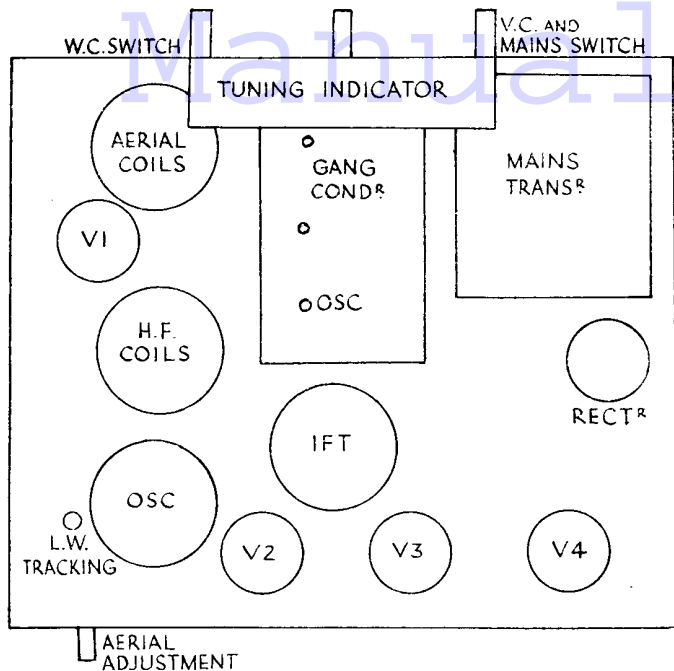


AMPLION "RADIOLUX" SUPERHET (Continued)



A point to note in connection with the top of the Radiolux is that to reach the pilot lamps and neon tube, two nuts holding the case must be removed.

transformer are not accessible for ordinary ganging.

The drive for the tuning dial is assembled as a complete unit. Should any trouble develop the unit should be removed and returned to the makers for repair.

To remove the dial, undo grub screw and two screws on front of tuning condenser.

The resistance and condenser panel appears more complicated than it really is. To replace a component snip the connecting wires on the other side of the perforated panel and pull the component free.

The A.V.C. components, consisting of the W.1 (or WMX12) Westector, C.12, R.17 and R.18, are mounted on the small assembly next the mains transformer.

Replacing Chassis.—Lay chassis inside cabinet, replace holding screws and knobs.

remove two nuts holding the case to the gang condenser.

Quick Tests.—Between the terminals in the L.S. transformer and chassis (note that as the chassis is coated with an insulating varnish, contact should be made to one of the many tubular rivets) :—

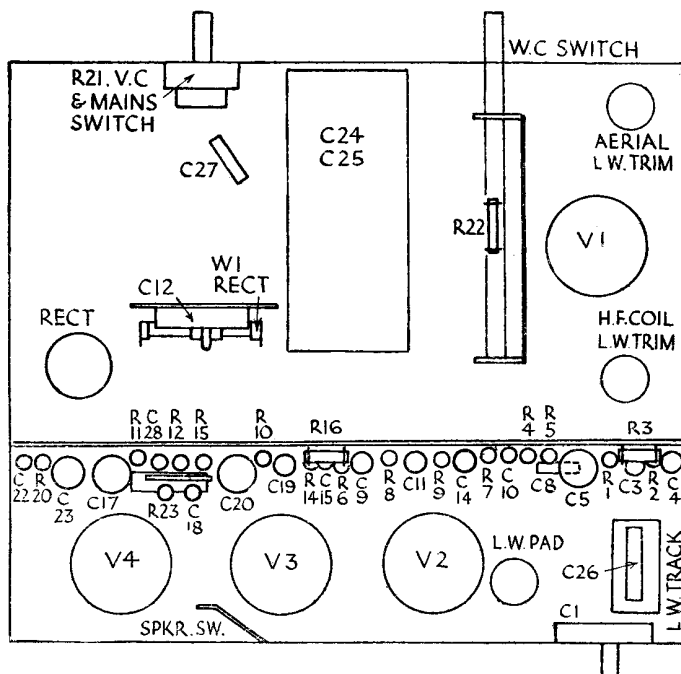
- Top (1) white, H.T. unsmoothed, 360 volts.
- (2) black, V.4 anode, 225 volts.
- (3) blank.
- (4) and (5) red, H.T. smoothed, 240 volts.

1 and 5 are field coil.
2 and 4 are primary of output transformer.

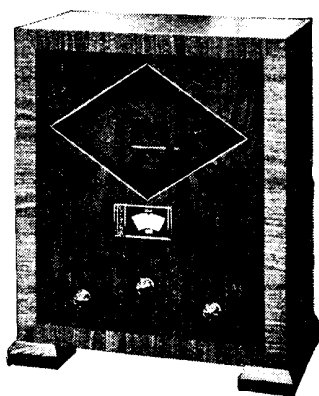
Removing Chassis.—Remove knobs (grub screw) and four holding screws underneath.

General Notes.—The trimmers of the I.F.

A strip of perforated Micalex forms an original condenser and resistance panel underneath the set (right).



BATTERY "TIGER" BY ULTRA



The "Tiger" battery set is a class B five-valve superhet. It is a product of Ultra Electric, Ltd.

Circuit.—The combined first detector oscillator, an S215 (V1), is a screen-grid valve preceded by a band-pass aerial coupling. Oscillation is obtained by coupling coils in the filament leads.

To prevent oscillation in the L.T. wiring a large valve or condenser is connected across the leads.

Coupling to the next valve is by band-pass I.F. transformer (frequency 456 k.c.).

The I.F. valve, S215VM met. (V2) is used with the variable-mu. characteristic to control volume by means of a potentiometer across the G.B. section of the battery, and is followed by a second band-pass I.F. transformer.

The second detector valve H2 met. (V3) operates as a semi power-grid detector. A limited amount of reaction is applied to the second I.F. transformer by means of a fixed condenser in series with a reaction winding. The following coupling is an auto transformer.

The L.F. valve, L2 (V4) is used as a driver for the PD220 Class B output valve (V5) to

which it is coupled in the conventional manner.

Tone compensation for the output valve is by a condenser between the anodes and one between each anode and chassis.

The speaker is a permanent magnet type.

Special Notes.—The H.T. battery is a Grosvenor DBA586, containing H.T. and G.B. tappings. The voltage between H.T.— and the 150 volt socket is actually 135 to 140 volts.

Connections are :—

- H.T.—, Brown, to H.T.—.
- H.T.+1, White, to 70 volts.
- H.T.+2, Yellow, to 150 volts.
- G.B.—1, Green, to —4.5 volts.
- G.B.—2, Blue, to —7.5 volts.

Originally the battery specified was Ediswan 69707. This is now discontinued and the Grosvenor type should be ordered for replacements.

As the battery runs down H.T.+1 should be raised to 80 volts, G.B.—1 reduced to —3 volts, and G.B.—2 to —6 volts.

These sets are fitted with a special aerial contained in a winder at the back of the

(Continued on next page.)

VALVE READINGS				
No signal. New H.T. battery.				
Valve.	Type.	Electrode.	Volts.	M.A.
1	SG215 (4) ..	anode ..	135	1.4*
		screen ..	66	
2	S215 VM	anode ..	135	2.2
	met. (4)	screen ..	66	
3	H2 met. (4)	anode ..	125	1.4
4	L2 (4) ..	anode ..	135	1.5
5	PD220 (7)	eachanode	135	1.3

* Stabilised.

ULTRA BATTERY TIGER (Cont.)

RESISTANCES

R.	Purpose.	Ohms.
1	V1 grid leak	1 meg.
2	Decoupling grid from filament coil.	2,000
3	Low H.F. potential end of aerial coupling.	25,000
4	Decoupling V2 grid	100,000
5	Var. V.C. across bias	50,000
6	V3 grid leak	1 meg.
7	V3 anode L.F. coupling	25,000
8	H.F. stopper in V4 grid	.25 meg.

CONDENSERS

C.	Purpose.	Mfd.
1	V1 grid	.00015
2	Part of band-pass coupling	.025
3	Aerial feed to V.C.	.1
4	Across filament leads to V1	25 el.
5	L.W. tracking on osc. (fixed)	.000274
6	V2 grid decoupling	.1
7	V1 and V2 screen by-pass	.1
8	V3 grid reservoir	.00015
9	Fixed reaction coupling	.001
10	L.F. feed to transformer	.1
11	H.F. by-pass from V4 grid	.0005
12	Tone compensating V5 anode	.001
13	Tone compensating V5 anode	.001
14	Between anodes of V5	.004
15	Across full H.T. battery	24 el.

chassis. When an outdoor aerial is used the aerial should be wound up and the handle folded back on itself away from the switch contacts.

Quick Tests.—Total set current with no signal is 8 m.a. approximately.

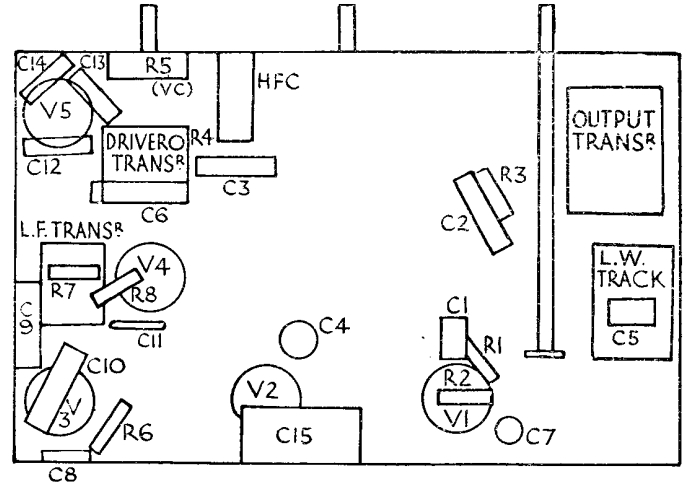
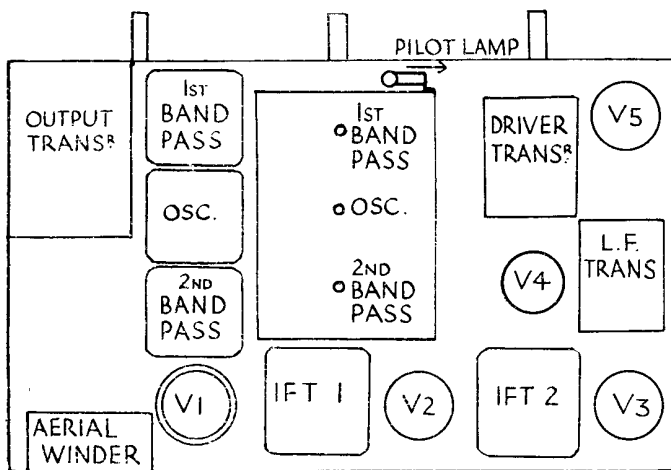
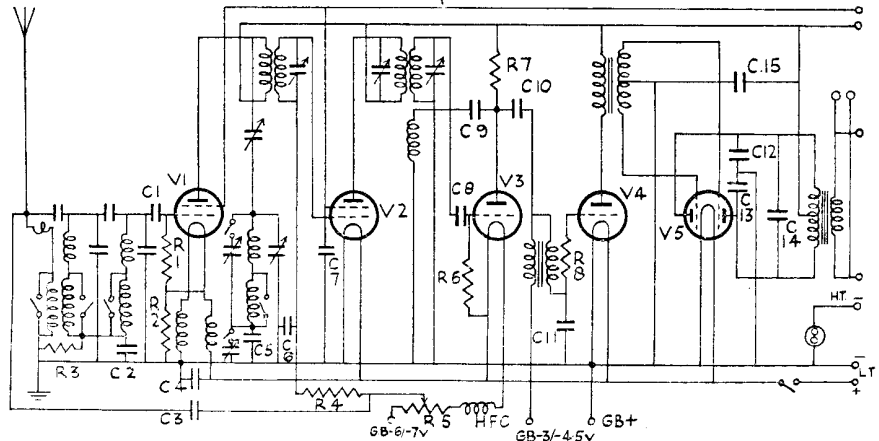
Removing the Chassis.—Remove knobs (grub screw), undo cleat holding battery cable and remove three holding screws from underneath. Remove L.S. plugs.

General Notes.—The set was one of the first battery superhets employing a screen-

grid first detector and the circuit is particularly simple. The components are easily recognised and the wiring easily traced. Switch contacts should be cleaned by a piece of tape.

Replacing the Chassis.—Lay chassis inside screening tray so that holes are opposite threaded holes in chassis. Place rubber buffers in position and lay chassis carefully on top of them.

Replace holding screws and knobs and fasten battery cable under cleat.



Circuit and chassis designs of the Ultra Battery Tiger are straightforward.

Valve Test Panel

(Continued from page 1.)

ordinary standard tests an H.T. voltage of 200 allows an adequate margin, and as the heater winding giving 4 volts A.C. at 2-4 amps. gives about 4.2 volts at 1 amp., a resistance of 3 to 4 ohms can be connected across the winding. (In practice an old PX4 with the anode pin cut off is suitable.)

For ease in servicing the apparatus the power pack is mounted on a baseboard 17 in. by 7 in., and the components fixed as shown. The rectifier is a Westinghouse H.T. 12,

and the condensers C.1, C.2 and C.3 are 4 mfd. 250 volts working types. The choke has an inductance of 30-40 henries at 40-45 m.a.

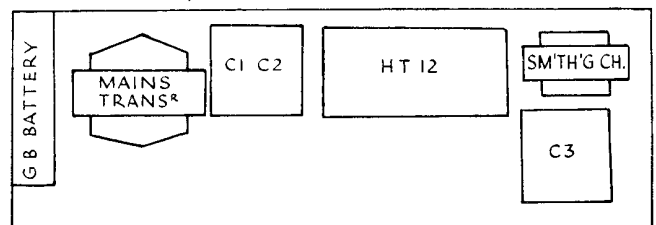
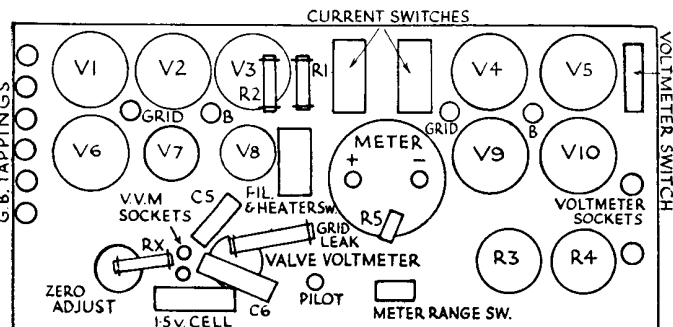
Several queries have been made concerning the possibility of using automatic bias. This is not a practical method of obtaining the necessary voltage for accurate test work. With fixed cathode resistance the bias depends on the current taken by the valve, and as the initial current decreased so would the bias—thus giving a too favourable estimation of the valve's condition.

A potentiometer in the negative H.T. lead has the disadvantage that an additional meter is required so that an accurate reading

can be taken for each adjustment of the H.T. potentiometers and, as the removal of the meter in shunt with the bias resistance would affect the voltage, the meter should be left connected permanently into the circuit.

The advent of 13-volt universal valves may be considered to necessitate special gear, but it is quite a convenient method to take six 2-volt cells in series (giving approximately 13 volts) and connect to the panel as for battery valves. If a pilot lamp is used this should be unscrewed when switching to 13 volts.

Details of the valve voltmeter and further particulars of the test bench will be given in the next issue of SERVICE ENGINEER.



Left is the layout of valveholders and components on the inclined panel. Above is the layout of the supply apparatus on the baseboard.