

W.E.A. Talks

(Continued from page 28.)
fall relatively to other goods. Mr. Ross will analyse the position of primary products just before the depression, paying a special attention to

wheat. The League of Nations has issued a number of reports on the position of primary production, and these will be used by Mr. Ross.

The following points might be discussed: Is there any fundamental reason why the fall in the price of primary products is not always followed by an increase in demand? If prices fall too far and producers are ruined, will not production be limited, so that prices will again rise? Are there any factors preventing this in the modern world? If the world is able to satisfy the needs of primary production with the expenditure of less energy what comments should be made on the campaign of economy, the proposals to put more men on the land, and the general position of New Zealand?

Do not forget that the W.E.A. of Otago will be pleased to enter into correspondence with listeners-in on these questions.

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"Radio Operating Qstns. and Ans.," by Nilsson and Hornung, 19/6.
"Radio Frequency Electrical Measurements," by Brown, 35/-.
"Radio Handbook," by Moyer and Westral, 37/6 (An unfailing coach for exams.).
"Armature Winding and Motor Repair," by Braymer, 24/-.
"Radio Receiving Tubes," by Moyer and Westral, 21/-.
"Radio Construction and Repairing," by Moyer and Westral, 21/-.
"World Time Indicator and Radio Station Log," (clock dial—over 600 stations), 1/2.
"Television News," Gernsback, April issue, 2/-.

Loomis's "Radio Theory and Operating" (U.S.A.) 32/6. A good book for any amateur or operator.
Henney's "Principles of Radio," 26/6.
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Leutz & Gable's "Short Waves," 19/- (A wonderful book on subject).
"Radio Amateur Handbook" (Handy's 9th edition), 6/6.
"Radio News," Oct., Nov., Feb., March, April, May, 2/- each.
"Q.S.T.," Sept., Oct., Nov., Dec., Jan., Feb., March, April issues, 2/- each.
Scott's Broadcast Time Chart (including log and complete list of world's long and S.W. stations), 7d.
"Wireless: The Modern Magic Carpet," by Ralph Stranger, 5/- (New stocks just arrived—The "Radio Record" and Mr. Dawson, Philips Lamps, say no set owner should miss this.)
"Radio Call Book and Technical Review," (formerly Citizens' Call Book Quarterly), 2/-.
Mack's List of World Short-wave Stations, 7d. (Don't miss this.)
"Mathematics for Practical Man," by Howe. Simplicity itself, 10/9.
"Radio: A Study in First Principles," by Burns, 15/- (Simple and clear).
"Elements of Radio Communication," by Morecroft, 18/6.

(Please note there is a rise of approx. 63 per cent. on all American publications, and don't blame us.)

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Questions and Answers

N. D. (Auckland): I wish to make a crystal set capable of separating 1ZR and 1YA, but the "Rejecta Two" is not suitable. "G.O." in July 31st issue, 1931, appears to be to receive most of the stations. Will his circuit do for me?

A.: You are setting up a fair problem to discriminate between 1ZR and 1YA, and yet maintain the strength of both. A crystal set can be made to separate any station by decreasing the coupling between the primary and secondary coils. If the "Rejecta Two" will not separate them, we do not know what will, if you wish to keep your circuit simple. Of course you can make it complicated, but then by doing so you will probably lose volume. If you write in in the usual way, "G.O.'s" address will be sent you.

2. Is there such a thing as a short-wave crystal set?

A.: Some crystal sets with a short-wave coil will receive very powerful nearly S.W. stations, but as there are very few sufficiently close, it is not much good experimenting in that direction.

3. Where can I obtain the diagram of a full-wave crystal set?

A.: In the 1929 "Radio Guide."

DX15A (Matamata): I have a seven-valve super het. and below 850 k.c. the set is insensitive. I am using a 600-foot aerial, 18 feet high.

A.: Your aerial is neither one thing nor the other—it is not a Beverage, and it is not the ordinary aerial. Before you can get satisfaction you had better get it either one or the other. Try this: a 30-40 foot aerial, 80 feet long, and see how results are then. This is your problem: Every aerial has its natural wavelength, below which it will not tune satisfactorily. Yours evidently will not go below 850 k.c. satisfactorily, so by shortening it you would decrease its natural wavelength and so bring in the station you require. The alternative would be to increase the length to 850 feet and earth the distant end through a 750 ohms resistance.

2. Why is it necessary to ground a Beverage through a resistance?

A.: Explaining why is beyond the scope of "Q. & A." It is sufficient to say that it is necessary for one end to be grounded through a resistance approximately equal to the surge impedance of the aerial, which, for most Beverage aerials is between 200-800 ohms.

F. H. (Gisborne): What is the correct value of bias resistance for a 224?

A.: We are rather unfortunate about the 224. There has been a series of printer's errors. Let us hope they get it right this time. The correct value of this resistance is 400 or 450 ohms.

2. Is S242 an American valve?—An exact American equivalent.

Which way should "B+" and "P" be connected with the primary?

A.: It is usual, as shown in the theoretical diagram to connect "B+" to the bottom, and "P" to the top, but it pays to change them round sometimes, as is shown in the layout sketch.

4. What resistance would I need to make a four-volt transformer deliver 2.5 volts? The total current passing being 5.75 amps.

A.: 5 of an ohm. Your best plan would be to obtain three yards of No. 16 Bureka wire and wind this round a non-conductor. Place an a.c. voltmeter across the valve sockets, put all your valves in, and connect all the resistors in the circuit. Then take off sufficient of the wire to get the exact 2.5 volts, but remember, always have all your valves in the sockets. If you pull one out the voltage will jump and probably ruin your set of valves. Really the best plan would be to get a new transformer. If you are not

using all the valves at 2.5 volts, add together the current taken by the filament of those you are, and then divide this into 1.5. This will give you the number of ohms you require in the circuit, and from the table of resistance wire, published in the 1930 "Radio Guide," you will find out the quantity of wire needed.

5. Where is the centre tap of the potentiometer connected in the "Radio Gram" circuit?

A.: You need not worry about the centre tap if you wish to use the exact circuit as is shown in the Call Book. However, you can connect one side of this to earth and connect the moving arm to the screen of the valve. If you have not yet bought your parts, you had better make the value 250,000 ohms if you wish to use this slightly more modern circuit.

6. I find my pushpull input transformer has broken down. Could I use a 3-1 audio transformer with resistances across the primary? What ohm resistor should I use?

Yes, you could use a 3-1 audio transformer, but the resistances, which should be about $\frac{1}{2}$ megohm, should be exactly the same. Ask your dealer to match them carefully before you put them in the circuit.

7. I have two condensers—first a seventeen plate, and next, a forty-three. From both condensers I have removed all but seven plates. What capacity are they now?

A.: It all depends upon the size of the condenser. You have not told us the size of the plates, but presuming they are fairly large, as they appear to be, the capacity should be about .00015.

L. D.Y. (Auckland): I wish to build a four-valve battery set, but cannot get the details I want. Can you supply diagrams?

A.: We think you will find the very circuit you want in the current issue of the "Radio Times," a four-valve battery set which is not only cheap to build, but economical to operate.

C. E. (Auckland): My set just fails to bring in KFI if there is any static about. Would it be possible to add another stage?

A.: No, unless your set is an exceptional one, and it is built to take an extra stage. Some are.

—(Wellington): We have not tested the set you mention.

E. B. (Clive): What is the best book to give a list of all the stations that are to be heard—both long and short-wave?

A.: A very comprehensive list is published in the "Radio Guide," but fuller lists will be published from month to month in the "Radio Times." Our next list in the "Times" will be a complete one of the American stations.

THIRD GRID (Greymouth): Why is push-pull so widely used for receiver output stages and for transmitting while parallel is hardly ever used?

A.: The push-pull circuit gives a greater output. You can double the output by paralleling valves, but you can practically treble it by using the valves in push-pull.

2. When a stage of push-pull is double biased how will the output be as compared with a single valve with the normal bias?

A.: About three times as great. Yes, push-pull increases the percentage of anode watts consumption, which may be utilised as undistorted output.

3. Would changing from 90 volts anode potential in a s.g. detector to 120-125 make a noticeable improvement in either s.w. or h.c.?

A.: This is rather hard to say. According to theory, yes, and we have found that to be the case.