

1. The ratio of Ferranti transformer.—
3:1.
2. How much of the enclosed resistance wire should be necessary to break down 4½ volts to 4 volts passing .26 amps.
A.: About an inch, but as the wire will not pass much current, take four inches and double it.
3. I get better quality when I place my fingers on the plate and grid terminals of the last valve.
A.: Try adjustment to the grid bias, and if this makes no difference, a grid leak across the secondary. Have the valves tested.
4. The speaker howls when I touch the plate terminal of the last valve.
A.: This is not an ill omen.
5. The set oscillates more easily when the detector rheostat is full on, yet I get more volume on the loud signals than when the rheostat is turned on only slightly.
A.: By turning up the filament of the detector, you are approaching very near the reaction point, and when strong signals have to be handled, this is a detriment to both quality and volume.
6. If resistance is waste, does a valve burn as much current with the rheostat full on as it does half on?
A.: No; a resistance prevents current from passing.
7. Are the Time Signals broadcast from 2YA yet?—No.

"GRID" (Timaru) has been using wet "B" batteries with his set and finds when he changes over to dry "B" batteries there is a continuous whistle.
A.: Try earthing A—and shunting the battery with a 1 mfd. condenser.

"D.W." (Masterton): We shall publish the circuit referred to in our article "Clear as a Bell" as soon as we can obtain it. We are at present awaiting a reply.

"B.S." (Matahurie) complains that there is a continuous noise like static. All connections have been checked over and cleaned.
A.: Take off the aerial and earth and turn on the set and see if the noise still

persists. If it does, it is more than likely due to a loose connection. A frequent cause of trouble of this nature is a break within the battery cable. The cable can be tested either by tugging at each wire to see if the set goes completely out of operation, by flexing it rapidly and noting the effect or by substitution. Broken down by-pass condensers, internal valve trouble, dust between the condenser vanes, defective resistances, can all cause this trouble, besides points you have already examined. Turn on the set and one by one remove the valves. If the noise stops when one valve is removed the trouble is either in the valve or the current associated with it.

2: Could this battery set be converted into a short-wave set? How, and what would be the cost?
A.: The best plan would be to build a short-wave adaptor, which would cost about £3. Such an adaptor has been described in the 1929 Radio Listeners' Guide, and another will be described in the 1930 edition.

"QUERY" (Te Awamutu) asks how he might ascertain the capacity of a new 2 volt accumulator.

A.: Capacity is obtained by the following formula:—
$$N \times A \times 20$$

144
Where

N=No. of positive plates.
A=Area of one side of positive plate in square inches.

2: I already own a broadcast receiver, but I wish to use a short-wave set as well. Must I pay another 30/- license?
A.: No. It is unnecessary to take out a separate license no matter how many sets are employed, as long as they are used by the same family. The fact of your having two separate aerials does not matter.

"A.C.F." (Seaton) asks the following:
1. At what distance does inductance cease between two wires as in the case of a twin wire aerial?

A.: To be electrically clear of one another they have to be spaced by at least 8ft.

2. Would it be of advantage to use low loss coils in the full-wave crystal set described by "Pentode"?
A.: Yes, but very little.

3. If so, what are the specifications for the coils?
3. Which is the most suitable wire, d.c.c., d.s.c., or enamel?

A.: There is very little difference, probably double silk covered.

4. The correct spacing for each of the above wires?

A.: Double silk, and cotton are spaced by their coverings, that is, they are wound as close as possible, while enamel is usually spaced by half its own width. These are approximations only, and competent designers will have different ideas on the subject. The total winding length determines the inductance, and this must be borne in mind when a circuit is designed.

5. What is the meaning of SWG and B. & S.?

A.: SWG is an English term meaning standard wire gauge, while B. & S. refers to the American system, the letters standing for Brown and Sharp. The numbers indicate the size of the wire, the smaller the number the coarser. B. & S. and SWG do not entirely coincide. Reference to a table is necessary to convert one to the other.

6. What is the capacity of a 23 plate variable condenser?

A.: It depends on the size of the plates, but probably a .00085.

"A.E." (Waverley) has heard music from his set when the speaker is not connected to it.

A.: This is due to vibration, probably of the laminations of the transformer. There is no cause for concern, but if it is annoying try tightening up bolts on the transformer.

"CONSTRUCTOR" (Wellington) asks if the details of an "A" eliminator have been described.

A.: Not fully; they are being given in the 1930 edition of the "Radio Listener's Guide."

2. Will a 1.3amp. battery charger as described in the "Radio Listener's Guide," shunted with a shunted electrolytic condenser, and with a choke in series, run four 201A type valves?

A.: Yes, providing the choke has a sufficiently small resistance. If the resistance is greater than 1 ohm., then voltage from the battery charger will have to be increased. If you are building up the charger with a view to using as a battery eliminator use more than 6 volts and break down the current with a resistance.

2. Can the electrolytic condenser be made of 30 plates approximately 66 x 8, 16 gauge aluminium, spaced with aluminium washers and 1-16in. apart so as to form parallel connection of all plates, that is, it is assembled similar to accumulator plates of one polarity and using a glass accumulator jar, and formed as described in the "Radio Record."

A.: It is difficult to say without being tried out, but it appears as though it would be quite OK.

3. Will a choke of .1 henry be sufficient?

A.: Better make up the choke that will be described in the 1930 edition of the "Radio Listener's Guide."

Improving Catwhiskers

SOMETIMES a crystal, after behaving well, will suddenly "go dead for no apparent reason, and it is very difficult to say, in all cases, what causes the trouble. There are, however, certain well-known causes which will interfere with the sensitiveness of a crystal, and in such cases the trouble is easily remedied. For example, dust or other dirt upon the surface of a crystal is very undesirable; it may be removed by means of a camel-hair brush, or by dipping the crystal into methylated spirits. The latter procedure has the effect of removing greasy contamination from the surface of the crystal, and often produces a marked improvement in its rectifying properties. The cat-whisker sometimes becomes corroded, and the tip should be cleaned with sandpaper, or by snipping off a fragment of the thin wire with a pair of scissors.

Easter Programmes

"K.D.K.A." (Pittsburg) will broadcast on short wave a special Easter programme, Sunday, April 20. (New Zealand time), commencing midnight, Saturday at Pittsburg, E.S. time. This programme is primarily intended as a special feature for Rear-Admiral Byrd and party. (R. Leslie Jones, Wellington).

Even his valves were home-made, as he found where a wholesale drug company dumped its broken test tubes, where the electric light company dumped its burnt-out bulbs, and where he could pick up enough scraps of tungsten wire for his filaments. To exhaust his home-made valves he constructed his own mercury vacuum pump from scrap glass, the necessary mercury being given or lent by another amateur, his headphones were built from bits of wood and wire, and the greatest outlay was that this lad of 17 had to face was 25 cents for a pair of cutting pliers.

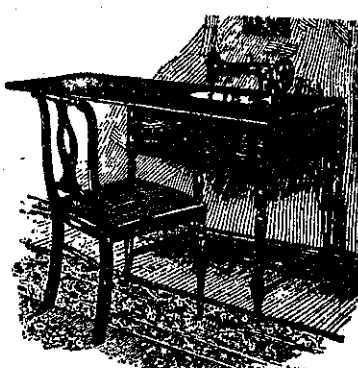
It is stated that his station was particularly efficient and attracted considerable attention on account of his long-distance records and superior operating.

Amateur Transmitters

Growth in U.S.A.

IN his statement before the U.S. Senate Committee on Inter-State Commerce last month, Mr. Hiram Percy Maxim, the president of the American Radio Relay League, outlined the history of amateur work in the United States from the early days when a few experimenters engaged in two-way radio communication with each other, unfettered by regulations, to the present time when 17,000 or more transmitters are restricted to the use of a few narrow wavebands. It is interesting to note that the Radio Law of 1912, which first recognised the amateur status, allotted them all waves below 200 metres, then considered "useless."

The keenness of the early transmitters is exemplified in a case quoted by Mr. Maxim, where an amateur, unable to afford the purchase of apparatus, set about constructing a transmitting set from odds and ends picked up.



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