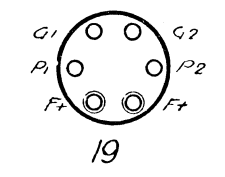
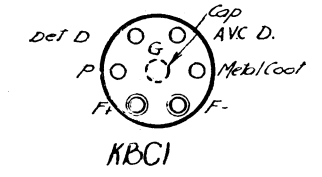
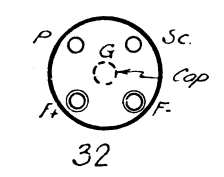
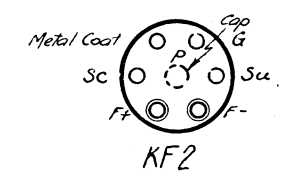
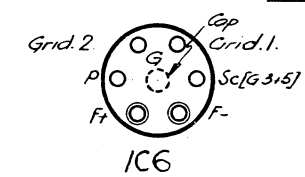


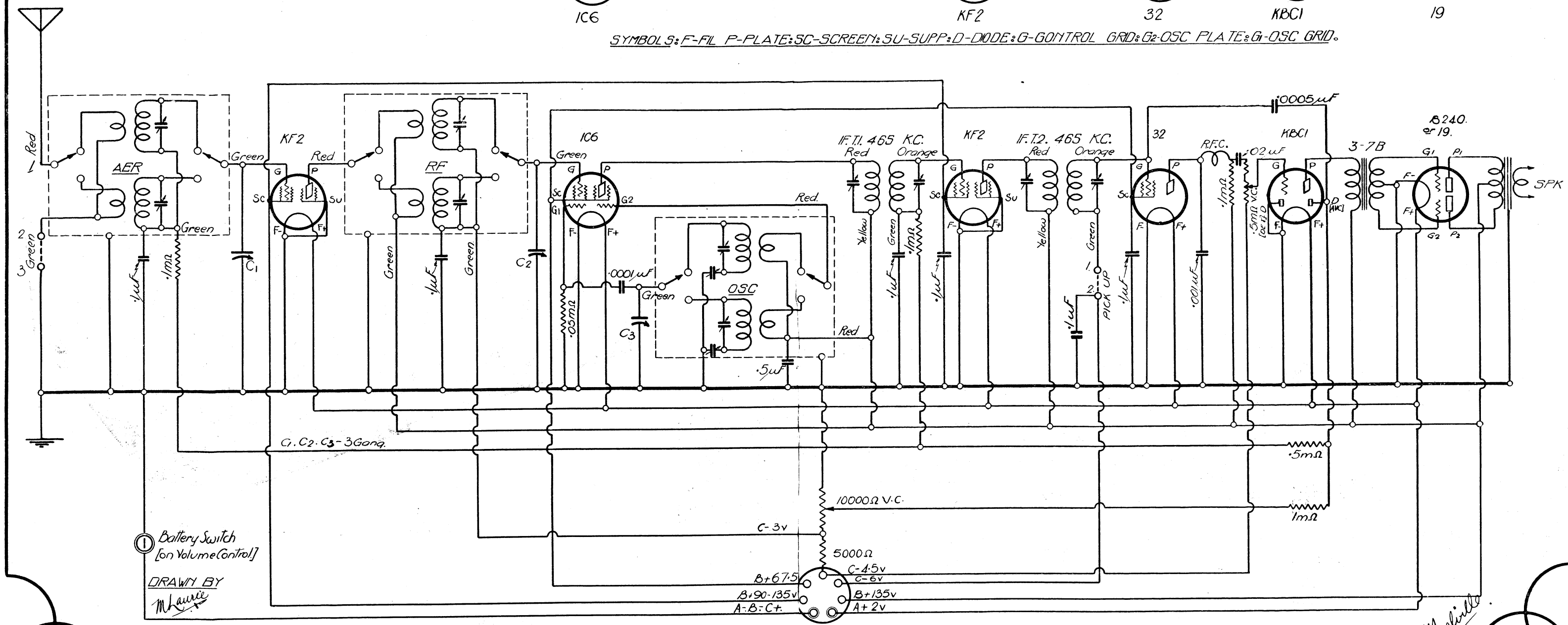
RADIOKES BATTERY DUAL-WAVE RECEIVER Type 12-35B £10-17-6 Batteries, Valves and Speaker Extra

DUAL WAVE BATTERY MODEL

SOCKET CONNECTIONS [LOOKING AT BOTTOM OF SOCKETS]



SYMBOLS: F-FIL P-PLATE SC-SCREEN SU-SUPP D-DIODE G-CONTROL GRID: G₂-OSC PLATE: G₁-OSC GRID.



Battery Switch
[on Volume Control]

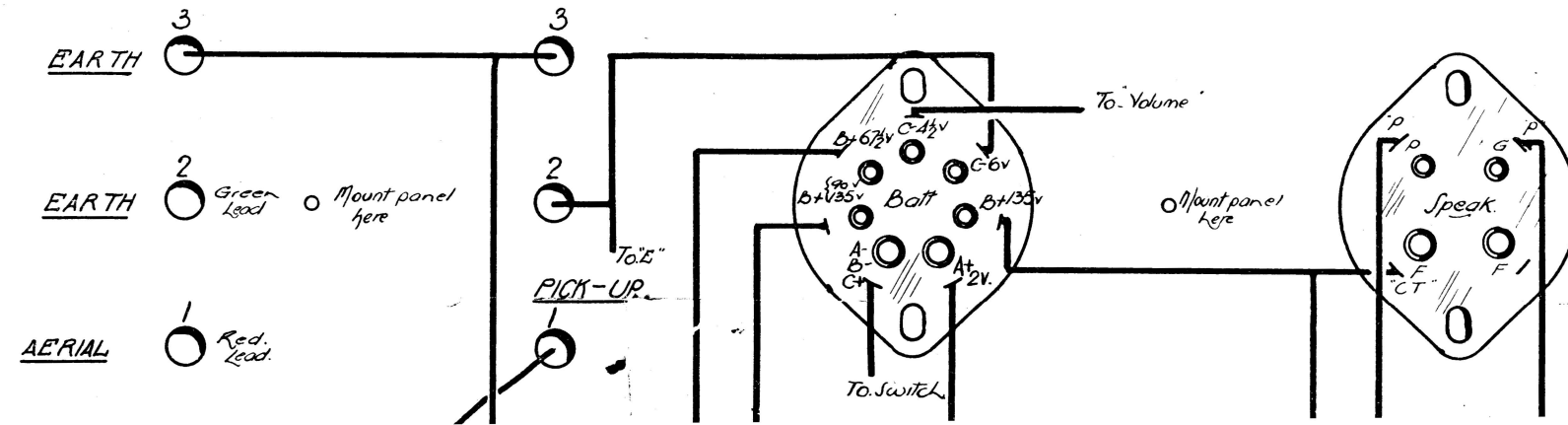
DRAWN BY
Maurice

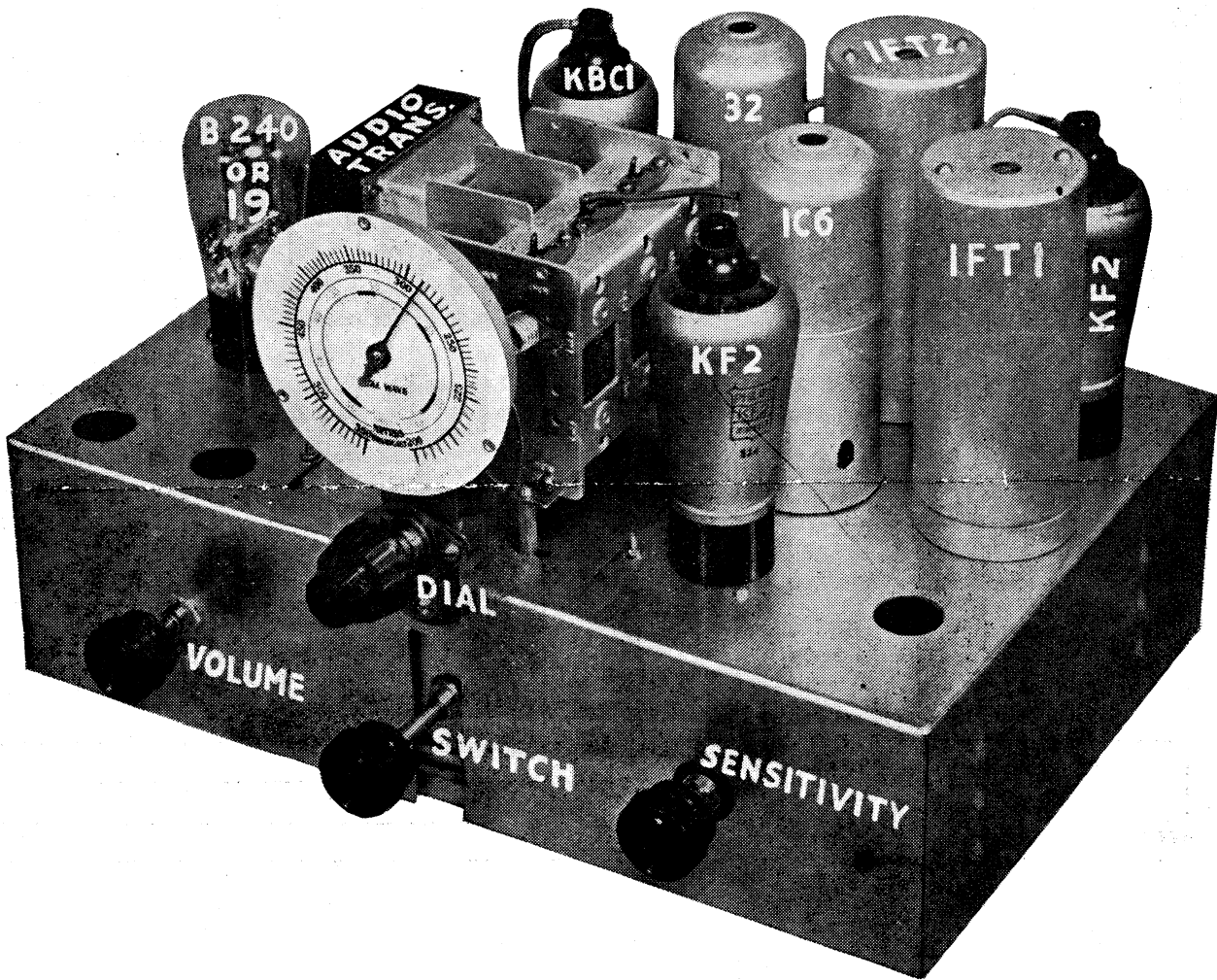
BATTERY PLUG

12-2-35

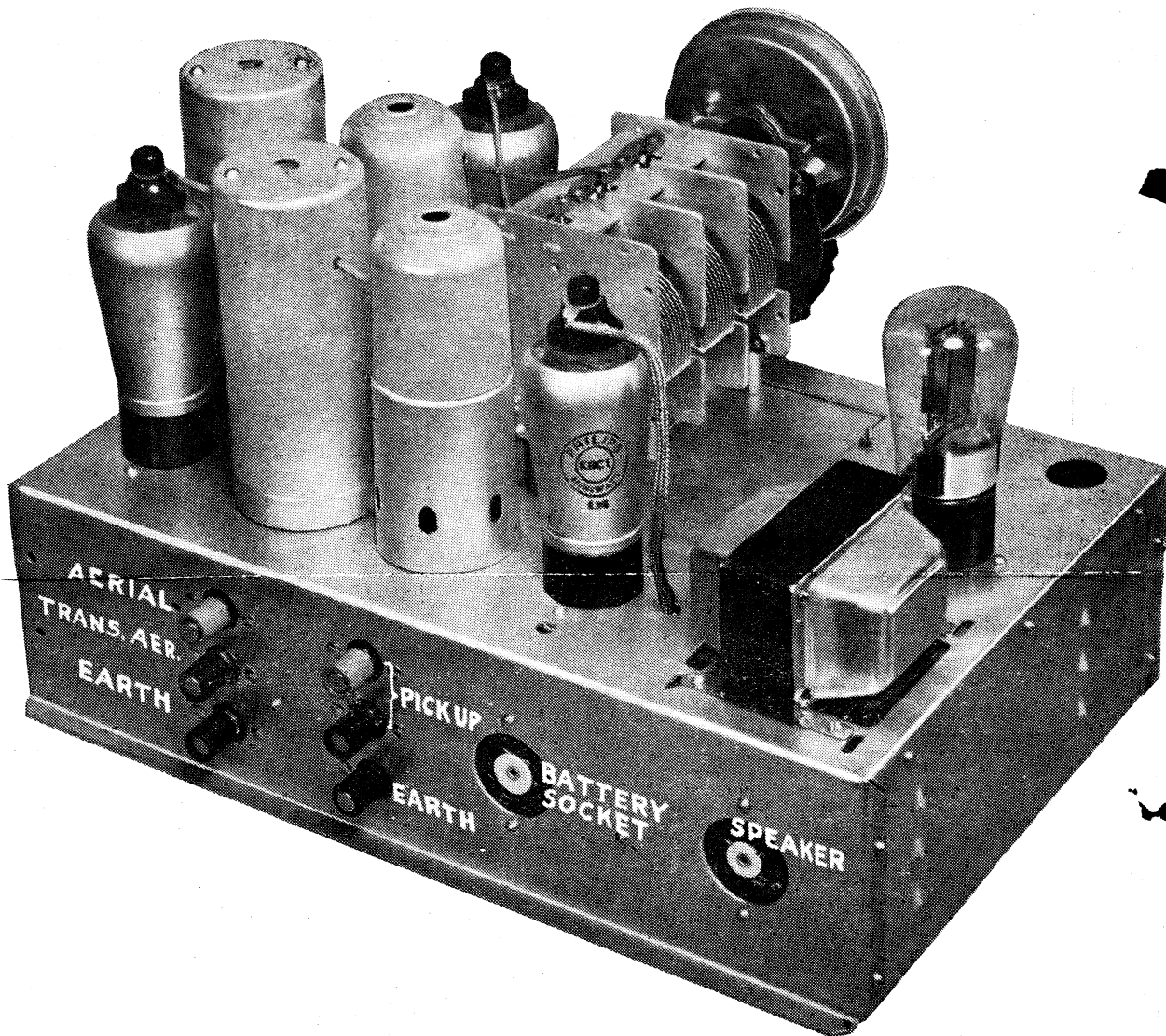
CIRCUIT DIAGRAM

CIRCUIT DIAGRAM

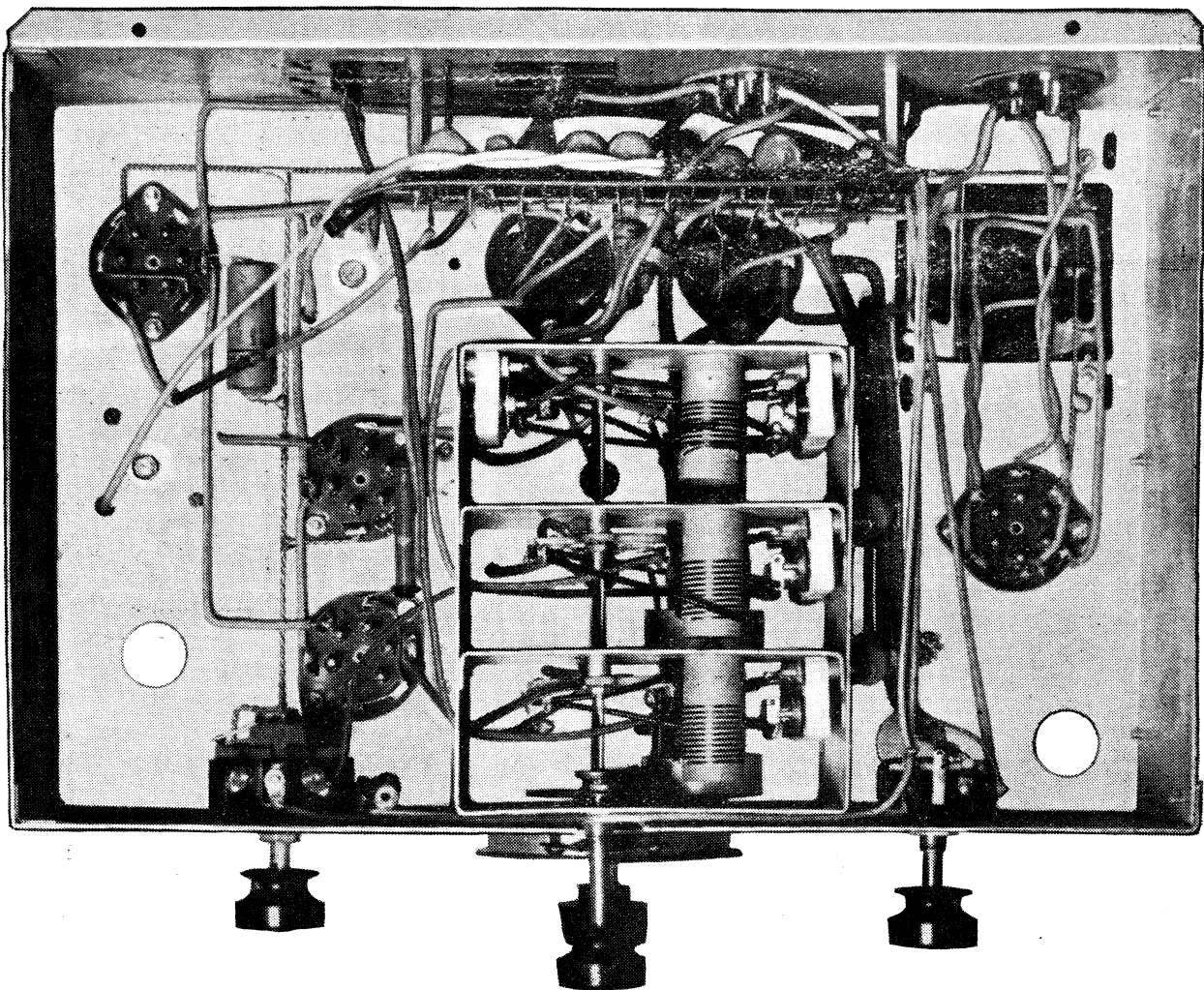




Front view, showing position of components.



Back view, showing positions of terminals, etc.



Under chassis view, showing wiring.

METROPOLITAN ELECTRIC CO., LTD.

Box 10 Redfern P.O., N.S.W.

THIS is the battery replica of our very successful A.C. model dual wave kit set.

To retain the brilliant performance of the A.C. set and keep the battery consumption down to a reasonable figure represented what at first seemed an almost insurmountable difficulty, but Radiokes engineers designed special I.F. transformers and special coils to suit the remarkable new Philips KF2 Radio Frequency amplifiers.

Extensive laboratory tests showed the 32 anode bend power detector to be the best all round detector, the added gain and increased sensitivity being a great advantage on short waves.

The Philips KBC1 valve having proved very satisfactory in our 12-34B receiver, was selected to provide A.V.C. and to drive the B240 output valve.

The 1C6 pentagrid converter used is the most suitable valve available for short wave work and is definitely reliable.

PERFORMANCE

All the principal short wave stations can be received easily and with plenty of volume. The broadcast band reception is well up to the standard of a good six valve all electric set. All interstate and New Zealand stations can be tuned in with ease. The broadcast band sensitivity averages about 2 micro-volts and the short wave band from 3 to 5 micro-volts. Some idea of what short wave stations can be tuned in and when to listen for them can be obtained from the following list.

SHORT-WAVE BROADCASTING STATIONS

PRINCIPLE INTERNATIONAL BROADCASTING BANDS.

9500kc. to 9600kc.—49 Metre band.
6000kc. to 6150kc.—31 Metre band.

15100kc. to 15340kc.—25 Metre band.
11700kc. to 11900kc.—19 Metre band.

Station Call Sign.	Station Loca- tion.	Wave Length Metres.	Fre- quency Kilo- cycles.	Approx. Schedules Australian E.S.T.	Station Call Sign.	Station Loca- tion.	Wave Length Metres.	Fre- quency Kilo- cycles.	Approx. Schedules Australian E.S.T.	Station Call Sign.	Station Loca- tion.	Wave Length Metres.	Fre- quency Kilo- cycles.	Approx. Schedules Australian E.S.T.
HVJ	Vatican City Italy	50.2	5970	Daily 5 a.m.—5.15 a.m.	W2XE	New York U.S.A.	49.0	6120	Daily 8 a.m.—1 p.m. Relays WABC.	PJC	Eindhoven Holland	31.28	959	Irregular.
YL3ZC	Christchurch N. Zealand	49	6000	Irregular.	ZTJ	Johannesburg South Africa	49.0	6120	Daily.	HBL	Geneva Switzerland	31.26	959	Sun. 8.30—9.15.
EAR25	Barcelona Spain	50	6000	Sun. 6.30—7.30 a.m.	W8XK	Pittsburgh U.S.A.	48.84	6140	Daily 7.30 p.m. to 3 p.m. Relays KDKA.	CT1AA	Lisbon Portugal	31.25	959	Irregular.
RW59	Moscow Russia	50	6000	Daily midnight (some- times later)—8 a.m.	CN8MC	Morocco	48.0	6250	Irregular. Relays Rabat.	EAQ	Madrid Spain	30.43	985	Daily 8.30—10 a.m.
VE9DR	Montreal Canada	49.95	6005	Daily 10 p.m.—2 p.m.	W3XL	New York U.S.A.	46.69	6425	Sat. 8.30 a.m.—4 p.m.	FYA	Paris France	25.64	1170	Daily 6 a.m.—1.30 p.m.
HRB	Honduras	49.95	6005	Irregular 10 a.m.—3 p.m.	RW72	Moscow Russia	45.38	6610	Irregular	PHI	Holland	25.63	1170	Irregular.
DJC	Zeesen Germany	49.83	6020	Daily 10 a.m.—noon.	EAR	Madrid Spain	43	6970	Wed. & Sun. 8.30 a.m.	VE9JR	Winnipeg Canada	25.62	1170	Daily 12.30 a.m.
WIZAL	Boston U.S.A.	49.67	6040	Irregular.	LCL	Norway	42.92	6990	Relays Oslo.	GSD	Daventry England (Empire Station)	25.51	1170	See daily papers.
GSA	Daventry England (Empire Station)	49.59	6050	See daily papers.	HBQ	Geneva Switzerland	38.4	7790	Sun. 8.30—9.15 a.m.	DJD	Zeesen Germany	25.51	1170	Daily Irregular hours.
VQ7LO	Kenya Colony East Africa	49.5	6060	Daily 2 a.m.—6 a.m.	JIAA	Japan	38	7900	Daily 8—11 p.m.	W1XAL	Boston U.S.A.	25.45	1170	Sun. 8.30 a.m.—2 p.m.
OXY	Denmark	49.5	6060	Irregular.	CNR	Morocco	32.26	9300	Mon. 5.30—8 a.m.	2RO	Rome Italy	25.4	1180	Daily 2.30—9 a.m.
W3XAU	Philadelphia U.S.A.	49.5	6060	Daily 10 a.m. to 3 p.m. Relays WCAU.	PRBA	Rio de Janeiro Brazil	31.58	9500	Daily 7.30 a.m.	W9XAA	Chicago U.S.	25.36	1180	Relays to WCFL.
W8XAL	Cincinnati U.S.A.	49.5	6060	Daily 4.30 a.m.—6.30 a.m. and 10 a.m. to 4.30 p.m. Relays WLW.	VK3ME	Melbourne Victoria	31.55	9510	Daily 7.30 a.m.	W2XE	New York U.S.A.	25.36	1180	Daily 5 a.m.—7 a.m.
YL2ZW	Wellington N. Zealand	49.5	6060	Irregular.	GSB	Daventry England (Empire Station)	31.55	9510	Wed. and Saturday, 8—10 p.m. See daily papers.	GSE	Daventry England (Empire Station)	25.29	1185	See daily papers.
VE9CS	Vancouver Chicago	49.43	6069	Irregular.	OXY	Denmark	31.51	9520	Daily 5—9 a.m. Relays Copenhagen.	W8XK	Pittsburgh U.S.A.	25.27	1180	Daily 7.30 a.m.—1 p.m.
W9XAA	U.S.A.	49.34	6080	Daily 7 a.m. to 3 p.m. Relays WCLF	W2XAF	Schenectady U.S.A.	31.48	9540	Daily 10 a.m.—4 p.m. Relays WGY.	FYA	Paris France	25.21	1190	Daily 2.15 to 3.45 a.m.
CPS	La Paz Bolivia	49.26	6090	Daily noon—3 p.m.	DJA	Zeesen Germany	31.38	9560	Daily 8 a.m.—noon.	RNE	Moscow Russia	25.0	1200	
VE9GW	Toronto Canada	49.22	6095	Daily (except Mon- day) 6 a.m.—3 p.m.	VK3LR	Melbourne Victoria	31.36	9560	Irregular. Relays 3AR and 3LO.	CNR	Morocco	23.39	1285	Mon. 10.30 a.m.
ZTJ	Johannesburg South Africa	49.2	6098	Daily 7 p.m. to mid- night.	W1XAZ	Springfield U.S.A.	31.36	9570	Daily 9 p.m.—3 p.m. Relays WBZ.	HVJ	Vatican City Italy	19.84	15120	Daily 8 p.m. to 8.15 p.m.
W3XAL	New York U.S.A.	49.18	6100	Sun., 7 a.m.—3 p.m.	GSC	Daventry England (Empire Station)	31.30	9585	See daily papers.	GSF	Daventry England (Empire Station)	19.82	15140	See daily papers.
W9XF	Chicago U.S.A.	49.18	6100	Daily (except Sun- day) 6.30 a.m.—10 a.m., 11.30 a.m.—4 p.m.	VK2ME	Sydney N.S.W.	31.28	9590	Sun., 4—6 p.m., 8 p.m. to 2 a.m.	DJB	Zeesen Germany	19.74	15200	Daily 5.30 to 6 p.m. 9.30 to 10.15 p.m.
VUC	Calcutta India	49.1	6110	Daily Irregular Hours.	W3XAU	Philadelphia U.S.A.	31.28	9590	Irregular.	W8XK	Pittsburgh U.S.A.	19.72	15200	Daily 1 a.m. to 7.15 a.m. Relays KDKA.

FEATURES

THE Dual wave "Kit Set" receiver is a 6 valve receiver featuring a new method of wave band changing with special switch using silver plated contacts. The short wave coils are space wound with heavy gauge wire and enamel insulated. The broadcast coils are the latest restricted field solenoids. The whole, including switch, coils and separate trimmers for each coil, is mounted in a special cadmium plated tank with each section fully shielded. There is tuned Radio frequency amplification on both bands—special air dielectric, litz wire wound, isolantite insulated intermediate transformers—Dual ratio aerovision dial (ratios 8-1, 56-1), calibrated on both bands in metres, full independent A.V.C.—provision for transposed aerial system, sensitivity control,—switch incorporated in volume control,—"B" class power output. All coil assemblies are "Air tested" and aligned and padded on a signal generator.

VALVE FUNCTIONS.

KF2 super controlled multi-mu radio frequency pentode amplifier.
1C6 electron coupled pentagrid frequency converter.
KF2 super controlled multi-mu, intermediate frequency pentode amplifier.
32 anode bend power detector.
KBC1 high gain audio driver and independent A.V.C. voltage generator.
B240 or 19 B class output tube providing approximately

2 watts output with tone comparable with good A.C. receivers.

The band coverage is:—Broadcast 200-550 metres; short wave 19-52 metres.
Switch positions:—Left—short wave; right—broadcast.

Positions of controls:—Volume control on left; sensitivity control on right; dial and wave change switch in centre.
Valves required:—2 KF2; 1 KBC1; 1 32; 1 1C6; 1 19 or B240.

Speaker required:—Permanent Magnet type, input transformer to suit B240 or 19 valve.

Intermediate amplifier:—A frequency of 460 kilocycles is utilised and is tuned with two type 5-35B isolantite air dielectric transformers of special design made expressly for the KF2 valves, and without which, maximum gain is not possible.

Automatic Volume control:—This is outstanding, and only made possible by the advent of the amazing new Philips KBC1 diode triode valve, working in conjunction with the KF2 valves.

Radiokes "B" class audio system:—A special audio transformer is used which enables a wide audio response and the maximum output from the B class valve. The output is approximately two watts. This system is unequalled for maximum performance and economical battery consumption.
Battery consumption:—With the B240 output valve the "B"

Very extensive tests were carried out before any finality of design was decided. Working models were taken to several well-known Sydney engineers for criticism and in all cases the performance was highly praised and no criticisms were forthcoming, until the set was taken to the "Wireless Weekly" laboratory, where Mr. A. G. Hull, chief engineer and technical editor, after carrying out his own tests, pronounced the 12-35B a great performer and a really "Hot Stuff" battery set, but told us in no uncertain manner that the current consumption must be lowered.

At that time the B battery current was round about 22-25 milli.

Realising how well Mr. Hull knows the requirements of battery set users our engineers set to work again and after many sleepless nights got the consumption down to 11 milliamps, and actually improved the performance.

After testing a number of these sets and taking the variation of valves into consideration we have the current rating at 11 to 14 milliamps.

In our opinion the 12-35B represents the most efficient modern battery Dual wave superheterodyne it is possible to build and is the result of months of laboratory work followed by the most exacting practical tests possible.

battery current will be between 11 and 14 milliamps at reasonable volume. The current will increase in proportion to the volume and when the set is "flat out" the current may average as much as 25 milliamps. It is possible to average as low as 10 or 11 milliamps by keeping the volume and sensitivity controls well back and raising the C bias voltage a little.

When a 19 output valve is used the B current will increase to 16 or 18 milliamps but the tone will be improved a little, perhaps not enough to warrant an extra battery drain.

With the B240 valve, the B battery voltage may be increased to 150 volts without the current exceeding 15 milliamps and the performance especially on short waves will be even better. The A battery current is approx. .85 amps. for which we

recommend a 2 volt, 100 amp. hour accumulator.
Note:—The R.F. and I.F. screen grid voltage should be equal to the maximum, i.e. 135 or 150 volts for best short wave results, but for greater economy the voltage can be reduced to 90 volts, thus saving 2 or 3 milliamps.

Special precautions:—1. Study all the diagrams, photographs and instructions thoroughly before attempting the assembly.
2. Be sure that you mount the sockets exactly as shown in the diagram, also mount the I.F. transformers in their correct positions. The position of the resistor panel can be obtained from the photograph. 3. The socket position and the wiring of the KBC1 must be exactly as indicated in the diagrams, including the polarity of the filaments.

ASSEMBLING AND WIRING

Assembly:—Begin by mounting all the sockets as shown in diagram, using $\frac{3}{8}$ " x $\frac{1}{4}$ " R.H. Brass screws. (Note—when mounting the IC6 and 32 socket mount a valve shield base using the same screws for base and socket.) Next mount the intermediate transformers and then the audio transformer. (No. 1 I.F. transformer has all leads thru' bottom—No. 2 has a red and orange lead thru' side of can—Red to plate KF2, Orange to grid 32.)

The terminals are now placed in position—red being at the top, the remainder being black. A $\frac{3}{8}$ " x $\frac{1}{4}$ " R.H. screw is placed in hole in front of chassis for holding the dial in position.

Mount the volume control (.5 meg. ohm) on left (near the 19) and the sensitivity control (10,000 ohms) on right.

The coil assembly and panels are not mounted until later. **Wiring instructions:**—Commence by wiring the negative filaments. These should be done with tinned copper and connected to the chassis. The positive filaments may now be wired and connected to A+ on the battery socket.

Connect a lead from "F—" of KF2 (RF) to one outside lug of sensitivity control.

Connect a lead from "SC" KF2 (RF) to "SC" KF2 (I.F.) and from "SC" KF2 (I.F.) to B+ 90-135v on battery socket. Connect a lead from "SC" IC6 to "SC" 32 and from "SC" 32 to B+ 67.5v on battery socket.

Connect a .1 mfd. cond. from "SC" KF2 to earth.

Connect a .1 mfd. cond. from "SC" 32 to earth. On the KF2 sockets connect together "F—", "SU" and "coat" and on the KBC1 socket connect "F—", "Coat" and "D" (det.).

Connect "Orange" of I.F.T.1 to "G" KF2 (I.F.).

Connect "Red" of I.F.T.1 to "P" IC6.

Connect .05 meg. resistor from "G1" IC6 to "Coat" KF2 (R.F.).

Solder a .0001 mfd. cond. to "G1" IC6 so that it stands at 90 deg. to the chassis.

Connect "Green" I.F.T.2 to Red terminal of Pick up.

Connect an R.F.C. to "P" of 32. (See diagram).

Connect "P" of KBC1 to "Yellow" of 3-7B audio trans.

Connect a shielded lead (earth shielding to chassis), from outside lug of volume control as in diagram.

Connect another shielded lead from centre lug of volume control thru' hole in chassis to cap (G.) of KBC1. (Connect shielding to chassis.)

Connect a .5 mfd. cond. from Red (audio trans.) to earth.

Connect C—6v to middle terminal (Black) of pick up.

Connect B+ 135v on Battery socket to "CT" (F) on Speak.

socket, and connect "CT" Speak. socket to Red audio transformer.

Connect C— $4\frac{1}{2}$ v to remaining outside lug on volume control. Connect one side of switch to shielding braid, the other side going to "A—", "B—", "C—" of battery socket.

Connect "G2" B240 or 19 socket to Green (audio trans.).

Connect "G1" B240 or 19 socket to remaining green (audio transformer).

Connect orange to earth.

Connect "P2" B240 or 19 socket to "G" of speaker socket. Connect "P1" B240 or 19 socket to "P" of speaker socket.

The panel may now be mounted. (Note—the assembly and wiring on the panel is carried out at the factory.) It is mounted with the lugs "A to J" nearest the top of the chassis.

The connections to the panel are as follows.

A—Green I.F.T. 1.

C—Orange I.F.T. 2.

E—Centre terminal (Black) of pick up.

F—"P" of "32".

G—R.F.C. (opposite side to "P" 32).

H—To shielded lead from V.C. (see diagram).

I—.1 meg. resistor (A.V.C.—see diagram).

J—A.V.C. diode ("D") KBC1.

K—Centre lug sensitivity control (connect after box is placed in position).

N—B+ 135v on battery socket—also yellow I.F.T.1 and I.F.T.2.

T—earth.

The set is now ready to receive the coil assembly. Before the assembly is screwed into the chassis the following additions should be made.

Connect .1 mfd. cond. from green lead section 1 (right hand side—see diagrams) to earth (Lug on side of box).

Connect .1 mfd. cond. from green lead, section 2 (right hand side—see diagrams) to earth (Lug on side of box).

A lead should be taken from F+ of KF2 (RF) thru' slot in top of the chassis for dial lights, the negative side going to chassis.

The assembly may now be placed in position. The screws to be used are $\frac{3}{8}$ " x $\frac{1}{4}$ " R.H. and are held in place with $\frac{1}{8}$ " hex. nuts.

Wiring of box:—Section No. 1 left side; Red—Aerial No. 1; Green—Earth No. 2; Orange—"G" KF2 (R.F.).

Right side:—Green—.1 meg. resistor (see diagrams).

Section No. 2, left side:—Red (thru' base)—Cap (G) KF2;

Yellow—remaining outside lug of sensitivity control; Green—"N" on panel (135v)

Right side:—Already wired.

Section No. 3, left side:—Red—"32" IC6; Green—.0001 mfd. (from "G1" IC6).

Back:—Red—"N" on panel (B+ 135v).

Cap of IC6 to stator lug on middle section of gang.

Cap of KF2 (I.F.) to red I.F.T.

Cap of 32 to orange I.F.T.2.

Connect a 5000w resistor from lug on sensitivity control (see diagrams) to lug on volume control. (Run lead between box and chassis front). Connect a lead from centre lug of sensitivity control to "K" of panel. (Run lead between box and chassis front.)

Method of mounting dial:—The mounting and adjustment must be carried out correctly as mechanical strain will cause slipping of the vernier movement.

Mounting:—If the dial slips when tightened up to the chassis, loosen the chassis mounting nut and the grub screws, holding the dial to the gang shaft, and move the dial forwards or backwards along the shaft until the dial chassis is just level with the mounting front of the receiver chassis, when the grub screws are tightened up. If the dial chassis is not pressing hard against the receiver chassis and it is not necessary to strain the dial chassis to screw it up to the set the dial is screwed to the correct position on the condenser gang shaft.

Adjustment:—To take up any slip in the vernier movement tighten the two adjusting screws which hold the tension plate in position.

To ease stiff movement of the large knob loosen the adjusting screws.

A tension must be found which does not render the knob movement too heavy and yet is not loose enough to permit slipping of the vernier.

Each dial is adjusted at the factory and the screws sealed with lacquer, but the dial may require adjustment when driving some gangs. This adjustment is fairly critical.

Important:—Before mounting the dial see that the gang movement is quite free. If necessary loosen the back adjusting screw and lessen the tension of the brass rotor springs by bending them a little. Be careful not to let the plates get out of centre when adjusting the back screw.

Note:—Tightening up the grub screws will alter the position of the chassis with relation to the front of the set and it may be necessary to compensate by moving the dial further along the condenser shaft.

TESTING AND ALIGNING THE RECEIVER

(a) Before commencing to align the receiver the following alterations should be made.

Remove the lead connecting "J" of panel to A.V.C. diode of KBC1, also connect C— $4\frac{1}{2}$ to C—6v approx. (on the battery). The .5 meg. volume control should be turned full on and the 10,000w sensitivity control used as volume control. When adjustments are completed the lead may be replaced.

Aligning the receiver:—To make the aligning simple, the removable side of the chassis should be taken out.

Aligning Procedure:—Turn the selector switch to the broadcast band and tune in a station at the bottom of the band (2SM or thereabouts). The trimmers have all been aligned at the factory and will only want a small adjustment. Don't touch the osc. trimmer.

The aerial and R.F. trimmers may be peaked again. Before shifting from this station the intermediates can be given a slight adjustment. This completes the alignment of the broadcast section. The padder should not need adjustment, but can be given a slight readjustment in the usual way if at all out.

Note:—A fairly weak interstate or distant station will give a more accurate adjustment.

Alignment of the short wave section:—Turn the selector switch to the short-wave band and tune in a signal near the 20 metre band and adjust the aerial and R.F. trimmers, but don't touch the osc. trimmer. This setting will do for the whole band as the whole unit has been previously aligned and padded.

Note:—When selecting the station choose one that is fairly steady, not one that is affected by fading.

Caution:—The short wave band should be aligned with the aerial intended for use with the set. Should it be desired to change the aerial at any time the short wave aerial trimmer should be realigned.

An aerial about 30-40 feet long including lead-in should be used. The lead should be as short as possible and well insulated and clear of any metal work.

If a large aerial is already installed and it is desired to use it, a small fixed condenser may be connected in series with the lead-in. The capacity should be about .0001 mfd. to .0005 mfd., depending on length of aerial. A special isolantite variable cond. is available for this purpose. Type 6-42R. Special transposition kits are available for use with doublet aerials and include full instructions for use. Price, 4/6 per set of 8 blocks. A doublet aerial with transposed lead-in is a big improvement, especially on short waves.

Note:—While adjustments are being made, the sensitivity control is used as a volume control, and volume control is left full on.

The sensitivity control should be turned in a clockwise direction for the reception of long distance stations and in an anti-clockwise direction to eliminate between stations noise when tuning in comparatively strong stations.

Technically, the control has the following effects:—

(1) Applying a negative bias to the KF2 valves;

(2) Applying a negative bias to the A.V.C. diode, thus producing delayed A.V.C.

The sensitivity control will not have any control of volume on strong stations, but it will be noticed that it has a strong affect in the reduction of the noise between stations which goes hand in hand with ordinary A.V.C.

LIST OF PARTS, 12-35 B

- 1—12-35B steel chassis.
- 1—5-35B coil assembly (complete with 2 5-35B I.F.'s).
- 1—3-7B audio transformer.
- 1—Dual ratio aerovision dial.
- SOCKETS.
- 5—6 pin.
- 2—4 "
- 1—7 "
- RESISTORS, Etc.
- 1—.05 meg.
- 3—.1 "
- 1—.5 "
- 1—1 "
- 1—5,000w maxome.
- 1—10,000w volume control.
- 1—.5 meg. volume control, with switch.

CONDENSERS, Etc.

- 1—.5 mfd.
- 6—.1 mfd.
- 1—.02 mfd.
- 1—.001 mfd.
- 1—.0001 mfd.
- 1—.0005 mfd.
- SUNDRIES.
- 1—R.F. choke.
- 6—terminals, 2 Red, 4 Black.
- 3—knobs.
- 1—No. 8 valve shield.
- 1—No. 7 valve shield.
- 2—3.5v. pea lamps.
- 2—grid clips.
- 3—spade lugs.
- 1—T-33 panel completely assembled and wired.

2—Mounting pillars (1 $\frac{1}{8}$ ").

- 40— $\frac{3}{8}$ " x $\frac{1}{8}$ " round head brass screws.
- 50— $\frac{3}{8}$ " hex. nuts.
- 1—yd. tinned copper.
- 5—yds. hook up wire.
- 1—yd. 7 way cable.
- 1—yd. shielding braid ($\frac{1}{4}$ ").
- 1—7 pin plug.

EXTRAS.

- 1—.25 mfd. conds.) When visual tuning is required.
- 1—tuning meter

SPEAKER.

Amplion L or O type permag. input transformer to suit 19 or B240 valve.

VALVES.

- 2—KF2; 1—KBC1; 1—32; 1—1C6; 1—19 or B240.

Operating Instructions

Operating instructions:—Everything being in order, the following points should be checked.

1. **The aerial and earth terminals.** There are three terminals coloured—1 red, 2 black and numbered 1, 2 and 3 in the circuit diagram. Connections should be as follows:—Aerial—Red, No. 1; Aerial—Black, No. 2; Earth—Black, No. 3. When using a standard aerial and earth system the aerial should be connected to Red (No. 1) and earth to Black (No. 3) No. 2 and No. 3 should be connected together.

When using a transposed aerial lead-in, the aerial connects to Red (No. 1) and the other lead to Black (No. 2) and earth connecting to Black (No. 3)—don't connect No. 2 and No. 3 together.

2. **The gramophone pick up.** There are three terminals for the gramophone pick up, coloured, 1 red, 2 black, and numbered: Red, No. 1; Black, No. 2; Black, No. 3. For Radio Use:—Connect Red (No. 1) and Black (No. 2) together.

For Pick Up Use:—Remove connection from Red (No. 1) and Black (No. 2) and connect pick up between Red (No. 1) and black (No. 2). The volume control on the set may be used as a volume control for the pick up.

Technical Information

Any further information or advice can be obtained by writing to the technical dept. Metropolitan Elec. Co., cnr. Cleveland and George Streets, Redfern, N.S.W.

Postal address:—Box 10, Redfern, N.S.W.