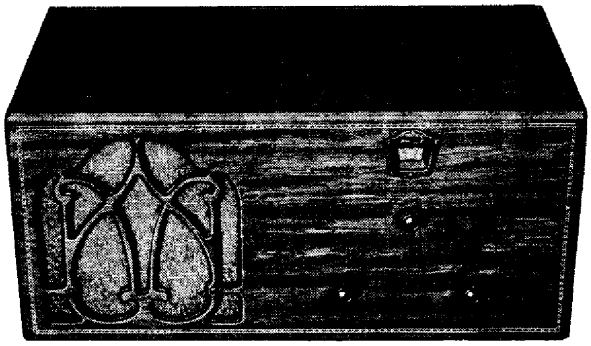
# PHILCO 237 SUPERHET



*The 237 receiver was the first battery set introduced by Philco in this country—and one of the first Class B instruments on the market.*

**Circuit.**—The first detector oscillator, type "15" (V1), is an H.F. pentode, and is preceded by a bandpass aerial circuit. Volume is controlled by means of a potentiometer between aerial and earth, ganged with a potentiometer controlling the bias of the I.F. valve. As this is an indirectly heated two-volt valve, oscillations are maintained by coupling with a winding directly in the cathode lead. The anode of this valve is coupled to the I.F. by a tuned secondary I.F. transformer (frequency 125 kc.).

The I.F. valve, "32" (V2) obtains its bias from a potentiometer across the G.B. battery (V.C.), and is coupled to the second detector by a bandpass I.F. transformer.

A screen-grid valve forms the second detector, "32" (V3), and operates on the anode bend principle. The anode is decoupled

(*Continued on page* 56.)

## RESISTANCES

| R. | Purpose. | Ohms. |
|---|---|---|
| 1 | Part of bias ptr. ... ... ... | 2,900 |
| 2 | Variable part of bias ptr. (Vc) ... | 5,000 |
| 3 | Ptr. across A and E (Vc) ... | 5,000 |
| 4 | Part of suppression circuit ... | 3,300 |
| 5 | Part of band pass coupling ... | 1 meg. |
| 6 | V1 cathode bias ... ... ... | 5,000 |
| 7 | V1 anode decoupling ... ... | 1,000 |
| 8 | Part of bias ptr. to V3 ... ... | 51,000 |
| 9 | Part of bias ptr. to V3 ... ... | 25,000 |
| 10 | V3 screen decoupling ... ... | 99,000 |
| 11 | V3 anode decoupling ... ... | 99,000 |
| 12 | L.F. coupling V3, V4 ... ... | 240,000 |
| 13 | H.F. stopper anode V3 ... ... | 99,000 |
| 14 | V4 grid leak ... ... ... | 490,000 |
| 15 | Part of bias ptr. ... ... ... | 1,000 |

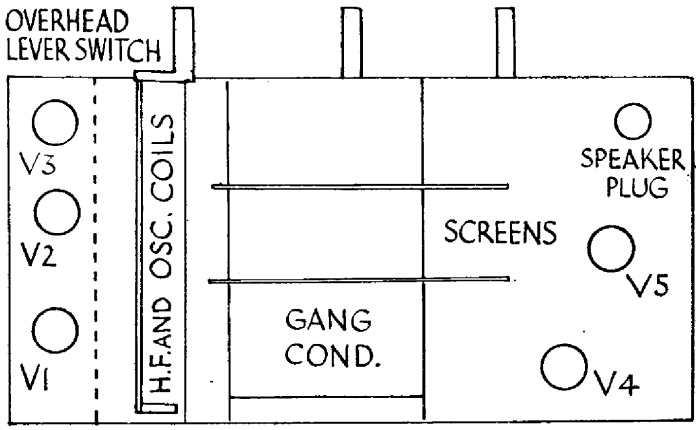
## CONDENSERS

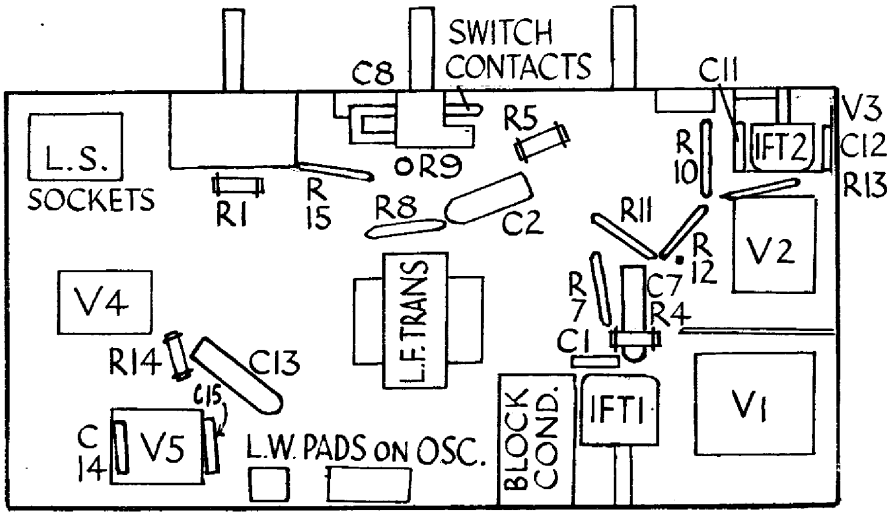
| C. | Purpose. | Mfd. |
|---|---|---|
| 1 | Part of suppression circuit ... | .0007 |
| 2 | Band pass coupling ... ... | .05 |
| 3 | V1 cathode ... ... ... | .006 |
| 4 | Decoupling screening grids from H.T.* | .1 |
| 5 | Decoupling V1 and V2 anodes from H.T.* | .15 |
| 6 | Decoupling bias to V2* ... ... | .25 |
| 7 | Decoupling V1 anode from V2 | .05 |
| 8 | Decoupling V3 grid ... ... | .05 |
| 9 | Decoupling V3 screen* ... ... | .5 |
| 10 | Decoupling V3 anode* ... ... | .5 |
| 11 | H.F. by-pass anode V3 ... ... | .00025 |
| 12 | H.F. by-pass anode V3 ... ... | .00025 |
| 13 | L.F. coupling V3 to V4 ... ... | .01 |
| 14 | Tone compensation anode V5 ... | .001 |
| 15 | Tone compensation anode V5 ... | .001 |

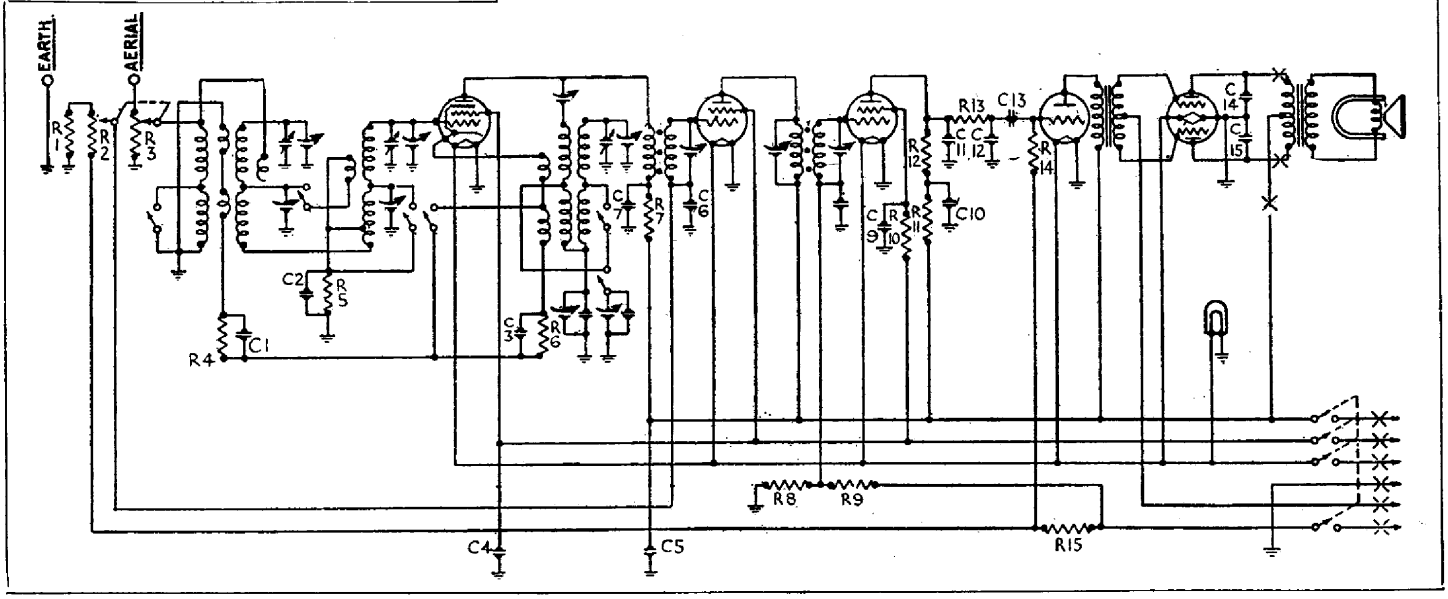
* In block.

*On the right is a diagram showing how the valves are placed.*

*Below are the sub-chassis diagram and the circuit of the Philco 237 battery superhet.*



# PHILCO 237 BATTERY SUPERHET (Cont.)

from the H.T. and is resistance capacity coupled to the first L.F. valve. The circuit contains an H.F. stopper, with the necessary by-pass condensers.

The L.F. valve, "30" (V4), is coupled by a Class B driver transformer to the output valve. This is a Class B "19," working with bias. Tone compensation is obtained by a small condenser between each anode and H.T.+.

A large permanent magnet speaker is employed.

**Special Notes.**—In earlier models the chassis has to be removed to allow the valve screen to be unscrewed, but in later types the side of the cabinet can be opened to facilitate changing valves.

The battery leads have tags with the required voltages, but in case these are missing, the braids are coded :—

White with black tracer L.T.+.
Black with white tracer L.T.—.
Yellow with black tracer H.T. + 67½ v.
Yellow, H.T. + 126v.
Blue, —3v. G.B.
Green, —9v. G.B.

**Quick Tests.**—Raise the "30" valve slightly in its socket and with a test prod on the H.T.+ lead of the voltmeter touch the inner rear valve leg (anode). The voltage should be practically full H.T.

Touching the outer rear leg (grid) should produce a loud plop in the speaker if the L.F. section is operating.

Touching the stator vanes of the rear tuning condenser (aerial tuner) should produce a loud click if the set is correct.

## VALVE READINGS

| Valve. | Type. | Electrode. | Volts. |
|---|---|---|---|
| 1 ... | 15 | anode ... | 120 |
| | | aux. grid ... | 70 |
| 2 ... | 32 | anode ... | 120 |
| | | screen ... | 70 |
| 3 ... | 32 | anode ... | — |
| | | screen ... | 50 |
| 4 ... | 30 | anode ... | 110 |
| 5 ... | 19 | each anode | 120 |

**Removing Chassis.**—To reach valves, it is advisable to remove the chassis by first removing the back board, pulling off the knobs, and removing the three holding screws underneath. The inclusion of long leads with the screen removed makes the H.F. side unstable.

**General Notes.**—C3 and R6 are mounted in the oscillator coil container.

Leads to the L.S. are green and white, H.T.+ ; green, anode; white, anode.

The valves have American bases, and the terminals are as follows (looking from underneath the valve-holder and counting clockwise from the two filament pins, which are the large ones together) :—

"15," anode, screen, cathode, grid at top.
"32," anode, screen, grid at top.
"30," anode, grid.
"19," anode, grid; anode, grid (paired in this order).

**Replacing Chassis.**—Lay chassis into cabinet, and replace three holding screws and knobs. Replace back strut after fixing batteries and aerial and earth leads.