

## The "Signal" Crystal Set.

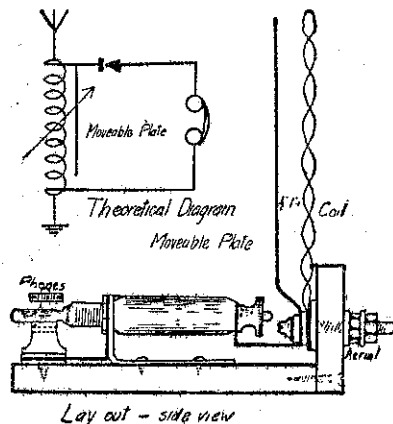
THIS crystal set was designed after a series of experiments, with the object of simplicity, clarity, and volume from the local station. It is suitable for local reception, either as a simple crystal set or with valve amplification. The tuning is accomplished by means of a copper disc moved over the face of a spiderweb coil, which, once adjusted, needs no further attention.

The coil is wound upon a former, and to suit 2YA a 60-turn coil is required; to find a coil suitable for other stations, divide the wave-length by 7. This gives the number of turns in a coil, suitable for a standard 100ft. aerial and lead-in. The former is made of a disc of wood or metal 1½ in. diameter with 2½ in. or 3 in. nails set radially around its circumference, like spokes in a cart wheel, any odd number, 9 to 15, may be used.

The wire, used, 24g. d.c.c., is wound in and out the nails until the required number of turns has been put on, and then the wire must be held in place by tying with strong thread where the wires cross, or fixed with celluloid cement before removing the former.

## The Tuning Disc.

THE tuning disc is cut from sheet copper, 26 or 28 gauge, the same diameter as the coil, leaving a lug on one side to fit on the aerial screw.



The tuning is affected by the distance that the copper disc stands away from the face of the coil, which should be from ¼ in. to 1 in. If the disc will not swing over the face of the coil, bend it away or remove a few turns from coil; if the loudest position is when the disc is full over, bend it closer until maximum volume is attained; move the disc with a piece of wood, not the hand, when tuning. The diagram shows the side view, with the theoretical diagram inset.

# Our Crystal Corner

By "Galena"

The base board is 4 in. by 4 in., and the back piece 4 in. by 2 in.; they can be made out of 3-Sin. rimu, rubbed over with linseed oil and shellaced, or, better still, is 3-Sin. "Sindanyo" or other insulating material.

The writer runs a medium size loud-speaker with this set and one valve, 9 miles from 2YA.

## A Novel Set.

A CORRESPONDENT, Mr. R. Garlick, has sent us a description of a novel crystal set. For this, the usual components are necessary, to wit, 4 terminals, a crystal, quarter-pound of D.C.C. wire, quarter pound of 32 enamelled wire, a 2-inch former, and a 3-inch former. The set is loose coupled as the two sizes of wire and formers would suggest.

The first task is to wind the coils on the 3-inch former. Wind on 40 turns of the 22 wire. There is no need to space wind the wire when it is cotton covered, so that this should present no difficulties. When wound on neatly and tightly, remove the former, and on the 2-inch former wind 75 to 90 turns of 24 D.C.C. wire. This, as before, will be close wound.

A box is then taken (the writer used an Epsom salts box), and on each end of the box four holes are drilled, so that a line between each pair crosses at right angles. The holes on the vertical plane are 3 inches apart, while those on the horizontal are 2 inches apart, that is, the respective diameters of the two coils. These are drilled similarly on the other end.

Through these, string is threaded so that a cage of four wires is made in the box. Upon the inner pieces of string, which are 2 inches apart, slip the coil of fine wire and solder a piece of heavier wire about 10 inches of, say, 22, on to each end. Now over the top of this coil and on the remaining two pieces of string, which are 3 inches apart, slip the remaining coil; pass the ends through the lid of the box to terminals marked "aerial" and "earth." This completes the primary winding.

Take the two ends of the finer wire, that is, the secondary, and pass them through the top of the box. One end passes to one side of the crystal, the other side of the crystal to a phone terminal. The other phone terminal connects with the free end of the secondary wire. This completes the set. The set is tuned by moving one coil in relation to the other.

Of this set the writer adds: "I can get really good phone strength at 2½ miles from 3YA, but I do not know the range of the set. I have heard it said that some listeners have heard 2YA here in Christchurch. There is plenty of room for improvement, and I would like to hear results which listeners get from this set."

In passing this set on to readers, it may be added that the loose coupled style, of which this is a variation, is usually more selective than the tight coupled, though seldom delivers the same volume. However, for anyone in-

terested in sets, this should make a very interesting and novel experiment.

## Full-Wave Rectification.

"E.C." (Christchurch) writes complaining of poor results. His trouble seems to be similar to that of "Puzzled" (Wellington), who was answered in Vol. 11, No. 27.

Certain specific questions are asked:

1. What should be the respective positions of one detector be to another? Answer: That is immaterial, but keep the leads short.

2. Can you account for greater volume on one crystal than on another. Answer: It appears as though one crystal is more efficient.

3. Should I get much more volume from the speaker at, say, 1½ miles from a station, with a forty-foot aerial than I would at two miles with a

*READERS in difficulty, or who feel they are not getting the best from their crystal should send in their difficulties. They will be discussed in the Corner, that is providing they are not too particular to one case, when they will be replied to by post. If an owner has found a circuit he considers superior to the usual, send it in and if worth publishing it will be passed on to others. Remember, address all inquiries "Technical Editor," and mark the letters "Crystal Corner."*

twenty-foot aerial. Answer: Providing both aerials point to the same direction and are the same length—Yes.

4. Would a horn speaker be suitable? Answer: Yes, if it is not too large.

5. Would an aerial 60-feet high one end and 40-feet high the other end, give much more volume than one 20-feet high each end and the same length? Answer: It should—Yes.

6. As I want to make my earth wire as short as possible, would the following be an advantage. (my present earth is connected to the water pipe, which is about 9ft. from set): I intended putting an old copper, well down in the earth, filling it with coke and leaving a pipe above the ground to pour water down. This copper is to be connected to bare copper wire, which would run along under the ground and connect to the water pipe,

still under the ground. Then the lead it would be connected to the copper and be brought in through the window. The distance between copper and the water pipe would be 10 or 15ft. Would this give both the benefit of the copper earthing and the water pipe earthing in one, or would one be robbing the other? Answer: The earth should be more efficient than the present one, but see our article on "Earths."

The correspondent remarks that the dials work on 60 and 100, so that it appears that turns have to come off the coil controlled by the condenser whose dial reads 100.

## Choice of Components.

IN this respect the amateur is very liable to err. So many components are on the market at most attractive prices that the young enthusiast who wishes to put his crystal outfit on to a loud-speaker, is inclined to under-estimate the value of good components. Cheap components injure tone more than volume, although the latter certainly suffers.

Transformers afford one of the most outstanding examples of the difficulties that beset the purchaser of cheap parts. A little while back, it was quite safe to say that a small transformer was a poor one, but to-day this can no longer be said with any degree of truth. Already, some very fine transformers, which are quite diminutive in size, have appeared on the market, and are giving the greatest of satisfaction. Particular among these are the Philips and Mullard type with silver wound primaries. These transformers are by no means cheap, but are well worth the extra expenditure. However, at the price paid for these, one has a wide choice of good transformers, and the constructor should always consult a reliable dealer whose advice he may quite profitably take before purchasing this component.

The coming season, too, will mark the advent of very many fine but low-priced transformers. If the young constructor will watch advertisements, he will see that many of these are now on the market.

The effect of a small transformer is to spoil the tone of the set. Besides this they have a very short life, so that it really pays both from the point of view of tone and economy to purchase the better type transformer.

The ratio very often worries the young amateur. For valve sets the usual ratio is about 3½ to 1, but in amplifiers for crystal sets where only a limited volume is to be handled, the ratio is not so important. So long as the curve of the transformer is flat or relatively so, a ratio of 6 to 1, or more, can be quite profitably used. In addition, this higher ratio helps to step up the output. The curve of the transformer is usually published by all reliable makers, so that the dealer should be able to show the young enthusiast just what his transformer is capable of doing.

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