

'TRADER' SERVICE SHEETS

NUMBER THIRTY - THREE
(VOLUME TWO)

BURGOYNE 2P-COMET 3-VALVE BATTERY RECEIVER

THE Burgoyne 2P-Comet receiver is a fairly simple battery-operated model of modern appearance, fitted with a "clock-face" type of tuning dial. Three valves are employed in the H.F. pentode, triode detector, and output pentode sequence, and a reaction control is fitted. There is no separate volume control. A P.M. M.C. speaker is used.

CIRCUIT DESCRIPTION

Aerial input by way of fixed series condenser **C1** and coupling coil **L1** to single-tuned circuit **L2, L3, C7** which precedes pentode H.F. amplifier (**V1, Mullard metallised SP2**). Choke-tuned grid coupling by **L4, C3** and **L6, L7, C10** to triode detector valve (**V2, Mullard metallised PM1HL**) operating on the grid leak system with **C4** and **R1**. Reaction applied from anode to grid coils **L6, L7** by single coil **L5** and controlled by variable condenser **C9**. Provision for connection of gramophone pick-up in grid circuit of **V2**, which then functions purely as an amplifier, G.B. being applied from G.B. - 1 tapping.

Auto-transformer coupling to pentode output valve (**V3, Mullard PM22**) by **T1**, which works in a parallel-feed circuit with resistance **R2** and condenser **C5**. **R3** in grid circuit is an H.F. stopping resistance and **C12** by-passes G.B. - 2 tapping. Fixed tone compensation by condenser **C8** in anode circuit of **V3**. Separate H.T. battery tapping H.T. + 1 is provided for the screening grid of the pentode, and fuse **F1** in H.T. - lead protects valve filaments.

DISMANTLING THE SET

Removing Chassis.—Remove knobs (grub screws). (When replacing these, note that the knob on the left is marked "off," L., M. Place switch in central position, and replace knob so that "off"

is uppermost.) Behind the central knob is a bush and fixing nut. Remove this nut. At the back of the receiver, slide out the horizontal wooden platform. Disconnect speaker leads from terminals on speaker transformer. The 0 and 55 terminals are employed. Remove the vertical wooden cover at back of chassis (4 wood screws). Remove 2 wood screws passing through upper platform of chassis into wood fillets at sides of cabinet. Chassis can now be withdrawn. Do not forget to re-connect speaker when testing.

Removing Speaker.—This is held to sub-baffle by four wood screws. When replacing, input transformer should be on the left.

Other Components		Values (ohms)
L1	Aerial coupling coil	2.4
L2	Aerial tuning coils	2.8
L3		16.0
L4		280.0
L5	Reaction coil	1.5
L6	V2 grid tuning coils	2.8
L7		16.0
L8	Speaker speech coil	2.0
T1	Interv. trans.	Pri. 1,850 Sec. 4,000
T2	Speaker input trans.	Pri. *400.0 Sec. 0.1
S1-S2	Waveband switches, ganged	---
S3	Filament switch	---
F1	H.T. circuit fuse	---

* Ratio 55-1.

COMPONENTS AND VALUES

Resistances		Values (ohms)
R1	V2 grid leak	1,000,000
R2	V2 anode resistance	25,000
R3	V3 grid H.F. stopper	250,000

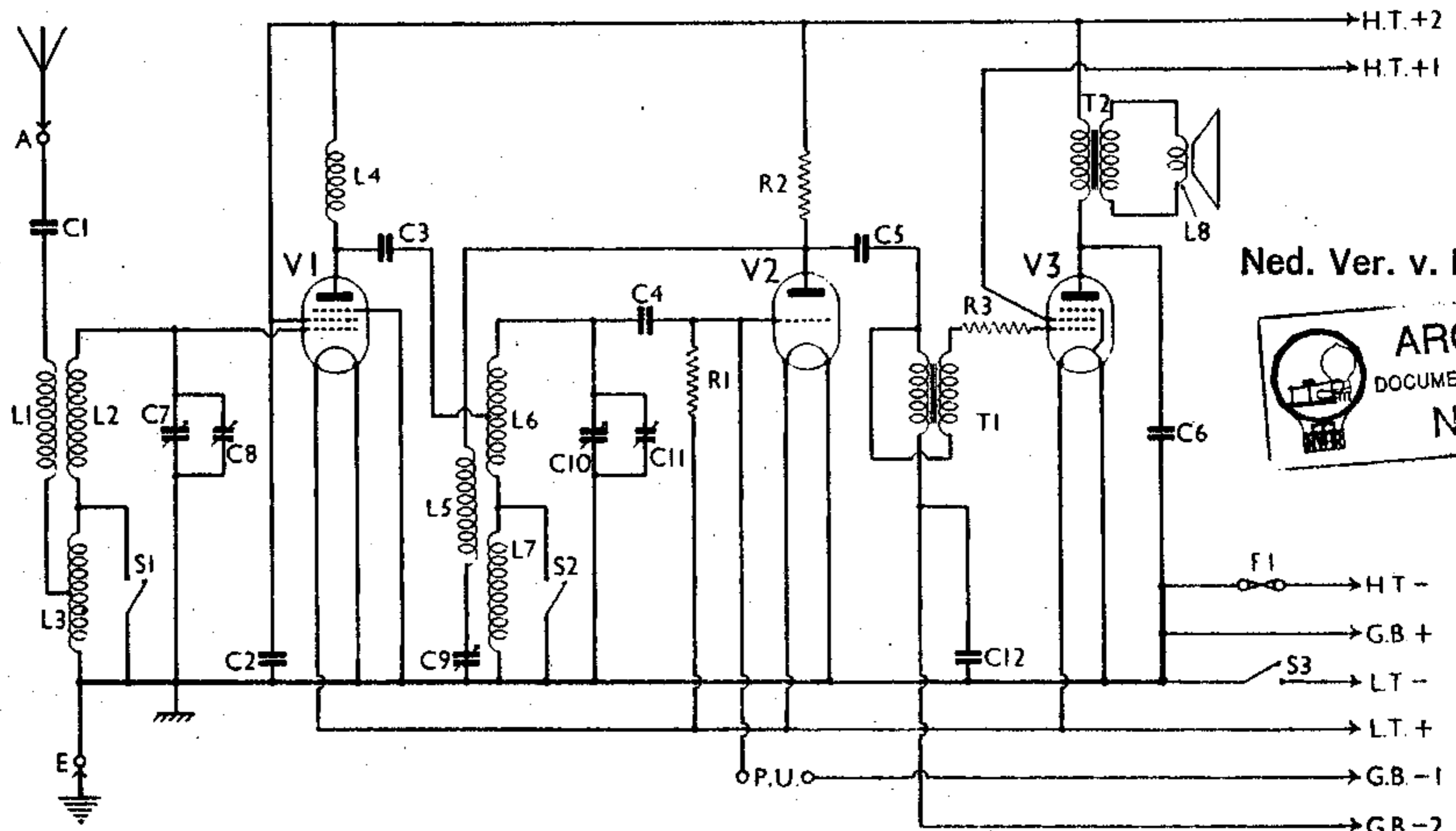
Condensers		Values (μF)
C1	Aerial series condenser	0.0003
C2	V1 S.G. by-pass	0.1
C3	H.F. coupling to L6, L7	0.0001
C4	V2 grid condenser	0.0001
C5	L.F. coupling to T1	0.1
C6	Tone compensator	0.005
C7	Aerial circuit tuning	0.0005
C8	Aerial circuit, trimmer, pre-set	---
C9	Reaction condenser, variable	0.0005
C10	H.F. circuit tuning	0.0005
C11	H.F. circuit trimmer, pre-set	---
C12	G.B. - 2 by-pass	0.0001

VALVE ANALYSIS

The voltage and current readings listed in the table overleaf were obtained from a representative chassis with a new combined H.T. and G.B. battery in use and the recommended voltages applied (see General Notes). No aerial or earth connections were made and the reaction control was kept at minimum. Voltages were measured on the 1,200 V scale of an Avometer with the chassis as negative and the anode current of the H.F. amplifier **V1** was taken with a milliammeter inserted in the low H.F. potential end of the circuit in order to avoid possible instability.

(Continued overleaf)

The circuit diagram of the Burgoyne 2P-Comet 3-valve battery receiver. Condenser **C12** may not occur in some chassis, while **C6** may be connected across the primary of **T2**. The actual receiver has a single lead for H.T. - and G.B. + since a combined H.T. and G.B. battery is employed.



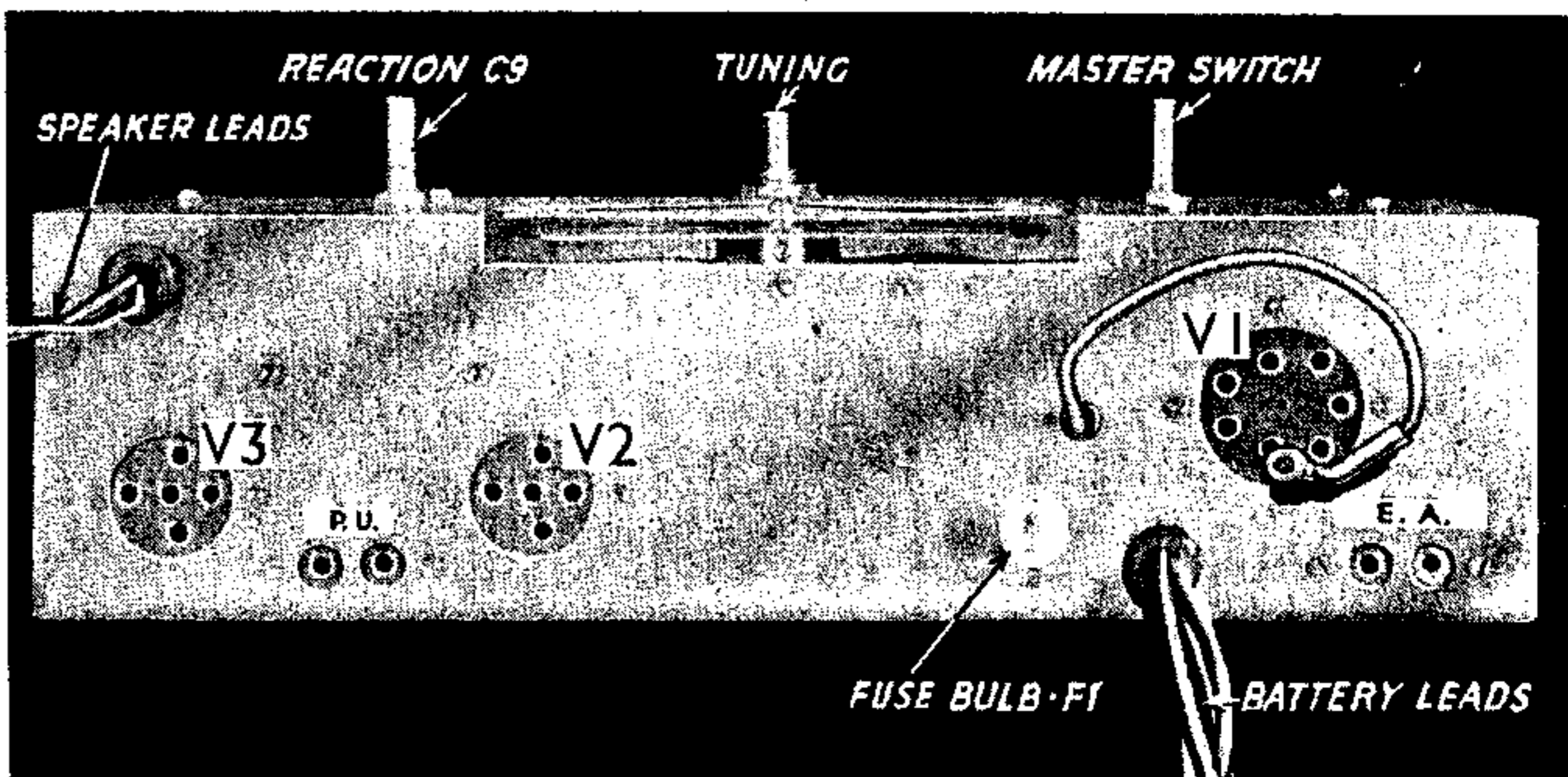
BURGOYNE 2P-COMET
(continued)

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 SP2	120	2.7	120	0.8
V2 PM1HL	75	2.3	—	—
V3 PM22	120	3.4	85	1.3

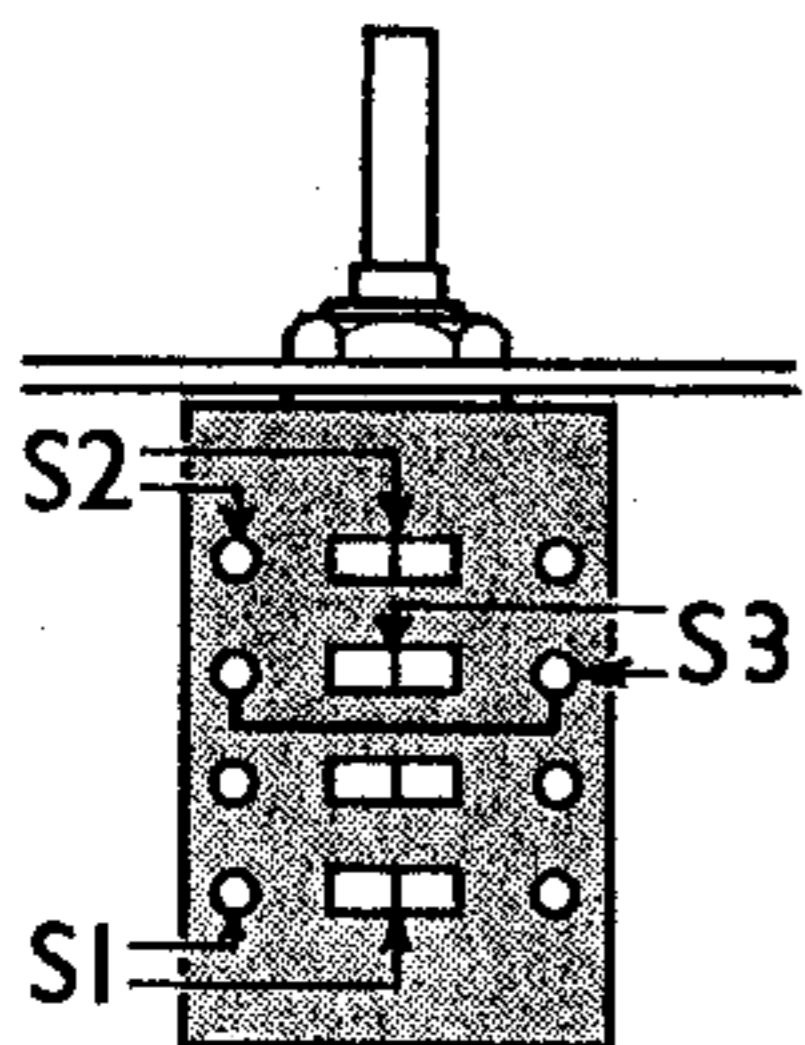
GENERAL NOTES

Switches.—All the switches are in one unit, seen in the under-chassis view. A 3-position 4-pole change-over type of unit is fitted, but only three sections are used. The tags employed are shown in detail in a separate sketch. **S1** and **S2** are the wavechange switches, which are closed on the M.W. band and open on the L.W. band. **S3** is the on-off switch, which is open in the central position and closed in the M.W. and L.W. positions.

Coils.—These are in two similar units,



Plan view of the chassis. Only the valves and the fuse bulb appear on the upper deck. The latter screws into an ordinary flashlamp type of holder.



A sketch showing the switch unit. The tags employed for the three switches are clearly indicated.

L2, L3, and the other the reaction and tuned grid H.F. coils, **L5, L6, L7.** **L4** is the H.F. choke in the H.F. anode circuit.

Fuse Bulb F1.—This is of the M.E.S. type, and screws into a holder on the upper deck of the chassis. It is indicated in both chassis views. The bulb is rated at 2.5 V, and should have a low current rating, though this is not indicated on the bulb in our chassis.

External Speaker.—Although no sockets are provided for this, it is a simple matter to connect an additional high resistance type across the terminals of **T2** to which the speaker leads from the receiver are connected.

Transformer T1.—This is connected up as an auto-transformer, with an external connection between one end of the secondary and one end of the primary.

H.T., G.B. + Connections.—Although separate connections are shown in our circuit diagram for H.T.— and G.B.+, in practice a combined H.T. and G.B. battery is employed, and the receiver is fitted with a single lead for H.T.— and

G.B.+ . In some chassis this lead joins the L.T.— lead on the battery side of **S3**, and does not go direct to chassis as in our diagram.

H.T. and G.B. Battery.—This is a Drydex combined 120 V H.T. and 9 V G.B. battery, Type S48.

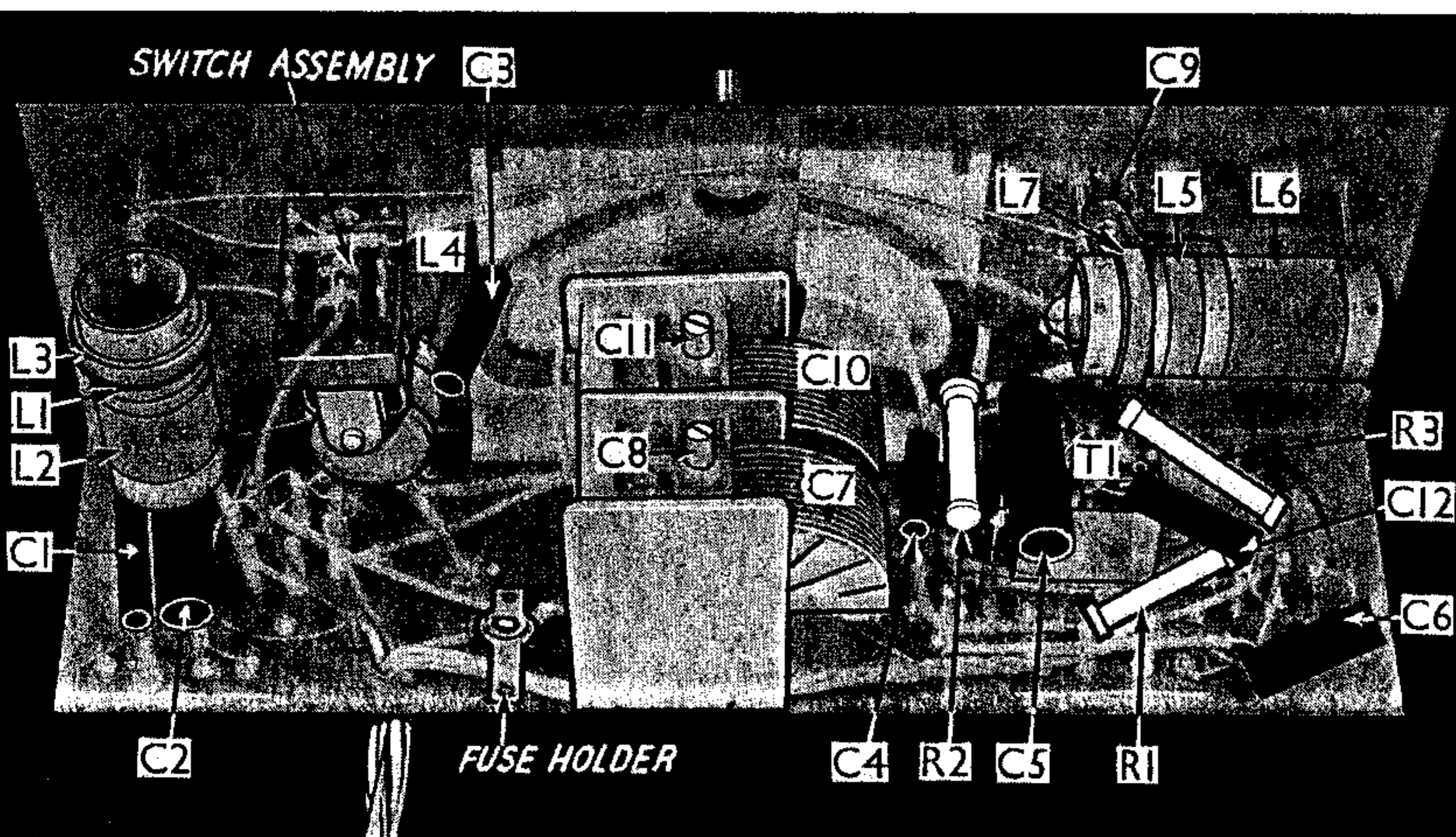
Battery Voltages.—L.T., 2 V; H.T.+1, 84 V; H.T.+2, 120 V; G.B.—1, 1.5 V; G.B.—2, 9 V.

Condenser C12.—This does not occur in the makers' own diagram, but it is incorporated in our chassis, and hence is shown in our diagram.

Condenser C6.—This is connected in our chassis in the position shown in our circuit diagram. In other chassis it may be connected across the speaker leads, i.e., in parallel with the primary of **T2**.

Pick-up.—This is connected in the grid circuit of **V2**, and bias is applied by the G.B.—1 tapping. When using the pick-up, the receiver should be detuned, or the aerial disconnected. An external volume control will be needed for the pick-up.

and are unshielded. The coils are wound on paxolin tubes, and the windings are plainly indicated in our under-chassis view. One unit contains the aerial coupling and aerial tuning coils **L1,**



Under-chassis view. A separate sketch of the switch assembly is in Col. 1. Condenser **C12** may not be included in some chassis. **L4** is the H.F. choke beneath the switch assembly. **T1** is the resistance-capacity fed auto-transformer.