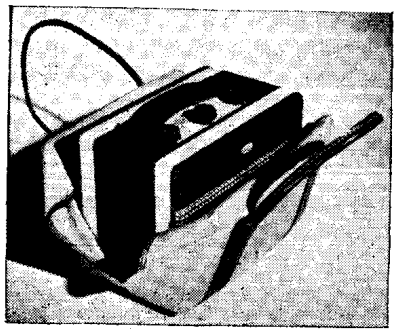
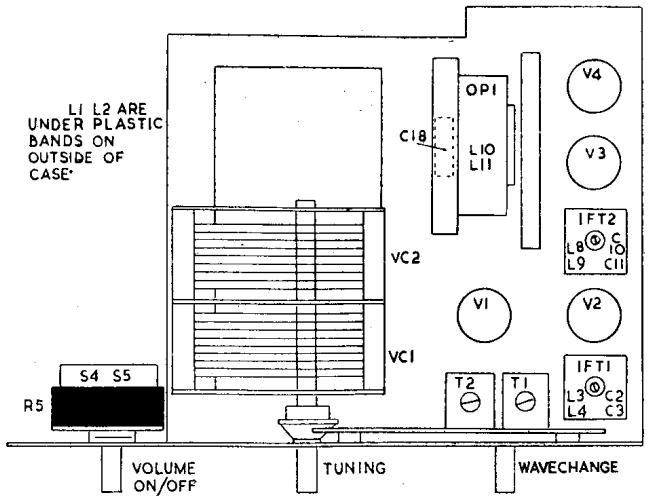
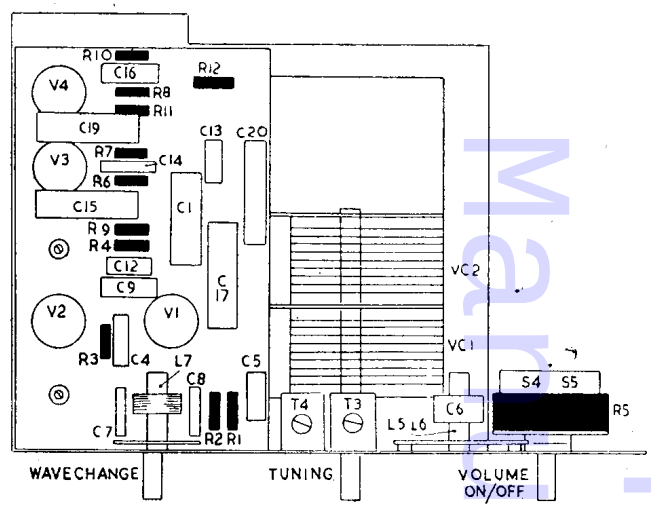
ROBERTS JUNIOR PORTABLE







V1—DK91	V2—DF91	V3—DAF91	V4—DL92
G2 G4 54V 2·33MA, G3, F+G5, A 54V ·75MA, G1, F+G5, F+	G2 36V ·65MA, F+G3, A 84·5V 1·5MA, G1, F+G3, F+	G2 ·016MA, D, A ·09MA, G1, F+G3, F+	G1, G2 59V 1·2MA, FcT,G3, A 80·5V 5MA, F+, F+

Total HT current = 11.5 mA. Bias across R12 = 7.5V.

Four-valve two-waveband all-dry battery portable superhet. Housed in attractive leatherette-covered carrying case, 9⅜ by 6¾ by 5⅝ inches. Weight complete with batteries, 11¾ lb. Supplied with waterproof holdall-type carrying bag fitted leather carrying handles and zip-fastener. Made by Roberts Radio Co., Ltd., East Molesey, Surrey.

RESISTORS

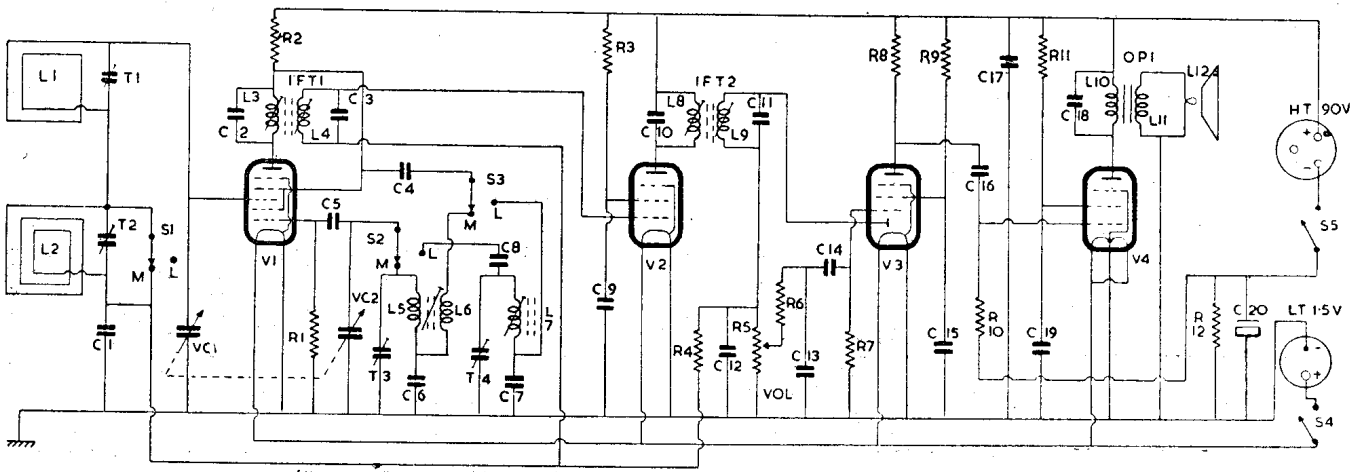
R	Ohms	Watts
1	100K	⅛
2	10K	⅛
3	68K	⅛
4	2.2M	⅛
5	1M	Potr. with DP Switch
6	56K	⅛
7	4.7M	⅛
8	560K	⅛
9	4.7M	⅛
10	1M	⅛
11	18K	⅛
12	680	⅛

CAPACITORS

C	Capacity	Type
1	.05	Tubular 350V
2	100pF	Silver Mica
3	100pF	Silver Mica
4	500pF	Tubular 500V
5	100pF	Mica
6	650pF	Silver Mica
7	650pF	Silver Mica
8	200pF	Silver Mica
9	.01	Tubular 350V
10	100pF	Silver Mica
11	100pF	Silver Mica
12	100pF	Mica
13	50pF	Mica
14	.002	Tubular 500V
15	.1	Tubular 200V
16	.005	Tubular 500V
17	.1	Tubular 200V
18	.002	Tubular 500V
19	.1	Tubular 200V
20	20	Electrolytic 12V

INDUCTORS

L	Ohms
1	4.9
2	42
3	14
4	14
5	5.4
6	1
7	19.5
8	14
9	14
10	680
11	5
12	2.5



TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune Receiver to	Trim in Order stated for Max. Output
Remove Receiver from Cabinet. (1) 455 kc/s to g3 of V1 via .05 capacitor	MW range 200 metres	Cores L9, L8, L4, L3
(2) Check to see that with gang at maximum capacity pointer coincides with line at end of scales.		
(3) 1.364 mc/s via loose coupling to frame AE	220 metres	T3
(4) 566 kc/s as above...	530 metres	Core L5. Repeat (3) and (4)
(5) 232 kc/s as above...	1293 metres	T4
(6) 167 kc/s as above...	1796 metres	Core L7. Repeat (5) and (6)
Replace Receiver back in Cabinet. (7) 1.364 mc/s as above	220 metres	T1
(8) 232 kc/s as above...	1293 metres	T2

ROBERTS JUNIOR PORTABLE

AERIAL. The MW and LW frame aerials L1 and L2, which are wound in slots around outside of case and protected by the cream plastic bands, are tuned by VC1, trimmed by T1 (MW), T2 (LW) and connected to g3 of heptode frequency changer V1. S1 shorts out L2, T2, when receiver is switched to MW band.

AVC decoupled by R4, C1, is fed through L1, L2 to g3 of V1.

Oscillator is connected in a tuned-grid shunt-fed circuit. The grid coils L5 (MW), L6 (LW), which are trimmed by T3, T4, and padded by C6, C7, C8 are switched by S2 to tuning capacitor VC2, and through coupling capacitor C5 to oscillator grid (g1) of V1.

Self bias for oscillator grid is developed on C5 with R1 as leak. Reaction voltages are developed inductively on L6 (MW) and capacitively across padder C7 (LW), and are switched by S3, through coupling capacitor C4, to oscillator anode (g2, g4) of V1. R2 is voltage dropper to anode V1 and is load of oscillator anode.

IF amplifier operates at 455 kc/s. L3, C2, L4, C3 form IFT1 in the anode of V1 and couple signal to g1 of variable-mu IF amplifier V2. AVC decoupled by R4, C1 is fed to g1 through L4. Screen (g2) voltage is obtained from R3 decoupled by C9. Primary L8, C10, of IFT2 is in the anode circuit.

Signal rectifier. Secondary L9, C11 of IFT2 feeds signal to single diode of diode-pentode V3. R5, the volume control, is the diode load and C12 a filter capacitor.

AVC is provided by the DC component of the rectified signal across R5. Decoupled by R4, C1, it is fed to control grids of V1 and V2.

AF amplifier. From volume control R5 the rectified signal is fed through filter R6, C13 and coupled by C14 to grid (g1) of pentode section of V3. Automatic bias for grid is developed on C14 with R7 as leak. Screen voltage is obtained from R9 decoupled by C15. R8 is the anode load.

Output stage. C16 feeds signal to pentode output valve V4. Negative bias for grid is obtained by returning earth end of grid resistor R10 to bias resistor R12 which is inserted in the negative HT lead to chassis. Bias voltage is decoupled by C20. Screen voltage is obtained from R11 decoupled by C19.

Primary L10 of output matching transformer OP1 is in the anode circuit. C18 is tone corrector. Secondary L11 feeds signal to a 4-in. PM speaker L12.

HT of 90V is obtained from an Ever-Ready B107 or Drydex 507 battery. Total HT consumption is approximately 11.5 mA. C17 decouples HT battery. S5, which is ganged to S4 and operated by volume control spindle, breaks negative HT lead.

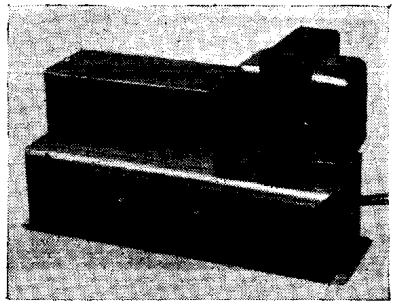
LT of 1.5V for the parallel connected filaments is obtained from an Ever-Ready Alldry 4 or Drydex H.1158 battery. Total filament current is 250 mA. S4 breaks positive LT lead.

Chassis removal. Remove three control knobs, the two round-head wood screws securing bottom left-hand edge of chassis to case, and the three securing top edge of chassis front plate to top of case. Lift frame aerial connecting leads with rubber grommet from slot in chassis. Uncoil speaker leads from around speaker output transformer. Carefully lift chassis, bottom end first, from case.

If speaker leads and frame aerial leads are unsoldered the chassis can be separated from the case for major repairs.

TEST REPORTS

VALRADIO DC/AC CONVERTOR TYPE 230/110



LATEST addition to the range of Valradio DC to AC vibrator-type convertors is model 230/110. It is primarily intended for operating radio-gramophones from 200-250 volt DC mains. The 110 watts 50 c/s AC output is specially filtered to minimise hum and particular attention has been given to frequency stability which, the manufacturers claim is maintained with an accuracy of plus or minus half a cycle.

RF interference is suppressed by means of a two stage choke-capacity network, AF ripple partly by the output transformer and partly by an iron-cored choke and capacity filter network. The output voltage on load is approximately the same as the DC input. In cases where the input is 250 volts, or higher, a tapping on the output transformer is provided to reduce the output by 20 volts. A series dropper resistor in the input circuit can be short circuited and the convertor then used on as low as 180 volts DC.

The vibrator is suspended in sponge rubber and housed in a totally screened box on the top of the main chassis. Operated at the rated load the life of the vibrator should be from 2,000 to 4,000 hours. Filter components, voltage dropper resistor and input fuse of 1.5 amps are housed in the totally screened main chassis. The shrouded output transformer is mounted on top of chassis adjacent to vibrator housing. Flexible leads are provided for input and output connections. The complete unit measures 10½ by 3¼ by 5 in., and weighs 11 lb. On test the convertor operated satisfactorily a standard AC radiogram which consumed approximately 80 watts. Mechanical noise from the vibrator was negligible and practically no AF or RF interference could be detected in the output of the receiver. Made by Valradio, Ltd., 57, Fortess Road, London, N.W.5, the 230/110 retails at £10 15s.

MICOVAC ELECTRONIC TEST METER

THE MicOvac is a battery-operated electronic testmeter providing five voltage ranges on both AC and DC up to 500V, two resistance ranges up to 100 megohms and five DC current ranges up to 1.5A. The instrument consists of a DC valve voltmeter, which forms one arm of a balanced bridge network, together with associated switching circuits to provide the various voltage and resistance ranges.

On AC inputs at frequencies up to 10 mc/s an internal diode rectifier is used, but by means of a special probe which can be plugged into a socket at the rear of the instrument, the frequency range can be extended to 200 mc/s.

On the five DC current ranges the meter is isolated from the electronic circuit and operates as a straightforward milliameter with shunts switched in to provide the ranges. For DC voltages a multiplier is supplied to extend the final range to 5,000 volts.

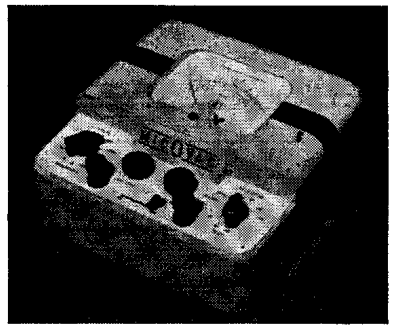
The two resistance ranges operate in conjunction with the electronic circuit.

The input resistance of the instrument is 10 megohms on AC voltages and up to 50 megohms on DC voltages.

The valve voltmeter circuit uses a DAF91 valve. HT is supplied by 67.5V miniature battery and filament current by a 1.5V heavy-duty battery. HT consumption is only 1.1 mA.

The internal diode and probe diode are 1A7 valves and their filament current is obtained from a separate 1.5V battery of same type as above. The probe diode filament is switched on only when the main "on-off-probe" switch is in the probe position. Whilst the probe is in use the internal diode filament is switched off.

The selector switch is provided with three battery voltage check positions so that the state of the batteries can be tested without need for access to the batteries.

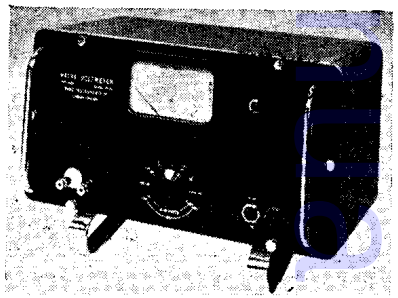


The instrument is very soundly constructed and is housed in an attractively stove enamelled light-alloy case. A small compartment on the underside is provided for storage of probe and leads. The selector switches and zero and ohms adjustment knobs are clearly calibrated. Two large insulated terminals are provided for connection of leads.

We were able to test the instrument on all its ranges and over a wide range of frequencies. On all of the tests the instrument proved to be extremely reliable and its accuracy well within the tolerances quoted by the makers. We were particularly impressed by the ease with which the meter scales could be read.

Its portability and light weight of 5½ lb., together with its many advantages over the normal multi-range meter, makes it an extremely useful piece of equipment. Made by Electronic Instruments Ltd., 17 Paradise Road, Richmond, Surrey, it retails at £29 10s. plus £2 10s. for VHF probe, £1 19s. for 5,000V multiplier, and 38s .6d or £3 12s. for canvas or leather carrying cases respectively.

DAWE VALVE VOLTMETER



THE Dawe valve voltmeter type 613B is designed to give accurate measurement of voltages from 1 millivolt up to 300 volts at frequencies of 10 c/s to 1.5 mc/s. The circuit is fundamentally a three-stage high-gain amplifier, a diode rectified voltmeter, together with a valve stabilised HT supply.

The voltage to be measured is fed through a 1,000V working capacitor to the grid of a 6F12 miniature high-slope pentode which functions as a cathode follower. The input is switched, so as to bring into circuit on the higher ranges above 10V, a frequency compensated attenuator. The output from the cathode follower is tapped from a potential divider by the range selector switch and applied to the grid of the first valve of the amplifier.

The amplifier consists of three 6F12 high-slope pentodes in a resistance-capacity circuit. Gain is stabilised by heavy negative feedback, approximately 20 dB.

The output is fed to a diode rectifier in the cathode circuit of which is the 1 mA moving-coil meter. A variable pre-set resistor in the negative feed-back chain enables the gain of the amplifier to be adjusted for initial or subsequent alignment of the instrument. Due to the limiting by the amplifier on excessive inputs the meter movement will not suffer damage when overloads of several hundred times are supplied provided, of course, that the voltage rating of the input condenser is not exceeded. Meter calibration is in RMS values for a sine wave input, the actual indications being proportional to the average half-wave value.

HT is provided by a full-wave indirectly heated rectifier and is choke-capacity smoothed. A series-valve type stabilisation circuit is incorporated. A 6V6 is the series valve and is controlled by the low impedance triode portion of a 6Q7,

Continued overleaf