

Circuits for the Crystaphile

Some New Crystal Hook-Ups

BY "CATHODE."



WITH this issue we commence a short series of three or four articles covering various uses of the humble crystal rectifier. For the most part only circuit diagrams will accompany the notes, but where it is thought that a particular arrangement is worthy of being made up in permanent form, constructional details will be provided. We propose to commence with the simpler circuits, using a crystal alone, working up gradually through the less involved combinations of crystal and valve, and finishing the series with a mains-operated crystal-valve combination of considerable range and power.

The simple condenser-tuned crystal circuit shown in Fig. 1 will be familiar to every reader. Its capabilities are well known. It gives fine loud signals, and is ridiculously easy to construct. And you can make your coil as rough as you like, because the damping of the crystal is so heavy that a low-loss coil makes no difference.

Very, very nice—so long as we have only one local station. The only trouble is that we are all going to have two or three local stations before very long. When we find 2YA coming in with an obligato by 2ZW, we shall look long and anxiously at our faithful crystal sets. If we are wise and knowledgeable enough—or if we read the "Radio Record" faithfully each week—we shall know that certain quite minor changes will enable us to overcome that "flat-as-pancake" tuning of our crystal sets and relieve us of the necessity of being so blatantly and indecently greedy as to listen consistently to two programmes at the one time.

Direct-Coupled Crystal Set.

THERE are two reasons why a direct-coupled crystal set is un-

selective. One is damping. And the other is damping. On the one hand the aerial system is connected right across the tuned circuit; on the other hand we have the crystal also connected—through the 'phones—across the whole of the tuned circuit. A big improvement can be made by connecting both aerial system and crystal across only part of the tuned circuit. If at first sight it seems that signal strength will be reduced by applying only part of the voltage across the coil to the crystal, remember that the voltage across the coil is likely to be very much greater than was the case previously owing to the reduction in damping.

It may even be worth while making a decent coil now it has half a chance to do its job. Everyone has his own ideas about coil construction, but for ease of winding combined with fair efficiency a straightforward winding of 70 turns of 22 D.C.C. on a 3-inch former may be recommended for use with a .0003 or .00035 mfd. tuning condenser. This may be tapped at 20, 30, and 40 turns up from the earthed end of the coil for alternative connections for the aerial and crystal, or a single tapping at 30 turns up will make a good compromise. The connections are shown at Fig. 2.

Still Sharper Selectivity

ALTHOUGH the arrangement just described will provide adequate selectivity for most circumstances, we can go still further if we do not mind

coil may be wound first with the first 40 turns or so from the earthed and slightly spaced; the crystal coil may then be wound in the spaces. For the 70-turn tuning coil described above, the crystal winding should consist of about 40 turns.

The Aerial Tapping

BY now you will have formed the habit of reducing damping so badly that you will be regarding the aerial tapping with a critical and jaundiced eye. Well, you can loose-couple the aerial now. A third coil of 20 or 30 turns may be added to the other two and the aerial connected to this instead of to a tapping on the tuning coil.

There is no need for such tight coupling as was employed for the crystal coil, and this aerial coil may be wound on a 2½ inch former inside the tuning coil, or it may be wound over it on paraffined match-sticks or strips of ebonite spaced round the coil. The winding may be of 28 or 30 S.W.G. and should be located at the low-potential or earthed end of the tuning winding. The circuit will now be that shown at Fig. 4.

Incidentally, this method of construction provides about the maximum selectivity that can be obtained from a crystal receiver without sacrificing volume, so, following the programme

FOR SALE OR EXCHANGE

The rate for small advertisements under this heading is 1/6 cash for 20 words, and twopence for every other word thereafter.

GOING Cheap—Loftin White Amplifier, professionally built, complete with valves, in thorough order. Will take £11/10/—a snip. "Bargain," Box 1032, Wellington.

YOUTH-O-FORM Capsules prevent faulty assimilation of food and accumulation of unnecessary fat. 6/6 posted. A. C. Timms, Chemist, Pahiataua.

£22 EAGLE Midget Electric Radio, Five Valves, Triple Screen-Grid, Dynamic. Ask for approval offer. R. H. Co., 553 Colombo St., Christchurch.

FAT people troubled with indigestion should take Youth-O-Form. 6/6 posted. Wonderful results. A. C. Timms, Chemist, Pahiataua.

STALLOY-TRANSFORMER—Strips 36 x 1 inches, 2/- doz. Other widths proportional. Also supplied cut, punched. Special quantity quotations. Johns, Ltd., Chancery Street, Auckland.

COMBINATION Gramophone and Local Station Radio Receiver in beautiful cabinet—Brand new. Price, £30. Further particulars "Combination," P.O. Box 1032, Wellington.

EVERY woman who desires slenderness should take Youth-O-Form. 20lb. reduction in 6 weeks. 6/6 posted. A. C. Timms, Chemist, Pahiataua.

64 Stations on Metrodyne Screen-Grid "Commander"—Americans, Japs, China, Hawaii. List available. From £35. R. H. Co., 553 Colombo St., Christchurch.

£30 up rich-toned Metrodyne "Sterling" Screen-Grid 8, 10in. Dynamic—Distance and volume second only to "Commander." R. H. Co., Christchurch.

ELECTRAD LOFTIN-WHITE TUNER KIT

THE OFFICIAL
ELECTRAD L.-W. TUNER

IS NOW AVAILABLE, EMPLOYING THE 224 R.F. VALVE.

THIS TUNER IS DESIGNED TO WORK INTO THE

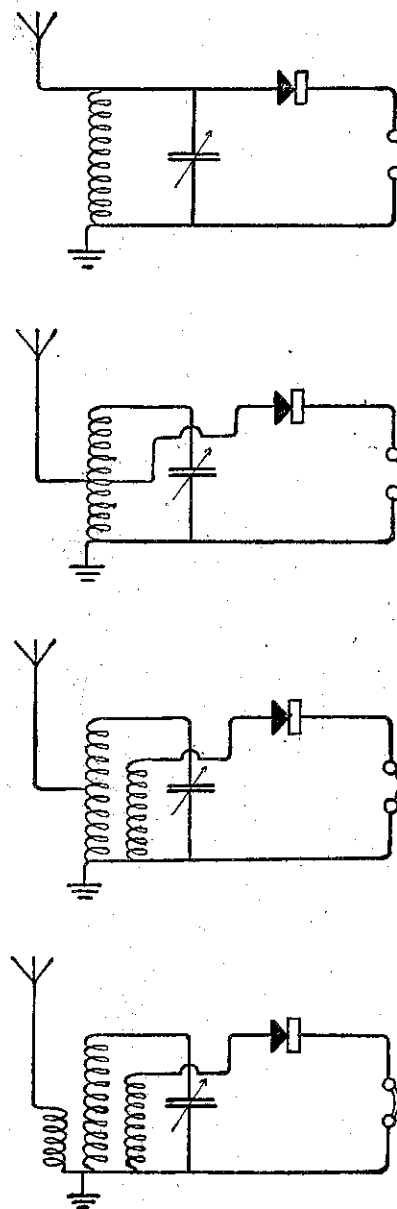
ELECTRAD L.-W. AMPLIFIER

We have stocks of Parts for building the L.-W. Amplifier.

Thos. Ballinger & Co. Ltd.

58-62 VICTORIA STREET ——— WELLINGTON.

"WHERE THE QUALITY GOODS ARE SOLD."



Types of crystal circuits.

complicating our coil construction a little. A separate untuned coil may be very tightly coupled to the tuning coil, and the crystal connected to the untuned coil. The circuit then appears as in Fig. 3.

There is only one way to obtain sufficiently tight coupling for the two coils of this circuit, and that is to interwind them. The small coil for connection to the crystal should be wound with small wire (28 or 30 S.W.G.) and wound turn for turn with the tuning coil. If this task is found unduly awkward, the tuning