A Corner for Beginners

Changing Valves.

FROM time to time, correspondents write in regarding this subject, sometimes in difficulty regarding neutralising and sometimes to know the different types of valves for each position. In general if the set has been functioning well before the valves began to weaken or were burnt out, replace by exactly the same type of valve, particularly so if the receiver is a factory made one. When home-made the constructor usually understands something about the relationship of his valves to the other components of the set, and so he can consider "matching."

But for the beginner, one would strongly recommend that valves are replaced as they came out. The main point to watch in this direction is the substitution of American valves by English or Continental. Not that this cannot be done, but the beginner seldom makes a success of it. In order that a set may not interfere with its neighbours, and give good reproduction, it has to be neutralised, and it is neutralised for particular valves, and if these are changed the neutralisation is not now correct, and the set either makes itself a nuisance or it will be noticed that reproduction is not as good as it used to be. There are certain makes of American receivers which cannot take other than American valves without considerable alteration and readjusting, so that it is indeed unwise to change.

The users of American sets can be quite safe in using the 201A type of valve for all positions in the set except the last, when something more powerful, e.g., the 171 could be used with advantage. With English and Continental valves, however, there is a greater degree of specialisation, and some consideration must be given before the valves are selected. As the number of these is fairly great, the beginner should consult a dealer before he makes his change. The use of one of these valves in the wrong place will entirely spoil reception.

Generally speaking, valves with a high impedance and a high amplification factor are used in the radio frequency stages, and low impedance valves with an amplification factor are used in the latter stages. The last valve need have only a very small amplification factor, usually not greater than three, e.g., 603 in Philips valves, PM252 (Mullard), and DEP250 (Osram). These power valves usually require a high plate voltage, not less than 150 volts, to work satisfactorily, while their filament consumption is regularly higher than that of the ordinary valve.

Very complete valve tables have been compiled for the new edition of the Radio Listeners' Guide. The valves treated are all those in general use in New Zealand, and the amateur can by referring to the table find in his own particular make the valve for any position in his set.

portable, described by "Pentode" in our issues December 14 and December 21, 1928.

2. I intend using a 6-volt car battery in place of 3 dry cells. What would be the result?

ANSWER: This would depend on the type of valve to be used. If valves consuming .1 and upwards of an ampere, the accumulator would be necessary. For dull emitters of the .06 type dry batteries would be quite O.K. Otherwise, there is no difference providing the accumulator can be regularly charged.

3. What advantages, if any, other than increased "A" battery drain, have low filament consumption valves over high filament consumption valves?

ANSWER: None.

4. Is the small vertical tuning coil obtainable in New Zealand?

ANSWER: If the plug-in type of coil is meant, yes.

5. I use an ordinary aerial coupled to the frame aerial. Could the frame aerial be obviated by employing different tuning coil from that incorporated in the factory-built set, and, if so, can it be procured in New Zealand?

ANSWER: The method of attachment of a frame antenna differs from that of an aerial. The former is made to replace the aerial tuning coil, the outside being connected to the tuning condenser and the inner end to the other set of plates of the tuning condenser and then to the filament negative. An aerial, however, is connected to an aerial coil which may be a single tapped coil or two coils. If the former type is used, the coil should consist of about 50 turns tapped at the eighteenth from the bottom. The aerial is taken on to this tapping, and the top of the coil goes to the condenser and the bottom to the other set of plates of the condenser. The frame antenna is thus replaced by the aerial coil.

The Value of Condensers.

THE following is the use of the values of combined condensers. These were published some time previously, but recently there have been several requests in this direction, so it has been considered advisable to reprint them. From the tables it will be seen that if condensers are placed in parallel the total capacity is equal to the sum of the two condensers so connected. The value of the condensers in series is rather more difficult to obtain. The fact that condensers in parallel is equal to the sum of their capacities is very often very useful in building up condenser banks for battery eliminators. It is very difficult to get precisely the capacity of condenser combined with the correct voltage test, so that it is necessary to combine these.

The capacities in the following table are all expressed in microfarads (mfds.). The first two columns contain the values of the two condensers to be combined, and the other two columns give the resultant capacity of the combination.

Separate Capacities.			Combination. Series.	Parallel.
.0001	and	.00025	.000071	.00035
.0001	and	.0005	.000083	.0006
.0001	and	.001	.000093	.0011
.0001	and	.005	.000095	.0021
.0001	and	.005	.000098	.0051
.0001	and	.006	.000098	.0061
.00025	and	.0005	.00016	.00075
.00025	and	.001	.0002	.00125
.00025	and	.002	.00022	.00225
.00025	and	.005	.00023	.00225
.00025	and	.006	.00024	.00625
.0005	and	.001	.00033	.0015
.0005	and	.002	.0004	.0025
.0005	and	.005	.00045	.0055
.0005	and	.006	.00046	.0065
.001	and	.002	.00066	.003
.001	and	.005	.00083	.006
.001	and	.006	.00085	.007
.002	and	.005	.0014	.007
.002	and	.006	.1115	.008
.005	and	.006	.0027	.011

Single Dial Control.

ONE of our correspondents this week has raised the question of single dial control, and as this more or less interests all, it is considered worth a a little elaboration. By single dial control, it is meant that all the variable condensers in the set are so fastened together that one dial operates all the moving plates. Each condenser controls a transformer or coil in the radio frequency side of the set, and the duty of each is to adjust that coil so that it may receive the variations as they come from the air, in other words, that the set may be tuned to the station's wavelength. Coils differ, so it would be expected that the reading for each coil will be slightly different from that of another, and this is the problem of single dial control. This variation is particularly noticeable in the aerial coil.

When a single coil is used in the aerial circuit the inductance of the aerial considerably affects the inductance of the aerial coil, with the result that the condenser reading on that coil should be slightly different from that on the other grid coils. To overcome this the aerial coil should be loosely coupled to its grid coil. That is, there should be two separate windings. Where a single coil is used, and it is desired to incorporate single dial control, a midget, or balancing condenser, should be placed across the first grid coil. By adjusting this, the tuning can be made very much finer, and inaccuracies ironed out.

It is very difficult to say if single dial control will replace multiple dial control, and some of our leading radio authorities claim that it will not. Certainly single dial control cannot be as selective as multiple dial control, but when balancing condensers are used the difficulty is overcome, but is it one dial control?

Dull Emitters and Bright Emitters.

THE terms dull emitters and bright emitters are used rather loosely. Actually there are no bright emitters on the market at the present time, understanding by bright emitters those that consumed about 1 or 1.5 amperes and were indeed, lamps.

Now, there are two general classes of valves: those consuming between .1 and .25 amperes, and those consuming approximately .06. For the sake of comparisons, the .06 type can be referred to low filament consumption valves as opposed to the higher filament consumption valve. In all ways, dull emitters of the two types mentioned are superior to the bright emitters that paved the way to modern reception. The differences betwen the two types of dull emitters are generally that although very economical in "A" battery, the low filament consumption valves are heavier on plate current. Where an eliminator is used, this latter is of little disadvantage.

2YB, New Plymouth

Open After Easter

THE transmitting plant for 2YB, New Plymouth, has been dispatched from Wellington. It was first intended that a temporary power plant should be installed in order to expedite operation, but as the permanent power equipment is due in Wellington by the s.s. Keeling in the immediate future, it was deemed best by the interests concerned to await its arrival and start the operation of this relay plant with everything in good working order. Certain details regarding preliminary equipment, etc., still require finality in New Plymouth, but it is anticipated that the official opening will take place very soon after Easter, and that 2YB will be on the air probably in the second week in April.