

A.C. Valves

Use of Heater Type

Those reading descriptions of A.C. valves will have noticed that there are two types, directly heated filaments (226) and indirectly heated (227). Manufacturers of alternating-current sets are now employing the heater-type valves more extensively because, primarily, of the greater ease in building sets with these valves. Now that proper means for regulating supply-voltage variations are being provided, and experimenters are becoming more familiar with the methods of handling unusual line voltages, this valve is considered as a very very good all-purpose one. The construction of sets with these involves less work and fewer parts than the use of the direct-filament A.C. valve, because of the simpler methods of balancing to reduce the "hum."

In sets employing the direct-filament valves a number of tapped resistances with adjustable taps are required to obtain the centre points of the filament circuits, and extreme care must be exercised in wiring the sets. When the heater type is employed, no balancing resistors are required and the sets are much easier to construct for this reason.

The inter-electrode capacity of the 227 type, too, is much lower than the capacity of the 226 type, and this makes it a better radio-frequency amplifier. The lower capacity also tends to make the valve more stable and, because of the construction, slight changes in the filament voltage do not cause a noticeable change in the output.

Brilliance of the Valves.

RADIO enthusiasts who have experimented with the heater-type valves are frequently puzzled by the fact that these valves do not always glow with the same brilliancy, even when the operating voltage remains unchanged. The contrast with the battery-type valve is quite marked; the latter showing quite uniform brilliancy. The reason for the difference is quite simple and it will be seen from this explanation that such differences in the brilliancy of the A.C. valves do not affect the performance of the valves in any way.

The filament which carries the heating current is made of pure tungsten, which is threaded through a cylinder of insulating material. The filament is exposed to the top of the insulation and any slight change in the contact and space left at the top will result in a change in the apparent glow of the tube. It is interesting to note that the filament is not operated close to the melting point; so that the voltage on the filament can be increased a great deal over the rated value without burning it out. The use of too high a voltage for great lengths of time, however, will reduce the life of the filament, and for this reason it is advisable to measure the filament voltage from time to time with an A.C. voltmeter. If the filament is operated a voltage higher than that specified by the manufacturer, the glow will naturally be increased.

Low Filament Voltages.

THE reasons for the use of very low voltages for the filaments of alternating-current valves may be unknown to many experimenters, but they will quickly be appreciated. The first is that a low potential difference between the ends of the filament results in a weaker electrostatic field and a corresponding reduction in the tendency to produce an A.C. hum.

The second important reason is that the use of a low voltage permits the use of a heavier filament and heavier current, which reduces the effect on the plate current of temperature changes (due to the current variations created by the alternations) and, consequently, the tendency to hum.

The different types of valves have different filament characteristics because of the difference in their construction and operation. The heater-type valve requires a longer filament than the direct-filament type, because of its insulating sleeve. On the other hand, the method of reducing the hum in the direct-filament valve requires a very low-voltage high-current charac-

teristic; so in order to keep both valves operating at their highest efficiency, different filament voltages are employed.

Successful Receiver

Parallel Feed B.D.

SEEING "Parallel's" letter on the 2 R.F. Browning-Drake prompts me to expound a little in a general way.

I have had one of these since "Megohm" first published the description, and I must say that it is an excellent receiver for an amateur to construct. The main New Zealand stations simply bellow at one, and the Australians require little or no reaction for the same results. I am one of those enthusiasts who do not mind much what the outfit looks like, so long as it works well. "Parallel's" receiver is a credit to him. I wish he could see mine!

However, I commenced operations with 3in. coils and all the rest of it; everything as per specifications. The absorption control of reaction proved a failure, so I installed a moving coil tickler, which I still use; but with a 4 to 1 reduction gear. The next stage was the split primary method, which was quite good, but did not seem to be much of an improvement on the usual method.

Some little time ago I took the set to pieces and built 2 1/2 in. coils, spaced wound with 26 S.W.G. enamelled, on very thin celluloid formers, using the parallel feed method with 1 mfd. coupling condensers. These latter seem to

be all right and as good as the .5 mfd. usually specified. As you see, this method makes the set very much more stable on the lower wavelengths.

As an average constructor, I can strongly recommend a' those who write you with neutralising troubles to try this method for the Browning-Drake.

Coming to the audio side I use large size transformers and both two stage, the last being push-pull, with 2-171A's feeding through the 25 to 1 output to a M.C. speaker of my own construction. The results from this combination are a treat to listen to. I may mention here that "The Radio Record" is responsible for my eliminator as well. As for long distance reception I leave that for the radio "globe trotters." There are dozens of carriers to be had for the asking, and these can easily be identified by means of a graph. Nevertheless, domestic peace and happiness must take first place. Still, I suppose this could be worked up into quite a good "log" by a DX fiend.—"ELIMINATOR" (Dunedin).

SIR BENJAMIN FULLER, one of the directors of the new Australian Broadcasting Company, has announced a scheme for the collection of funds to provide radio receiving equipment throughout all hospitals in Victoria. A special committee has been formed to supervise the collections at the 3LO, Melbourne, weekly community singing. It is expected that the general public of Victoria will rally to the aid of the scheme. The directors of the Broadcasting Company have subscribed 30 guineas and many other handsome contributions are promised by leading men.

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