

SERVICE EQUIPMENT BUYERS' GUIDE

Specifications of Outstanding Test Apparatus for 1937/8

AVO

Automatic Coil Winder & Electrical Equipment Co., Ltd., Winder House, Douglas Street, London, S.W.1.

All-Wave Avo-Oscillator.—This is a 7-range battery operated signal generator, with six fundamental ranges and one harmonic range. Fundamental ranges 30 MC/S to 100 KC/S (10 m. to 3,000 m.). Harmonic range goes down to 60 MC/S (5 m.) for television work. Attenuation by a 4-position switch and continuously variable control. R.F. output can be obtained alone or modulated 30 per cent. at 400 C/S. Provision is also made for external modulation, or for use of one self-contained A.F. modulation alone. Directly-calibrated scale. Price 9 guineas list.

Avo Valve Tester.—This comprises a main meter panel on which are mounted the controls and two valve panels, one for English and one for American valves. Mutual conductance reading direct and coloured "Good-Replace" indication. Heater-cathode insulation while hot. Diode and rectifier emissions. List price 11 guineas with one valve panel. Second panel 2 guineas extra.

Model 7 46-Range Universal Avometer.—D.C. ranges: Current, 10 ranges from 0.1 mA to 0.10 A. Volts, 12 ranges from 0.50 mV to 0.1,000 V.

A.C. ranges: Current, 8 ranges from 0.5 mA to 0.10 A.

Volts, 8 ranges from 0.5 V to 0.1,000 V.

Resistance: 5 ranges; 3, 0.10,000 O, 0.100,000 O and 0.1 megohms on internal batteries; 0.10 megohms and 0.40 megohms using external batteries. Capacity, 0.01 μ F to 20.0 μ F using external A.C. source. Power, 0.4 watts. Decibels, —10 dB. to +15 dB. Automatic cut-out safety device. List price 16 guineas.

36-Range Universal Avometer.—D.C. ranges: Current, 8 ranges from 0.6 mA to 0.12 A. Volts, 10 ranges from 0.60 mV to 0.1,200 V. A.C. ranges: Current, 6 ranges from 0.60 mA to 0.12 A. Volts 0.6 V to 0.1,200 V. Resistance: 4 ranges; 2, 0.1,000 O and 0.10,000 O on internal batteries; 0.100,000 O and 0.1 megohm using external batteries. List price 13 guineas.

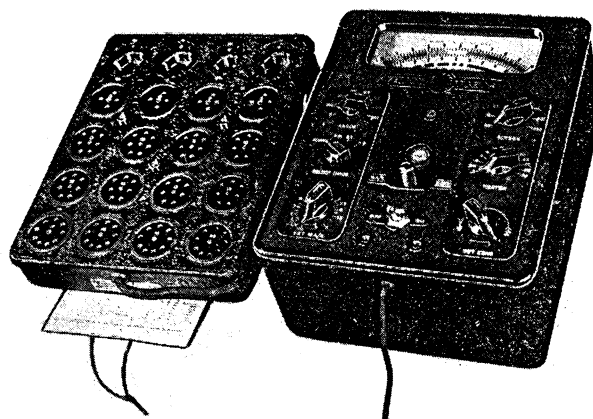
Avometer.—D.C. ranges only: Current, 8 ranges from 0.6 mA to 0.12 A. Volts, 10 ranges from 0.60 mV to 0.1,200 V. Resistance: 4 ranges; 2, 0.1,000 O and 0.10,000 O on internal batteries; 0.100,000 O and 0.1 megohm using external batteries. List price 9 guineas.

Universal Avo Minor.—D.C. ranges: Current, 5 ranges from 0.2.5 mA to 0.500 mA. Volts, 6 ranges from 0.75 mV to 0.500 V. A.C. ranges, volts, 5 ranges from 0.5 V to 0.500 V. Resistance: 6 ranges; one, 0.20,000 O on internal battery; 0.100,000 O, 0.500,000 O, 0.2 megohms, 0.5 megohms and 0.10 megohms, using external batteries. List price £5 10s.

Avo Minor.—D.C. only: Current, 3 ranges from 0.6 mA to 0.120 mA. Volts, 6 ranges

from 0.6V to 0.600V. Resistance: 4 ranges; One, 0.10,000 O on internal battery; 0.60,000 O, 0.1,200,000 O and 0.3 megohms, using external batteries. List price £2 5s.

Avo Daptor and Avo Coupler.—These provide a means whereby valve voltage and current readings may be taken by plugging the valve into the adaptor and the adaptor plug into the valve socket in the set. Avo Daptor for 5- or 7-pin valves, 25s.; Avo Coupler to adapt to 9-pin valves, 12s. 6d.



The Avo valve tester, with the English valve panel connected up.

BULGIN

A. F. Bulgin & Co., Ltd., Abbey Road, Barking.

Valve Tester, Type V.T.15.—A.C. mains operated model, fitted with 4 valve-holders and supplied with adaptors. G.B. continuously variable from 0.50 V; L.T. from 2 V-40 V; H.T. from 75 V to 400 V; screen from 75 V to 350 V. Dual range meter reads 0.15 and 0.60 mA. Price 9 guineas list.

Valve Test Adaptor, Type V.T.14.—This consists of a 9-pin valve-holder with terminals for each electrode disposed around it, mounted upon a circular wood base, connected by a multiple core lead to a 9-pin adaptor which plugs into valve socket, the valve being inserted in the base. List price 17s. 6d. Adaptors for 5- or 7-pin valves 3s. each.

All-wave Modulated All-Mains Oscillator, Type V.T.23.—Operating from A.C. or D.C. mains and with calibration chart in lid, this unit is entirely self-contained. Fundamental range 30 MC/S to 90 KC/S (10 m. to 3,310 m.). Internal (oscillating neon) or external modulation. A.F. and R.F. attenuators. List price, 10 guineas.

Neon Output Measuring Unit, Type V.T.19.—A device employing a neon tube to indicate output to facilitate ganging operations. Pressed aluminium case fitted with glow attenuator control. List price 20s.

Dummy Aerial, Type V.T.18.—For use with V.T.23 oscillator. List price 4s.

Intermediate Frequency Liners.—When connected to any source of 200-250 V D.C. these units consume only 0.2 mA and provide an exact frequency for lining up I.F. transformers, accurately tuned at the factory, and modulated with A.F. Type V.T.17, 465 KC/S, and V.T.20, 110 KC/S, 15s. each, list.

Radio Frequency Liner, Type V.T.21.—Similar to the I.F. liners, but operates at radio frequencies. Wavelengths are 200, 333, 500 and 1,000 metres. List price, 15s.

COSSOR

A. C. Cossor, Ltd., Cossor House, Highbury Grove, London, N.5.

Oscilloscope Model 3332.—Employs gas focused tube with 4½-in. screen, electrostatic and magnetic deflection control. Sensitivity: electric 24 m.m./V with self-contained amplifier; magnetic 1 m.m./mA. Removable millimetre ruled screen scale. A.C. mains operated. Price £20.

Ganging Oscillator Model 3343.—Designed mainly for use with above, a "Wobulator" oscillator is incorporated. Beat-frequency type giving constant ± 15 KC/S band-width; no moving parts. 5 R.F. ranges 20 MC/S to 85 KC/S (15 m. to 3,500 m. approx.). External modulation if required. Supplied with calibrated charts. Operated from A.C. mains. Price £20.

A special camera, model 3330, is also produced for use with above. Price £8 15s.

ELECTRADIX

Leslie Dixon & Co., 218 Upper Thames Street, London, E.C.4.

Dix-Onemeter.—This comprises a nucleus in the form of a sensitive meter with full-scale deflection of 2.0 mA, which, used in conjunction with a range of external shunts and series resistances, forms a multi meter of practically unlimited range. The price is 55s. for the meter, whilst the multipliers are from 6s. 6d. up to 0.100 V to 74s. for 0.2,000 V, and 6s. 6d. each for all current ranges from 0.20 mA to 20 A.

A.C. Multipliers.—As the above meter only operates with D.C. the A.C. multiplier blocks have been designed for A.C. working with the meter. They comprise three models: No. 1, Dix-Wevo, 6 ranges A.C. or D.C., 5 V to 500 V; No. 2, Dix-Wema, 6 ranges from

SERVICE EQUIPMENT BUYERS' GUIDE

5 mA to 250 mA; No. 3, Dix-Weamp, 5 ranges from 0.5 A to 10 A. Each is priced at 85s.

Electradix Service Set.—A combined multi-range meter and valve tester for checking valves under working conditions in the set, or in the instrument, using external supplies. Eight D.C. and A.C. ranges, and resistance 50 to 100,000 O. Two test valve-holders are on panel, one with contact plates for prod tests, and a cable adaptor for tests in sets. Extra adaptors are available. Price £5 17s. 6d., in portable wooden case.

ELLIOTT

Elliott Brothers (London), Ltd., Century Works, Lewisham, London, S.E.3.

D.C. Portable Instruments.—A wide variety of moving coil instruments is available, in various ranges. Ammeters and voltmeters are made in single, double or triple ranges, priced at £3 5s., £3 10s. and £3 15s., mounted in teak cases with lid and carrying handle. Voltmeters have a resistance of 200 O per V. Accuracy B.S.S. first grade.

A.C. Portable Instruments.—Incorporate Westinghouse rectifiers. Multi-range milliammeter has ranges of 0.10, 0.50, 0.250 and 0.1,000 mA, while the millivoltmeter has the same ranges in millivolts. Price is £7 list in each case.

The firm also make a wide variety of single and multi-range instruments of all patterns, including some miniature edgewise types for flush mounting.

E.M.I. SERVICE

E.M.I. Service, Ltd., Sheraton Works, Hayes, Middlesex.

The All-Wave Oscillator.—A 7-range A.C. mains-operated signal generator. Six position switch waveband selector covers all wavelengths from 5 m. to 3,500 m. (60 MC/S to 85 KC/S), modulated to 30 per cent. at 400 C/S. Output 1 μ V to 0.1 V in two ranges. Internal or external modulation or unmodulated R.F. Price £15 12s. 6d. net.

The Service Oscillator (M.W. and L.W.).—This model covers a range of from 180 m. to 3,200 m. (1,660 KC/S to 94 KC/S) in 4 steps. It is battery-operated and self-contained. All four ranges are on fundamental frequencies. Price complete £8 5s. net.

The Service Oscillator (S.W.).—A signal generator mainly for use in conjunction with the service oscillator above, covering a range from 5.1 m. to 190 m. (58.8 MC/S to 1.58 MC/S). Price £9 17s. 6d. net.

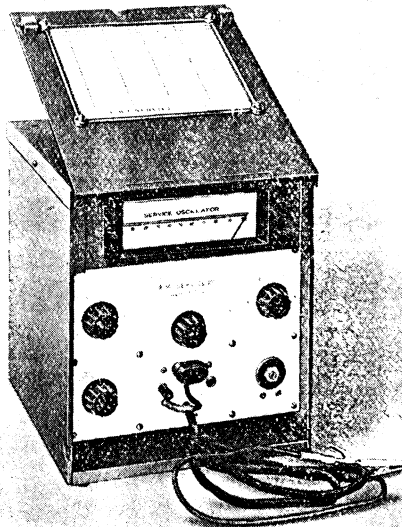
Audio Frequency Oscillator.—An A.C. mains-operated beat frequency oscillator. Frequency range 30 C/S to 10,000 C/S. Output 1.2 V, controlled by attenuator. Price £16 2s. 6d. net.

Output Meter.—This instrument is calibrated in milliwatts and decibels. Three ranges cover 0.3,000 mW and —30 to +18 dB. Price £3 7s. 6d. net.

Insulation Tester.—Calibrated zero-10,000 O to 20 MO—infinity this is a precision instrument of the generator type. Price, with leather case and leads, £7 11s.

Super-Sensitive Analyser.—An unusually sensitive movement is incorporated in this instrument having a resistance of 20,000 O per V (D.C.). 5 A.C. and D.C. voltage ranges cover from 0.25 V to 0.1,000 V.; 5 D.C. current ranges 0.100 μ A to 0.500 mA; 3 A.C. ranges 0.05 A to 0.5 A. Four resistance ranges, 0.100 O to 0.10 MO. Price 16 guineas net.

Service Analyser.—A less sensitive but high grade instrument. 1,000 O per volt movement. 6 A.C. and D.C. ranges from 0.5 V to 0.1,000 V. 5 current ranges (D.C.) from 0.25 mA to 0.500 mA. Four resistance ranges from 0.1,000 O to 0.500,000 O without external batteries. Adaptors enable voltage

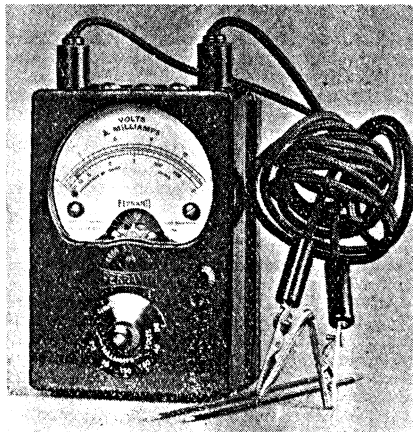


The E.M.I. Service Oscillator (M.W. and L.W.).

and current readings to be taken under working conditions. Price £11 17s. 6d. net.

Valve Voltmeter.—An A.C. mains-operated instrument. Five ranges from 0.25 V to 0.250 V. Price £11 10s. net.

Cathode Ray Oscillograph.—A.C. mains-operated instrument employing a hard tube with 3½ in. screen and electrostatic deflection. Consumption 20 W. Sensitivity 1.6 V per millimetre (40 V per in.). Linear saw-tooth oscillator, adjustable from 10 C/S to 55,000 C/S. Price £27 10s.



One of the Ferranti A.C./D.C. Circuit Testers.

FERRANTI

Ferranti, Ltd., Hollinwood, Lancs.

All prices of Ferranti instruments have been increased by 10 per cent. over the figures given below.

Ferranti A.C./D.C. Circuit Tester.—A multi-range instrument. D.C. volts, 0.3, 0.15, 0.150, 0.300, 0.450, 0.600. A.C. volts, 0.15, 0.150, 0.300, 0.450, 0.600. All 1,000 O per V. D.C. milliamperes, 0.1, 0.75, 0.30, 0.150, 0.750. A.C. milliamperes, 0.1. Ohms, 0.50,000, and four other ranges up to 30 MO with external batteries up to 600 V. Accuracy, B.S.S. first grade on D.C., 2 per cent. at

full scale and at 20-20,000 C/S on A.C. Range selection by rotary switch and sockets. Price, including leatherette case, £5 15s.

Multi-Range D.C. Test Set.—Two 2½ in. scale moving-coil instruments are used, one for voltage and the other for current measurements. Volts, 0.01, 0.05, 0.1, 0.5, 0.10, 0.50, 0.100 and 0.250, all 1,000 O per V. Current, 0.10 mA, 0.50 mA, 0.100 mA, 0.500 mA, 0.1 A, 0.5 A, 0.10 A, 0.25 A. Price, £8 5s. Special model, with above voltage ranges doubled, but resistance of 500 O per V, price £8 15s.

Multi-Range A.C. Test Set.—Similar to above, but two moving-iron instruments. Volts, 0.75, 0.15, 0.30 (10 O per V), 0.150, 0.300, 0.600 (100 O per V). Current, 0.05 and 0.5 A. 25-100 C/S and D.C. Price 6 guineas.

A range of capacity and resistance testers, and all types of single and multi-range instruments also available.

HUNTS

A. H. Hunt, Ltd., Bendon Valley, Garratt Lane, Wandsworth, S.W.18.

Capacitor Analyser.—Capacity and resistance bridge with visual balance by cathode ray indicator. Capacity ranges 0.00001 μ F to 70 μ F; resistance ranges 50 O to 2 MO. Power factor of electrolytics, insulation resistance, open circuit, etc., indicated. All readings direct. A.C. operated, 120 and 200-240 V. 25-60 C/S. Price £7 14s. net trade.

All-Wave Signal Generator.—Battery-operated portable type, 10-3,000 m. (30 MC/S-100 KC/S) in five fundamental ranges, and 5-15 m. (60-20 MC/S) in harmonics. Provision for modulation 30 per cent. at 1,000 C/S. Calibrated attenuator, 100 mV to 1 μ V. Hand calibrated chart, and dial also calibrated. Price 8 guineas net trade, including two dummy aeriels.

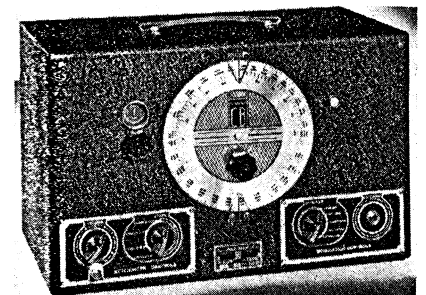
LELAND

Leland Instruments, Ltd., 46 Bedford Row, W.C.1.

This firm handle several American ranges of instruments, including those of the Clough-Brengle Co., of Chicago, the Ferris Instrument Corporation of Boonton, N.J., and the Boonton Radio Corporation of Boonton, N.J.

Clough-Brengle.—This range includes a number of signal generators. The OCA is for A.C. mains, the OCB for A.C./D.C. mains, and the ODA for battery operation. Price in each case is £11 18s. 6d., and the general features are the same. Range, 100 KC/S-30 MC/S (3,000 m. to 10 m.), in four fundamental bands. Unmodulated R.F., 400 C/S modulated R.F., or 400 C/S A.F. output alone. Hand-drawn calibration curves.

There is also the OMA signal generator with self-contained mechanical inductor



The Clough-Brengle A.C. signal generator, Model OCA.

COMPLETE REVIEW of TEST APPARATUS

sweep at £26 10s. This is for use with a cathode ray oscillograph for alignment. The inductor sweep unit may also be obtained separately (price, £14 10s.).

There are two cathode-ray oscillographs, the 105 with 1 in. tube (£19 10s.), and the CRA, with 3 in. tube (£33 2s. 6d.).

The range is completed by beat frequency oscillators, valve voltmeters and several multi-range analysers.

The Ferris and Boonton equipment is mainly of the laboratory type.

LEXINGTON

Lexington Instrument Laboratories, Ltd., 155-157 Gt. Portland Street, W.1.

Lexington Valve Tester.—A model for counter or portable use, of the total emission type, giving "Good," "?" and "Bad" indications on a 3-in. instrument. A selector control shunts the meter suitably for the valve under test, settings for various valves being provided by the makers.

Provision also made for leakage tests on electrodes, for two ranges of D.C. voltage, 0-10 and 0-250 V, and for external continuity tests (neon). Price 8 guineas net trade.

Lexington Continental Valve Panel.—For use with above instrument, enabling all continental valves to be tested. Price 30s. net trade.

Lexington Valve Socket Analyser.—A device consisting of 88 cards pivoted in a strong cardboard case, carrying the base connections and typical operating conditions of all the well-known British and American valves. Price 4s. 6d.

CLAUDE LYONS

Claude Lyons, Ltd., 76 Oldhall Street, Liverpool.

Monarch Model 12 Standard Signal Generator.—An A.C. mains-operated oscillator covering 27 MC/S to 100 KC/S (11 m. to 3,000 m.) in 5 bands on fundamentals. Attenuator is directly calibrated in microvolts output. The 400 C/S modulation is also available alone. The R.F. output is 30 per cent. modulated. Control dial is scaled 0-100 divisions for use in conjunction with calibration chart. Price £21.

Monarch Model 32 Signal Generator.—A.C. or D.C. mains-operated. Range 20 MC/S to 125 KC/S (10 m. to 2,400 m.) in 5 bands, with directly calibrated scales. Modulation 30 per cent. at 400 C/S. Price £16.

Monarch Model 41 Output Meter.—Five ranges cover from 25 mW to 25 W on directly calibrated scales. Price £22 10s.

Simpson Roto-Ranger Volt-Ohms Milliammeter, Model 201.—This is a multi-range analyser of unusual design. When the selector switch is moved to a new position the appropriate scale comes into view at the scale window. Six resistance ranges cover from 0-20 Ω to 0-20 MΩ. Three current ranges from 0-200 μA to 0-150 mA. Three voltage ranges from 0-8 V to 0-1,000 V. Sensitivity 5,000 ohms per volt. D.C. only. Price 10 guineas.

Simpson Roto-Ranger Model 202.—Operates as A.C. and D.C. instrument. Similar to Model 201. Three resistance ranges cover from 0-100 Ω to 0-2 megohms. Three D.C. current ranges from 0-1 mA to 0-130 mA. Three D.C. voltage ranges from 0-8 V to 0-1,000 V. Three A.C. voltage ranges from 0-8 V to 0-1,000 V. Price £11 10s.

Simpson Model 250 Universal Meter.—A high sensitivity instrument, resistance on all ranges is 20,000 Ω per V. Twelve D.C. ranges; current 0-50 μA to 0-25 A. Volts 0-2.5 V to 0-1,000 V. Five A.C. voltage ranges, 0-2.5 V to 0-1,000 V. Resistance 0-4,000 Ω to 0-40 megohms. Five decibel ranges from -10 to +55 dB. Price 15 guineas.

MARCONI-EKCO

Marconi-Ekco Instruments, Ltd., Electra House, Victoria Embankment, W.C.2.

This firm manufacture high-grade test and laboratory equipment, mainly for manufacturers' use. They also distribute R.C.A. test apparatus in the British Empire. Among these are several R.C.A. cathode ray oscillographs, and the R.C.A. electronic sweep test oscillator.

MULLARD

Mullard Wireless Service Co., Ltd., Mullard House, 225 Tottenham Court Road, London, W.1.

Master Test Board.—A very comprehensive A.C. mains operated valve-tester and measuring instrument. Every electrode tested for performance and internal short by pressing a row of 7 buttons. Only one holder for each type of English, American and continental valve base. Operating conditions automatically adjusted by insertion of appropriately punched index card in gate switch. Resistance, voltage, current, capacity and inductance tests also available. Full review in issues of *Radio Maintenance* for October 9 and 16. Price £27 10s. net, with 150 test cards.

Measuring Bridge, Type GM4140.—A.C. mains operated. Capacity range 1 μF to 10 μF plus additional ranges by employing an external standard. Resistance range 0-1 Ω to 10 MΩ directly calibrated. A percentage scale permits comparison between two resistances or condensers. Price £12 12s. net.

Service Signal Generator, Type GM2880F.—R.F. range 21.5 MC/S to 100 KC/S (14 m. to 3,000 m.) modulated or unmodulated. 4 valves; R.F. oscillator, A.F. oscillator, fixed R.F. oscillator for variable beat-frequency tone and rectifier. 6-position attenuator and potentiometer. Price 20 guineas.

Cathode Ray Oscillograph, Type GM3152.—Portable instrument operated from A.C. mains, incorporating 3-valve time base, 3-valve 2-stage amplifier and a new type hard tube. Sensitivity 6 mV, 100 mV and 10 V R.M.S. per centimetre image height. Linear time base from 10 C/S to 150 KC/S in 10 ranges. Price £50 net.

NORMAN

Norman Rose (Electrical), Ltd., Waveband House, 43 Lamb's Conduit Street, London, W.C.

Omnisection Valve Tester.—An A.C. mains-operated valve tester. Examines valve as a unit or by individual electrode tests. Measures cathode/heater insulation while hot. Price £4 10s. net.

Omnisection Model 66.—A.C. mains-operated. Used without reference to valve charts, it is an improvement on the above model. Automatically selects suitable G.B. potential. Also provides dual range voltmeter and continuity test. Price £7 15s. net.

Model 94 Set Analyser.—19 A.C. and D.C. ranges. Five voltage ranges from 0-10 V to 0-1,000 V A.C. and D.C. Six current ranges from 0-1 mA to 0-1 A. Valves tested in conjunction with receiver or independently, all pins being brought out to a numbered socket. Can be used as output meter or for continuity or resistance measurements. Price £9 17s. 6d. net.

PHILCO

Philco Radio & Television Corp., of Great Britain, Ltd., Perivale, Greenford, Middlesex.

Philco Model 088 Signal Generator.—Battery operated, covering 110 KC/S to 20 MC/S (2,730-15 m.) in five fundamental

ranges. Directly calibrated scale. Modulation 80 per cent, at 800 C/S, can be switched on or off. Attenuator is continuously variable. Provision for individual compensation for each waveband. Price £5 15s. (£5 5s. to Philco and R.M.S. dealers).

Philco Model 065 Multi-Range Meter.—A Weston instrument, with A.C. and D.C. voltage ranges of 0-5, 0-10, 0-50, 0-250, 0-500 and 0-1,000 V. D.C. milliamperes 0-2.5, 0-10, 0-25, 0-100 and 0-500 mA. Ohms, 0-1,000, 0-10,000, 0-100,000, 0-500,000 Ω. Can also be used as output and capacity meter. Positive switching to all ranges. 1,000 Ω per V on all voltage ranges. Price 12 guineas (£9 to Philco and R.M.S. dealers).

Philco Model 077.—Contains above two instruments in special carrying case. Price £18 (£16 to Philco and R.M.S. dealers).

Various accessories are available.

PYE

Pye Ltd., Service Department, Test Equipment Section, Cambridge.

De Luxe All-Wave Trimeasy.—Battery operated, five ranges covering 6 m.-3,000 m. (50 MC/S-100 KC/S). All but lowest range on fundamentals; separate coils for all ranges, switched into circuit. Hand calibrated charts supplied; clock-face dial. 5-position modulation switch for C.W., 400 C/S modulation, 10 KC/S modulation, 150 KC/S modulation, or external modulation. Modulation 30 per cent. Attenuated 400 C/S or 10 KC/S A.F. output available. Separate A.F. and R.F. attenuators. Normal R.F. output 350 mV, separate "force" output of 1 V. Price 8 guineas net, including dummy aerials and leads.

Service Component Analyser.—Capacity, resistance and inductance bridge, with C.R. balance indicator. Single control with five directly calibrated scales. 1 μF-0.002 μF, 0.0001 μF to 0.2 μF, 0.01 μF-20 μF, 10 Ω-20,000 Ω, and 1,000 Ω-2 MΩ. Power factor of electrolytics, 0-30 per cent. Five test voltages for condensers, with neon leakage test. A.C. operated. Price 7 guineas net.

Pye Roto Ranger.—Multi-range meter with separate scale for each range. 12 ranges, 0-8, 0-300, 0-1,000 D.C. volts; 0-8, 0-130, 0-1,000 A.C. volts; 0-1, 0-8, 0-130 D.C. milliamperes; 0-100 Ω, 0-50,000 Ω, 0-2 MΩ. Price 10 guineas net.

Life Test Alarm.—A device for indicating intermittent faults by means of an alarm bell. Uses a thermionic relay, and can be adjusted to operate at any given drop from a pre-determined output. A.C. operated. Price £3 15s. net.

Insulation Testers.—Two generator types, 0-20 MΩ (500 V test). Megotest, price £7 net; Megohmmeter, similar, but with 0-500 V A.C. or D.C. voltmeter, £8 net.

Output Meter.—3 ranges, 0-4, 0-40 and 0-400 mW, and decibels. Pocket size. Price £3 10s. 2d. net.

RADIOLAB

Everett, Edgcombe & Co., Ltd., Colindale Works, London, N.W.9.

Set Analyser and Valve Tester.—Multi-range A.C. D.C. instrument with which valves may also be tested either in conjunction with the receiver or independently of it. A.C./D.C. volts; from 0-10 mV to 0-1,000 V at 1,000 Ω per V. Current 0-1 mA to 0-100 mA and amperes, using external shunts. Resistance 5 Ω-2,500 Ω and 5,000 Ω-250,000 Ω. Price £13 17s. 3d.

All-Purpose Tester.—Ranges 0-1 to 0-500 V and 0-1 to 0-1,000 mA, A.C. or D.C., 1,000 Ω per V. Resistance 5 Ω-250,000 Ω in two

SERVICE EQUIPMENT BUYERS' GUIDE

Radiolab—Continued

ranges on internal battery. Price £6 15s. External shunts available.

Omni-Selector.—For use in conjunction with above for testing all kinds of valves. Price £3 5s.

Service Valve Tester.—Contained in case with sloping panel fitted with a number of valve sockets, a meter and switch controls.

types of valve, given in a handbook supplied. A check on mutual conductance and inter-electrode insulation can also be made. Panel carries thirty-six valve holders for different valves to avoid switching. Tests all types except octals and British midjets. For use on A.C. Price, with data book, 8 guineas net.

UVET Adaptor.—Extra panel for use with above, having holders for octal, British

Meters.—There is also a comprehensive range of single-range meters for panel mounting.

TELSEN

Telsen Electric Co. (1935), Ltd., Fitzgeorge Street, Rochdale Road, Manchester, 9.

Signal Generator No. 905.—An A.C. mains-operated oscillator, covering 22 MC/S to 100 KC/S (13.5 m. to 3,000 m.) in 5 bands, with or without internal modulation. Continuously variable attenuator. Price, complete with calibration charts, 6 guineas.

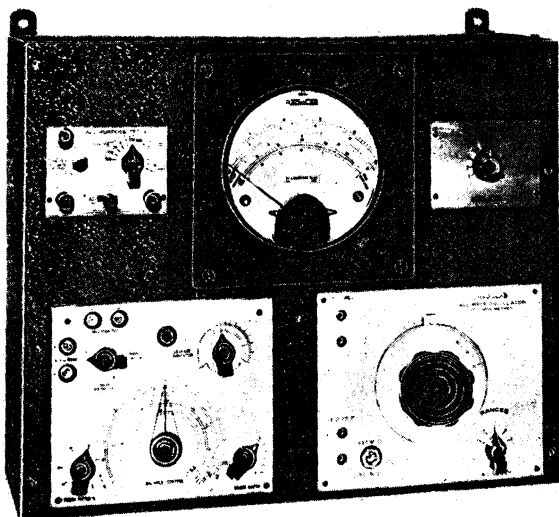
Universal Tester No. 915.—A.C. mains-operated all-purpose tester. Tests valves and indicates shorted or disconnected electrodes and heater/cathode insulation. Meter ranges 0.12 V, 0.120 V and 0.1,200 V D.C. and 0.1,200 V A.C. Resistance 0.1,000 O and 0.500,000 O. Capacity 0.01 μ F and 0.4 μ F. Sensitivity 1,000 O per V. Scale is directly calibrated and has also "Good-bad" valve scale. Valve-holders provided for English, American, octal and 7-pin Continental valves. Price 9 guineas.

Capacity Analyser No. 909.—This is an A.C. mains-operated capacity and resistance bridge. Capacity ranges 0.00001 μ F to 70 μ F paper and electrolytic, and electrolytic power factor. Resistance ranges from 5 O to 10 MO. Cathode ray indicator shows position of balance. Price 6 guineas.

Multi-Range Test Meter No. 907.—A high grade meter and Westinghouse rectifier form the nucleus of a multi-range A.C. and D.C. meter. A.C. and D.C. voltage ranges 0.12 V, 0.120 V and 0.1,200 V. Current 0.12 mA, 0.120 mA and 0.1,2 A D.C. Resistance 0.500 O and 0.50,000 O. Sensitivity 1,000 O per V. Price 6 guineas.

Valve Voltmeter No. 908.—This is a directly reading reflex type meter. Range 0.1 V to 200 V from 30 MC S to 10 C/S. Price, complete with 3 valves, 6 guineas.

Output Meter No. 906.—Incorporates a $\frac{3}{4}$ -in. movement, directly calibrated in watts from 0.1 W to 50 W in two ranges.



The latest Radiolab production is this receiver test panel, which contains all the equipment necessary for service work, except a valve tester.

Operated from A.C. mains. Price 11 guineas. Panel for American valves £2 6s. 3d.

Valve Gauge.—A low-priced edition of the service valve tester. Meter calibrated "Good," "Indifferent" or "Poor" by coloured zones. A.C. mains. Price £5 15s. 6d.

Universal Oscillator, Type B.—Range 175 m.-3,000 m. in 4 fundamental bands. Battery operated. Internal or external modulation. Price £6 10s., plus batteries.

All-Wave Oscillator.—Range 10 m.-3,000 m. (30 MC/S-100 KC/S) on fundamental bands. Battery operated; batteries in separate container. Attenuator attached by lead. Internal or external modulation. Price 10 guineas.

Output Meter.—Primarily intended for use with Radiolab oscillator. Three ranges cover 0.40 mW to 0.4,000 mW. Also decibel scale. Price £4 2s. 6d.

All-Purpose Tester.—A multi-range meter with 6-in. scale. Same specification as the previous All-Purpose tester. Square portable pattern £13 7s. 6d. Round wall pattern £9 15s., plus external shunts.

Glow-Worm.—Voltage and insulation tester employing gas-discharge tube in conjunction with a calibrated scale. Fitted with rubber-handled test prod clips. Price £1 7s. 6d.

Meters.—The firm also make a comprehensive range of single and multi-range meters.

Receiver Test Panel.—The firm are shortly to introduce at a reasonable price a receiver test panel which includes a multi-range meter for A.C., D.C. and resistances, capacity and resistance bridges, a valve voltmeter and an all-wave oscillator. The price has now been fixed at £2 15s. net.

RADIOMETERS

Radiometers, Ltd., Eagle House, Jermyn Street, S.W.1.

Type UVET Valve Tester.—Gives an emission test, with strapped electrodes, in comparison with lists of values for various

midjet and H.F. pentodes with grid top cap. Provision for fitting extra holders for new types as they become available. Price, with data book, 3 guineas net.

Paradohmeter.—Directly calibrated resistance and capacity measuring bridge, 50 O to 4 MO and 0.00005 μ F to 25 μ F. For use in conjunction with UVET valve tester, using the meter in the latter for balance indication. Price, 5 guineas net. A similar self-contained model, with simple indicator, is obtainable at the same price.

ROTHERMEL

R. A. Rothermel, Ltd., Rothermel House, Canterbury Road, Kilburn, London, N.W.6.

Webber Oscillator Model 20.—All-wave signal generator covering 5 m.-3,500 m. (60 MC/S-90 KC/S) in 7 bands. Direct reading scale. Battery-operated, 3-position attenuator with vernier. Price 15 guineas.

Webber Oscillator Model 40A.—Lower-priced edition of above model. Battery-operated. Price 12 guineas.

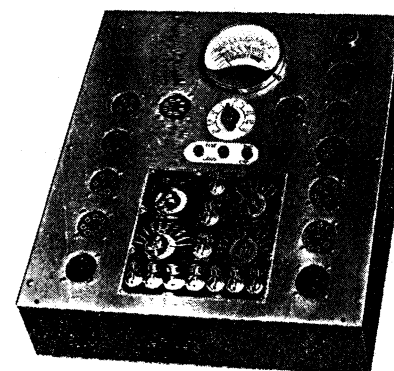
Rothermel-Sprague Interference Analyser.—Defines empirically type of suppressors required to remove interference. Fitted with rubber-handled input and output connectors. Price, complete with four condensers and one choke, £4 10s.

SIFAM

Sifam Electrical Instrument Co., Ltd., Hollydale Road, Queens Road, London, S.E.5.

Valve Emission Tester, Type VET12.—An A.C. mains-operated instrument, fitted with bases for English and American valves. Meter indicates "Good" or "Bad." Automatic G.B. volts selection. Any section or diode can be separately tested. Price £6 10s., or with 2-range voltmeter £6 17s. 6d.

Multi-Range Service Test Set, Type RT9.—A 9-range meter with terminal selector connections mounted in wood case. Sensitivity 400 O per V. Price £2 17s. 6d.



The Telsen Universal Tester, No. 915, which is a combined valve tester and circuit analyser.

Input impedances 4,000 O, 6,000 O and 10,000 O. Price 4s.

"Lystan" Valve Tester, No. 910.—Valve tester as in No. 915. Price 7 guineas.

TRIPLETT

Universal Electrical Instruments Corp., 7 Rugby Street, W.C.1.

Triplett Volt-Ohm-Milliammeters.—Multi-range instrument incorporating separate meters for A.C. and D.C. Ranges: D.C. volts, 0.10, 0.50, 0.25, 0.500 and 0.1,000 V

Continued on page 123

'AVO' PRECISION TESTING INSTRUMENTS

Regd. Trade Mark



THE D.C. AVOMATOR

This high-grade moving-coil instrument is thirteen meters in one. It provides facilities for all normal test measuring. It has 13 ranges covering D.C. volts, current and resistance. All readings are direct. In case, complete with leads, testing prods, crocodile clips and instruction booklet.

45/- (Subject)

THE UNIVERSAL AVOMATOR

A compact precision moving-coil instrument for A.C. and D.C. testing. A total of 22 ranges cover A.C. volts, D.C. volts, current and resistance. All readings direct. Total resistance of meter, 200,000 ohms. Complete with leads, testing prods, crocodile clips and instruction booklet.

£5.10.0 (Subject)

Leather Carrying Case 10/-

THE AVODAPTER

Simplifies valve testing in service work. Enables all valves to be tested under working conditions outside the set. Eliminates the need for severing connections and grovelling about inside the set. Instantly adaptable for 4-pin, 5-pin and 7-pin valves.

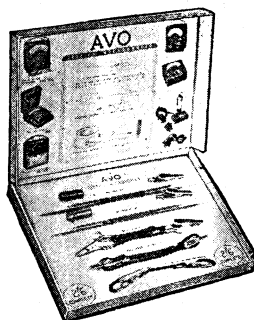
27/- (Subject)

9-PIN AVOCOUPLER

Attachment (not illustrated) for rendering Avo-Dapter suitable for 9-pin valves.

12/6

(Subject)



"AVO" TESTING ACCESSORIES

A valuable adjunct to your service kit. The boxed set of accessories comprises insulated testing prods, interchangeable crocodile clips, connecting leads, etc., etc. Easier, safer and quicker to use than nondescript lengths of wire. The outfit sells readily to amateurs.

2/6

THE 46-RANGE UNIVERSAL AVOMETER Model 7

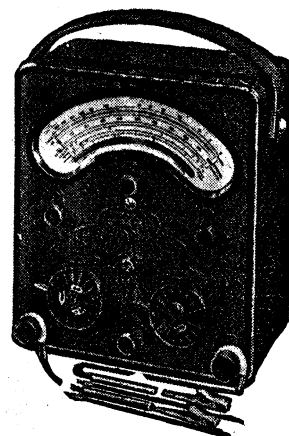
World's foremost multi-range instrument. A self-contained, precision moving-coil instrument, conforming to B.S. 1st Grade accuracy requirements. Has 46 ranges providing for measuring A.C. and D.C. volts, A.C. and D.C. current, resistance, capacity, audio-frequency power output and decibels. Direct readings. No external shunts or series resistances. Protected from damage through overload by an automatic cut-out. Robustly built for lasting precision.

16 Gns

(Subject)

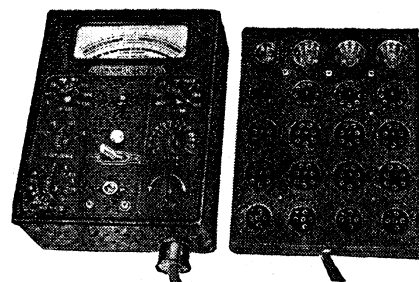
Model 7 Resistance range extension unit (for measurements down to 1/100th ohm), price 10/- (Subject).

Also the 36-range Universal Avometer, 13 Gns. (Subject).
The 22-range D.C. Avometer, 9 Gns. (Subject).
Leather Carrying Cases, 25/- (Subject).



THE "AVO" VALVE TESTER

This instrument efficiently reveals the state of the valves by means of mutual conductance measurements, a method employed by valve makers. Gives mutual conductance readings of all types of English and American valves; also provides for heater-cathode tests and emission tests for rectifier valves, etc. Shows customers state of valve by means of scale indicating "Good," "Indifferent" and "Replace." No calculations. Operated from A.C. mains. Will never become out of date.



11 Gns Including valve panel for English Valves. (Subject)

Additional valve panel for American valves, 2 Gns.

OTHER "AVO" INSTRUMENTS

"AVO" Capacity Meter. New ALL WAVE "AVO" Oscillator.
"AVO" Light Meter. "AVO" Exposure Meter.

Entirely new Edition.

RADIO SERVICING SIMPLIFIED.

A new and considerably enlarged edition of this popular text book is now ready. It has been entirely re-written to conform with modern requirements and in the light of present-day standards of knowledge. It takes the reader through the whole routine of testing modern radio receivers, and describes in a clear and interesting manner every test, and much other useful information. It is a valuable work of reference for the Radio Dealer or Service Engineer. 150 Pages, 8½ in. x 5½ in. Numerous illustrations, diagrams and graphs.

Price 2/6 (Post Free 2/10)

THE AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD.,
Winder House, Douglas Street, London, S.W.1.

Telephone: Victoria 3404-7

Please mention "The Wireless & Electrical Trader" when replying to Advertisers.

Giving Better Service than Ever —

Every job guaranteed—Every job back on the tick in twenty-four hours. Engineers that specialise be it British or American sets and **THE FULLEST STOCKS AVAILABLE OF ALL COMPONENT REPLACEMENTS ON EVERY RECEIVER BUILT SINCE 1927.**

Let **R.D.C.** SERVICE *do it!*

Try us with your next repair job.

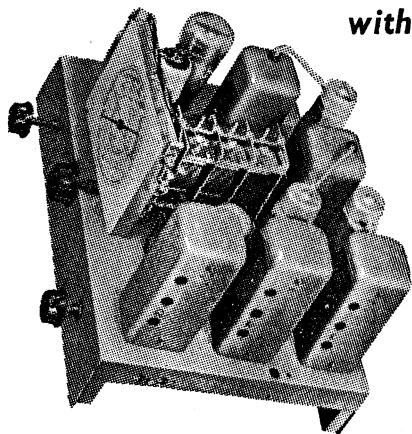
RADIO DEVELOPMENT COMPY.
(Props.: Epoch Reproducers, Ltd.)

EPOCH HOUSE

101/105 GOSWELL RD., LONDON, E.C.1
Telephone: CLERKENWELL 4865/6/7.

REPLACE THAT OLD RECEIVER

with



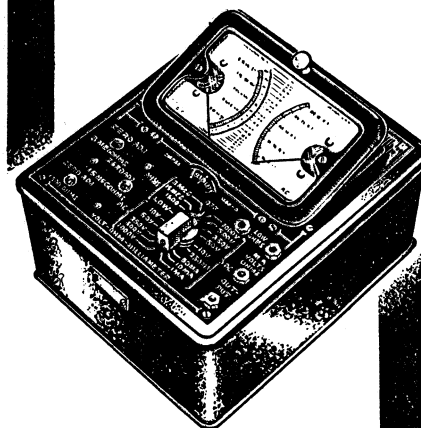
an up-to-date MCCARTHY ALL-WAVE CHASSIS!

A McCarthy replacement chassis (retail prices range from £4 5s.) is a fine proposition—both for the customer and the service man. No-trouble sets, embodying most recent radio developments, of every type for Battery A.C. or D.C. mains operation. Catalogue contains circuit diagrams, full specifications, and technical details of every McCarthy model. A modern McCarthy replacement is fine value for the customer, and is more satisfactory and profitable for the service man than a doubtful reconditioning job. Stocks ready for instant delivery. Write for catalogue, terms, etc.

MCCARTHY RADIO Ltd.
44a Westbourne Grove, London, W.2
Telephone: Bayswater 3201

TRIPLITT PRECISION TEST EQUIPMENT

The Finest Test Equipment Value of all Time . . .



Look at the "Triplitt" Model 1200a Volt-Ohm Milliammeter (shown above). It provides two instruments—one for A.C. and one for D.C.—in an exclusive **TILTING TYPE TWIN-CASE FOR EASY READING** that permits adjustment of scales to an angle always in direct alignment with operator's line of vision. Switch contact error **LESS THAN 1/2 per cent.** Now read the special features of this model.

★ D.C. Scale readings 10-50-250-500-1,000 volts at 2,000 ohms per volt.

★ Low ohms, back up circuit, .5 to 500.

★ A.C. Scale readings, 10-50-250-500-1,000 volts.

★ Resistance measurements have individual zero adjustments for 1,500 ohms, 1.5 megohms, and 3 megohms without external batteries.

★ Selector switch for all readings.

★ Contains 22½ and 1½ volt batteries.

Fill in and send us the coupon below, for the full range of "Triplitt" Test Instruments at prices from £2 2s. to £18 10s. You can then appreciate the inestimable value of "TRIPLITT" accuracy for all types of service work.

**NET
TRADE
£7:10**

**THE UNIVERSAL ELECTRICAL
INSTRUMENT CORPORATION**
7 RUGBY STREET, LONDON, W.C.1.
Telephone: HOLBORN 8819.

TRIPLITT RADIO TESTERS

You'll be glad you used this **COUPON**

The Universal Electrical Instrument Corporation,
7 Rugby Street, London, W.C.1.

Without obligation send at once full details of "Triplitt" Test Gear.

Name

Address

LESDEX BARGAINS

CONDENSERS. 5,000 Mansbridge 1 mfd metal-cased Condensers, to clear, 18/- gross.
STAMPINGS. Two tons assorted ex. H.M.V., Stalloy, etc., £5 ton, 5-cwt. lots.

OHMMETERS AND MEGGERS
500 volt "Meggers" to 10 megohms, £15 10s. 100 volt Meggers, low reading model, 1,000 ohms to 10 megohms, £12. 1,000 volts, 200 megohms, £15. 500 volt, 2-set Evershed recalibrated and tested O.K. to 50 megohms, £6 10s. Two 200 volt, 2-set Meggers, Evershed, recalibrated and tested O.K. to 10 megohms, £5 10s. **EVERSHED Bridge Megger**, only £15, with Res. Box, £20. Capacity Megger, .005 to 1 mfd., £20.

WHEATSTONE BRIDGES
10,000 ohm Wheatstone Bridge with C.Z. Galvo. Paul Model Dial Bridge with Galvo. Range to 100,000 ohms, £10. G.P.O. Type, H.R. Bridge, £7 10s. Sub-divided ohm Box, reads by 1/20th ohm in 1/20 steps to 20 ohms, 45/-.

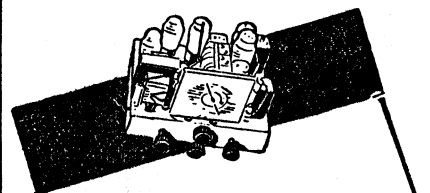
PUMPS AND COMPRESSORS
Fountain Electric Pumps, for A.C. or D.C. mains. Centrifugal, all-bronze pump, 3 ft. lift, 120 gals. per hour. For 6 ft. fountain, etc., 67/6. Larger pumps quoted for. **AIR COMPRESSORS** for paint spraying. Set Cleaning, Inflation, etc. Foot Operated, 37/6. Electric

No. 1 size, £5/15/- No. 2 Twin-cyl., £7/10/-. A few S.H. Plants in good order, cheap. **A BARGAIN IN DYNAMOS** Type "C". Our latest for Bungalow, Yacht or Cell Charging. 140 watt. Enclosed Dynamo, 12-20 v., 12 amps. Ball Bearings, Vee Pulley, 25/-.

Marine Type Switchboard with Ammeter, maximum and minimum Auto Cut-out Mains Switch and Fuses, Field Regulator, 25/-.

POWER PLUGS. 15 amp. shrouded earth type, fitted 2 ft. flex metallic tubing, panel plug and socket, 4/6; or wall plug and socket, 4/6. Two pairs on iron box, Reyrolle, 10/-. D.P. 10 amp. G.E.C. Ironclad Linked Switches, fireproof, 250 volts, 2/6.

LESLIE DIXON & CO.
218 UPPER THAMES STREET, LONDON, E.C.



**PLESSEY
CHASSIS**

2-Wave Chassis complete with all accessories, Speaker and 5 Mullard Valves

£3:10:0

WE HOLD LARGE STOCKS OF SERVICE GEAR

Appointed Distributors for Ferguson Radio

RADIO MERCHANDISE CO. LTD.
287 City Road, London, E.C.1

24 HOUR REPAIR SERVICE
Guaranteed

Repairs and Rewinds of every description. M.I. Speakers. L.F. Transformers and Pick-ups 2/-. O.P. Transformers 3/-, postage ex. Special quotations for Mains Trans. Electric Clocks and M.C. Speakers. **GRAHAM'S SERVICES**
Tolworth Rise, Kingston By-Pass, Surrey
Phone: Dersent 2060

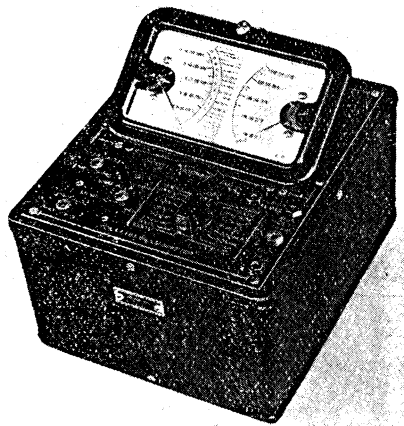
SERVICE EQUIPMENT BUYERS' GUIDE

Triplett—Continued from page 120

(2,000 Ω per V); A.C. volts, 0-10, 0-50, 0-250, 0-500 and 0-1,000 V; D.C. milliamps, 0-1, 0-10, 0-50 and 0-250. Ohms, 0-5-500 Ω , 0-1,500 Ω , 0-1-5 MO, 0-3 MO. Meters in case which can be tilted upwards. Model 1,200 A, price £7 10s. net. Model 1,200 C, similar but 5,000 Ω per V on D.C. scales, and additional 250 μ A and 7-5 MO scales, £9 10s. net. Model 1,200 E, similar but with 25,000 Ω per V on D.C. scales, and includes 2 MO and 40 MO ranges, and 50 μ A D.C. range, price £12 10s. net.

Triplett Signal Generators.—Model 1,232 is a direct reading A.C. instrument with six ranges covering 100 KC/S-30 MC/S (3,000 m. to 10 m.), all fundamentals. Modulation at 400 C/S, also available separately. Special vernier drive and large scales. Operates on 100-250 V 50 C/S A.C. Price £9 10s. net. Model 1,231 is similar but battery-operated, £8 10s. net. Model 1,631 is a special triple-shielded instrument, incorporating electronic frequency modulation for use with cathode ray oscilloscopes (frequency modulation variable from 5 C/S to 40 KC/S). Price £17 10s. net.

Cathode Ray Oscilloscope.—Model 1,690, with 2 in. tube. Incorporates separately controlled R.C. horizontal and vertical



One of the Triplett Volt-Ohm-Milliammeters, which incorporate two indicating instruments.

amplifiers. Linear sweep 15 C/S to 20,000 C/S. Price 15 guineas net.

Condenser Tester.—Model 1,241, directly calibrated in four ranges, 0-0001 μ F to 0-01 μ F, 0-01 μ F to 0-2 μ F, 0-2 μ F to 2-0 μ F, 2-0 μ F to 30-0 μ F. Coloured good-bad scale for electrolytics. D.C. volts up to 1,000 V in five steps for paper condenser breakdown tests, and up to 575 V in nine steps for electrolytics. Price £9 10s. net.

Audio Oscillator.—Model 1,260 incorporates feed-back circuit to give pure sine wave output up to 10,000 C/S in 10 ranges. Accurate attenuation, variable impedance matching. Price £10 10s. net.

Vacuum Valve Voltmeter.—Model 1,250, has two meters, one for balancing and the

other for measurements, directly calibrated. Three ranges, 0-2-5, 0-10 and 0-50 V, peak A.C. and D.C. Price £11 10s. net. Model 1,251 similar, but 0-3, 0-15, 0-75 and 0-300 V, £15 10s. net.

WEARITE

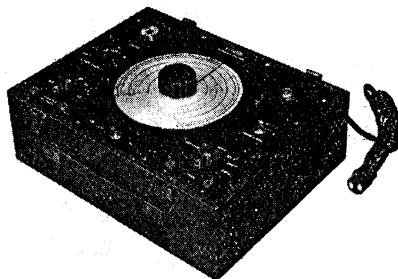
Wright & Weaire, Ltd., 740 High Road, Tottenham, London, N.17.

Valve Testing Unit.—Mains-operated type, for testing valves with its own supply, or under working conditions in a receiver. An external milliammeter or the meter unit (below) is necessary before tests can be made. Tests total emission in comparison with figure for good valve of same type, given on chart supplied, voltages and currents under working conditions, electrode shorts, gas content, loose electrodes. A.C. operated, price £4 17s. 6d.

Meter Unit.—Uniform in size with above. A multi-range meter. D.C. volts, 0-10, 0-50, 0-500 (1,000 Ω per V), 0-20, 0-100, 0-1,000 (500 Ω per V). A.C. volts, as for D.C. D.C. milliamps, 0-2, 0-10, 0-100. Resistance, 0-1,000 Ω , 0-100,000 Ω , 0-1 MO. Capacity, 0-05-4 μ F. Inductance, 5-120 H. Meter 3½ in., B.S.S. first-grade accuracy. Price £7 10s.

All-Wave Oscillator Unit.—Battery-operated, uniform in size with above. 20 MC/S to 100 KC/S (15 m. to 3,000 m.) in four ranges. Three calibrated fixed R.F. outputs, 100 μ V, 2,000 μ V and 30,000 μ V. No variable attenuator. 1,000 C/S modulation at 30 per cent. can be switched on or off, or can be used separately. Calibration curves are provided. Price £7 15s.

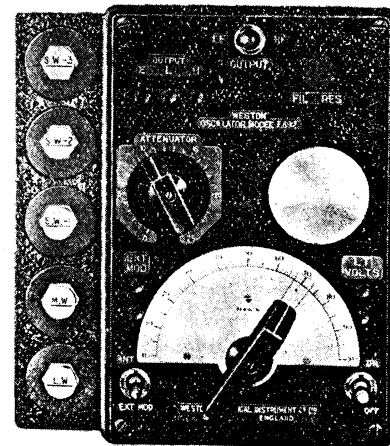
All-Wave A.C. Oscillator.—Steel cased A.C. operated, covering 20 MC/S to 100 KC/S (15 m. to 3,000 m.) in seven fundamental ranges, with interchangeable coils. Directly calibrated scales. Fixed 3-output attenuator.



The Wearite Condenser Analyser, which has provision for capacity and resistance measurements.

A.F. output available separately. Modulation may be switched on or off. Price 11 guineas.

Condenser Analyser.—A.C. operated capacity and resistance bridge with cathode ray balance indicator. Tests capacity, insulation, power factor (of electrolytics), open and short circuits, resistance. Ranges: 0-00001 μ F to 0-004 μ F; 0-001 μ F to 0-4 μ F; 0-1 μ F to 80 μ F; 50 to 40,000 Ω ; 10,000 Ω to 4 MO. D.C. test voltages of 100, 200, 300 and 500 V. Directly calibrated. Price 9 guineas.



The Weston Super Oscillator, Model E692.

WESTON

Weston Electrical Instrument Co., Ltd., Kingston By-Pass, Surbiton, Surrey.

Super Sensitive Analyser, Model E772.—A multi-range meter and valve analyser with a sensitivity of 20,000 Ω per V on D.C. voltage ranges. 5 A.C. and 5 D.C. ranges cover 0-2-5 V to 0-1,000 V; 5 D.C. current ranges, 0-100 μ A to 0-500 mA; A.C. current 0-0-5 A, 0-1 A and 0-5 A. Resistance in 4 ranges 0-100 Ω to 0-10 MO on internal battery. Capacity 0-0002 μ F to 10 μ F with external A.C. source. Can also be used as an output meter. Price 16 guineas net.

Selective Analyser, Model E665.—This is another multi-range meter with sensitivity of 1,000 Ω per V on A.C. or D.C. volts. Supplied with adaptor for valve analysis. Five ranges 0-5 V to 0-1,000 V A.C. and D.C. Five ranges 0-2-5 mA to 0-500 mA D.C. Four resistance ranges, 0-1,000 Ω to 0-500,000 Ω . Capacity 0-0002 μ F to 10 μ F with external A.C. source. Price £11 16s. 3d. net.

Capacity Meter, Model 664. Operating from A.C. mains this instrument measures A.C. voltages from 0-4 V to 0-500 V in 6 ranges. Sensitivity 1,000 Ω per V. Five capacity ranges from 0-0001 μ F-0-02 μ F to 10 μ F-200 μ F. Price £14 5s. net.

Valve Voltmeter, Model 669.—A.C. mains operated. Six ranges from 0-1-2 V to 0-16 V. Price £18 net.

Super Oscillator E692.—A battery-operated all-wave signal generator covering 26 MC/S to 100 KC/S (11-5 m. to 3,000 m.), with 6 plug-in coils. Scale calibrated 0-100 with calibrated charts. Modulated or unmodulated R.F., or A.F. outputs. Price £14 19s. 3d. net.

Output Meter Model 687.—Three ranges 0-2 V, 0-10 V and 0-50 V. Self-contained blocking condenser. Sensitivity 1,000 Ω per V. Price £4 6s. 3d. net.

Output Meter, Model 571.—Constant impedance, 4,000 Ω . Self-contained condenser. Four ranges, 0-1-5 V to 0-150 V. Price £7 2s. 6d. net.

WEARITE CONDENSER ANALYSER

A new instrument of the latest design for carrying out rapid complete tests of radio condensers. Electrolytic, Mica, Paper, Trimmer and Tuning condensers may now be tested for Capacity, Insulation, Power Factor, Open Short and Inter-

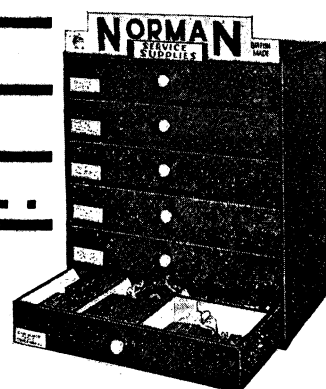
mittence. This unit is portable, entirely A.C. mains operated.

PRICE - £9.9.0

• Full particulars upon request to:
WRIGHT & WEAIRE LTD.,
740, High Road, Tottenham, London, N.17.

FREE! THIS USEFUL SERVICEMAN'S STOCK CABINET....

IN response to considerable demands from our Trade friends we have now produced a very handsome Serviceman's Cabinet containing a comprehensive range of products used in the service room. We offer this splendid cabinet, a really fine piece of furniture, *entirely free of charge* on purchasing the contents. The cabinet is fitted with drawers each specially slotted to take its respective article—thus diminishing stocks can be seen at a glance.



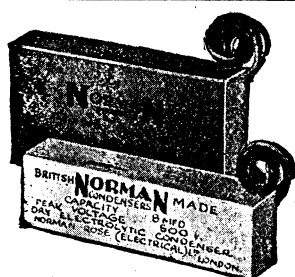
CONTENTS

DRAWER No. 1 Electrolytics Card. Case Types.
DRAWER No. 2 Electrolytics Round Metal Can and Tubular Bias Types.
DRAWER No. 3 Tubular Paper, and Lilliput Condensers.

DRAWER No. 4 Resistances and Fuses.
DRAWER No. 5 Volume Controls, 12 W.S. and 6 L.S.
DRAWER No. 6 Spare drawer for keeping Service Sheets, notes, etc.

Price **£11**—and your cabinet **FREE!**

Everything for the Service Room!



NORMAN ELECTROLYTIC CONDENSERS

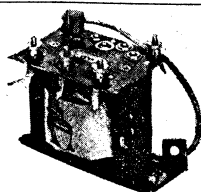
Unparalleled range at the Trade's keenest prices. 500 V Peak.

Examples: 8 mf, 1/9; 4 mf, 1/6; 8 x 8, 3/3; 8 x 24 x 2 (for Ekco, etc.), 3/9; 16 x 8, 4/-; Tubular 4 mf 350 V, 1/3; 9 mf 250 V, 1/6.



LILLIPUT CONDENSERS

4 mf 500 V 1/6
8 mf 500 V 1/9
8 x 8, 3/6



UNIVERSAL O.P. TRANSFORMERS

Suitable ratio for any speaker, very high-class product fitted with terminals and 2 alternative fittings 5/-

NORMAN CARDED PRODUCTS

Now universally used in the trade.

TC 24 TUBULAR WIRE-END CONDENSERS.

Useful assortment, .0001, .0003, .01, .1, .5, etc. (15/- retail) 10/- trade.

WR 33 WIRE WOUND RESISTORS.

From 50, to 50,000 ohms. 1 and 2 watt (retail value 18/-) trade 9/- card.



NATIONALLY ADVERTISED!

NORMAN SUPPRESSORS

A complete range, details on request. Stock NOW the bakelite-cased PENCIL suppressor for fitting in mains lead of vacuum cleaners, hairdryers, sewing machines, etc.

An enormous selling line, only 3/8 trade.



FUSES 24 Fuses on display card, assorted: 500 ma, 750 ma, 1 and 1 1/2 amp. (retail value 12/-) nett trade .. 6/-

VOLUME CONTROLS All values with switch 2, 4; L.S., 2/- Special display card 5 W.S. and 5 L.S. (retail value 32/6), trade 21/8.



WHOLESALE STOCKISTS:

GLASGOW: J. Corston Sinclair & Co., 25 Wellington Street.

LIVERPOOL: Drury Radio Co., Ltd.

HULL & NEWCASTLE: Gilberts (Hull), Ltd.

SHEFFIELD, BOLTON & HANLEY: C. Gilbert & Co., Ltd.

BRADFORD: F. Riddiough & Son, Ltd.

NOTTINGHAM: Nottingham Radio Supplies, Ltd.

COVENTRY: Coventry Radio Factors, Ltd.

SWANSEA & PETERBORO: Radio Supply Co.

NEWPORT, MON.: Algiers Wholesale Supplies, Ltd.

BRISTOL & BOURNE-MOUTH: Wireless-Electric (Wholesale), Ltd.

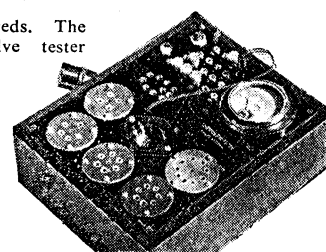
MANCHESTER: W. Monks & Co., Ltd.

STOCKPORT: H. Hollingdrake & Son, Ltd.

NOTE NEW ADDRESS:

The Famous OMNISECTION Valve Emission Tester

Still selling in their hundreds. The famous "Omni-section" valve tester which caused special interest at Radiolympia. Test valves: 2-40 V filament. British or American. No charts, no curves, entirely new patented principle. £4-10s.



NORMAN ROSE

(ELECTRICAL LTD.)

WAVEBAND HOUSE,

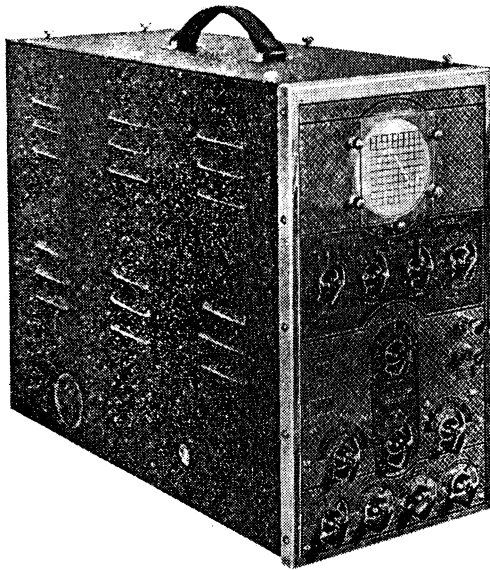
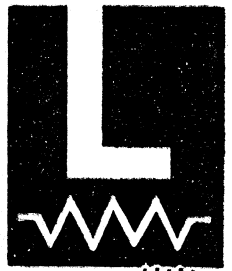
43 Lambs Conduit St., Russell Square, LONDON, W.C.1

Temple Bar 4175 (Branch Exchange)

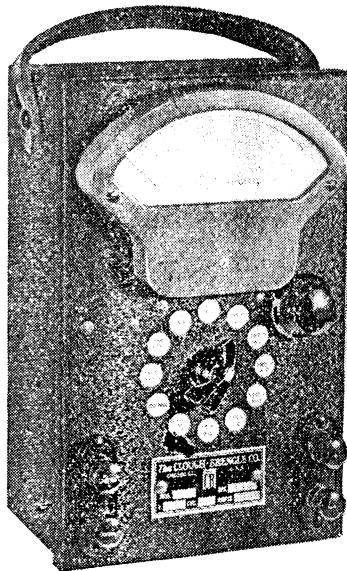
Please mention "The Wireless & Electrical Trader" when replying to Advertisers.

The **NEW** Clough-Brengle

SERVICE and TEST EQUIPMENT

**MODEL CRA OSCILLOGRAPH.**

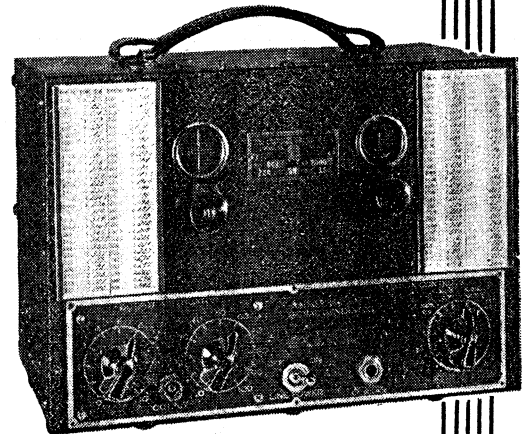
Power Supply : 230 volts A.C.
Linear Sweep Time Base : 12-20,000 c.p.s.
Independent Amplifiers : flat to 100,000 c.p.s. and free from wave form and phase distortion.
Sensitivity : .38 RMS volts per inch.
Synchronising Control : Internal, External or 50 cycle source.
Individual Beam Centering Controls for horizontal and vertical directions.
Separate Power Transformers and rectifiers for tube and amplifiers eliminating interaction between controls.

DEALER £33-2-6 PRICE**MODEL OCA. SERVICE SIGNAL GENERATOR.**

Power Supply : 230 volts A.C.
Frequency Range : 100 KC to 60 MC.
 30 MC on fundamental output.
Five Ranges : Selected by rotary switch.
Radio Frequency Output : 100,000 microvolts.
Audio Frequency Output : Up to 1.2 volts.
Modulation : 400 cycles internal, or external at will.
Dual Attenuators : Giving smooth control.
Accuracy : $\frac{1}{2}$ of 1%. Hand drawn curves.
DEALER £11-18-6 PRICE
 Model OCB for A.C./D.C. operation.
 Model ODA for Battery operation.
 Available at same price.

MODEL 85A UNIMETER. RANGES

D.C. volts : 15, 150, 750.
A.C. volts : 15, 150, 750.
D.C. m/a. : 1.5, 15, 150.
Ohms : 0-100, 0-20,000. 0-2 meg.
 Reads 0.5 ohms.
Accuracy : 2% of full scale.
Output Measurements : Through separate terminals.
DEALER £9-15-0 PRICE

**LOOK INSIDE—THEN DECIDE!**

We shall be pleased to forward fullest details of these and other C-B instruments, illustrated booklet and prices. Address all enquiries to Dept. T.

LELAND

INSTRUMENTS LTD.

46 BEDFORD ROW, W.C.1

Telephone : CHAncery 7518

Telegrams : Leraco Holb., London.