

# PRACTICAL WIRELESS

*Published Monthly*

Volume 31

January, 1955, to December, 1955

---

*Editor:*

F. J. CAMM

*(Editor of "Practical Wireless" and "Practical Television")*

---

*Author of:*

"The Practical Wireless Encyclopædia," "Everyman's Wireless Book," "Practical Wireless Circuits," "Radio Training Manual," "Radio Engineer's Vest Pocket Book," "Television Principles and Practice," "Practical Wireless Service Manual," "Superhet Manual," "Mastering Morse," "Newnes Short-wave Manual," "Wireless Coils, Chokes and Transformers," "Newnes Radio Valve Data Book," "Wireless Transmission," "Refresher Course in Mathematics," "Mathematical Tables and Formulae," "The Slide Rule Manual," "Practical Television Circuits," "A Beginner's Guide to Radio," Etc., Etc.

London:

George Newnes, Ltd., Tower House, Southampton Street,  
Strand, W.C.2

# INDEX

## A

Aerial coils, potted iron-dust, 245  
— efficiency, topband, 674  
—, relay controlled directional, 217  
— systems, topband, 214  
Aerials for topband, loaded, 602  
Aid, D.X., 373  
Aligning and servicing F.M. receivers, 353  
American test equipment, 282  
Amplifier, an economical gramophone, 330  
—, a single ended D.C., 701  
— design, 10, 106, 144, 206  
— performance, improving, 469, 541, 609  
— mixer, a cascaded twin-triode R.C. coupled, 46  
Analyser, a set, 605  
An eight-valve A.M./F.M. receiver, 755

## B

BBC frequency modulation, more about, 346  
Bedside push-button four, making a, 223  
Beginner's guide to radio, 37, 93, 157  
Bench power supply, a versatile, 611  
Bias oscillator, tape erase and, 621  
B-J arm, 501  
Bolometer indicators, surplus, 24  
Book received, 272, 482, 750  
Brain, electronic, 698  
Brenell Tape Deck, 118  
Britain's sapphire needles industry, 30  
British radio leads the world, 542  
Building communication receivers, 21, 85, 151, 237

## C

Car radio installation, 177  
—, making a, 683, 735  
Cascaded twin-triode R.C.-coupled amplifier/mixer, 46  
Case of modulation hum, 430  
Cellophane wraps for Mullard valves, 437  
Cells, fundamentals of iron-selenium, 614  
Choice of intermediate frequency for communication receivers, 677  
Cigar box amateur transmitter, 149  
— receiver, 297  
Circuits, oscillatory, 49, 113  
Clubs, news from the, 26, 90, 153, 250, 310, 354, 422, 482, 538, 637, 693, 770  
Combined 465 kc/s modulated oscillator and audio oscillator, 286  
Comments of the month, 7, 71, 135, 199, 263, 327, 391, 455, 519, 587, 659, 731  
Communication receivers, a crystal marker for, 462  
—, building, 21, 85, 151, 237  
—, choice of intermediate frequency for, 677  
Compass, G.E.C. radio, 205  
—, sub-miniature radio, 478  
Component show, radio, 1955, 25, 334  
Construction, New Valve, 365  
Control from the extension speaker, remote, 617  
Conversion of D.C. voltage, 697  
Crystal circuits, overtone, 277  
—, marker for communication receivers, 462

## D

D.C. amplifier, a single-ended, 701  
— voltage conversion of, 697  
Denco fish-band coils, 314  
Desert, an ice rink, in, 206  
Design, amplifier, 10, 106, 144, 206  
Designing a receiver with screen A.V.C., 178  
— the PI network tank circuit, 557  
— the power pack, 738  
Designs and uses of relays, 138, 202, 301, 337, 400  
Dial modification, 433  
Diode testing, transistor and, 746  
— transistor loudspeaker receiver, 88, 546  
Directional aerial, relay controlled, 217  
Discharge valves, surplus gas filled, 173  
Discriminators, understanding F.M., 689  
D.X. aid, a, 373  
Dyeline process, the, 226

## E

Earphones, "radio," 242  
Economical gramophone amplifier, 330  
— quality receiver, 80  
Efficiency, topband aerial, 674  
Ekco AM/FM receivers, 501  
Electronic brain, 698  
— organ employs Osram valves, new, 208  
End and top loaded aerials for topband, 405  
Equipment, American test, 282  
Ever-Ready FM/AM all-dry receiver, 709  
Exhibition, German radio, 524  
Ex-R.A.F. R1132A receiver, modifying the, 142, 429  
Extension, Rugby radio, 618  
— speaker, remote control from the, 617

## F

Fader unit, a three-channel mixer, 425  
Fatigue tester, an ultrasonic, 566  
Faults, locating obscure, 309  
F.M. discriminators, understanding, 689  
— receiver, aligning and servicing, 553  
— transmissions, receiving, 285  
Frequency for communication receivers, choice of intermediate, 677  
— modulation, more about BBC, 346  
Fundamentals of iron-selenium cells, 614  
Fury Four, the new, 31

## G

Gas-filled discharge valves, surplus, 173  
Gas to oil firing conversion, 84  
Gasholder inspections, walkie-talkies for, 30  
G.E.C. radio compass, 205  
German radio exhibition, 524  
Gramophone amplifier, an economical, 330  
Guide to radio, the beginner's, 37, 93, 157

## H

Heathkits, 245  
Heating, pig sty, 44  
Hi-Fi, low cost, 41  
— recording tapes, new, 50  
High-speed decade counter tube, 501  
H.M.V. 3-speed radiogram, 314  
How many turns, 472, 528

## I

Improved T.R.F. tuning, 681  
Improving amplifier performance, 469, 541, 609  
Indicators, surplus Bolometer, 24  
Inspections, walkie-talkies for gas-holder, 30  
Interests, listening and viewing habits of minors, 158  
Intermediate frequency for communication receivers, choice of, 677  
International Radio Controlled Models Soc., 434  
Iron-selenium cells, fundamentals of, 614

## J

J.B. "pot. lock," 501  
Junction transistors, new

## L

Leak pre-amplifier, 709  
Lifeboat radio, portable, 50  
Link coil, tuning the, 493  
Lip and throat microphone, surplus, 76  
Loaded Aerials for topband, 602  
Locating obscure faults, 309  
Loudspeaker receivers, diode-transistor, 88, 546  
Low cost hi-fi, 41  
— resistance with a sensitive meter, measurement of, 706

## M

Magnetic recording tape, new, 345  
Mains transformers, small, 562  
Making a bedside Push-button Four, 223  
— a car radio, 683, 735  
— a 2-metre walkie-talkie, 543  
— a radio telescope, 287, 351  
— a sensitive two-valver, 479  
— a valve voltmeter, 394  
— transistors, 293  
Measurement of low resistance with a sensitive meter, 706  
Measuring oscilloscope, new, 182  
Mechanical station selection, 418  
Meter, a plug-in tuning, 141  
Microphone, surplus lip and throat, 76  
Millimicro-second photography, 336  
Minors, interests, listening and viewing habits of, 158  
Mixer fader unit, a three-channel, 425  
Models, radio controlled, 266  
Modification, a dial, 433  
Modulation hum, a case of, 430  
—, more about BBC frequency, 346  
Modifying the Ex-R.A.F. R1132A receiver, 142, 429  
More about BBC frequency modulation, 346

Mullard valves, cellophane wraps for, 437  
 — junction transistors, 566  
 — power triode, 709  
 Multicore solder thermometer, 437  
 Multivibrator timebase, 777

## N

National Radio Show, the 533, 590, 669  
 New electronic organ employs Osram valves, 208  
 — Pury Four, the, 31  
 — H.F. point contact transistor, 437  
 — hi-fi recording tapes, 50  
 — junction transistors, 542  
 — magnetic recording tape, 345  
 — measuring oscilloscope, 182  
 — Osram valves, 566  
 — reflectometer system, 336  
 — "stereosonic" tape records, 350  
 — tape recorder, 742  
 — technique for sound recording, 74  
 — valve construction, 365  
 News from the clubs, 26, 90, 153, 250, 310, 354, 422, 482, 538, 637, 693, 770  
 — from the trade, 118, 182, 245, 314, 437, 501, 566, 709

## O

On your wavelength, 15, 79, 143, 213, 279, 345, 413, 471, 535, 601, 673, 745  
 Open to discussion, 57, 121, 185, 249, 313, 377, 441, 505, 569, 641, 713, 785  
 Oscillator, a combined 465 kc/s modulated oscillator and audio, 286  
 Oscillators for vibrator, 221  
 Oscillatory circuits, 49, 113  
 Osnuor coil type QA81, 437  
 Osram KT55 A.F. valve, 466  
 — valves, new, 566  
 — new electronic organ employs, 208  
 Overtone crystal circuits, 277

## P

Phase splitting valve, 490, 498  
 Phillips L.F. valve voltmeter, 566  
 — recordergram, 245  
 Photography, millimicro second, 336  
 Pinetwork tank circuit, designing the, 557  
 — tanks, more on, 16  
 Pitfall, resistor, 154  
 Plancer, Wolf Cub, 182  
 Plessey pre-selectors, 402  
 Plug-in tuning meter, 141  
 Portable lifeboat radio, 50  
 Potted iron-dust aerial coils, 245  
 Power pack, designing the, 738  
 — supply, a versatile bench, 611  
 — units, surplus vibrator, 369  
 Pre-amplifier with scratch filter and tone control, 458  
 Pre-selectors, Plessey, 402  
 Presentation to Mr. J. Clarricoats, 166  
 Programme Pointers, 53, 117, 181, 246, 306, 374, 438, 502, 565, 638, 710, 762  
 Push-button Four, making a bedside, 223  
 Pye motor-cycle to sidecar intercom., 566

## R

R.1132A receiver, modifying the ex-R.A.F., 142, 429

R.1155, selectivity and the, 741  
 Radio and TV sales, 534  
 Radio compass, G.E.C., 205  
 — sub-miniature, 478  
 — component show, 1955, 25, 334  
 — controlled models, 266  
 — taxis, 268  
 — train, 398  
 — Earphones, 242  
 — exhibition, German, 524  
 — extension, Rugby, 618  
 — installation, car, 177  
 — making a car, 683, 735  
 — portable lifeboat, 50  
 — receiver, servicing, 357, 415, 463, 525, 596, 665, 765  
 — show, the national, 533, 590, 669  
 — telescope, making a, 287, 351  
 — the beginner's guide to, 37, 93, 157  
 Radiogram, 8-valve superhet, 159, 229, 269  
 Rai-Tel-Ade, 314  
 Ratio board, resistance, 477  
 R.C.-coupled amplifier/mixer, a cascaded twin-triode, 46  
 R.D., junior amplifier and control unit, 118  
 Receiver, a cigar box, 297  
 — and economical quality, 80  
 — an 8 valve A.M./F.M., 755  
 — a 3-stage transistor, 662  
 — diode-transistor loudspeaker, 88  
 — modifying the ex-R.A.F. R1132A, 142, 429  
 — with screen A.V.C., designing a, 178  
 Receivers, a crystal marker for communication, 462  
 —, aligning and servicing F.M., 553  
 — building communication, 21, 85, 151, 237  
 — choice of intermediate frequency for communication, 677  
 — servicing radio, 357, 415, 463, 525, 595, 665, 765  
 Receiving F.M. transmissions, 285  
 Recordergram, Philips, 245  
 Recording, new technique for sound, 74  
 — tapes, new hi-fi, 50  
 Records, new stereosonic tape, 350  
 Rectangular scope tube, 182  
 Reflectometer system, new, 336  
 Relay-controlled directional aerial, 217  
 Relays, design and uses, 138, 202, 301, 337, 400  
 Remote control from the extension speaker, 617  
 Resistance ratio board, 477  
 — with a sensitive meter, measurement of low, 706  
 Resistor pitfall, 154  
 Round the world of wireless, 8, 72, 136, 200, 264, 328, 392, 456, 520, 588, 660, 732  
 Rugby radio extension, 618

## S

Sales, radio and TV., 534  
 Sapphire needles industry, Britain's, 30  
 Scope tube, rectangular, 182  
 Scratch filter and tone control, a pre-amplifier with, 458  
 Screen A.V.C., designing a receiver with, 178  
 Selection, mechanical station, 418  
 — switched auto station, 536  
 Selectivity and R.1155, 741  
 Sensitive two-valver, making a, 479  
 Set analyser, 605  
 Servicing F.M. receivers, aligning and, 553  
 — radio receivers, 357, 415, 463, 525, 596, 665, 765  
 Short-wave notes and notions, 273, 349, 397  
 — section, 21, 85, 151, 237, 273, 349, 397, 462, 677

Simple neon tuning indicator, 370  
 Single-ended D.C. amplifier, 701  
 — span, a three-valve, 753  
 Small mains transformers, 562  
 Sound recording, new technique for, 74  
 Speaker, remote control from the extension, 617  
 Starting on topband, 101  
 Station selection, mechanical, 418  
 — switched auto, 536  
 Stereosonic tape records, new, 350  
 Sub-miniature radio compass, 478  
 Superhet radiogram, eight-valve, 159, 229, 269  
 Superhets, two- and three-valve, 549, 629  
 Surplus bolometer indicators, 24  
 — gas-filled discharge valves, 173  
 — lip and throat microphone, 76  
 — vibrator power units, 369  
 Switched auto station selection, 536

## T

Tape erase and bias oscillator, 621  
 — recorder, a new, 742  
 — recorder, telephone attachment for, 414  
 — records, new stereosonic, 350  
 Taxis, radio controlled, 268  
 Technical training scheme, 434  
 Technique for sound recording, new, 74  
 Telephone attachment for a tape recorder, 414  
 Telescope, making a radio, 287, 351  
 Tester, an ultrasonic fatigue, 566  
 — a valve, 29  
 Test equipment, American, 282  
 — instruments, using, 13, 77, 169, 209, 280, 342, 408, 485, 522, 633, 667, 773  
 Thermionic valve, 50th anniversary of the invention of, 54  
 Three-channel mixer fader unit, 425  
 — valve single span, 753  
 Throat microphone, surplus lip and, 76  
 Timebase, a multivibrator, 777  
 Tone control, a pre-amplifier with scratch filter and, 458  
 Topband aerial efficiency, 674  
 — systems, 214  
 — end and top loaded aerials for, 405  
 — loaded aerials for, 602  
 — starting on, 101  
 Trade, news from the, 118, 182, 245, 314, 437, 501, 566, 709  
 Train, radio-controlled, 398  
 Training scheme, technical, 434  
 Transformers, small mains, 562  
 Transistor and diode testing, 746  
 — new H.F. point contact, 437  
 — receiver, a three-stage, 662  
 Transistors, making, 293  
 — new junction, 542  
 Transmissions, receiving F.M., 285  
 Transmitter, a cigar box amateur, 149  
 Transmitting topics, 16, 101, 149, 214, 277, 373, 405, 493, 557, 602, 674  
 T.R.F. tuning, improved, 681  
 Tuning, improved T.R.F., 681  
 — meter, a plug-in, 141  
 — the link coil, 493  
 TV, sales, radio and, 534  
 Twin-triode R.C.-coupled amplifier mixer, a cascaded, 46  
 Two- and three-valve superhets, 549, 629  
 Two-valver, making a sensitive, 479

## U

Ultrasonic fatigue tester, 566  
 Understanding F.M. discriminators, 689

Uses of relays, designs and, 138, 202,  
301, 337, 400  
Using test instruments, 13, 77, 169,  
200, 280, 342, 408, 485, 522, 633,  
667, 773

### V

Valve construction, new, 365  
—, Osram KT55 A.F., 466  
—, superhets, two- and three-, 549,  
629

Valve tester, A, 29  
—, the phase splitting, 490  
— -voltmeter, a, 95  
— -voltmeter, making a, 394  
Valves, surplus gas-filled discharge,  
173  
Versatile bench power supply, 611  
V.H.F. radio facilitates tug working,  
174  
Vibrator oscillators for, 221  
— power units, surplus, 369  
Vibrators, 694  
Voltage, conversion of D.C., 697  
Voltmeter, a valve-, 95

Voltmeter, making a valve-, 394

### W

Walkie-Talkies for gasholder in-  
spections, 30  
Wavelength, on your, 15, 79, 143, 213,  
279, 345, 413, 471, 535, 601, 673,  
745  
Wolf Cub planner, 182  
World of Wireless, round the, 8, 72,  
136, 200, 264, 328, 392, 456,  
520, 588, 660, 732