MARCONIPHONE 279 (PORTABLE Cont.)

are labelled, and the wiring is colour coded with the new system :

H.T.+, red.

Valve anodes not direct to H.T., red and yellow.

Screening and auxiliary grids not direct to H.T., red and black.

Grid circuits, green.

Earth, black.

Mains, orange.

Heaters, filaments and cathodes, brown.

When leads not included in the above are nee[redacted] yellow systoflex will be used, and this colour will also be used if stocks of any one colour are temporarily exhausted.

Quick Tests.—Between the following terminals on L.S. transformer and chassis (note the polarity) :—

F. (green and yellow), 113 volts negative (H.T.—).

Tap (green), 10 volts negative (MPT4 bias).

O.P. (red), 250 volts positive H.T.+ smoothed.

O.P. (red and yellow), 225 volts positive V5 anode.

Removing Chassis.—There is no need to remove the knobs as the whole escutcheon is free from the cabinet. Remove four screws from underneath the support brackets. Unsolder the aerial leads from the frame (green on top, maroon on bottom) and release the cleat.

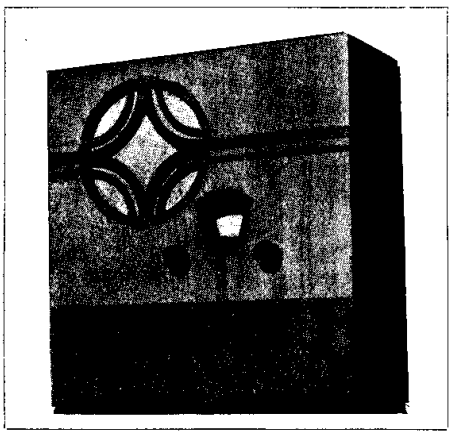
Removing Power-pack.—Remove four screws underneath, and after lifting unit out remove three screws at each end and one between the mains connector and switch. The cover can then be removed by easing it towards the switch side.

General Notes.—The H.T. to V1 and V2 is switched off for gram. See that switch is on radio when taking voltages.

To reach valve holders remove the screening plate.

Replacing Chassis.—Replace cover over valve sockets, slide chassis into cabinet and replace four holding screws. Resolder aerial leads and clip the leads.

PHILIPS 834B BATTERY RECEIVER



Five valves in a straight circuit and a moving coil speaker are provided in the 834B receiver by Philips Lamps, Ltd.

Circuit.—The first H.F. valve, PM12A (V1), follows a single tuned aerial coil with optional aerial series condensers. The grid is biased negatively by means of a variable resistance in series with a limiting resistance in the negative L.T. lead. Both the anode and screen circuits are properly decoupled. Coupling to the next valve is by tuned secondary H.F. transformer.

The second H.F. valve, PM12A (V2), is biased by a small fixed resistance in the negative L.T. lead, and the screen potential is obtained from the decoupling point in the detector anode circuit. The coupling following this valve is semi-aperiodic.

A PM2DX (V3) operates as a leaky grid detector, and is followed by "straight" transformer coupling.

The output pentode, PM22A, is biased from a point on a H.T. and bias potentiometer, and the operation of this valve is controlled by an extra valve.

The control valve, PM1HL (V5), operates by rectifying a portion of the L.F. output of V4, and the resultant decrease in the H.T. current through R2 causes a rise in positive potential at the junction of R4 and R5 (R's 2, 3, 4 and 5 form a potentiometer across the H.T. and G.B.) allowing the output valve to be correctly biased on receipt of an L.F. signal, but keeping it slightly over-biased when no signal is impressed on the grid.

The moving-coil speaker is a standard Philips permanent magnet type.

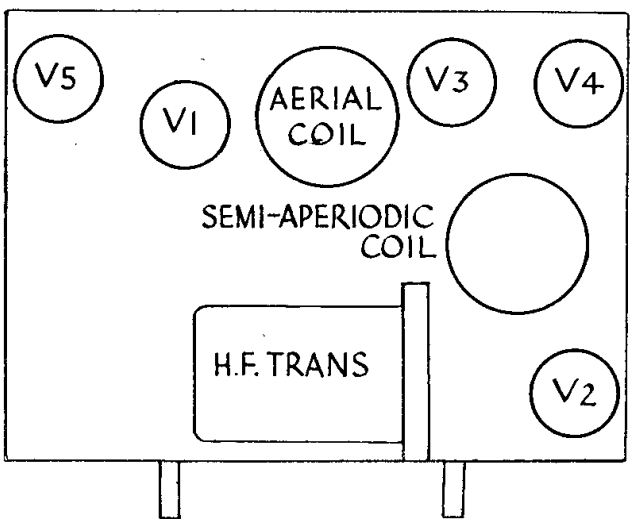
Special Notes. — Battery connections, Drydex H1088 (the leads are labelled with tags and are connected to screws on a small panel at the back of the set). These are, counting from inside :—

Top row (1) +B1, 63 volts,
(2) +B2, 130 volts,
(3) +A, L.T.+ volts.

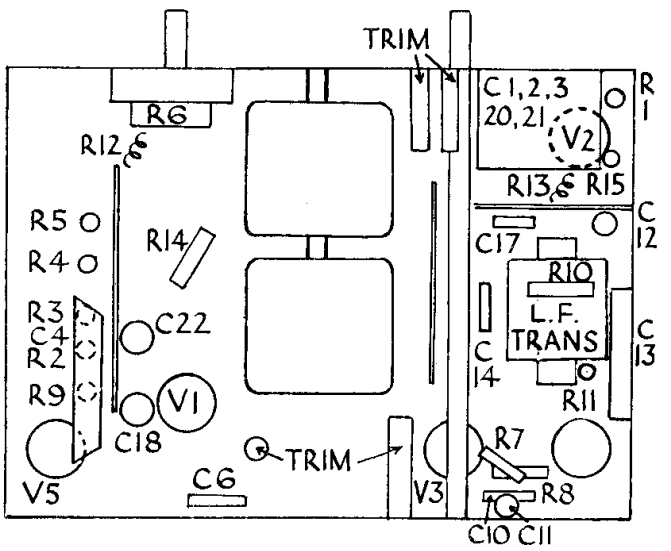
Bottom row (1) —C1, 0 volts (i.e., G.B.—),
(2) —B, 9 volts (i.e., H.T.—),
(3) —A, L.T.—.

The series aerial condenser, C5, shown in the diagram, is formed by the capacity between the A1 and A2 terminals, and the fact that there is nothing attached to the terminal does not mean that any component has been omitted.

(*Continued on next page.*)



Considering the nature of the circuit, the top of the Philips chassis is particularly clean.



The under-chassis arrangement of parts in the Philips 834B is indicated here.

PHILIPS BATTERY 834B (Cont.)

Quick Tests.—These consist of routine tests of the valves with observation of the "clicks" produced by making the connections for the different measurements.

Removing Chassis.—Undo the knobs (grub screw) and remove the four holding screws by inserting a long screw-driver through the holes in the bottom of the cabinet. Unsolder the earthing lead to the speaker and lift the chassis out. The L.S. leads are sufficiently long, and the chassis will stand on either end.

General Notes.—The bias resistances, R12 and R13, consist of small lengths of coiled resistance wire soldered to the valve sockets and to chassis.

The action of the control valve, V5, is straightforward. With the valve in position the current taken by V4 depends on the strength of the signal, and fluctuates above and below 2.5 m.a., but with the control valve removed the pointer swings slightly above and below 5.3 m.a. With no signal and controlled, the V4 current is .7 m.a., but with V5 removed the current is 5.3 m.a.

The wiring is easily followed and, with the aid of the circuit diagram, the anode and grid circuits can be traced easily. As usual with these Super-inductance sets, the trimmers should not be disturbed.

Replacing Chassis.—See that the rubber rings are in position and lay the chassis on them. Place the earthing plate for the foil screen under one of the rear supports *with the convex end downwards*, and replace the holding screws. Resolder the earthing lead to the speaker, clip the L.S. leads, and replace the knobs.

VALVE READINGS

No signal.

Valve.	Type.	Electrode.	Volts.	M.A.
1	PM12A ...	anode ...	122	.6
		screen ...	60	
2	PM12A ...	anode ...	122	.5
		screen ...	54	
3	PM2DX ...	anode ...	52	1.85
4	PM22A ...	anode ...	123	.7
		aux. grid	125	.2
5	PM1HL ...	anode* ...	10	.1

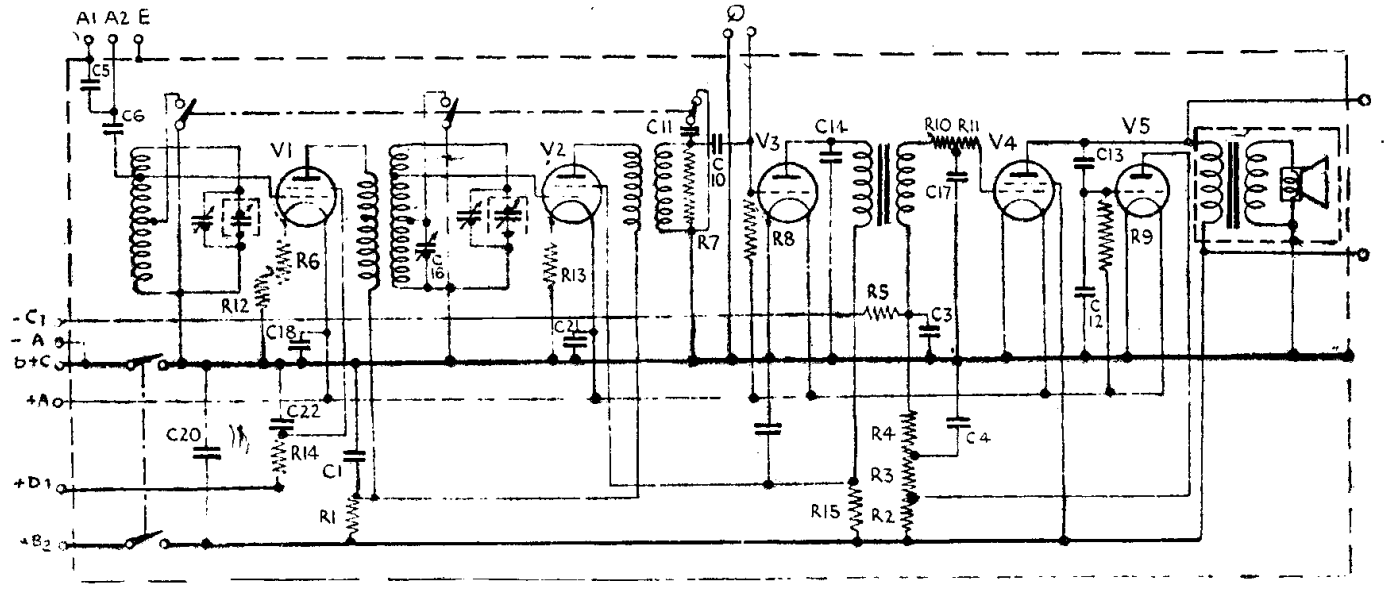
* With moderate signal, 15v., .02 m.a.

CONDENSERS

C.	Purpose.	Mfd.
1	Decoupling H.T. to H.F. valves	.1
2	Decoupling H.T. to V3 anode ...	.1
3	Decoupling V4 grid	.25
4	Across part of H.T. ptr.... ...	.1
6	Series aerial cond.	.00005
10	V3 grid	.0001
11	Across H.F. transformer sec. for L.W.	.00059-.00065
12	Part of control valve grid circuit	.01
13	L.F. feed to valve grid circuit ...	.008
14	V3 anode by-pass	.002
17	H.F. by-pass from V4 grid ...	.00005
18	Between V1 + filament and L.T. neg.	.1
20	Across H.T.	.1
21	Between V2 + filament and L.T. neg.	.1
22	Decoupling V1 screen	.1

RESISTANCES

R.	Purpose.	Ohms
1	Decoupling H.T. from H.F. anodes.	00
2	Part of H.T. and G.B. control ptr.	1 meg.
3	Part of H.T. and G.B. control ptr.	.64 meg.
4	Part of H.T. and G.B. control ptr.	1 meg.
5	Part of H.T. and G.B. control ptr.	.1 or .16 meg.
6	V1 filament volume control ...	20
7	Across sec. of semi-aperiodic transformer.	.64 meg.
8	V3 grid leak	1 meg.
9	V5 grid leak	2 meg.
10	H.F. stopper V4 grid	.2 meg.
11	H.F. stopper V4 grid	.2 meg.
12	Fixed resist. in V1 fil.	1.25
13	Fixed resist. in V2 fil.	1.25
14	Decoupling H.T. to V1 screen ...	40,000
15	Decoupling H.T. to V3 anode and V2 screen.	40,000



Two H.F. amplifiers, detector and pentode output valves are employed in the Philips 834B receiver. The fifth valve is used to adjust the consumption of the pentode to suit the volume.

The Detector Stage (Continued from page 95)

diode load resistance, and the L.F. coupling condenser is connected between the slider and the grid of the triode section which has its own fixed grid leak. Either method may include an H.F. stopper, R4, in the grid lead of the triode section.

When reconnecting the components after dismantling any of them, care should be taken to ensure that the diode D.C. circuit is continuous to cathode through a load resistance (and bias resistance in the diagram) and that the condenser C2 is not short-circuited.

In sets which do not employ A.V.C. a good test of the detector lies in connecting a high-resistance meter (with a total resistance of 100,000 ohms or more on the scale used) between the points A and B.

When rectification is taking place a deflection of from two to nine volts will be obtained from a local station on an oscillator. This represents a very small deflection of the average good service meter, but it is sufficient evidence of rectification.

When no such reading is obtained, a test valve should be tried, and if this fails the H.F. side of the set should be examined. One infallible test of the valve is by connecting the dummy aerial of the modulated oscillator (tuned to the correct I.F.) to the diode anode and to chassis, and noting whether or not the valve is rectifying the signal.

In testing double-diode triode valves it is sufficient to take the emission of the triode section. This will tell whether or not the cathode has lost its emission.

SEPTEMBER "SERVICE ENGINEER."

The September issue of SERVICE ENGINEER will contain reviews of the following:

Atlas—758 mains set.
Cossor—435B battery three.
Ferranti—Lancastria portable.
G.E.C.—A.V.C. 5.
Halcyon—6701 7-valve A.C.
K.-B.—A.C. "Pup."
Mullard—M.B. Three.
Philips—588 A superhet.
R.G.D.—Radiogram.
Ultra—"22."

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