

## A New Non-Oscillating Detector

**I**N a paper to be published soon in the proceedings of the Institute of Radio Engineers there is described a new detector tube devised by Harold P. Donle.\*

The construction of the tube and the usual method of using it is shown in Figure 1. Current from the A battery passes thru the filament rheostat R, then thru the filament (shown dotted) and the heater-wire H (wrapped around the outside of the tube) to the other terminal of the battery. The purpose of this heater is to keep the tube warm enough so that it will be filled with sodium vapor, a slight amount of metallic sodium having been placed in the tube at the time of the exhaust. C is a "collector" which takes the place of the usual grid. Because C is rather large and very close to the filament the "collector current" (equivalent to the ordinary grid current) is quite large and the input impedance is low. To keep the collector current within reasonable values a "neutralizing voltage" is supplied from a slider running on the potentiometer P.

The plate (anode) circuit impedance is normal and the tube will work into the usual phones or amplifiers. The collector

the square of the applied voltage. Thus it seems that the tube will not give tremendous signals from a loud station but will respond well to very weak signals—tending to equalize the signal strengths of various stations more than is the case with standard tubes.

The plate voltage and the filament current are not critical. The position of the grid-potentiometer slider must be adjusted

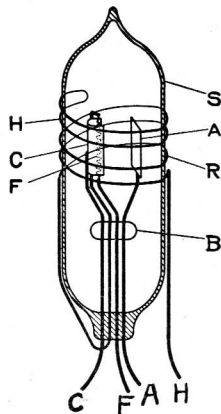


Fig. 2

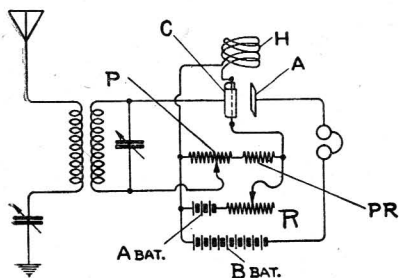


Fig. 1

circuit will not work well with the usual tuner, as the input impedance is very low and a secondary circuit adapted to operation at low voltage with larger currents must be used. This calls for a relatively large condenser across a low resistance coil with a few turns, the number of which is adjustable.

The tube does not oscillate, nor is it an amplifier tube; altho it has three electrodes it acts differently from the normal tube and can be used for detection only. When so used a sustained radio frequency impulse causes the plate current to drop in proportion to the applied voltage. This is markedly different from the standard tubes in which the response is in proportion to

with some care but this is not a "tricky" adjustment since the tube has no tendency to begin oscillating.

For spark, phone or I.C.W. reception the new tube would seem to have desirable characteristics; the C.W. operator will think twice before adopting a non-oscillating detector with the attendant complication of a separate heterodyne. However, it will be well to consider such a change in neighborhoods where there is interference on 200 meters between oscillating receivers operating on the same wave.

—S.K.

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F. H. Schnell, *Traffic Manager.*