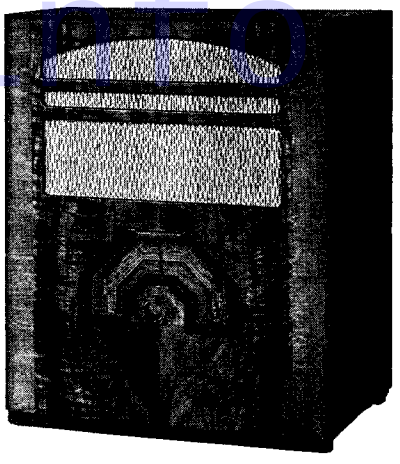
AERODYNE 300 A.C. THREE BAND



The Aerodyne model 300 is a four-valve plus rectifier three-band superhet listed at 9 gns. The full-vision scale is coloured for band indication and there are pick-up and extra speaker sockets.

CIRCUIT.—The aerial input is an H.F. transformer on the short waveband and a set of iron-cored band-pass coils on the medium and long wavebands. V1 is a triode hexode frequency changer.

The signal, converted to the I.F., passes *via* an iron-cored transformer to the I.F. amplifier, V2, an H.F. pentode. Another iron-cored transformer leads to the demodulating diode of V3, a double diode valve. The other diode is fed by a coupling condenser C13 to give a D.C. potential utilised in operating the A.V.C. network of the receiver.

V4, an output pentode, has a manual volume control in its grid circuit and is fed by an L.F. coupling condenser, C11, the other side of which is connected *via* an H.F. stopper resistance to the demodulating diode load resistance, R12. A pentode compensator condenser is included in the anode circuit of V4.

Mains equipment consists of a full-wave rectifying valve, V5, a mains transformer, electrolytic smoothing condensers, and a smoothing choke consisting of the speaker field coil.

Chassis Removal.—The back of the cabinet is secured by two wood screws. The three control knobs are fixed by grub screws. Remove the four chassis-securing bolts and washers from the base and uncleat the speaker cable. The chassis can then be withdrawn.

For complete removal, either the speaker (secured by four bolts) can be removed or the leads to the speaker panel unsoldered. The blue lead goes to the top tag, black to the one below, and red to the bottom tag.

Special Notes.—Sockets are provided at the rear for a pick-up.

A wander-plug attached to a flying lead fits into the aerial socket, thereby connecting the mains aerial. When not in use the wander-plug fits into an extra earthing socket.

There are two dial lights located one at each side of the gang behind the wavelength scale. These are fitted in screw-in holders clamped to a metal bracket. They are Osram bulbs rated at 6.2 volts 0.3 amp. fitted with M.E.S. bases.

Terminals on the speaker panel are for connecting an external speaker with its own high-impedance matching transformer.

In our particular chassis, C.14 was found to have a value of 0.01 mfd.

QUICK TESTS

Quick tests are available on this receiver on the leads to the speaker panel. Voltages measured between these and chassis should be:—

Blue lead, 335 volts, H.T. unsmoothed.
Red lead, 245 volts, H.T. smoothed.
Black lead, 230 volts, V4 anode.

Circuit Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer and a modulated oscillator between

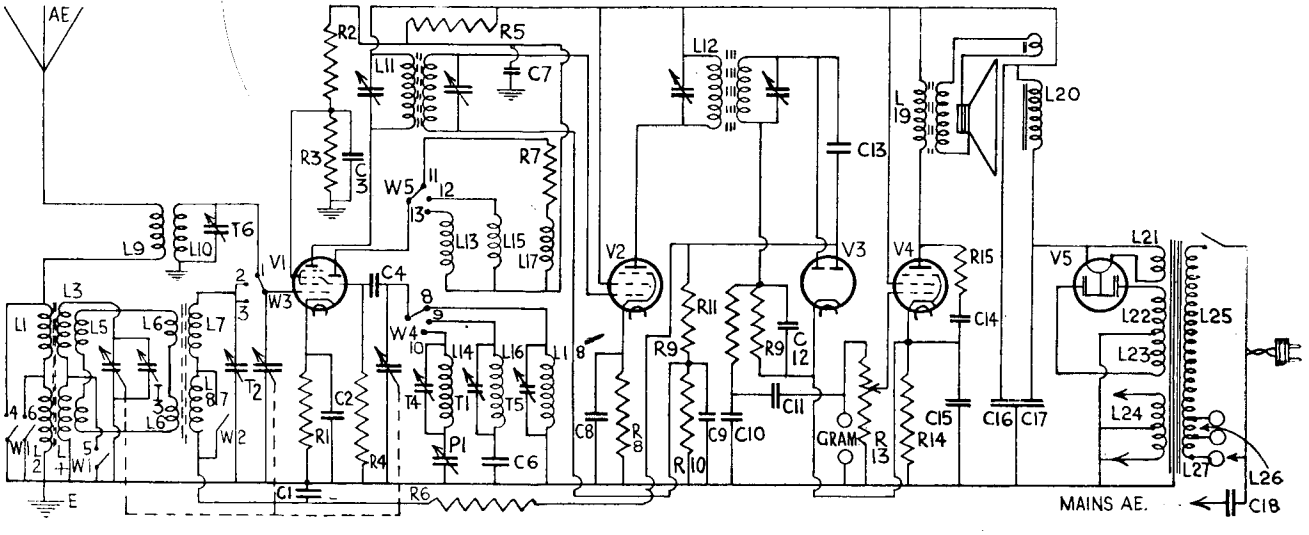
VALVE READINGS

No signal. Volume maximum. Bottom of M.W. 200 volts. A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	(All Mullard) T.H.4 met. (7)	Anode ..	248	4.2
		Screen ..	55	4.1
		Osc.anode	130	2
2	VP4B met. (7)	Anode ..	248	9.5
		Screen ..	248	3.7
3	2D4A met. (5)	Diodes only.	—	—
4	PenA4 (7) ..	Anode ..	230	34
		Screen ..	248	5.5
5	IW4/350 (4) ..	Filament	335	—

CONDENSERS

C.	Purpose.	Mfd.
1	V1 A.V.C. decoupling ..	.1
2	V1 cathode bias shunt ..	.1
3	V1 screen decoupling ..	.1
4	Oscillator grid	.0001
6	M.W. oscillator fixed padder	.002
7	V1 anode decoupling ..	.1
8	V2 cathode bias shunt ..	.1
9	V2 A.V.C. decoupling ..	.1
10	H.F. by-pass	.0002
11	L.F. coupling.	.005
12	H.F. by-pass	.0002
13	A.V.C. diode coupling ..	.0002
14	Tone modifier	.005
15	V4 cathode bias shunt ..	25
16	H.T. smoothing	6
17	H.T. smoothing	6
18	Mains aerial	.0001



Band-pass input, with inductively coupled circuits, are used on M.W. and L.W. These coils and the I.F. transformers have iron-dust cores.

the top grid cap of V1 and chassis. Switch set to M.W. and fully interleave the vanes of the gang. Set volume control to maximum.

Tune the oscillator to 465 kc. and adjust the trimmers of I.F.T.2 and then I.F.T.1 for maximum, reducing the input from the oscillator as the circuits come into line to render the A.V.C. inoperative.

Signal Circuits.—Connect the service oscillator to the aerial and earth sockets. Only feed sufficient input from the service oscillator to obtain definite peaks in the output meter to keep the A.V.C. inoperative

Medium Waves.—Tune set and oscillator to 210 metres (1,476 kc.) and adjust T1, T2 and T3 in that order for maximum. The medium wave padding is fixed.

Long Waves.—Tune set and oscillator to 1,300 metres (230 kc.) and adjust T4 for maximum.

Tune set and oscillator to 1.900 metres (157 kc.) and adjust P1 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement is noticed.

Short Waves.—Tune set and oscillator to 19 metres (15.7 mc.) and adjust first T5 and then T6 for maximum.

The short-wave padding is fixed, but check calibration by injecting signals of different wavelengths throughout the range covered.

WINDINGS

Winding.	Ohms.	Winding.	Ohms.
L1	40.5	L13	78.2
L2	9.8	L14	12.8
L3	1.6	L15	32
L4	18.5	L16	1.3
L7	1.6	L17	36.7
L8	18.6	L18	.1
L9	.2	L19	1,720
L10	.1	L20	1,250
L11, 12, each winding ..	32	Mains trans. prim. ..	37
		H.T. sec. (total)	431

RESISTANCES

R.	Purpose.	Ohms.
1	V1 cathode bias	200
2	V1 screen potr. (part) ..	10,000
3	V1 screen potr. (part) ..	25,000
4	Oscillator grid leak	25,000
5	V1 anode decoupling ..	13,000
6	V1 A.V.C. decoupling ..	1 meg.
7	S.W. regeneration modifier. .	100
8	V2 cathode bias	150
9	A.V.C. diode load (part) ..	500,000
10	A.V.C. diode load (part) ..	500,000
11	H.F. stopper	50,000
12	Demodulating diode load ..	500,000
13	Volume control	500,000
14	V4 cathode bias	150
15	Tone modifier	20,000

Replacement Condensers

TWO exact replacement condensers for the Aerodyne 300 are made by A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18. The first is for the block containing C's 16 and 17. List 3882. this unit retails at 5s. 6d. For C15 there is unit 2918 at 1s. 9d.

TELEVISION PRACTICE

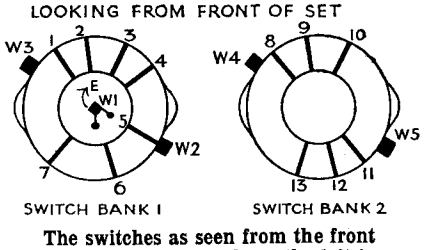
A COMPREHENSIVE and up-to-date book on television is *Television, Theory and Practice*, by J. H. Reyner, B.Sc., A.C.G.I., A.M.I.E.E. It is published by Chapman and Hall, and is available from Odhams Press Book Dept., Arne Street, London, W.C.2, at 13s. post free. Actually it is a second, revised and enlarged, edition of the book.

Mr. Reyner begins with the basic ideas of scanning and persistence of vision, and proceeds *via* simple mechanical systems to a detailed description of cathode ray tubes, time base circuits and general reception methods. There is a long chapter on receiver design.

Final chapters are devoted to the ultra-short waves, photo cells, transmitters, film technique and velocity modulation.

The book, while simply written, will be found sufficiently technical by most engineers. It has over 200 pages, and many excellent photographs and diagrams.

Trade readers, while not complaining, will wish Mr. Reyner could have introduced descriptions of some commercial receivers.



The switches as seen from the front of the set. The bank on the left is the one nearer the front.

Aerodyne 300 on Test

MODEL 300.—Standard model for A.C. mains operation, 200-250 volts, 40-100 cycles. Price, 9 gns.

DESCRIPTION.—Three-band, four valve plus rectifier, superhet table receiver.

FEATURES. — Full-vision scale coloured as to waveband. Controls for combined volume and master switch, wave selection and concentric tuning. Terminals for external speaker on internal speaker panel. Sockets for pick-up. Provision for use of mains aerial.

LOADING.—64 watts.

Sensitivity and Selectivity

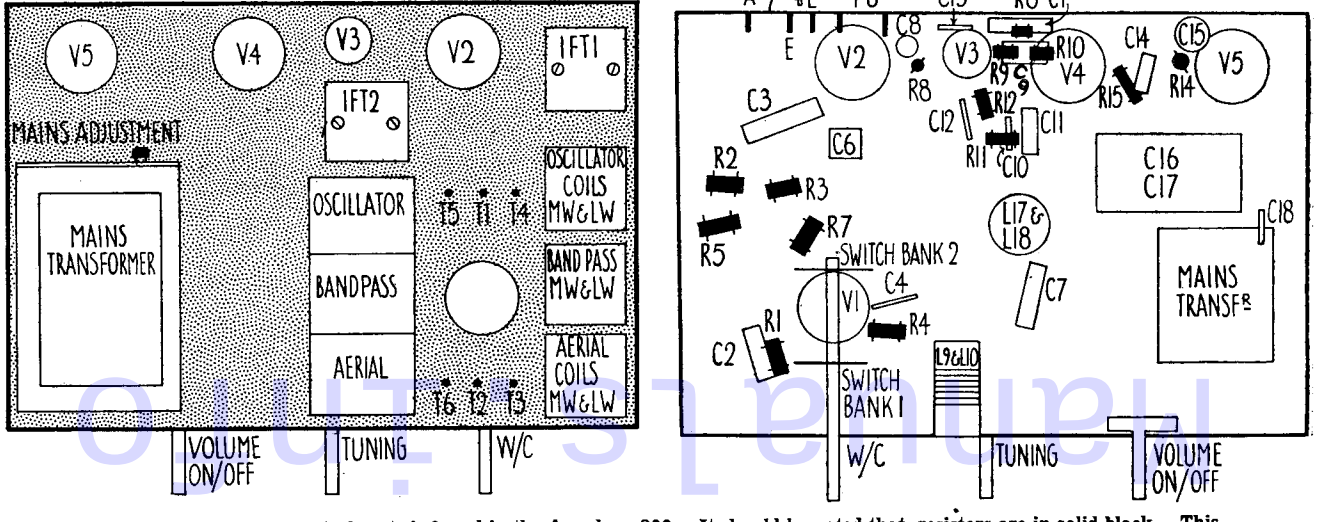
SHORT WAVES (16.5-50 metres).—Good selectivity and sensitivity and ease of handling. No appreciable drift. Representative performance.

MEDIUM WAVES (200-550 metres).—Good gain and representative selectivity. Local stations spread on adjacent channels only. A number of noticeable whistles.

LONG WAVES (700-2,000 metres).—Similar performance to medium waveband with all main stations easily received.

Acoustic Output

Representative tone and volume for the valve combination employed. A fair amount of crispness, good attack and also noticeable bass radiation. Very little coloration on speech and general pleasing balance.



Clean, logical arrangement of parts is found in the Aerodyne 300. It should be noted that resistors are in solid black. This aids reference.