parallel feed Browning Drake circuit with a moving coil dynamic speaker. At first I was not successful with the latter, as there was too much rattle, so I altered the design, making the moving coil and the cone into a fixed unit, thus simplifying matters, and making the cone more responsive to the vibrations of the voice coil. I was also able to make the gap, in which the voice coil moves, half the size of that specified. This speaker gives more than double the volume of the ordinary magnetic speaker, using about 10 watts in the field. I have also been experimenting with a crystal circuit, and have been able to receive the local station, 2YB, and also 1YA, 2YA, 2BL, 2FC, 4QG at night, and also to hear faintly music from other stations. I have not heard of anyone being able to do this. (Neither have we.—Tec. Ed.). I have a good aerial and earth 70 feet high and 140 feet long. What is the best arrangement of Phillips valves to use with my Browning Drake set?

A.: A609, A409, B415, and B409, B405.

2. Would screen-grid valves be satisfactory?

A.: Yes; you could alter your set to the design of the Outspan Five, and no doubt you would get better results than you are now getting.

JOE (Greymouth): How many times more powerful would the Outspan Five be than an old model five-valve neodyne using 90 volts "B" for the plate?

A.: It is rather difficult to make a comparison in this manner. All we can tell you is that the Outspan Five would be definitely superior.

2. It is my intention to build the Outspan, but am a little at sea regarding some of the distances you mention. If I forwarded you a suitable drawing would you mark them in for me?

A.: Yes; send along your drawing and we will see what we can do for you.

3. Do two power valves in push-pull give double the volume that one does?

A.: No; they give a greater undistorted power output than one valve. Amplification will be the same as a single valve.

DX23A (Cambridge): My aerial is 60 feet high and 100 feet long, the top giving about 160 feet in all, including the lead-in, which is heavily soldered on to the top portion of the aerial. The set is not selective at present, and I am of the opinion that if the length of the aerial were reduced say 100 feet the selectivity would improve, but would distance-getting reception be interfered with to any extent?

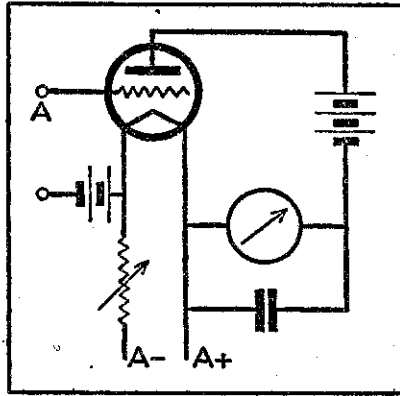
A.: We are afraid it would. Whenever a set is made more selective its sensitivity is decreased. You must have one or the other, or a compromise between them both. Certainly not the two at once.

C.C. (Christchurch): We cannot tell you accurately what the voltage will be at the point indicated because you have not given us any details about your choke. It will depend upon the number

of ohms resistance in that piece of apparatus. The drop in the valve is almost negligible, something in the region of 10 volts. An average choke would drop about 40 volts, so that you would have roughly 700 volts.

A.W.M. (Dunedin): I am constructing the "Outspan Five" and am at sea as to the coils, for I have on hand .0005 condensers. Could you supply me with full information for the number of turns, using .0001 reaction condenser?

A.: The secondaries should have 72 turns of No. 26 d.c.c. wire. The primaries each about 25-30 turns, and the tickler



coil 40, but this can be very much finer wire. It can be even No. 38 and still retain efficiency.

2. Is it absolutely necessary for the coils to be shielded?—Yes.

3. What is a vacuum tube voltmeter?

A.: A vacuum tube voltmeter is a sensitive instrument employing the circuit of an ordinary anode bend rectifying valve and a very sensitive meter or galvanometer. We reproduce a diagram of a vacuum tube voltmeter herewith. It is operated by varying the grid bias until no direct current flows. The incoming r.f. current is rectified and flows as a.f. current to the plate circuit of the valve. This direct current operates the direct current galvanometer. If we allowed the ordinary d.c. current to flow in the circuit the meter would be destroyed. Such a meter can be used for measuring the strength of signals from gramophone pick-ups, crystal sets, etc. All laboratories use them.

TUBE (Invercargill): I intend to erect a higher aerial. Will I pick up more static and atmospheric noises with an aerial that height, than with one 40 or 50 feet?

A.: Generally the higher the aerial the more are the atmospheric noises that one picks up, because they decrease toward the ground. However, you would get greater signal strength. Keep the top quite short and depend upon the lead-in for length. This will give you the best results.

2. My local dealer insists that a good earth is out of the question unless it is making contact with clay. You say that "unfortunately, clay, especially wet clay, is not the best of earths because it offers so much resistance." Whom am I to believe?

A.: Sorry. O.M. we cannot enter into controversies of this nature. We have made a statement which we believe to be correct, and we have based our assumption

upon measurements taken by the Bureau of Standards in America.

3. Which is the next best earth to the Pierce earth system? What about a copper sheet 2ft. 6in. long, 18in. wide, with the earth wire soldered to it at three different points?

A.: We think this would be an excellent earth; although listeners claim to have had great results with the Pierce earth system, still we are sceptical. Measurements tend to show that no improvement can be had by arranging an earth system such as Pierce has done.

STATIC (Christchurch): I have been able to log only one American station, though I have a fairly good aerial. What is the trouble?

A.: Why some people cannot receive American stations and others only a small distance away can receive them well, is something of a puzzle. Your aerial could be improved, but still it is not bad, and many people are receiving the American stations on a very much inferior outfit. Look through this month's "Radio Log" and you will find out what type of installation the people who won the competition are using. Locality has a tremendous effect upon very long distance reception.

FUSE (Christchurch): On tuning to a station the set chokes and music gurgles through very weakly. Moving the dial a few degrees the set roars and motorboats. What is the matter?

A.: It sounds as though you are overloading your set. Very few sets can be turned in full blast to a strong station. If, however, this happens on weak stations, the indications are that your set is oscillating when the condensers resonate. This can be due to a defective bypass condenser, or to the absence of such a condenser. Try a 2 mfd. condenser between B+ r.f. and earth.

2. Why should the set not go on the first jack and yet on the second jack?

A.: It sounds as though the jack is not connected properly, doesn't it?

W.H.D. (Wellington): Can you suggest a suitable set of valves for an American five-valve battery set?

A.: You do not state what model set you are using, and as the valves are different for each model we cannot help you very much.

2. Reception from outside stations is very poor. Is this the fault of the valves being in the wrong position?

A.: It is unlikely the valves will be in the wrong position, but it is quite possibly due to weak or defective valves. Your best plan would be to take them in to a dealer and have them tested, and ask him what ones should replace them.

K.M.D. (Wellington): Would it be possible to alter my set to take a s.g. valve in the h.f. stage?

A.: According to your circuit it will be quite a simple matter, but, after all, the circuit is not the only thing that counts in changing a set over from triode to s.g. r.f. You see, so much depends upon the layout of the set; you may be hampered with the shielding or the wiring may not be easily accessible. Furthermore, can you get adequate inter-stage shielding on it without seriously

modifying the layout of your set? All these things must be taken into consideration in changing a set over from triode to s.g. Usually it is not a practicable proposition.

PURUKI (Marlborough): Pleased to hear of your results and are glad to hear from you. We always like to hear from correspondents after they have remedied the trouble that was worrying them.

DON JUAN (Napier): Could you let me have the circuit and full details of an all-wave a.c. set?

A.: Yes, the Advance A.C. Short-wave Set described in the "Radio Guide" is the ideal one for your purpose. You can get a "Guide" if you are lucky for 2/6. Your present set is certainly out of date, and you would notice a big difference if you built the "Advance." Your method of connecting the choke and resistance volume control could, we think, be improved upon. The optimum aerial coupling is a third of the way from the earth end. Now, if you turn the slider down there you will have very little resistance between the aerial and the earth, and consequently would lose all you gain from it being coupled there. If the resistance is variable, without the variation having any effect upon the aerial coupling, it will then be quite satisfactory. We think if you carry out these changes the rather peculiar phenomenon you speak of will disappear. We can understand the set working without an earth, but if you can put the earth on to an aerial terminal and put the aerial on as well, and still get signals, (Concluded on page 30.)

CORRESPONDENTS must attach this coupon to all queries sent to the Technical Editor (Box 1082, Wellington). Limit three questions, unless letter is accompanied by 1/- fee.

Name of set
Number of valves
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.

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