Mainly About Construction

"By Megohm"

A Five-Valve Browning-Drake

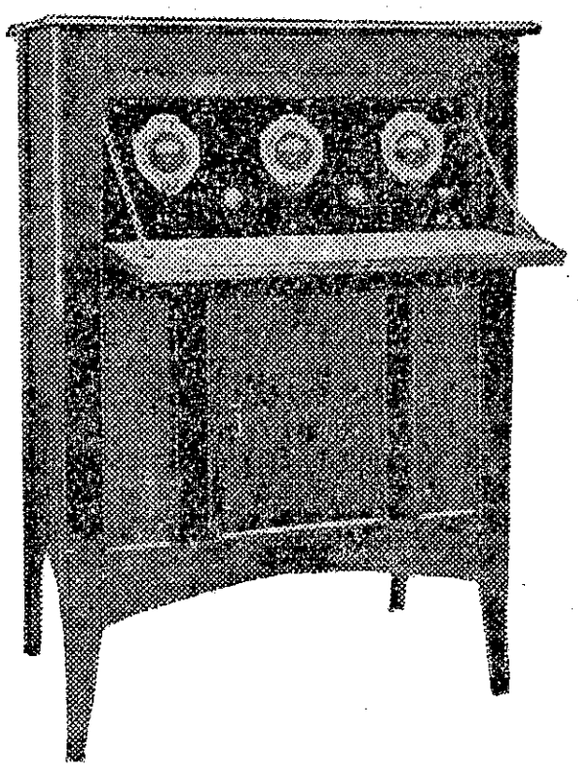
Successful Home Construction

AN enthusiastic South Island constructor, writing under the nom-de-plume "Satisfied Constructor," forwards a photograph and report of the 2R.F. Browning-Drake receiver which he has constructed, including the amplifier in the same cabinet, making the complete 5-valve set. The cabinet certainly does our correspondent credit, and extracts following from an interesting and lengthy report show that reception performance is correspondingly good.

"I BUILT the 2R.F. Browning-Drake recently described by you and you will be interested in the following report. The volume is tremendous, and it beat a 7-valve neutrodyne for distance and volume, both tested out on the same aerial (a 37-foot high 60-foot long T), but before I secured these results I had a bit of trouble, which one can only expect when making up a new circuit. I altered the lay-out slightly and instead of a wood base-board with copper covering I made up a solid brass (1-16in.) base with sides turned down 1¼in. I think for all the extra expense it would be far better for constructors to carry out this plan.

"I wound all the coils with No. 22 D.C.C. wire supported with celluloid strips. I did not space the turns, as I considered the covering to be sufficient, and from results I think it is. The tuning condensers are W.R.C. The neutralising condensers are also W.R.C. midgets with all plates removed except one fixed and one moving. I am using a rotating tickler.

"Audio is transformer coupled, all built on the one base, making a complete receiver. The panel is a fornier 24 x 8½ x 3-16in. with a 26-gauge copper shielding on the back.



"When I finished building it and switched on, all I could get from it was a high-pitched whistle. If I coupled a .002 condenser across the grid of first audio value to A— the whistle stopped, so I took out the first audio transformer, an All-American 5—1, and fitted a Jefferson 2—1 in its place; the whistle stopped. I still retained a 3—1 All-American in last stage, so I tuned in 3YA, and then neutralised. No signal would come through, even with the tickler turned full in. I considered this a good test, but when I tuned in a low-powered station in Sydney and pushed the volume up with the volume control with tickler set well back, the R.F. valves would oscillate, so I went over the balancing again but it was all the same, so I tried connecting a No. 2 Emmcostat between grid and N.C. of first R.F. valve. That gave it full volume and better tone. I am using 16 turns No. 30 enamelled bunch-wound primary and 3 Mullard P.M.5X valves, 1 Geco first audio and a P.M.6 last audio.

"I am using a Philips power-plus B eliminator and a Philips baby grand loud-speaker, which are splendid instruments.

"There is very little background noise and in between items it is so silent that you would have to stand with your ear to the speaker to hear any hiss. You might think I am 'stretching it,' but it is true. It is a wonderful distance-puller. I heard 1ZQ, Auckland, at good speaker strength on Thursday, August 30. I never heard this station before, even when using an 8-valve super-het. In two nights' searching have heard 21 stations, including three Japs."

The "A" Battery Charger.

A CORRESPONDENT writes asking how the charger outlined on September 7 can be adapted to use on 110-volt (Wellington) supply. The charger in question is intended for use on a supply of 230 volts, 50 cycles, the New Zealand standard, but for use on 110 volts the primary is wound with the specified turns, with the addition of a tap at the half-way point. In actual practice it would be advisable to make two taps, at the 530th and 550th respectively, so that the one giving the best result may be used. Connection is then made to the commencement of the primary, and to one of these taps. The remainder of the winding is not used, but is there ready for the change-over to 230 volts, at which time the whole of the primary winding will be used, and the half-way taps discarded. Secondary and filament windings will be the same for either mains supply. Another plan is to arrange that the two portions of the primary have the same number of turns, and to connect the two halves in parallel for 110 volts. This would mean bringing out both ends of each primary winding separately, and arranging that any taps taken were over the same number of turns in each half. The two beginnings would be connected to one mains lead and the two ends to the other.

Extra Primary Taps.

OWING possibly to slight modifications in construction, error in counting primary turns, and other causes, there have been cases where constructors have not obtained full voltages expected from the secondary windings. To compensate for possible differences, constructors are advised in every case to take two or three taps in the primary winding at say. 970, 1000 and 1050 turns, as by employing a lesser number of turns the output voltage may be increased, as a greater magnetising current is used, but this must not be carried too far, or the charger will not be economical of current. Some experimenters will prefer to fit a switch to vary the number of turns, otherwise the best position may be found by trial, and a permanent connection made.

THE original charger was designed with the maximum number of primary turns for economical working, but a considerable number of turns may be cut out with very small increase in current consumption. The extra trouble of taking taps as recommended will be found worth while by experimenters.

For ordinary charging purposes the secondary taps shown in the original charger are not an absolute necessity, but were provided so that experimenters could make use of the transformer for other purposes. For charging only, the whole of the two secondary windings may be permanently connected up, the resistance lamps automatically regulating the output to suit the battery being charged, from 2 to 12 volts.

Ordinary iron cannot be used in place of the stalloy prescribed for the core, as the turns specifications are quite different for black iron, which is not nearly so efficient as stalloy.

If, through some fault in construction, a transformer does not give at least a total of 40 volts over the two secondary windings, it is possible for the primary turns to be reduced and the output voltage raised by the following method:

Take out the stalloy strips and remove the spool end at the side where the primary ends. Carefully pull out the wire, removing about 50 turns, cutting off the surplus wire, and passing out the end for the finish of the primary. Then secure the spool end in place. If found necessary, the other spool end may be removed, the beginning of the last layer pulled out, and a tap soldered on. If this does not effect the necessary improvement, the transformer should be rewound and a careful check made when counting turns. Unless a revolution-counter is used, the turns on each layer should be carefully counted after the layer is wound, and noted on paper, so that when the last layer is reached the total may be added up and the exact specified number of turns put on.

CONSTRUCTORS must recognise the importance of correctly counting turns. The constructor of an eliminator transformer, writing recently to