

SANIO (Timaru).—Can I use power grid detection with PM4DX valves?—Yes.

2. Would there be any gain in amplification if I altered the connections of my audio transformers to the shunt feed audio, as shown.

A.: You may gain in quality slightly, though you will lose in volume. If you are to employ it in the last stage it would be advisable for you to apply grid bias by breaking the return between plate terminal of the transformer and earth, and inserting therein a grid bias battery with the positive terminal toward the earth. The value of this battery will depend upon the bias to be applied to the valve.

HUGO (Greymouth): Can I use .00035 condensers for the Outspan Five? Or could I reduce their capacities by removing plates?

A.: You could use .0005 condensers for the Outspan quite well by winding about ten turns less on the secondary coils. The primaries will have to be reduced by approximately two turns, but the tickler should remain the same.

2. Could you forward a rough sketch of the coils somewhat similar to the sketch of the regenerator?

A.: The coils were really so simple that we did not bother with a sketch. If you send a stamped and addressed envelope we will send you the necessary diagrams.

3. Does the diameter of the coil former affect the number of turns?

A.: Yes. If the former is larger than that specified there are fewer turns, and if smaller there are more.

4. Could I procure a blue print for the Outspan Five?

A.: No, a blue print has not been issued. If you have any difficulties we will try to clear them up in Q. and A., if necessary devoting a special article to their elucidation. Would any other correspondents who have experienced any difficulty with the Outspan Five let us know as soon as possible, for this is really a splendid set and very easy to make. The fact that our diagrams were very badly treated in the printing process has caused a certain amount of confusion among readers. If there is the demand we shall supplement the previous article with a redescription of certain points that may not be clear, and suitable drawings.

G. L. (Auckland): Which is the better, a single or double-wire aerial?

A.: A double wire, providing the wires are spaced at a greater distance than six feet, and that the total length of the wires added together do not exceed 100 feet.

2. Which is the better, enamelled or bare aerial wire?

A.: Enamelled is the better because bare wire corrodes.

3. Which is better to have in series with the aerial, a midget variable or fixed condenser?

A.: A midget variable, because it is easier than to alter the capacity of the aerial to suit the particular frequency being received.

4. For efficiency is it better to vary the grid bias to suit different valves?

A.: Most decidedly, yes. Some valves take more bias than others.

5. Which is the best way to vary the grid bias voltage?

A.: By shifting the wander plug to the most suitable tap. Another method is to connect a potentiometer of 2000 ohms across the bias battery and vary the centre tap to give the best results. This method, although it permits of finer adjustment of grid bias, places a certain bleed upon the battery. It is, however, very small.

6. Are 4-volt valves as efficient as 6-volters?

A.: For all practical purposes, yes.

7. What make of transformers do you advise and what ratio?

A.: It pays always to use high quality transformers having a ratio of $3\frac{1}{2}$ or $4/1$.

E. J. L. (Ohura): I want a long and shortwave receiver. Do you know of one? It must be battery operated.

A.: The Philips is the only one we know of, although you could have one of the R.R. receivers made up by any experienced radio dealer.

G. A. T. (Invercargill): My commercial super heterodyne receiver produces a ploppy sound in the speaker when the announcer pronounces a word with an accent on the "t" or "th." What is the reason and cure for this?

A.: The reason is due probably to oscillation caused by the high frequency sounds of the consonants you mention. The cure can be brought about only by the agents for the receiver.

RAY DX (Waikato): Which is the best method of coupling valves—by transformer, as in the Outspan Five, or through a condenser as in September 5 circuit?

A.: The Outspan Five is the better method of coupling s.g. valves. It is conducive to greater selectivity, though sometimes the pickup is not quite as great.

2. For a primary I use 30 turns of 30 d.s.c. on a 2in. former. Is this enough to get maximum results?

A.: It sounds about right.

3. Would it be worth while changing the detector coil to the regenerator as in the Outspan Five?—Yes.

4. Would the regenerator make the set more selective?

A.: Reaction always tends to make a set slightly more selective than a set not using reaction.

5. Does painting a coil with shellac lower its efficiency?

A.: Shellac will dissolve the enamel of covering of wire, but for a space wound cotton or silk-covered wire, shellac does not have a detrimental effect.

STEP DOWN (Taumarunui): Could you supply data for shortwave coils mounted on valve sockets?

A.: A complete table was given in the R.R. of January 30, 1931. Furthermore, details were given in connection with the Differential One, and these could apply to a .0001 condenser.

2. Can you give me information on constructing step-up, step-down transformers to work on 110 volts, 50/60 cycles a.c.?

A.: This information was given in the 1930 Guide, and a table will appear in the 1931 Guide.

Useful Hints

SUPER-POWER valves should be worked at the maximum rated plate voltage with the correct negative grid bias specified, if the best possible quality is to be obtained.

CORRECT grid bias is particularly important for the last valve in a set, and too little grid bias will inevitably shorten the valve's life, introduce distortion, and waste B battery current.

THE chief disadvantage of using wood for a panel is that panel-mounting components are designed for panels of a quarter inch or less in thickness, and that wood of this thickness is not usually sufficient rigid.

ALTHOUGH a small grid bias battery as used for R.F. stages has a very long life, do not imagine that it is everlasting, or you may be troubled with a mysterious and hard-to-define loss of efficiency and crispness.

New Recording Device Of Topical Interest

German Invention

(By "Switch.")

A NEW process for the recording and reproduction of sound vibrations has been devised by a German inventor. It is in many respects similar to the telegraphone, in which recording was carried out by imparting varying degrees of magnetism to a steel wire as it passed between the poles of a magnetic system.

Whereas in the telegraphone the variable magnetism of the steel wire is used to record and reproduce, the sound in this new method is first converted into fluctuations of light.

Photographic emulsions containing metals such as silver, chromium, platinum, etc., are used exclusively, the carrier being a band of celluloid film, metal, paper, or fabric, in the form of tape, strings, or wires. The amount of metal left at the various places on this carrier will be larger where the light has been more intense.

If such a carrier is made to pass through (or close to) a coil situated in the magnetic field of another coil, fluctuations will be set up in this second coil corresponding to the amount of metal at the various points of the carrier-band or string.

These current fluctuations will affect any suitable instrument inserted into the circuit of the second coil. In a telephone receiver a reproduction of the original speech or music would be heard. Any amplifier of the type used in radio practice could be used

THE writer in resuming short-wave listening has been converted back to battery reception. The set he operates is a special circuit and employs only two valves which are of the latest low-consumption 2-volt type. The drain on the "B" batteries is only 2 milli-amperes, and at a conservative estimate, high-class, fresh dry batteries which operate this set should last well over a year. Battery reception is, of course, delightfully quiet, and static even when fairly vigorous on the broadcast band was merely a soft background to the stations to which "Switch" listened.

THE Wellington-Sydney trans-Tasman public radio telephone has often been heard by "Switch" lately. Wellington and London have been testing exhaustively through 2ME, Sydney, but in the evenings the results have not been as good as desired. 2MD, Sydney, however, has given quite satisfactory loudspeaker volume, with the use of only two valves previously referred to. The writer's proximity to the transmitting station of 2YA, Wellington, has resulted in some harmonics from the "big voice" coming in on his short-wave receiver, but as these harmonics are needle-sharp they are readily tuned out.

to increase the power of the fluctuations.

This process of reproduction can be used either in connection with a moving picture or as a substitute for gramophones.

RADIO DIRECTORY

What to Buy and Where

CITIES

ACE and HAMMARLUND SETS, Johns, Ltd.

WESTINGHOUSE Rectifiers Chancery Street, Auckland.

BURGESS RADIO BATTERIES, All Radio Dealers.

LOFTIN-WHITE AMPLIFIERS Stewart Hardware Ltd., Courtenay Place, Wellington.

MAJESTIC RADIO RECEIVERS Kirkcaldie & Stains, Wellington Agents, Lambton Quay.

MULLARD VALVES ... All Radio Dealers.

N.Z. DISTRIBUTORS PILOT PARTS AND RECEIVERS, INCLUDING PILOT SUPER-WASP and GILFILLAN ELECTRIC RECEIVERS Harrington's, N.Z., Ltd., 40-42 Willis St., Wellington. 142 Queen St., Auckland.

RADIOLA RECEIVERS and Farmers' Trading Co., Ltd., Expert Radiola Service. Hobson Street, Auckland.

STEINITE RADIO ... G. G. Macquarrie, Ltd., 120 Willis St., Wellington.

COUNTRY TOWNS

PHILIPS VALVES AND APPARATUS All Good Radio Dealers.