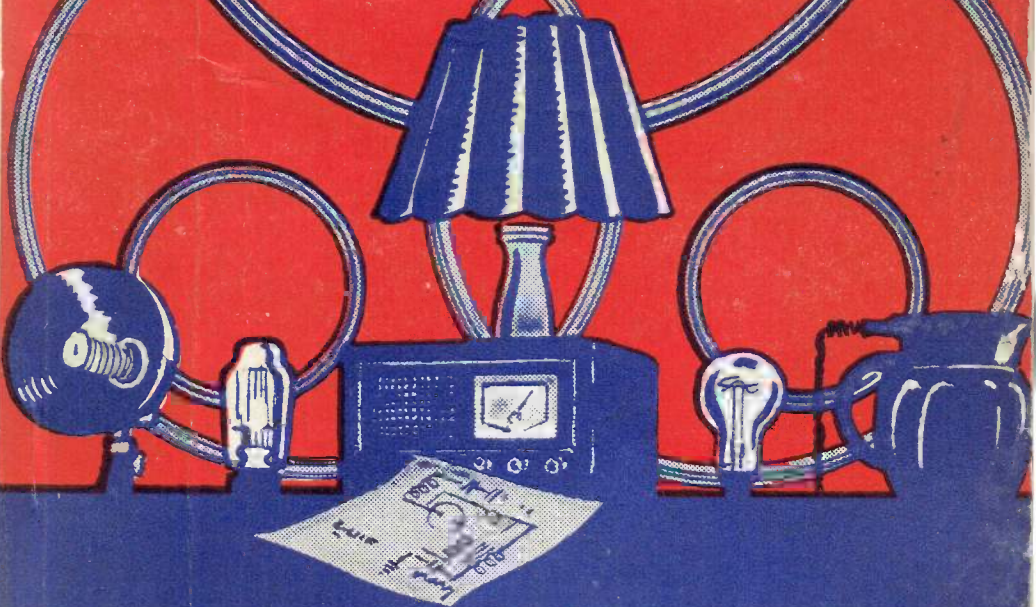
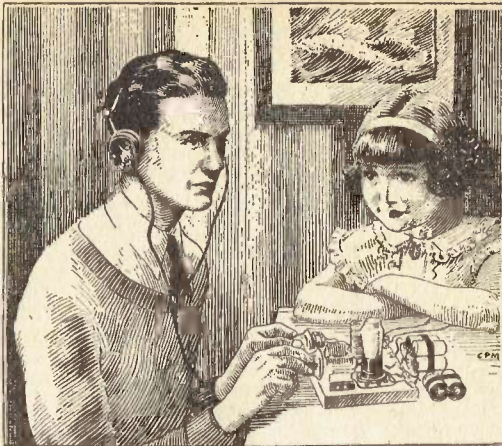


LAMPHOUSE ANNUAL 1946-'47

1/4



*NEW ZEALAND'S RADIO AND
ELECTRICAL GUIDE*



1946

Lamphouse Annual

BACK TO PEACE!

WE had planned for a bigger and better "Lamphouse Annual" as soon as the war was over, but conditions beyond our control have prevented this for the 14th (1946) Edition. Paper is scarcer than ever and we have had to allow our printers to supply a lower grade than usual. This was the only alternative to discontinuing the "Annual" altogether. This publication uses nearly three tons of paper, and that's a lot of paper when there is a shortage.

We apologise for the quality of the paper and the late publishing date—both are entirely due to our printers—or, to be more correct, to our printers' unavoidable difficulties.

The Catalogue lists goods which we expect to be available during the currency of the Catalogue, but we expect many other lines which have been in short supply for some years to become available as the year progresses.

Many thanks for any orders you may have sent us during the past year, and we hope it will not be long now before you can again have the pre-war Lamphouse Mail Order Service. In the meantime we remind you of the Lamphouse Guarantee:

Any goods which are in any way unsuitable may be returned undamaged, within seven days from receipt, and your money will be refunded in full.

THE ELECTRIC LAMP HOUSE, Ltd., Wellington.

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LAMPHOUSE LAY-BY SERVICE

The Lamphouse Lay-by is a means of obtaining your requirements with easy payments but at no extra cost.

Many goods are in short supply, and if you see an article you want it is advisable to secure it at once, as it may not be available later, or when the next shipment arrives the prices are almost sure to be advanced.

All you have to do is to pay a deposit and tell us you want to buy it under the Lamphouse Lay-by plan. It costs you no more and you can complete the purchase at any time convenient to yourself by making payments of any amount you can spare at intervals of not less than

once a fortnight. Here are the only conditions which we make covering goods sold on lay-by:—

1. All goods under this system are sold at our cash prices.
2. A payment must be made at least once a fortnight, otherwise goods and cash may be forfeited without notice.
3. Goods must be fully paid for within four months.
4. No goods will be exchanged and part contents cannot be taken from parcels.
5. Deposits cannot be refunded or transferred.

THE LAMPHOUSE, 11 Manners Street, Wellington, C.1.

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GENERAL INFORMATION

PRICES:—The prices in this Catalogue should be taken as an indication only. Prices are fluctuating rapidly and all orders will be executed at the prices ruling at the date of supply.

TERMS OF BUSINESS.—Our terms are cash with order. We buy for cash and sell for cash, that's why our prices are lower. If it is desired we will hold any moneys of regular customers in a deposit account for future purchases, otherwise any balance due will be returned with the goods.

HOW TO ORDER.—Order forms are always available for your convenience. It is only necessary to quote the catalogue number and short description when ordering, such as TE508—Iron Element.

CATALOGUE NUMBERS.—The first letter (T) of the number is for our reference. The balance of the catalogue number will always remain the same for the same article.

FREIGHT.—We pay freight on all retail orders over £1 value. Please include sufficient cash for postage on small orders.

GUARANTEE.—Any goods that prove in any way unsuitable may be returned undamaged within seven days from receipt and your money will be refunded in full.

REFERENCE.—Our Bankers are the National Bank of New Zealand, Ltd., Courtenay Place, Wellington.

COMPLAINTS.—Please specially address all letters containing complaints, etc., to "The Director."

RETURNS.—Should it be necessary to return goods, always put in a slip of paper with your name and address. When returning goods for credit or exchange, state invoice number in covering letter to ensure prompt attention.

TELEGRAMS.—Address telegrams to "Lamphouse," Wellington.

REMITTANCES.—Enclose cheque, pound notes, postal note, or money order to the full amount of your order. If you send coin or bank notes, be sure to register the letter. Make cheques and postal notes payable to the Electric Lamp House, Ltd., and keep numbers for reference.

DELIVERY.—We endeavour to maintain a same day dispatch service. This is not always possible as at times goods have to be specially procured, and at times exceptional rushes take place. It is very seldom, however, that an order is held for more than one day after receipt.

SUBSTITUTES.—Owing to the present difficulty of obtaining supplies we suggest that you indicate on your order whether or not you wish us to substitute with similar articles in the event of the goods ordered being out of stock.

LAY-BY.—See page 5.

POSTAL ADDRESS.—All orders and general correspondence should be addressed to—

THE ELECTRIC LAMPHOUSE LTD.

11 MANNERS STREET - - - WELLINGTON, C.1.

Telephones 43-015 and 43-016

A SUGGESTION.—As it is much easier for us to make a refund along with your receipt than for you to get stamps or postal notes to remit a small balance that may be left owing when your receipt is sent, would it not save you inconvenience if you were always to send ample cash to allow for freight, etc? We will refund the difference, or place it to your credit, according to your instructions. Do as hundreds of our customers do, send a blank cheque, which we will fill in when we have totalled your order. You can write across the top of the cheque "Not to exceed £5"—or £10, or £20, as the case may be.

NEW ARRIVALS

METERS

Limited quantities of the following Meters are available from stock. All flush panel mounting. Order early!

Cat. No.		
TM800—Triplett 0-5 amp. Square 3in. A.C. Meters	ALL 55/- each	
TM801—Triplett 0-5 amp. Round 3in. A.C. Meters.		
TM802—Simpson 0-3 amp. Square 2½in. D.C. Meters.		
TM803—Burlington 0-25 M.A. Sq. 3in. D.C. Meters.		
TM804—Burlington 0-50 M.A. Sq. 3in. D.C. Meters.		
TM806—Simpson 0-10 Volt Square 2½in. A.C. Meters.		
TM807—Simpson 0-15 Volt 2½in. Square A.C. Meters.		
TM808—Electro-Tec 0-1 amp. Rnd. 3½in. D.C. Meters.		
TM809—Burlington 0-100 M.A. Square 3in. D.C. Meters.		
TM810—Triplett 0-1 amp. 3in. Square R.F. Thermo Ammeters		£5
TM811—Triplett 0-1.5 amp. 3in. Square R.F. Thermo Ammeters	£6/10/-	
TM812—Simpson 0-2 amp. 3½in. round R.F. Thermo Ammeters	£5	

PALEC M.A. METERS

Cat. No.	
TM805—Palc 0-1000 M.A. 3½in. round Meters. Special purchase of a large quantity enables us to sell them not at their true value £3/10/-, but at 30/- EACH	

TRICKLE CHARGERS

Never be stuck with a run down radio or car battery. These Chargers simply plug into a 230 Volt light socket or wall plug, and are then connected to your battery. Incorporates dry metal type rectifier. Size of case 5½in. x 4½in. x 2½in.

Cat. No. TA607, 1 amp. .. **£4/10/-**

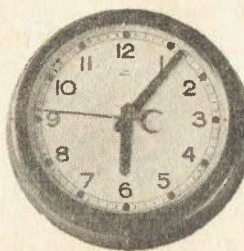
DX (LONG DISTANCE RECEPTION)

Readers who are interested in DX-ing should contact Arthur T. Cushen, 212 Earn Street, Invercargill, who will be only too pleased to send them a sample of a monthly bulletin which is published for the benefit of DXers.

TINK ELECTRIC CLOCKS

Just plug in and forget and correct time is yours always. Current consumption is practically nil. Slow speed, silent-running motor—Long Life!

ROSANNA MODEL



Big face with plain figures which can be easily read make this clock ideal for factories, offices and other commercial users. Also an excellent kitchen clock.

Cat. No. TE 870
£12/3/-

OAKLANDS MODEL



For the home. Well finished in rich, highly polished wood, with chrome brim.

Dimensions:
Height 7 in.
Length 10½ in.
Depth 2½ in.

Cat. No. TE871—(Price not yet fixed. Approx £8.)

SEWING MACHINE MOTORS



TO ARRIVE SHORTLY—230 Volt Sewing Machine Motors, with variable foot control. Will fit all makes of household sewing machines. Complete with flex and special Lamp. Cat. No. TM663 .. **£9/17/6** approx.

The LAMPHOUSE 1946

CATALOGUE 1947

OSRAM ELECTRIC LAMPS

OSRAM STANDARD VACUUM BULBS. OSRAM GAS-FILLED CLEAR BULBS.

Clear and Frosted. 240v.



Low intensity, small consumption lamps for passages, halls, etc., or where it is necessary to have a small lamp burning over a long period.

Cat. No. TL201—15 watt 2/2 each
Cat. No. TL202—25 watt 2/2 each

	Special G.E.S. large Screw Base.	
TL211—300 watt	.. .. .	14/6
TL212—500 watt	.. .. .	20/9
TL180—1000 watt	.. .. .	33/3

LAMPS FOR HOUSE LIGHTING PLANTS.

Low voltage globes with Standard bayonet cap base. Used mainly for house lighting plants in country districts. The 6 and 12 volt types can be used from a car battery for tent lighting, or in conjunction with windcharger installations.

OSRAM GAS-FILLED GLOBES.

Clear or Pearl.

A gas-filled globe suitable for every purpose. Clear types as used for ordinary house lighting in sizes to sufficiently illuminate any room, no matter how large or small. Used extensively in shops, stores, and factories. The pearl type is used mainly in confined spaces, where a large amount of close work is done, or where work under artificial light for long periods is necessary. Frosted just sufficiently not to impair the efficiency of the lamp, but to keep the sharp glare from the eyes. Ideal for Reading Lamps, Desk Lights, Offices, etc. Standard Bayonet Base.



TL215—40 watt	.. .. .	at 2/2 each
TL216—60 watt	.. .. .	at 2/3 ..
TL217—75 watt	.. .. .	at 3/3 ..
TL218—100 watt	.. .. .	at 4/- each
TL219—150 watt	.. .. .	at 7/- ..
TL220—200 watt	.. .. .	at 10/3 ..

The same type as outlined above but using the Edison Screw (E/S) Standard screw base:

TL600—15 watt	.. .. .	2/2
TL601—25 watt	.. .. .	2/2
TL602—40 watt	.. .. .	2/2
TL603—60 watt	.. .. .	2/3
TL604—75 watt	.. .. .	3/3
TL605—100 watt	.. .. .	4/-
TL606—150 watt	.. .. .	7/-
TL607—200 watt	.. .. .	10/3
TL608—300 watt	.. .. .	16/1

12 VOLTS.		
Cat. No. TL500—10 watt	.. .. .	2/7 each
Cat. No. TL501—15 watt	.. .. .	2/7 each
Cat. No. TL502—25 watt	.. .. .	2/7 each
Cat. No. TL503—40 watt	.. .. .	2/7 each
25 VOLTS.		
Cat. No. TL550—15 watt	.. .. .	2/5 each
Cat. No. TL551—25 watt	.. .. .	2/5 each
Cat. No. TL552—40 watt	.. .. .	2/2 each
Cat. No. TL553—60 watt	.. .. .	2/3 each

32 VOLTS.		
Cat. No. TL560—15 watt	.. .. .	2/5 each
Cat. No. TL561—25 watt	.. .. .	2/5 each
Cat. No. TL562—40 watt	.. .. .	2/2 each
Cat. No. TL563—60 watt	.. .. .	2/3 each

50 VOLTS.		
Cat. No. TL570—15 watt	.. .. .	2/5 each
Cat. No. TL571—25 watt	.. .. .	2/5 each
Cat. No. TL572—40 watt	.. .. .	2/2 each
Cat. No. TL573—60 watt	.. .. .	2/3 each

THE LAMPHOUSE

11 MANNERS STREET, WELLINGTON

OSRAM GAS-FILLED 110 VOLT LAMPS.

Low voltage globes as used on ships. Several districts not converted to the 240 volt supply still use this voltage. Available in B/C or E/S Base.

110 VOLTS.

Cat. No. TL580—15 watt	..	2/2 each
Cat. No. TL581—25 watt	..	2/2 each
Cat. No. TL582—40 watt	..	2/2 each
Cat. No. TL583—60 watt	..	2/3 each
Cat. No. TL584—75 watt	..	3/3 each
Cat. No. TL585—100 watt	..	4/- each
Cat. No. TL586—150 watt	..	7/- each
Cat. No. TL587—200 watt	..	10/3 each

110 VOLTS. Special G.E.S. Base.

Cat. No. TL588—300 watt	..	14/6 each
Cat. No. TL589—500 watt	..	20/9 each
Cat. No. TL590—1000 watt	..	33/3 each

ROUGH SERVICE LAMPS.

Vacuum type Lamps with special reinforced filaments for places where ordinary lamps have a short life, due to excessive vibration. Mainly used in garage hand-lamps, or machine lights.

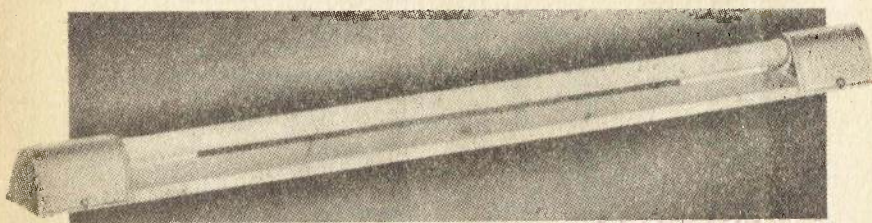
Cat. No. TL237—40 watt B/C Base	3/- each
Cat. No. TL238—60 watt B/C Base	3/- each
Cat. No. TL609—40 watt E/S Base	3/- each
Cat. No. TL610—60 watt E/S Base	3/- each

OSRAM NEON LAMPS.

230-volt DWARF INDICATOR LAMPS, with standard B.C. base. .5 watt

Cat. No. TL20	..	5/2
Cat. No. TL21—Standard Neon Indicator Lamp with B.C. base	..	5/6 each

OSRAM FLUORESCENT LAMPS AND REFLECTORS



F16938 Channel, Choke and Condenser	..	£9/11/9 each
Choke and Condenser Box	..	18/- each
240 Volt 5 Ft. 80 Watt OSRAM Fluorescent Daylight or warm white Lamps	..	£2/4/8 each

Can also be supplied with Trough Reflector. Domestic type and other sizes becoming available.

PANEL LAMPS.

RADIO PANEL LAMPS. Tubular Type, screw base.

Cat. No. TL119—2 volt, .05 amp. (special low consumption for battery sets)	..	1/4 each
Cat. No. TL120—2.5 volt	1/4 each	
Cat. No. TL121—3.8 volt	1/4 each	
Cat. No. TL122—6 volt	1/4 each	

Cat. No. TL124—6 volt, screw base, round bulb .. 1/4 each

Cat. No. TL123—6 volt, with small Bayonet Base .. 1/4 each

Cat. No. TL118—2 volt Battery Set type with small bayonet base .. 1/4 ea.
TL300—6 volt, with S/C large Bayonet base for Columbus and similar sets .. 1/5 ea.

TORCH LAMPS.

STANDARD TYPES. BEST QUALITY.

Cat. No. TL100—1.4 volts—1/5 each	..	11d. each
Cat. No. TL103—4 volts	..	10d. each
Cat. No. TL112—Focus 2.5 volts	..	10d. each
Cat. No. TL113—Focus 3.5 volts	..	1/2 each
Cat. No. TL109—Focus 6 volts	..	1/9 each
Cat. No. TL99—2.5 volts, pre-Focus type (American Fixed Focus)	..	1/9 each
Cat. No. TL1—6 volt 3 watt Cycle Dynamo Lamps	..	1/9 each
Cat. No. TL2—6 volt 1.8 watt Cycle Dynamo Lamps	..	1/9 each

PIGMY (PILOT LAMPS).

15 Watt. Small size Bulb.

Cat. No. TL200	..	2/2 each
----------------	----	----------

BELLS AND BELL MATERIAL

Best British BELL

British. Pressed iron frame. Silver contact points. Terminals under cover. Nickel-plated steel gong, 2 1/2 in. diameter. Bakelite case. For battery or 4-volt A.C. operation.

Cat. No. TG320 9/6



BRITISH BUZZER

British good quality Buzzer in bakelite case.

Cat. No. TG319 7/3 each

BELL BATTERIES

See Page 45.

BELL PUSH



Good quality Brown Bakelite Push; 1 1/2 in. diameter.

Cat. No. TG334 2/3 each

"Cubist" BELL PUSH.

Bell Push of exceptionally attractive appearance, suitable for inside or outside use. Moulded Bakelite. Size 2 1/2 x 2 in.

Cat. No. TG326 1/7 each



BAKELITE PEAR PUSHES

Bell Pear Push for cord suspension. Attractively finished in moulded bakelite. The plunger is of polished bone.

Cat. No. TG335 2/- each



BELL TRANSFORMERS



Bell Transformers for 230-volt supply. Output 3/5/8 volts. Moulded into an attractive bakelite case. British.

Cat. No. TG337 .. 14/9 each

BELL WIRE

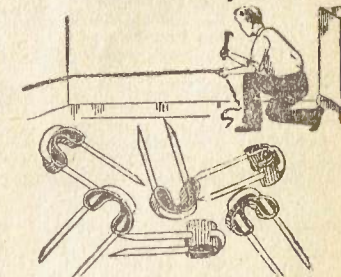
Best Quality British Bell Wire. Well insulated.

Cat. No. TW114—1/20 S.W.G. 2 D. Yard

Cat. No. TW113—1/22 S.W.G. 2 D. yard

BELL STAPLES

INSULATED STAPLES Make a Neat Job!



Insulated Staples for tacking up bell wire.
Cat. No. TS118 .. 3 1/2 D. doz.
(2/3 pack of 100)

THE LAMPHOUSE, 11 Manners Street, Wellington, C.1.

£17

ADAPTORS — HOLDERS — PLUGS



ADAPTORS

For end of cords to fit into light socket for extensions, etc.
Cat. No. TG210 ... **1/-** each

2-LIGHT ADAPTORS

Two-light Bakelite Adaptors.
Cat. No. TG218 each



SWITCH TYPE

Enables an extension to be taken from a lamp-holder. Provided with a switch so that the centre light can be switched off and leave the extension going.



Cat. No. TG220 **6/-** each

LAMP HOLDERS

CORDGRIP TYPE. BAKELITE—

Cat. No. TG50—With skirt Each 1/9
TG51—Without skirt 1/6

TG52—With switch, with skirt 6/6
TG53—With switch, without skirt 6/6

BATTEN TYPE—
TG54—With skirt 3/5
TG56—Without skirt 2/8



Cat. No. TG58—With switch, without skirt

ANGLE TYPE BATTEN HOLDERS—

Cat. No. TG65
THREADED TYPE—
Cat. No. TG59—3in. Bakelite type .. 2/9
Cat. No. TG60—3in. metal type .. 2/3
Cat. No. TG61—3in. light metal .. 2/-
Cat. No. TG62—3in. conduit thread type 2/11
Cat. No. TG63—3in. bakelite type .. 2/-
Cat. No. TG64—3in. with switch .. 6/9

E.S. HOLDERS—
Cat. No. TG68—Batten type .. 3/-
Cat. No. TG69—Cordgrip type .. 2/10
Cat. No. TG70—Goliath screw type .. 5/6
Cat. No. TG71—3in. Bakelite .. 3/3

WALL PLUG CAPS.



2 Pin "Tee" TG85 .. **1/-** each
2 Pin Parallel TG84 .. **8D.**
3 Pin Side Entry TG89 **1/3**

Top Entry 3-pin. cap.
Cat. No. TG90 **1/-**

TG99—Rubber covered 3-Pin Plug
Tops .. **2/3** ea.

ADAPTORS, MINIATURE



These are similar to TG210, but fit miniature lamp holders. They are standard size for use on motor cars.

Cat. No. TG211—Single contact **1/4** Each.

TG212—Double contact **1/4**

WALL PLUGS AND BASES.

3 Pin.
Cat. No. TG 89/96— **3/1** each

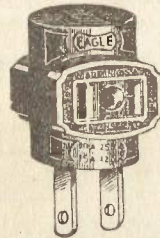
Tee Pin.
Cat. No. TG 85/86— **3/3** each



WALL BASES.

TITEGRIP 10/15 amp. PLUG BASES.
Cat. No. TG96 .. **1/10** each

TITEGRIP "TEE" 2-pin PLUG BASES.
Cat. No. TG86 .. **2/3** each



PLUG CUBE

Triple Plug Cube with parallel pins. Enables 3 separate leads to be taken from one point.

Cat. No. TG102— **10D.** each

APPLIANCE PLUGS

Fit practically all types irons, toasters and other electrical appliances.

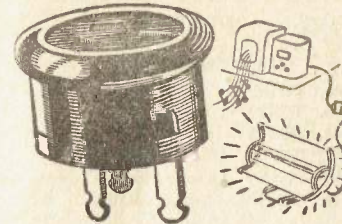
Cat. No. TG112 **1/-** ea.

Type with earth strip (for 3-wire flex).
Cat. No. TG113 **1/6** each



CONNECTORS. ETC.

PLUGS, DOUBLE THREE-PIN



A useful plug where it is desired to take two leads from one three-pin socket. The plug illustrated is fitted to the appliance or radio cord. A standard 3-pin plug cap can then be inserted into the top of it.
Cat. No. TG100 .. **2/-**



CONVERSION ADAPTORS

These Conversion Adaptors will be found useful to the general public, besides appliance salesman, etc. They enable a radio set with a three-pin plug to be used from a two-pin socket, etc.

Cat. No.	Fits into.	Takes.	Price.
TG500	3-pin	2-pin Tee	—
TG501	3-pin	2-pin Prll.	3/7
TG502	3-pin	Lamp Prll.	3/6
TG503	2-pin Tee	2-pin Prll.	3/-
TG504	2-pin Tee	3-pin	3/11
TG505	2-pin Tee	Lamp Sock.	2/10
TG506	2-pin Parallel	3-pin	4/-
TG507	2-pin Parallel	2-pin Tee	—
TG508	2-pin Parallel	Lamp Sock.	2/11
TG509	Lamp Sock.	Adaptor 2-pin Tee	—
TG510	Lamp Sock.	Adaptor 2-pin Prll.	3/7
TG511	Lamp Sock.	Adaptor 3-pin	4/2

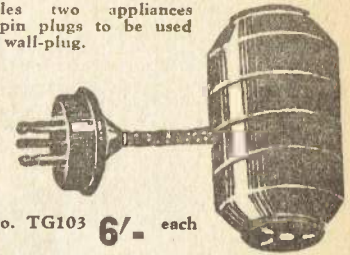
CONNECTORS FOR A.C. MAINS



This two-piece Connector gets over the difficulty of joining two power leads, etc. Made of best bakelite, they are strong and easy to pull apart.
Cat. No. TG18—Complete **2/3**

LAMPHOUSE 2-WAY ADAPTORS

Enables two appliances with 3-pin plugs to be used from a wall-plug.



Cat. No. TG103 **6/-** each

Similar to above but for two pin (Tee) plugs.
Cat. No. TG104 .. **6/9**

CONNECTORS—2-WIRE BLOCK

Porcelain Insulated Connector for joining wires, etc.



Cat. No. TG29—Single Wire .. **6D.** each

Cat. No. TG28—Two Wire .. **10D.** each

Cat. No. TG27—Three Wire **1/3** each

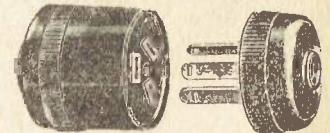
CONNECTORS FOR A.C. LEADS



Two-piece Cord Connectors (parallel pin) for joining mains. flex. Polarised type.

Cat. No. TG20— **2/3** each

CORD CONNECTORS (3.Wire)



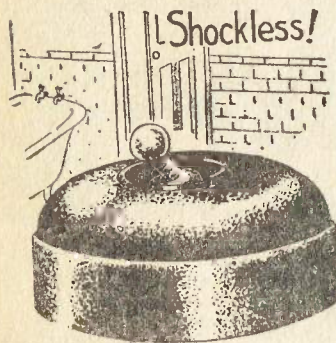
Cord Connectors for joining three-wire cord. Moulded in bakelite. Titegrip. N.Z.-made.

Cat. No. TG25/90—Complete .. **3/-** ea.

Cat. No. TG25—Body only .. **2/-** ea.

Cat. No. TG90—Plug Top .. **1/-** ea.

ELECTRICAL SWITCHES

SWITCHES—INSULATED
ELECTRIC

Shockless!

Cat. No. TG123—5-amp., 1-way	2/8
Cat. No. TG124—10-amp., 1-way	3/6
Cat. No. TG125—15-amp., 1-way	7/6
Cat. No. TG121—5-amp., 2-way	3/3
Cat. No. TG122—10-amp., 2-way	5/6

METAL COVER TYPE, Ox. Copper Finish—
Cat. No. TG134—10-amp., 1-way

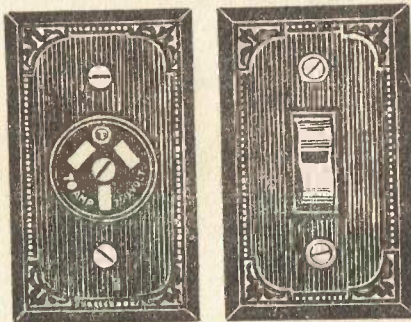
FLUSH SWITCHES AND
PLUGS

SWITCHES ONLY.

Cat. No. TG169—5-amp. Brown ..	2/6
Cat. No. TG171—5-amp. Ivory ..	3/-
Cat. No. TG172—10-amp. Brown ..	2/6
Cat. No. TG173—10-amp. Ivory ..	3/-
Cat. No. TG174—5-amp. Brown, 2-way	3/3
Cat. No. TG175—5-amp. Ivory, 2-way	3/6

PLUG BASES ONLY.

Cat. No. TG177—3-pin Brown Bases ..	2/4
Cat. No. TG178—3-pin Ivory Bases ..	2/9



PLATES FOR SWITCHES AND PLUGS.

Cat. No. TG186—Ivory Bakelite, Classic type, for 1 switch ..	1/6
TG187—Ivory Bakelite, Classic type, for 2 switches ..	3/6
TG188—Ivory Bakelite, Classic type, for 3 switches ..	5/6
TG189—Ivory Bakelite, Classic type, for 1 switch and 1 plug ..	3/6
TG194—Ivory Bakelite, Classic type, for 1 plug ..	2/3
TG195—Brown Bakelite, for 1 switch, Classic type ..	1/6
TG196—Brown Bakelite, for 2 switches, Classic type ..	3/-
TG197—Brown Fancy Screws ..	2d. each
TG198—Ivory Fancy Screws ..	3d. each
TG190—Single Gang Boxes ..	1/8
TG191—Double Gang Boxes ..	3/-
TG192—Triple Gang Boxes ..	4/3

INSULATED SCREW EYES.

The wiring regulations state that all flexible cords running along walls and ceilings must be supported by an insulated screw eye every 12 inches. Well, here they are:—

Cat. No. TS421 .. 5D. each



CEILING SWITCHES.

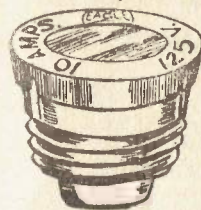
BEST QUALITY.

Cat. No. TG127—1-way	7/6	each
Cat. No. TG128—2-way	9/6	each

CORDS FOR
CEILING
SWITCHES

Spare Cords for Ceiling
Switches.
Cat. No. TG116 8D. each.

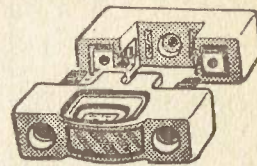
ELECTRICAL SUNDRIES

FUSES, ELECTRIC RANGE FUSES FOR SWITCHBOARDS,
ETC.

Screw Type Fuses are used on nearly all makes of electric ranges and other electrical appliances.

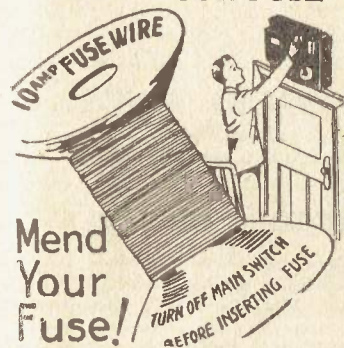
Cat. No. TG40—5 amp. 10D. ea.

Cat. No. TG41—10-amp. } ALL 10D. each
Cat. No. TG42—15-amp. }
Cat. No. TG43—20-amp. }



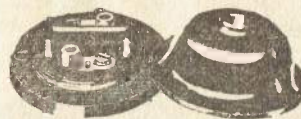
2-piece Fuse Blocks.
Cat. No. TG160—5-amp. .. 2/7 each
Cat. No. TG161—10-amp. .. 2/7 each

MEND YOUR FUSE



TG46—5 amp., on card	2d. each
TG47—10 amp., on card	2d. each
TG48—15 amp., on card	2d. each
TG350—3 amp. (1lb. reels)	3/9 ea.
TG351—5 amp. (1lb. reels)	3/3 ea.
TG352—10 amp. (1lb. reels)	2/6 ea.
TG353—25 amp. (1lb. reels)	4/6 ea.
TG354—50 amp. (1lb. reels)	4/5 ea.

CEILING ROSES



Bakelite Ceiling Roses for electric light pendants.

Cat. No. TG32 .. 1/6 each

FLANGES

Metal Conduit Flanges to fit 3/8 in. Conduit.
Cat. No. TN1 w/male thread .. 4D. each

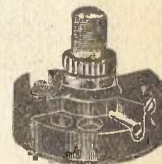
Cat. No. TN2 w/female thread 4D. each

ERA BLOCKS

Cat. No. TG78—Era Blocks, with connectors .. 2/6

TABLE LAMP SWITCH

Small Push Button Switch for mounting in the base of table lamps, etc. Single hole mounting.



Cat. No. TG117—3/9 each

WOOD BLOCKS

Round and rectangular Wood Blocks for mounting switches, ceiling plates, etc. Carefully made and well finished. Recessed. (Made in N.Z.)



Cat. No. TG79—3 1/2 in. round ..	5D. each
Cat. No. TG83—3 1/2 x 3 1/2 square ..	8D. each
Cat. No. TG80—6 x 3 rectangular ..	10D. each
Cat. No. TG81—9 x 3 rectangular ..	1/3 ea.
Cat. No. TG82—6 x 6 square ..	1/9 each

WIRES, CABTYRE FLEX

Heavy rubber-covered Circular Flex for extensions in workshop. Flexible. 11/012.

Cat. No. TW75—2-wire	1/4 yd.
Cat. No. TW76—3-wire	1/10 yd.

WORKSHOP FLEX

23/0076 Flex. Heavily insulated and protected overall with stout braid, waterproofed.

Cat. No. TW96—2-wire	1/4 yd.
Cat. No. TW95—3-wire	1/10 yd.

WIRES — CABLES

FLEX for EXTENSIONS



For 230-volt supply. Handy for extending lights, etc. 23/.0076.

Twin Twisted Cotton-covered Eng. Rubber, Insulated
Cat. No. TW70 10 D. yard

Ditto P.V.C. Insulated—
Cat. No. TW165 1/ yard

WIRES, V.I.R. CABLE

Cat. No.	Yard.	100 yard coil.
TW77—1/.044 (1/18)	4d.	
TW78—7/.029 (7/21)	8d.	
TW79—3/.036 (3/20)	6d.	
TW80—7/.036 (7/20)	9d.	
TW81—7/.044 (7/18)	1/1	

TRU-RIP FLEX



Thin Plastic-covered Flex. Two wires laid flat. Handy for wiring Table Lamps, etc.

Cat. No. TW172 10 1/2 D. yard.

WIRES, HEATING



23/.0076 Rubber-insulated Asbestos-covered, heating flexible. Covered over all with a glazed cotton braid. Used for toaster and other appliance cords.

Cat. No. TW66—2-wire	..	..
Cat. No. TW67—3-wire	..	..
Cat. No. TW71—40/0076, 2-wire	..	..
Cat. No. TW72—40/0076, 3-wire	..	..
Cat. No. TW73—70/0076, 3-wire	..	..

RANGE WIRING WIRE

Asbestos-covered Wire for internal wiring of electric ranges, backs of fires and in other places subject to heat. 3/.036.

Cat. No. TW85 1/8 yard

WIRE, FLEXIBLE.

Two and three-wire. 23/.0076 P.V.C.. Flexible, for extensions, appliances, etc. Each core is P.V.C. insulated braided overall.

Cat. No. TW90—2-wire 1/ yard

Cat. No. TW169—3-wire 1/6 yard

RADIO WIRES

See Page 72

MOTOR-CAR CABLES

Insulated and Cambric covered. Oil and heat resisting. Standard conducted Rubber Insulator. Used for Wiring Motor-cars and for any other purposes requiring a hard-wearing flexible cable.



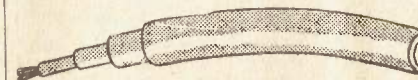
Cat. No. TW300 2.75 M.M. Single—
3 D. per ft.

Cat. No. TW301 4 M.M. Single—
5 D. per ft.



Twin Cable under one cover, specifications as above.

Cat. No. TW302 5 D. per ft.



Rubber-covered Ignition Cable, multiple covers of high-grade Rubber. 7 M.M.

Cat. No. TW303 6 D. per ft.

CHAIN SETS — FITTING ACCESSORIES

WALL BRACKETS



Plain plated 9in. Wall Brackets, complete with Lamp-holder.

Cat. No. TF800 8/6 each

As above, but better quality—
Cat. No. TF801 13/9 each

SHADE CLIPS.



Can be attached to any Lampshade. By using this Clip an ordinary lampshade can be converted to fit a reading lamp without the usual shade carrier.

Just clips straight on to the globe.

Cat. No. TF381 6 D. each

SHADE HOLDER

Shade Holders for table lamps. Oxidised finish. Hinged in the centre so that the shade can be tilted.

Cat. No. TG36 2/3 ea.

Similar to the above, but chrome plated.

Cat. No. TG37 3/3 ea.



NIPPLES

Threaded Brass Tube for making table lamps, etc. Fit standard 3/4in. lampholders.

Cat. No. TG200—6 D. each



SHADE HOLDERS

For fixing Shades to table lamps. Non adjustable type.

Cat. No. TG38 2/3 each

CABLE CLIPS, BUCKLES.

Cat. No. TG514 1d. each, 10d. doz.

GALLERIES FOR LAMP SHADES

All the following have a standard 1 1/2in. hole for fitting on to standard size lamp-holders.

Brown Bakelite Moulded Gallery, 2 1/2in.—

Cat. No. TF350—
1/3 each

Cat. No. TF351—Ditto, 3 1/2in. .. 3/9

Cat. No. TF352—Ditto, 4 1/2in. .. 4/-

Cat. No. TF356—Ditto, 4 1/2in. white .. 4/3

METAL GALLERIES AS ABOVE.

Oxidised Copper.

Cat. No. TF353—2 1/2in. .. 1/3

Cat. No. TF354—3 1/2in. .. 3/6

Cat. No. TF355—4 1/2in. .. 4/9

Cat. No. TF379—Ditto, with hook .. 6/-

CHROME FINISH.

Cat. No. TF357—2 1/2in. .. 1/9

Cat. No. TF358—3 1/2in. .. 4/9

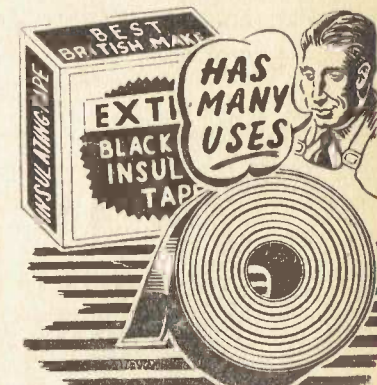
Cat. No. TF359—4 1/2in. .. 5/3

CHROME CEILING GALLERIES.

Cat. No. TF360—3 1/2in. .. 7/6

Cat. No. TF361—4 1/2in. .. 8/9

BLACK INSULATING TAPE



Has many uses, such as binding hockey sticks, axes, etc., besides being an excellent means of insulating. 2oz. rolls.

Cat. No. TS237 — roll

Cat. No. TS236A—5yd. rolls .. 10 D. roll

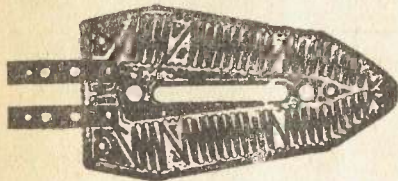
Cat. No. TS238—8 oz. rolls .. 2/9 roll

ELECTRICAL REPLACEMENT PARTS

STANDARD PARTS

Will fit or can be adapted to many brands of appliances.

ELECTRIC IRON ELEMENTS



The Element in the iron is the part that does all the work and practically the only part that goes wrong. These Elements are specially constructed for long service, and will fit all standard makes of irons.

Fittall Type Iron Elements.

Cat. No. TE508 **4/6** each

Iron Elements, 110v.
Cat. No. TE504 **8/8** each

APPLIANCE TERMINALS



Appliance Terminals, for fitting in the back of electric irons, etc. Supplied complete with nuts. Cat. No. TE400 **8D.** each

ELECTRIC IRON HANDLES

Wooden handles for electric irons—will fit practically all makes.
Cat. No. TE405 **1/9** each

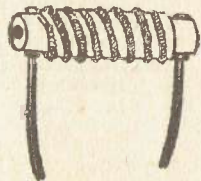
ELECTRIC JUG ELEMENTS

Spiral Windings for Electric Jugs. 230 volt.
Cat. No. TE514—

1/-

Porcelain Bobbins for Jug Elements.

Cat. No. TE515—
1/3 each



Complete Jug Elements, consisting of winding on bobbin and connecting rods.
Cat. No. TE560 **4/3** each

THE "WIRELESS" JUG ELEMENT



Cannot burn out! This Element is made on an entirely new and patented principle. Having no element wire, cannot burn out. Easy to fit.
Cat. No. TE517 **10/-** each

SPEEDEE JUG ELEMENTS

For Speedee Enamelled Jugs.
Cat. No. TE516 **9/6** each

RUBBER RINGS

For fixing Elements in metal jugs, such as Speedee, Ultimate, etc.
Cat. No. TE500 **6D.** each

APPLIANCE CORDS

Cords for electrical appliances, irons, toasters, jugs, etc., etc. Fitted with "Fittall" type appliance plug on one end and a wall plug on the other end.



Cat. No.
TE800—Cord with 2-pin parallel Cap **4/9**
TE801—With two-pin tee cap **4/8**
TE803—With three-pin cap .. **6/6**
TE802—With lamp socket adaptor **5/6**

(Note.—The above are fitted with 6 feet best cord. Extra long cords can be supplied. Add 1/6 for each extra yard required.)

ELEMENTS AND SPARES

Spare Parts for all makes of Appliances are stocked (when available). Send us your enquiries or orders.

RADIATOR ELEMENTS

SPIRAL WINDINGS.

Spiral Element Windings for re-winding Radiator Elements, etc. Made of best British resistance wire.

TE509—230 volt, 600 watt .. **2/-**
TE510—230 volt, 750 watt .. **2/3**
TE511—230 volt, 1000 watt .. **2/6**

RADIATOR ELEMENTS

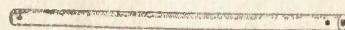


Large tile, 9 1/2 x 3 1/2, 1000 watts. Complete.
Cat. No. TE519 **9/1**
Small tile, 7 1/2 x 3, 1000 watts.
Cat. No. TE518 **8/1**



Pencil Rod Elements, 1000 watts, 10 in. Komfee Brand.
Cat. No. TE520 **12/6**
Ditto, 12 in., 1000 watts.
Cat. No. TE521 **12/6**

PORCELAIN ELEMENT BARS



Round Porcelain Bars for Radiator Elements, etc. Unwound. Size 9 1/2 in. x 1/2 in. diam. 5/32 in. hole.
Cat. No. TE502 **4/3** each

ELEMENT FORMERS

CONE TYPE. Heavy porcelain cone type radiator formers. Height 4 in., diameter 2 in. Wide recess to take standard 1000 watt wire element. No base or supports provided. Porcelain drilled at both bottom and top to simplify the attaching of spiral.

Cat. No. TE506—

5/3



RANGE ELEMENTS

Electric Range Hot Plates. Elements that will fit all makes of ranges. Speedee to fit any make of range, 8 in. to 11 1/2 in. diameter. 1750 watts.

Cat. No. TE550 **38/6**
Ditto, 6 in. to 8 in. diameter, 900 watts.
Cat. No. TE551 **32/-**

CARBONS FOR HEALTH LAMPS

Spare Carbons for Pifco and other Arc type Health and Sun-tan Lamps.
Cat. No. TE599 **4/-** pair

ULTIMATE OVEN ELEMENTS FOR RANGETTES

Cat. No. TE527 **£1/5/1**
HOTPLATES FOR RANGETTES.
Cat. No. TE570—Ultimate 6 in. .. **£1/8/2**
Cat. No. TE571—Ultimate 8 in. .. **£1/13/7**
Cat. No. TE523—1000 watt, 10 in. x 1/2 in. Pencil type Radiator Elements .. **8/-**

DORMEYER

Spare Bowls, Clear Glass, for Dormeyer Electric Mixers.
Cat. No. TE833—Large **17/-**
Cat. No. TE834—Small **10/6**

KNIGHT CLEANER SPARES

Cat. No. TE238—Carbon Brushes .. **1/-**

ULTIMATE RADIATOR ELEMENT

10 in. Element, 1000 watt, with fixing screws.
Cat. No. TE523 **8/-**

OXFORD ELEMENT

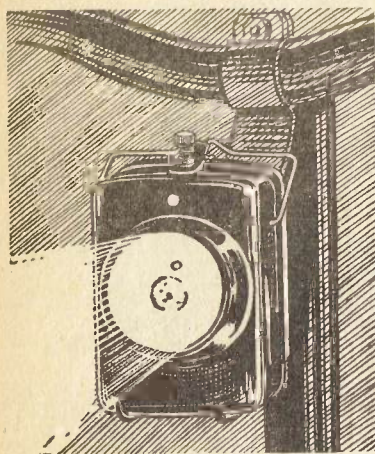


9 1/2 in. Replacement Element, 1000 watt.
Cat. No. TE512 **5/9** each

INSULATING BEADS

Fishline white Insulating Beads. Suitable for insulating elements, lead-ins, grillers, irons, soldering irons, etc.
Cat. No. TE410 **2D.** dozen

CYCLE LAMP



British made Cycle Lamp, with fixing bracket. Moulded back. Switch on top. Complete with bulb.

Cat. No. TT802—Complete with Bulb and Battery **5/-** each

"MANDAW," CYCLE LAMPS

Black sprayed case to take standard cycle battery. Rigidly constructed, with strong clip for quick attachment to cycle. Reflector 2½ in. diameter. English make.

TT805—Complete with Bulb and Battery **5/-** each

PIFCO TORCHES



STANDARD SIZE ENGLISH TORCHES

Ribbed design, nickel-plated body with black top and bottom caps. Two position switch, either intermittent or permanent light. Size 6½ in. x 1½ in. diam. Takes two Standard Cells (ER950).

Cat. No. TT818a—Complete with globe and batteries **7/3** each

BABY SIZE ENGLISH TORCHES

Similar to above, except smaller size. 5½ in. x 1½ in. diameter Takes two Baby Cells. (ER935).

Cat. No. TT817a—Complete with globe and batteries **5/11**

TOASTER ELEMENTS

"EVEN-GLO" ELEMENTS

There's an "EVEN-GLO" ELEMENT to fit every make of Toaster. Made with good quality mica and English Nichrome Ribbon, these elements are a first grade production. If you are not too sure as to what make of element your toaster takes, forward us the old one and we will make a new one to pattern.

Cat. No. TE1003—Speedee Type .. 9/11 ea.
 Cat. No. TE1004—Hotpoint Type .. 10/6 ea.
 Cat. No. TE1006—Hi-Speed Type .. 9/6 ea.
 Cat. No. TE1007—Magnet Type .. 11/- ea.
 Cat. No. TE1008—Hecla Type .. 9/6 ea.
 Cat. No. TE1009—Universal 4-Strip 10/6 ea.
 Cat. No. TE1010—Westinghouse Type 9/6 ea.
 Cat. No. TE1011—Effesca 9/6 ea.
 Cat. No. TE1012—Servex 10/6 ea.
 Cat. No. TE1013—Ultimate 11/- ea.
 Cat. No. TE1014—Majestic Type .. 10/6 ea.
 Cat. No. TE1015—Monarch Type (2 Strip) 10/6 ea.

KETTLE STRIPS

Cat. No. TE1030—Hecla Kettle Strips 8/6 ea.
 Most kettles are fitted with two of these strips and several are fitted with three.

PERCOLATOR ELEMENTS

Cat. No. TE1040—Elements to fit Universal type Coffee Percolators **8/8** each

BOWL FIRE ELEMENTS

"FITZALL" BOWL FIRE ELEMENTS

This type of Element can be adapted to numerous makes of Bowl Fire Radiators. Radiators with elements using the plug-in or screw-in base may, with slight adaption take this type of element. Distance between screw holes on legs of former 1½ in. 750 watt spiral.

Cat. No. TE505—
8/6 ea.



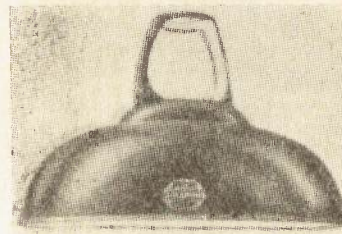
3-HEAT SWITCH.

Flush Range Switch, suitable for Neeco and other ranges, grillers, etc., employing 3 heat flush switches. Dimensions 1½ in. x 1½ in. Complete with lock nut and black pointer knob.

Cat. No. TG513— .. **15/-** each

COOLICON SHADES

Coolicon Shades are ideal for all lighting, whether in the home, warehouse or factory. Four Types are available, as follows:—



THE GREEN COOLICON

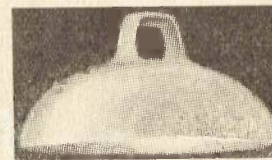
This shade is made of sheet steel, vitreous enamelled green outside and white inside, with an open type gallery incorporated, allowing some light to pass upwards to illuminate the ceiling.

9in. Size—Takes 40/60 watt lamp.
 Cat. No. TF1006 **9/4**

11in. Size—Takes 75/100 watt lamp.
 Cat. No. TF1008 **10/9**

THE WHITE COOLICON

This type is made of plastic and mounted on a special gallery so arranged that it is not affected by the heat of the lamp. It will not discolour and is practically unbreakable.



9in. Type—Takes 40/75 watt globe
 Cat. No. TF1056 **6/6**

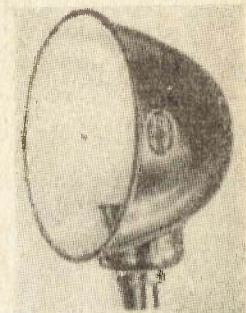
11in. Type—Takes 100/150 watt globe.
 Cat. No. TF1058 **8/9**

All the Coolicons outlined above have a 1½ in. hole gallery, for mounting on any shade carrier or lamp holder.

BENJAMIN REFLECTORS

Benjamin Local Lighting Reflectors are recommended for the lighting of areas where the work in hand requires increased illumination or where obstructions make other lighting insufficient.

These shades are made of heavy gauge sheet steel, crystal porcelain enamel; white inside and green outside. Standard 1½ in. hole for easy attachment to ordinary lamp holder.



The types available are as follows:—

EXTENSIVE REFLECTOR, 6½ in. diameter, takes 60/75 watt lamp

Cat. No. TF8347 **12/6**

HORIZONTAL REFLECTOR, 6½ in. (as illustrated), takes 15/75 watt lamp.

Cat. No. TF8329 **13/3**

EXTENSIVE REFLECTOR, 7½ in. diameter. Takes 100 watt lamp.

Cat. No. TF8367 **15/3**



INTENSIVE REFLECTOR, 7½ in. diameter. Takes 100 watt lamp.

Cat. No. TF8368 **12/9**

OPAL SHADES. BAKELITE TYPE.

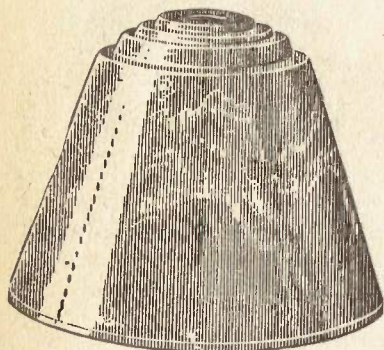


Moulded in New Zealand, these bakelite shades take the place of the old glass opal shades. Very strong and light. Supplied in plain white and pastel tints.

White—Cat. No. TF560 .. **1/6** each

Tinted—Cat. No. TF561 .. **1/9** each

BEAUTIFUL SHADES



Attractive translucent Bakelite Lamp Shades in the following colours: Pink, Mauve, White, Green, Blue, Yellow. Size 7in. diameter, 5in. high.

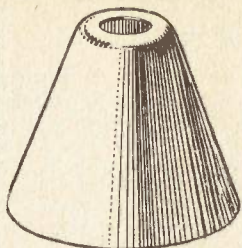
Cat. No. TF562 .. **2/-** each

“CLIP ON” LAMPSHADES.



Made of translucent bakelite, these shades are fitted with a wire clip which clamps direct on to the lamp bulb, making them ideal for adjustable table lamps, etc. Available in most popular colours. Diam. 5 1/2 in.

Cat. No. TF255 .. **2/6**



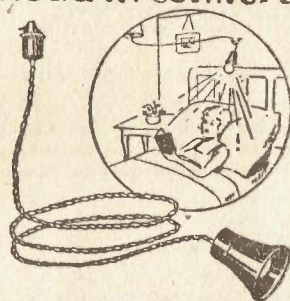
BAKELITE SHADES

Cat. No. TF661—
4 1/2 in. high, 5 1/2 in. diam.—Blue

1/9 each

Lighting EXTENSION CORDS.

Read in Comfort!

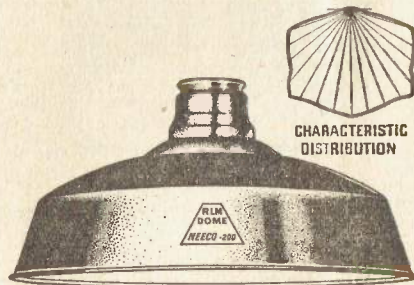


For taking the light where you want it. Ten feet long and supplied with an insulated shock-proof lampholder. Extra long lengths can be made up at 1/- yard extra.

Cat. No. TE51 .. **6/8**

Cat. No. TE52 (with switch holder) **11/8**

R.L.M. REFLECTORS



CHARACTERISTIC DISTRIBUTION

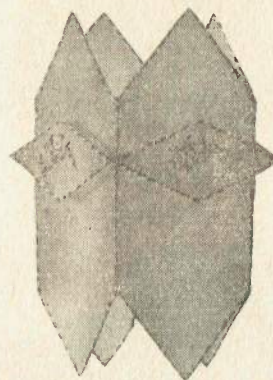
Steel Reflectors, enamelled green outside, white inside.

Cat. No. TF925—12 in. **22/6**

Cat. No. TF926—14 in. **27/6**

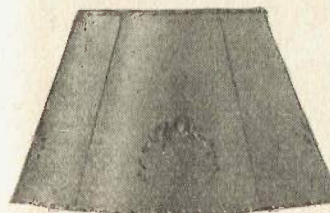
MODERN LAMPSHADES

Here we list modern Lamp Shades manufactured from the latest translucent parchments. All Shades listed are washable and can be supplied in the following colours: Rose, Tango (Orange), Rust (Orange-Brown), Gold, Green, Blue, Clover (Mauve).



Bright Hall Lamp Shade. For halls, passages, etc. Size 10in. x 14in.

Cat. No. TF605 .. **12/6** each



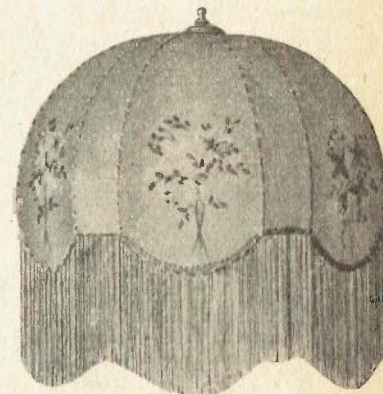
A dignified Shade in the lower-priced class. Diam. 12in., height 7 1/2 in.

Cat. No. TF604 .. **6/-** each



One of our most popular models. Diam. 14in., height 7in.

Cat. No. TF603 .. **11/-** each

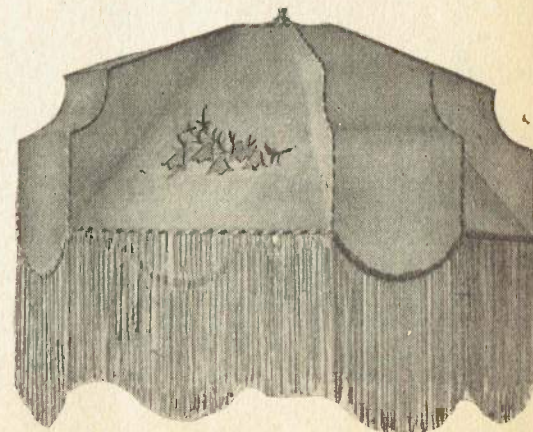


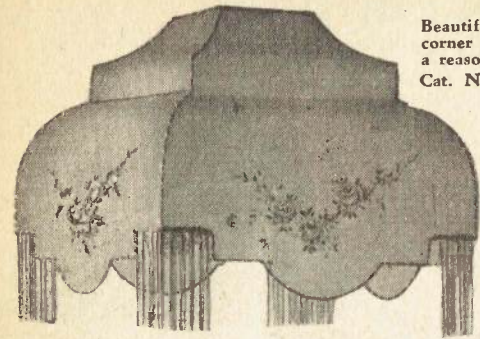
Attractive Decorated Shade, with fringe. Diam. 14in., overall depth 14 1/2 in., fringe 5in.

Cat. No. TF600 .. **23/-** each

Diam. 18in. This modern Shade will enhance the appearance of any room.

Cat. No. TF626 .. **28/6**

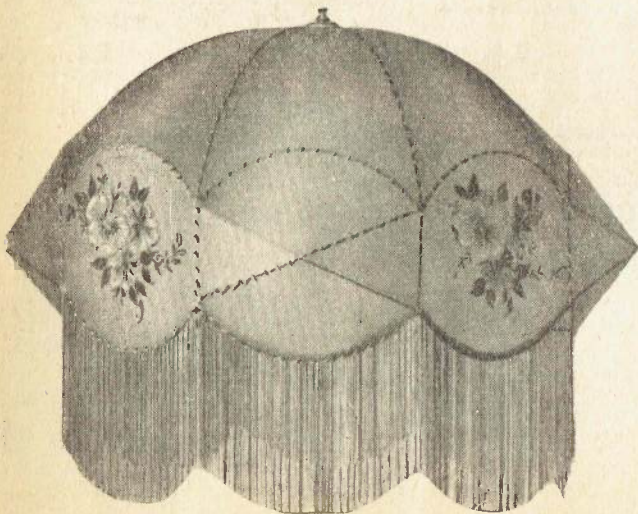
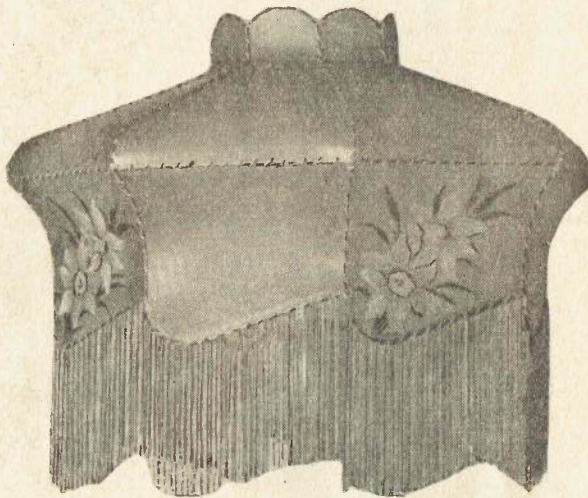




Beautiful Shade of tasteful design. Size from corner to corner, 18in. This is a large Shade at a reasonable price.
Cat. No. TF622 **15/6**

Another large Shade suitable either for hanging or for floor standard. Diam. 22in., depth 12½in., plus fringe 6in.

Cat. No. TF624
45/-

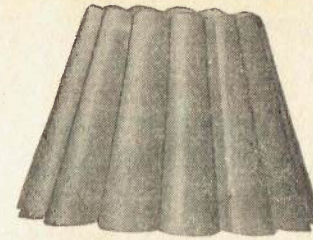


Large Shade for big room or for Floor Lamp. Made from best washable parchment. Diam. 24in., depth 12in., plus fringe 6in. Supplied in all listed colours.

Cat. No. TF623—
45/-

“ENSIGN” MIRALITES REFLECTORS.

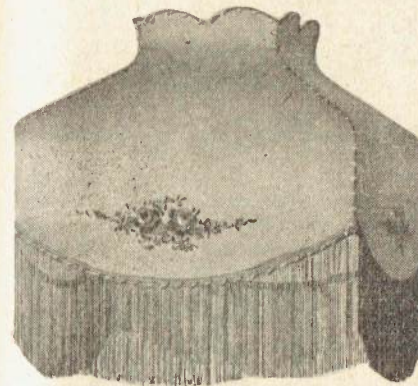
For economical lighting for windows, stores and home. Special arrangement of mirrors in these reflectors enables you to obtain up to 33-1/3 per cent. more light. Miralites for ordinary lampholders. No special fittings required.



Our most popular shade for general lighting purposes. Made in different sizes.

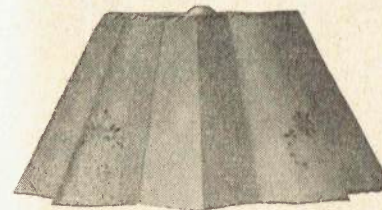
Cat. No. TF614—
8in. Diameter. Frost-Parchment **9/6**

Cat. No. TF615—
10in. Diameter. Frost-Parchment **12/6**

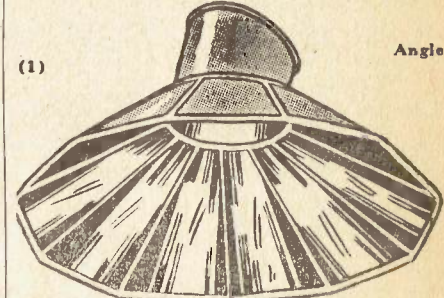


Modern Shade in frosted parchment. Diam. 18in., overall depth 15½in., fringe 5in.

Cat. No. TF601 **16/6**



A delightful shape. Diam. 14in., height 7in.
Cat. No. TF602 **6/9** each

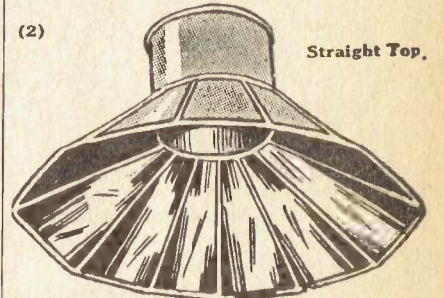


(1)

Angle

Angle window lighting reflector. The top of this type is angled enabling the reflector to be placed in front of a window so that the light will be reflected directly on the goods displayed in the window. For lamps 75 to 150 watts. Size 11in. x 5in.

Cat. No. TF251 **20/-** each

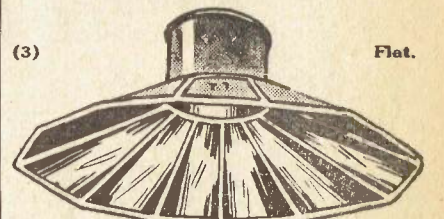


(2)

Straight Top.

Straight top type. For use directly above special displays. Over machines, desks, etc.; anywhere where a direct intensive light is required for lamp 75-150 watts. Size 11 x 5½in.

Cat. No. TF252 **20/-** each



(3)

Flat.

Straight top type for use where a wide, even distribution of light is required, such as in stores, shops and in the home, etc. Supplied in two sizes.

Cat. No.—
TF254—13 x 13½in. (75-100 w. lamp) **20/-**

Mail all orders to the Electric Lamphouse Ltd., 11 Manners Street, Wellington.

PARCHMENT LAMPSHADES

Low-priced attractive Lamphshades, Parchment with wire frames. Illustrations give shape, but decorations are in numerous designs. Colours available are: Pink, Blue, Green, Brown, Orange, Yellow and Red.

Types marked "hole" are for standard hanging lights, while types marked "clip" are for clipping on to a Lamp Bulb, as used for Table Lamps, etc.

Shape 1.—Bottom diam., 10in.; Top diam., 5in.; Height, 7in. "Standard Empire."

Cat. No. TZ1P—Plain (Hole) 3/11 ea.

Cat. No. TZ1D—Decorated (Hole)—

4/9 ea.

Cat. No. TZ1AP—Plain (Clip) 3/11 ea.

Cat. No. TZ1AD—Decorated (Clip)—

4/9 ea.



Shape 3.—Bottom diam., 8in.; Top diam. 4in. Height, 6in. "Small Empire."

Cat. No. TZ3P—Plain (Hole) .. 3/9 ea.

Cat. No. TZ3D—Decorated (Hole) 4/6 ea.

Cat. No. TZ3AP—Plain (Clip) .. 3/9 ea.

Cat. No. TZ3AD—Decorated (Clip) 4/6 ea.

Shape 4.—Bottom diam., 6½in.; Top Diam., 2½in.; Height, 5½in. (Midget Empire).

Cat. No. TZ4P—Plain (Hole) .. 2/11 ea.

Cat. No. TZ4D—Decorated (Hole) 3/6 each

Cat. No. TZ4AP—Plain (Clip) .. 2/11 ea.

Cat. No. TZ4AD—Decorated (Clip) 3/6 ea.



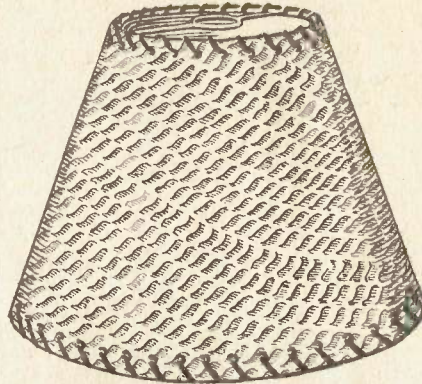
Shape 6.—Bottom diam., 14in.; Top diam. 6in.; Height, 6in.

Cat. No. TZ6P—Plain (Hole) 7/6 ea.

Cat. No. TZ6D—Decorated (Hole) 9/- ea.

Cat. No. TZ6AP—Plain (Clip) 7/6 ea.

Cat. No. TZ6AD—Decorated (Clip) 9/- ea.



Shape 7.—Bottom diam 5½in.; Top diam., 2½in.; Height, 4½in. (Candle).

Cat. No. TZ7P—Plain (Hole) .. 3/6 ea.

Cat. No. TZ7D—Decorated (Hole) 4/3 ea.

Cat. No. TZ7AP—Plain (Clip) 3/6 ea.

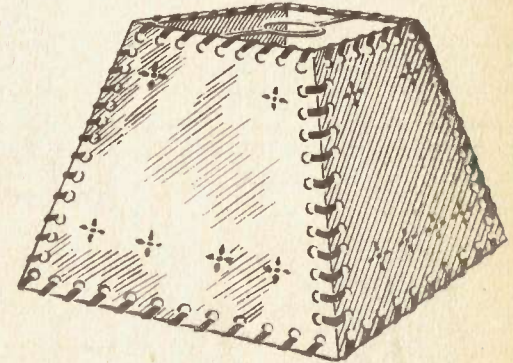
Cat. No. TZ7AD—Decorated (Clip)—

4/3ea.

Shape 8.— Bottom 10in.; Top, 6in.; Height, 7½in. Large Square, Leather thonged.

Cat. No. TZ8P—Plain (Hole) 10/6 ea.

Cat. No. TZ8D—Decorated (Hole) 12/6 ea.



Shape 15.—Bottom, 10in.; Top, 4in. Height, 6in. Squat Empire, especially suitable for Table Lamps.

Cat. No. TZ15P—Plain (Hole)—

4/11 ea.

Cat. No. TZ15D—Decorated (Hole) 5/11 ea.

Cat. No. TZ15AP—Plain (Clip)—

4/11 ea.

Cat. No. TZ15AD—Decorated (Clip) .. 5/11 ea.

Shape 17.—Bottom 7in.; Top, 4½in. Height, 6in. Small square.

Cat. No. TZ17P—Plain (Hole) .. 5/11 ea.

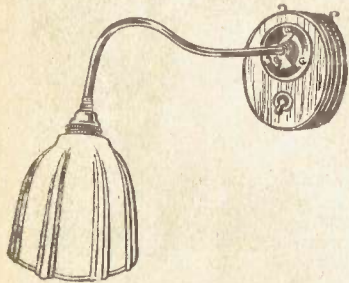
Cat. No. TZ17D—Decorated (Hole) .. 7/11 ea.



BETTER LIGHTS

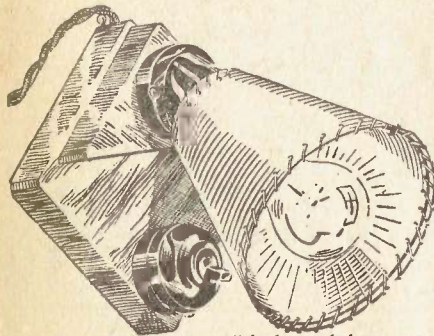


BEDSIDE LAMP, for standing on table at bedside, or for decorative reading lamp. Mounted on polished rimu base. Diam. of base 7in. Supplied complete with 3 yards flexible cord. Switch mounted on base.
Cat. No. TF901 **£1/11/6**



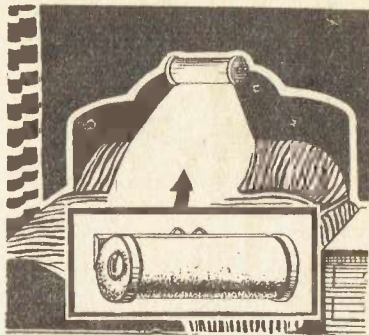
WALL LAMP, supplied with 3 yards flexible cord. Polished wood base, 5½in. diam. Bracket extends 9in. Bakelite shade. Switch mounted flush in base.
Cat. No. TF902 **£1/17/6** each

WALL LAMP.



Neat Wall Lamp, polished wood base, complete with switch, shade, cord and lamp.
Cat. No. TF910— **32/6** each

BED LAMP.



Modern and attractive Bedroom Lamp. Can be hung on bed-rail or screwed to wall. Wood base and sides. Parchment shade. Length 11in., diameter of shade 3½in.

Cat. No. TF907 **27/6** each

AEROPLANE LAMP



Black wood base 6in. diam. Glass Ball 6in. diam. Plane mounted on chrome support. Supplied complete with 9ft. flexible cord. A novel decorative lamp.

Cat. No. TF903 **67/6** each

PRICES ARE SUBJECT TO ALTERATION !
All prices in this book must be regarded as an indication only—all orders will be executed at ruling prices.

FLOOR LAMPS

Turned in New Zealand from New Zealand wood.

Height to base of Lampholder, 61 in.; diameter of base, 11½ in. Supplied complete with 12 ft. flexible cord. Lampholders with switch and shade holder.

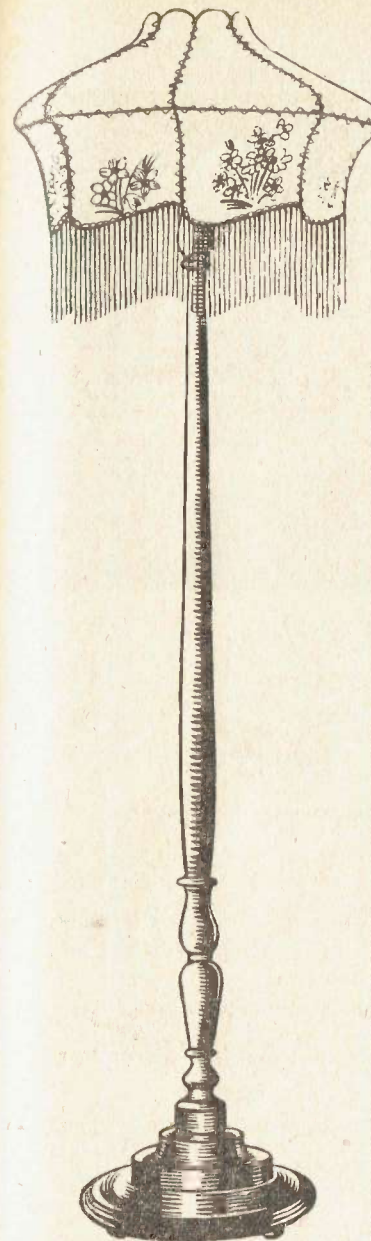
The Lamp Shades are NOT included in the price.

Refer to pages 23 and 24 for suitable shades.

Cat. No. TF920 **£5/19/6**

Cat. No. TF919—(Unfinished) **£3/10/-**

Not mounted, polished or stained.



THE PERLUX "CLAMPLITE"

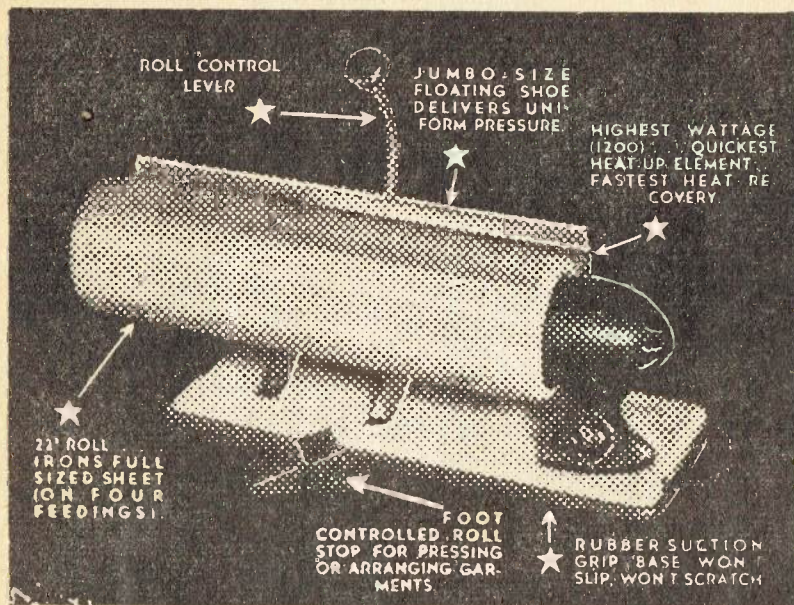


A really handy Reading Lamp which will clip on to the bed rail or will stand on a table. The shade is on a swivel and may be turned up or down. Finished in mottled colours. Complete with switch, lampholder, shade and globe, with approx. 6 feet flex. Moulded in plastic.

Cat. No. TE53 **24/6**

Cat. No. TE53a—Complete with adaptor or plug **25/6**

THE LAMPHOUSE, 11 Manners Street, Wellington, C.1.



Making Ironing a Pleasure

Have more time for leisure

USE AN "IRONETTE" ELECTRIC IRONER

With the "Ironette" any woman can easily cut one or two hours off her usual ironing time; can iron from 50 to 200 lbs. of laundry each week without the least bit of fatigue.

You, like thousands of other housewives, can dispense with the ironing day "Lame" back, sore feet, and that "all in" feeling, by investing in an "Ironette."

And here are 5 features of the "Housewife's Delight."

1. It irons everything—sheets, shirts, ruffled curtains, cottons, silks, woollens, etc.
2. It's portable—weighs only 25 pounds and plugs into an ordinary Hotpoint.
3. It's Safe; Easy to Operate, and occupies only a small space.
4. It's Economical—Uses the same amount of electricity as the ordinary household iron.
5. Each "Ironette" is covered by a 12 months guarantee.

Now is the opportunity to make "IRONING DAY" an "EASY DAY"

With the "IRONETTE."

Cat. No. TE851 £29/-

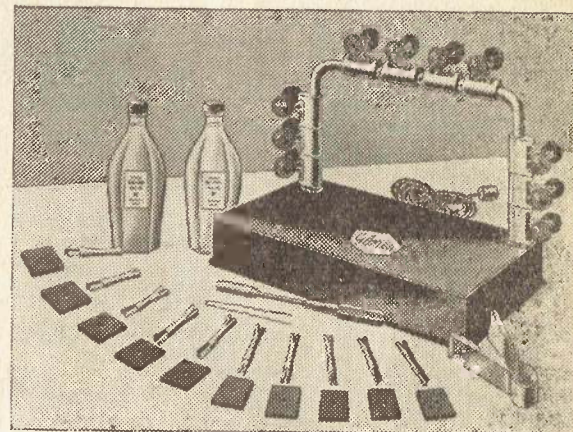
PERM. Your Hair—YOURSELF—at Home

Yes! Now you can cut out those tedious time-wasting hairdressing appointments. All you need is—

The "GLORIA" HOME PERMANENT WAVE Outfit



With the "GLORIA" Outfit you will be able to PERM YOUR OWN HAIR IN YOUR OWN HOME, easily obtaining a PERM of professional quality—waves and curls of lasting loveliness, with self-setting ends. The "Gloria" is ready for service any time of the day or night. The parts of the "Gloria" Outfit are extremely easy to use, and by following the instructions you will immediately be able to "perm" your own hair and also that of other members of the family, if desired!



ASSURES A PERM OF PROFESSIONAL QUALITY. We illustrate the complete outfit above. It is, in principle, the same as used in any modern Beauty Salon. No experience or training is necessary with the "GLORIA" Permanent Wave Outfit. Those who live in the country will find this outfit will soon pay for itself by the saving of time and expense of going to town for perms.

Complete Outfit **£6** only. Cat. No. TE105

Includes: 130-watt, 230-volt Permanent Waving Machine; 10 Heater Clamps; 10 Spring Winding Rods; 10 Rubber Pads; 1 bottle Waving Solution; 1 bottle Setting Lotion; 1 Damper; 1 Winder; 1 Instruction Book. Extra Parts and Refills of Waving and Setting Solutions can be bought separately.

Our Guarantee Protects You! SEND FOR ONE NOW! Spares Always Available!

GLORIA WAVER SPARES

Cat. No.	Each	Each	
Cat. No. TE106—Heating Clamps	4/3	Cat. No. TE110—2½oz. Bottle of Setting Lotion	2/2
Cat. No. TE107—Curling Rods ..	2/2	Cat. No. TE111—10oz. Bottle of Setting Lotion	5/6
Cat. No. TE108—2½oz. bottle of Waving Solution	3/9	Cat. No. TE112—Spare Dampers	4/6
Cat. No. TE109—10oz. bottle of Waving Solution	10/9	Cat. No. TE113—Spare Winders	4/4
		Cat. No. TE114—Rubber Pads	5/- doz.



ELECTRIC CLEANER

Electric cleaning is now within the reach of every home. The "Knight" is a thoroughly efficient, high-grade cleaner—a marvel of beauty, simplicity and SAFETY—yet you get it at about half the usual cost because of our modern buying and selling policy.

We import direct from the factory in England, so as to cut out all intermediate charges and profits. We are proud of this Cleaner, and the fact that we can sell it at approximately £14, because we know of similar makes of cleaners that sell for nearly twice as much.

COMPLETE EQUIPMENT INCLUDES:—

7in. Oval Brush; 8½in. Nozzle; "Nosie Parker"; Curved and Straight Extension Tubes; 5ft. 6in. Covered Flexible Metallic Hose; 15ft. Flexible Heavily Braided Cord, with plug and switch connections.

SUPPLIES DUE AUGUST, 1946.

PRICE, APPROX. **£14**

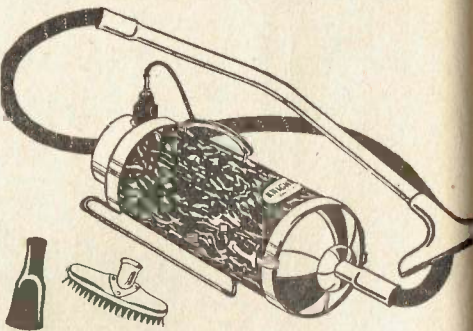
HOMES CLEANER WITH LESS LABOUR.

No pushing, pulling, or lifting of heavy furniture, no stooping, no climbing, straining, or back-breaking beating, no taking down of draperies or curtains if you own a "KNIGHT" ELECTRIC CLEANER.

And the home will be cleaner, freer from dust. The enormous suction power of the "Knight" extracts every particle of dust, grit, fluff, animal hairs, etc., from carpets, upholstered furniture, bookcases, stairs, cupboards, etc.

Don't be a slave—let the "Knight" do the work. Send for one today. Can be used both on AC or DC 230-volt supply.

TRY IT AT OUR RISK!



Let us send you a "KNIGHT" ELECTRIC CLEANER—try it out in your own home, and if you are not satisfied in every way we will refund your money in full, including return delivery charges. Our guarantee is your assurance of fullest protection. You can't lose.

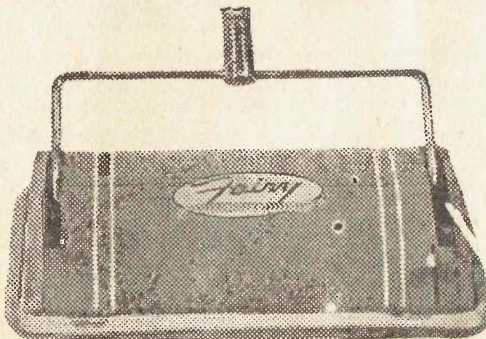
Supplies available about August.

Cat. No. TE200. — PRICE ABOUT **£14**

FAIRY CARPET SWEEPERS (Not Electric)

From end to end of New Zealand come glowing accounts of the "Fairy" (the first New Zealand-made Carpet Sweeper) that's lightening housework for hundreds and hundreds of women throughout the country. The "Fairy" is appropriately named—it works like magic. Carpets, rugs, linoleum, even stained floors can all be cleaned quickly, thoroughly and easily with this new light-weight . . . that's the test of a really good sweeper.

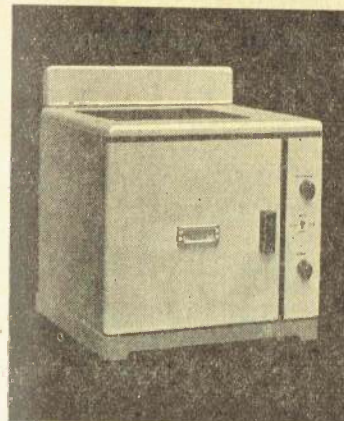
The SELF-CLEANING RRUSH.—This big new "Fairy" feature eliminates for ever the old method of laborious cleaning of the sweeper brush by hand. As the brush revolves it is automatically combed . . . the fluff and dirt, etc., then falling into the pan, which is emptied in the usual way each day.



Cat. No. TU139 **52/3**

ATLAS RANGETTES

Modern Rangettes which will plug in to any heating point. Finished in finest cream enamel. Complete with 6ft. Flex and 3-pin Plug.



	Width	Depth	Height
Oven	12in.	12½in.	12½in.
Cooking Top	17½in.	14½in.	—
Floor Space	17½in.	15½in.	—
Height to Cooking Top—16½in.			

Top Element: 1—10 x 8 inches, 1700 watts.

Oven Element: 800 watts.

Total Loading: 2.5 k.w.

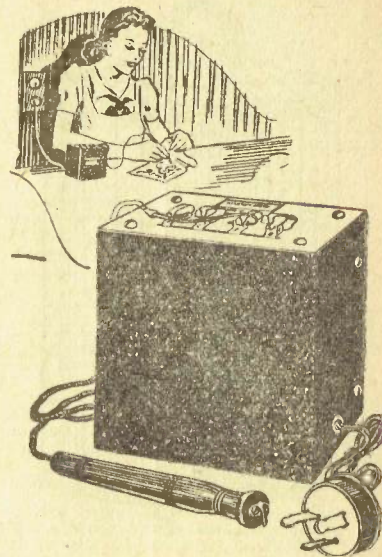
Cat. No. TE32 **£17/18/3**

TABLE LAMP



Table Lamp with back base (wood). Chrome tray and stem. Complete with 3yds. Flex, lamp, shade and adaptor.

Cat. No. TF923 **35/-**

THE "HOMECRAFT"
ELECTRIC POKER MACHINE

For use from standard 230-volt light socket or power point. Point gets very hot and by changing leads on to different terminals heat can be varied for different classes of work. Metal box measures 3½in. x 3in. x 4½in.

The introduction of the Homecraft Poker Machine will undoubtedly advance this art in New Zealand. By using this machine the artist can concentrate all his or her attention on the pokerwork itself, as when the heat is regulated to the required strength it automatically remains at the same heat. This enables the work to be executed at great speed. Homecraft Machines are perfectly safe in use.

Cat. No. TE90 **70/-**

Cat. No. TE91—Spare Points **4D.** each

TE92—Spare Handles, with Points **12/-** ea.

COYLROD WATER HEATERS



Tank Heaters for permanent installation in tanks, water cylinders, etc.

Cat. No. TE540—750 watt **£1/6/-** each

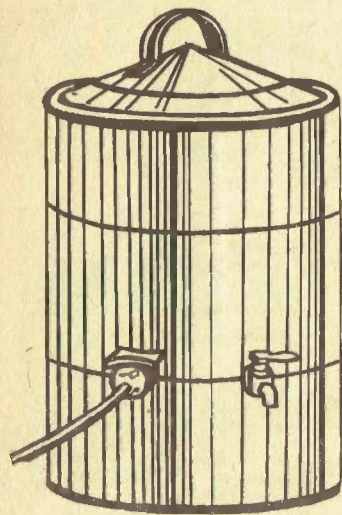
Cat. No. TE541—1000 watt **£1/6/-** each

Cat. No. TE547—1500 watt, 3 heat type **£2/5/-** each

Brass Flanges for fixing above.

Cat. No. TE543 **5/3** set

NO STOKING with THIS Copper!

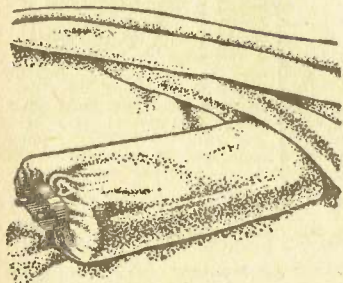


NO SMOKE!
NO WOOD CHOPPING!
NO STOKING!
NO CLEANING FIREPLACES!

Just plug into a hotpoint. Quick, clean and economical. The ideal means of electric washing. Copper is supported in a robust outer iron casing as illustrated. Filled with water and clothes takes approximately 1 hour to boil at summer temperatures, in winter a little longer. The 2,500 watts heating element is housed in special circulating chamber under the copper, which ensures maximum efficiency, quick heating and fast, continuous movement of water right through the clothes as though worked by a motor-driven pump. By this means the clothes are washed quicker and cleaner than in a washing machine. Circulating chamber well lagged for greatest efficiency. Standard finish, dark green, special colours to order. Electric coppers save the cost of a chimney; they are quicker, cleaner, and mean a lot less work. Capacity 12 gallons. Height, 29in. Diam., 19in.

Cat. No. TE64 **£14/19/6**

MONARCH BED WARMER



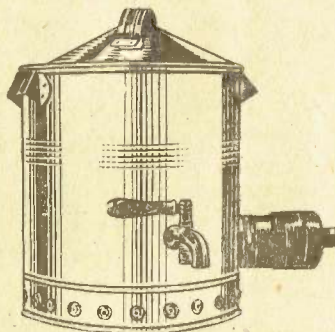
This new electrical device dispenses with the old-fashioned hot-water bottle. To heat it you simply connect it to the power supply and leave it for three minutes. It is then disconnected, and will retain a comfortable heat under the bed clothes for a number of hours. May be taken in your motor-car to add comfort to travelling, or to the pictures as a foot warmer. Inexpensive to run, and, of course, invaluable in the sick room. It is extremely handy for people working at desks, tables, etc., who suffer from cold feet. Cost about 1d. per week for current. Can be bought without plug or cord or complete. (The household iron or toaster cord set will fit the Monarch Bed Warmer).

Cat. No. TE82--Monarch Bed Warmer **28/6**

Cat. No. TE82A--Monarch Bed Warmer, with 3-pin Plug and Cord Set .. **34/6**

ELECTRIC URNS

Plated Electric Urns for use in Factories, Schools, Shops, etc. New Zealand made.



Cat. No. TE2039—1 gallon **£4/10/-**

Cat. No. TE2040—2 gallon **£5/17/6**

Cat. No. TE2041—3 gallon **£7/3/6**

Cat. No. TE2042—4 gallon **£8/17/6**

ELECTRIC MOTORS

(All 230 Volt 50 cycle).

Westinghouse 1/3 H.P. Split
Phase Motors, 1425 RPM.
Cat. No. TM671 **£6**

1/3rd H.P. Ditto
Cat. No. TM672 **£7/5/-**

1/2 H.P. Ditto
Cat. No. TM674 **£15/5/-**

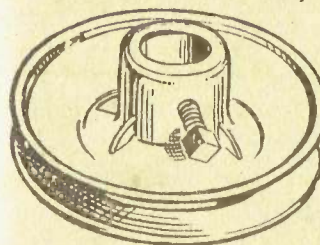
MAGNETS



Strong Magnets removed from old meters. Useful in every workshop, office, etc., for picking up nails, screws, pins, etc. Every youngster will find dozens of other uses.

Cat. No. TU4 **6D.** each

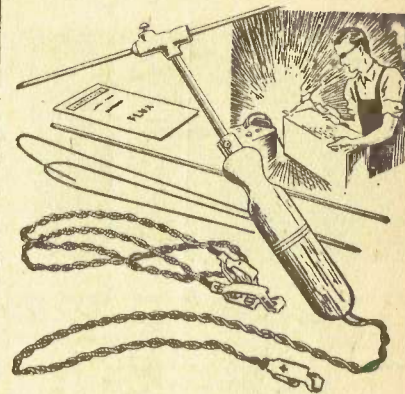
PULLEYS FOR MOTORS, ETC.



Cast Aluminium Pulleys, 4in. diam. for "V" Belts.

Cat. No. TM700 for 1/2in. shaft
Cat. No. TM701 for 3/4in. shaft
Cat. No. TM702 for 1in. shaft **7/9** each
Cat. No. TM703—2in. diam., for 1 1/2in. shaft.

ENSIGN BATTERY WELDER



A Welding, Brazing and Soldering Tool, which will save you time and money. Works from any 6 or 12 Volt storage battery, providing instant, concentrated, even heat. You can do all your own soldering, brazing and welding with this indispensable tool.

Rugged construction. Battery leads are specially heavy flexible conductors giving maximum transfer of power to the Welder.

The Ensign Welder is especially applicable for Auto repairs (mudguards, radiators, etc.), also for light inside work. For the farm it is invaluable for mending buckets, cans and light farm implements. Battery firms use them for lead burning, and they are especially useful for battery repairs on the roadside. The Radio man finds them invaluable for quick soldering.

Supplied complete with electrodes, flux and full instructions.

Cat. No. TE8 **52/6**

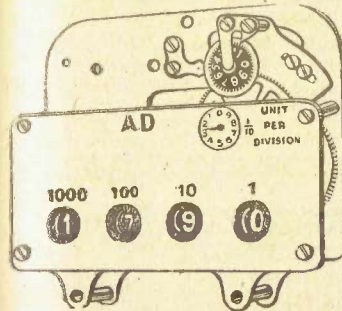
SPARES FOR WELDERS

Carbon Electrodes—Cat. No. TE9 .. 2/6
Brass Electrodes—Cat. No. TE13 .. 6d.
Steel Electrodes—Cat. No. TE14 .. 6d.
Packets Flux—Cat. No. TE15 .. 6d.

K.W.H. COUNTERS

An exceedingly useful unit, which can be put to a variety of uses by the average experimenter. Can be adapted to count turns when winding coils, chokes, transformers, etc. Will register up to 9,999 9-10ths and down to 1-10th of turn. These units have been removed from electricity measuring meters and can be adapted by the experimenter or engineer to do any counting job.

Cat. No. TU140 **2/6** each



MOTOR CAR LAMPS



We can supply Lamps for any type of car, including types with special caps, and if you are in doubt about the type to order, send a sample.

6/8 VOLT SINGLE CONTACT SINGLE FILAMENT LAMPS

Cat. No.	Candle Power.	Equivalent Wattage.	Location.	Price
TL300	6	5	Tail	1/5
TL302	15	12	Stop	2/4
TL303	21	20	Head	2/4
TL304	32	25	Head	2/4
TL305	50	35	Head	2/4

6/8 VOLT DOUBLE CONTACT SINGLE FILAMENT LAMPS

Cat. No.	Candle Power.	Equivalent Wattage.	Location.	Price
TL306	6	5	Tail	1/5
TL308	15	12	Stop	2/4
TL309	21	20	Head	2/4
TL310	32	25	Head	2/4
TL311	50	35	Head	2/4

12/16 VOLT SINGLE FILAMENT SINGLE CONTACT LAMPS.

Cat. No.	Candle Power.	Equivalent Wattage.	Location.	Price
TL312	6	5	Tail	1/5
TL314	15	12	Stop	2/4
TL315	21	20	Head	2/4
TL316	32	25	Head	2/4
TL317	50	35	Head	2/4

12/16 VOLT SINGLE FILAMENT DOUBLE CONTACT LAMPS.

Cat. No.	Candle Power.	Equivalent Wattage.	Location.	Price
TL313A	6	5	Tail	1/5
TL315A	15	12	Stop	2/4
TL316A	21	20	Head	2/4
TL317A	32	25	Head	2/4
TL318	50	35	Head	2/4

6/8 VOLT DOUBLE FILAMENT HEAD LAMPS WITH STANDARD DOUBLE CONTACT CAP.

Cat. No.	Candle Power.	Equivalent Wattage.	Price
TL319	21/3 (Ford)	20/3	2/9
TL320	32/6	25/5	2/9
TL321	21/21	20/20	3/6
TL322	32/32	25/25	3/6
TL323	50/50	35/35	3/6

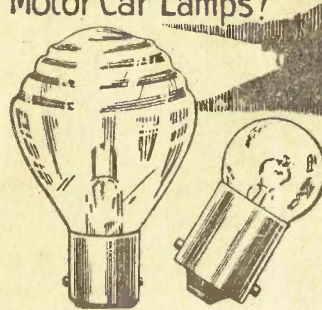
12/16 VOLT DOUBLE FILAMENT HEAD LAMP WITH STANDARD DOUBLE CONTACT CAP.

Cat. No.	Candle Power.	Equivalent Wattage.	Price
TL327	21/3	20/3	2/9
TL328	32/6	25/5	2/9
TL329	21/21	20/20	3/6
TL330	32/32	25/25	3/6
TL331	50/50	35/35	3/6

6/8 VOLT LAMPS WITH SPECIAL CAPS.

Cat. No.	Location.	Wattage.	Cap.	Price
TL350	Head	25/25 Prefocus 836	836	4/10
TL351	Head	35/35 Prefocus 836	836	4/10

Motor Car Lamps!



12/16 VOLT LAMPS WITH SPECIAL CAPS.

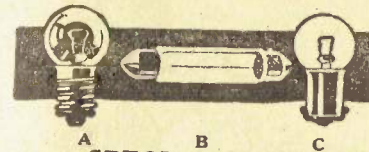
Cat. No.	Location.	Wattage.	Cap.	Price
TL373	Head	25/25 Prefocus 836	836	4/10
TL374	Head	35/35 Prefocus 836	836	4/10

MOTOR CAR FUSES



Cat. No. TS167—	5 amp.	} 4D. each
Cat. No. TS168—	10 amp.	
Cat. No. TS169—	20 amp.	

MOTOR CAR LAMPS AND BATTERIES



- A—Ignition Indicator Min. Screw.
B—Trafficator.
C—Ignition Indicator Min. Bayonet Cap.

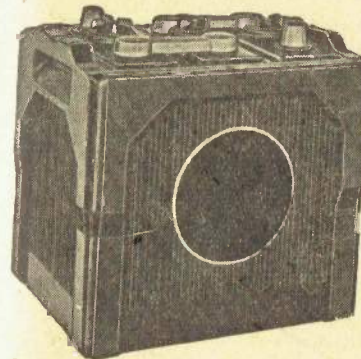
SPECIAL INTERIOR LAMPS, ETC., 6/8 Volts.

Cat. No.	Location.	Size.	M.M.	Cap.	Price
TL335	Trafficator	38 x 7 1/2	..	Tubular 2-cap	1/9
TL336	Festoon	43 x 15	..	Tubular 2-cap	1/9
TL337	Festoon	32 x 15	..	Tubular 2-cap	1/9
TL338	Ignition Indicator	..	..	Min. Screw	1/3
TL339	Ignition Indicator	..	..	Min. B.C.	1/3
TL340	Dash Board Dial	..	..	Min. B.C.	1/5

SPECIAL INTERIOR LAMPS, ETC., 12/16 Volts.

Cat. No.	Location.	Size.	M.M.	Cap.	Price
TL341	Trafficator	38 x 7 1/2	..	Tubular 2-cap	1/9
TL342	Festoon	43 x 15	..	Tubular 2-cap	1/9
TL343	Festoon	32 x 15	..	Tubular 2-cap	1/9
TL344	Ignition Indicator	..	..	Min. Screw	1/3
TL345	Ignition Indicator	..	..	Min. B.C.	1/3
TL346	Dash Board Dial	..	..	Min. B.C.	1/5

Oxford Motor Car BATTERIES



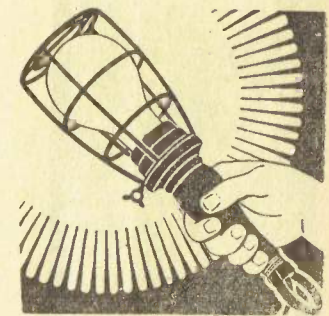
Eighteen months' unconditional guarantee. Solidly built H.D. leak-proof batteries. Thick plates built in N.Z. for N.Z. conditions.

Thick Plates—Carefully Sealed Cells—
Long Life Guaranteed.

Cat. No.	Price
TA40—6-volt, 9-plate. Width 7in. x length 7in. x height 9in.	£3/10/11
TA41—6-volt, 11-plate. English. 7in. x 7 1/2in. x 9in.	£3/19/6
TA42—6-volt, 11-plate. Squat. 7in. x 7 1/2in. x 7 1/2in.	£3/19/6
TA43—6-volt, 13-plate. 7in. x 9 1/2in. x 9in.	£4/6/4
TA44—6-volt, 13-plate. Squat. 7in. x 9 1/2in. x 7 1/2in.	£4/6/4
TA45—6-volt, 15-plate. 7in. x 10 1/2in. x 9in.	£4/17/11
TA46—6-volt, 15-plate. Squat. 7in. x 10 1/2in. x 7 1/2in.	£4/17/11

TA47—6-volt, 17-plate. 7in. x 11 1/2in. x 9in.	£5/15/7
TA48—6-volt, 17-plate. Squat. 7in. x 11 1/2in. x 7 1/2in.	£5/15/7
TA49—6-volt, 19-plate. 7in. x 12 1/2in. x 9in.	£6/7/4
TA50—12-volt. 7-plate. 7in. x 11 1/2in. x 9in.	£5/19/3
TA51—12-volt 9-plate, 7in. x 12 1/2in. x 9in.	£6/7/4
TA52—12-volt, 11-plate. 7in. x 14 1/2in. x 9in.	£8/0/3
TA53—12-volt, 11-plate. Squat. 7in. x 14 1/2in. x 7 1/2in.	£8/0/3
TA54—6-volt, 7-plate. Motor Cycle. 3 1/2in. x 4 1/2in. x 6 1/2in.	£2/1/8

HANDY! SAFE!



The ideal INSPECTION LAMP for workshops, garages, factories, etc. Take the light where you want it most. Wood handle, strong wire protective frame. Fitted with bakelite shockproof lampholder.

Cat. No. TE95 25/-

STUCKA PHENONIC CEMENT



For repairing Wood, China, Bakelite, Glass, in fact, Stucka will stick anything which can be mended. Can also be used as insulating varnish, for doping coils, etc.

Cat. No. TU160 **2/3** jar

“3-IN-ONE” OIL

“3-in-One” works miracles in brightening dull furniture and woodwork. A few drops on any soft cloth wrung out in water give you a dusting and polishing cloth that not only polishes but also cleans and protects the finest finish. Use it for all appliances.

Cat. No. TU151—

Contents 3oz., in bottle **1/10 1/2**

LIQUID CASEIN GLUE— “ATAGLUE”

Waterproof. A high-class, ready to use, casein liquid glue. Ataglu eliminates loss of time preparing hot glues. Does not stain. Gives a better spread than ordinary cold glues.

Cat. No. TU157 Tin **1/10 1/2**



Cat. No. TU1 . . **2/3** bottle.

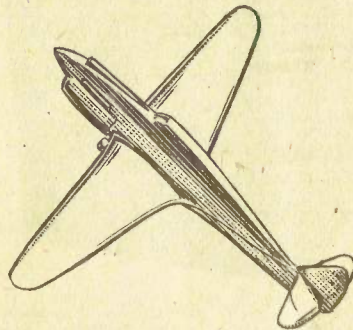
C.M. PUTTY.



Ready for use, simply by mixing with water. Dries rock hard without shrinking. Easy to apply, and can be used on wood, plaster, stone, and similar material. Can be coloured or varnished.

Cat. No. TU163 **1/8** per tin
TU165—Large size (16oz) . . **2/8** per tin

MOULDED AEROPLANES



These are moulded from Bakelite to drawings issued by the Aeronautical Production Dept., R.N.Z.A.F., and are produced to teach recognition of friendly and enemy aircraft.

Excellent toy, or a useful decoration.

Kittyhawk SS/F Model. Mottled Bakelite.
Cat. No. TU6 **2/-** each

“ATAMAX”

Efficient cleaner for Gas and Electric Stoves. Removes old grease with speed and ease, even though the grease has been on for years.

Cat. No. TU164 **2/-**

“KITCHEN TIDY”



The modern version of a small hygienic rubbish bin. Outside metal container. Sprayed either cream or blue. A handy sized galvanised bin (8in. x 9in.) complete with handle, slips inside this container and can be removed and emptied at frequent intervals. Just press the metal lever as illustrated and the lid swings open. The housewife's delight. So attractive, clean and convenient. Keep your kitchen tidy with a “KITCHEN TIDY.” Height 13 1/2 in., diameter 9 1/2 in.

Cat. No. TU351 **22/-**

HACK-SAW BLADES

BEST QUALITY.

Cat. No. TU700 **6D.** each

NEW GRIP

The Universal Cellulose Cement. Mends anything. Slate, paper, ivory, glass, wood, etc., etc.

Cat. No. TU156 . . . **1/7** ea.

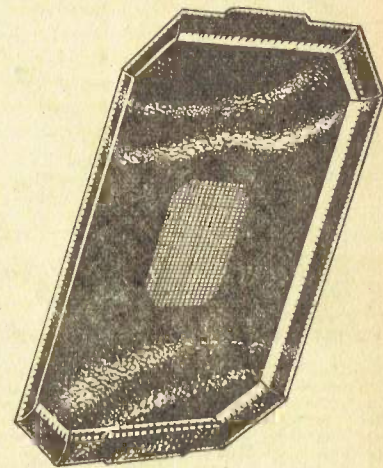


RUBBER SOLUTION

Rubber Solution, packed in collapsible tubes. Will stick anything made of rubber.

Cat. No. TU158 **1/-** tube

TOASTER TRAYS



Made of Moulded Bakelite in following colours: Red, Cream, Black, Green. For standing under toasters to catch crumbs, etc.—as well as many other home uses. Size (overall) 10 1/2 in. x 7 in.

Cat. No. TE761 **3/9**

Special Trays (drilled) for Speedee Hostess Toasters.

Cat. No. TE760 **3/9**

Ditto for Speedee Tiffen Toasters.

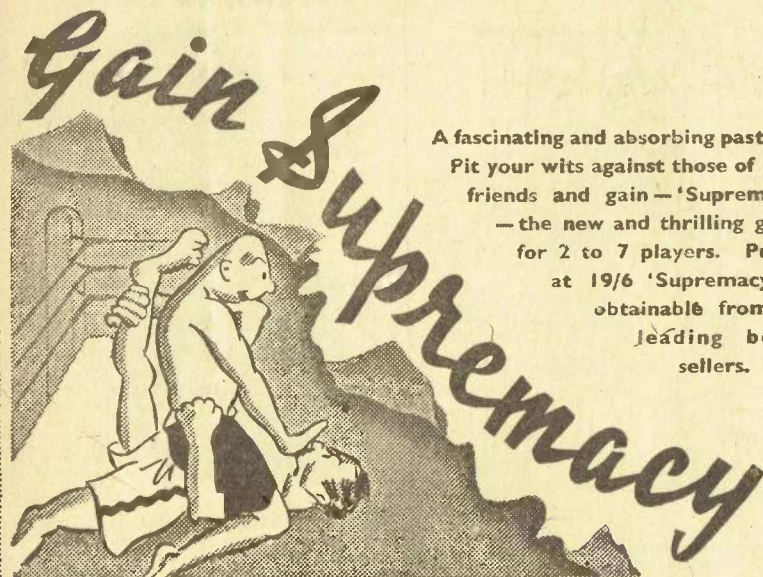
Cat. No. TE759 **7/6**

PLASTIC WOOD



The perfect moulding material. A plastic material which is easily worked. A high-class filler for all types of jobs. Used by Carpenters, Joiners, Painters, Mechanics, Farmers and Householders. Hardens very rapidly, and, like wood, can be cut, sawn, planed, filed, nailed or screwed. It can be varnished, stained, painted or polished. Grease-proof, waterproof and weather-proof.

Cat. No. TU166 **3/6** tin



SUPREMACY

Direct attack operations with Infantry divisions, Tank squadrons, Plane formations and Battle Fleets in the van. Consolidate with Forts, Aerodromes, Fortified Lines, etc., in this fascinating and sensational game of Supremacy. Your name mightn't be Eisenhower or Montgomery but you, too, can organise and control masses of military material. Reveal your ability as a front-line strategist. Spend pleasant evenings packed full of excitement and thrills with your "Supremacy." For 2 to 7 players. View the lighter side of war over a Supremacy Board. Anyone can learn to play in a few minutes.

Order your set now and invite your friends over to play the game, no one can resist. Complete with all equipment and printed instructions.

Cat. No. TU500—

19/6 Post free

Obtainable from

**THE ELECTRIC
LAMPHOUSE Ltd.**

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WELLINGTON, C.1.

Recognised Dealers who have not
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A fascinating and absorbing pastime.
Pit your wits against those of your
friends and gain—'Supremacy'
—the new and thrilling game
for 2 to 7 players. Priced
at 19/6 'Supremacy' is
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leading book-
sellers.

S.46

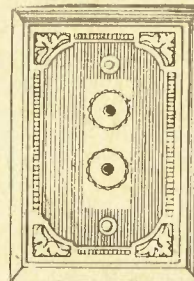


RADIO SECTION

AERIAL EQUIPMENT

AERIAL & EARTH PLATES

Eliminate those unsightly wires leading to your set by having them concealed in the wall. This beautiful moulded plate is fitted with two terminals on to which the Aerial and Earth leads to your set connect. The Aerial and Earth proper are connected at the rear of the plate. Moulded in Ivory or Brown Plastic. Modern design.



Cat. No. TA431 3/2 each

AERIAL WIRE—Plain Copper



Cat. No. TA252—7/22, 100ft. .. —
Cat. No. TA254—7/22, 50ft. .. —
Cat. No. TA267—7/22, 100ft., Tinned —
TA257—16 S.W.G. 50ft. Coils .. 2/- ea.

TA257a—16 S.W.G. 100ft. " .. 3/11 ea.

Cat. No. TA256, 14 S.W.G., 50ft.
Coils 2/11

Cat. No. TA256A, 14 S.W.G., 100ft.
Coils 5/10

INSULATOR—EGG

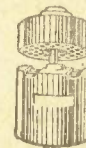


Cat. No. TA313 4D. each

LARGE EGG INSULATORS

2in. long and 1 1/2 in. diameter. Brown glazed,
Cat. No. TA361 10D. each

CLAMP INSULATORS



Used for taking wires along outside walls, etc. Made in two pieces, and when screwed up, grip the wire and make a neat and efficient job. 1 1/2 in. high, 1 1/8 in. diameter.
Cat. No. TA351 7D. each

BUTTON INSULATORS

For use on Electric Fence installations and for installing wires run along walls, etc. N.Z. made. Brown glazed.



1 1/2 x 1 1/4—Cat. No. TA354
4d. ea., 3/10 doz.

1 1/2 x 1 1/2—Cat. No. TA360
6d. each
(Screws not included.)

SHACKLE INSULATORS

Used for corner insulators on Electric Fence and for other purposes requiring a substantial insulator. Size—2 1/2 in. diam., 1 1/2 in. high, 3/4 in. hole.

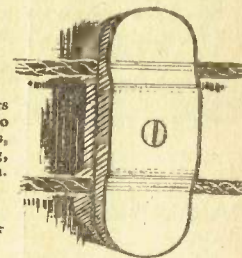
Cat. No. TA362

1/2 each

CLEAT INSULATORS.

Cleat Insulators for running two wires along walls, etc. 2 1/2 in. long, 1 5/16 in. wide, 3/4 in. high.

Cat. No. TA356
7D. pair



ENSIGN LEAD-IN WIRE



Tough, rubber-covered Lead-in Wire. Very flexible. Will withstand constant swaying. Diam. 4 mm.

TW305 3D. ft.

AERIAL EQUIPMENT

PULLEYS—GALVANISED



TA412



TA413

1 in. Galvanised Pulleys for halyards, etc.
Cat. No. TA412 11 D. each

NON-JAM PULLEYS

These pulleys are specially constructed so that the guy wire cannot jam. Heavily galvanised.
Cat. No. TA413 1/9 each

LEAD-INS, EBONITE



Lead-ins are used for putting through the wall. Consists of brass rod insulated with ebonite. With a nut and washer on each end. Diameter 3/8 in.

Cat. No. TA402—Ebonite Lead-in, 9in. long .. 1/-

TA404—9in. x 3/4 in. diameter, heavy Ebonite Lead-in 1/3

AERIAL CLEATS



Galvanised iron cleats for securing halyard ropes.
Cat. No. TA414—
1/3 each

STAPLES

Coppered Staples (not insulated), for fastening earth wires, etc.

Cat. No. TS119— 2 D. doz.



GALVANISED SCREW EYES

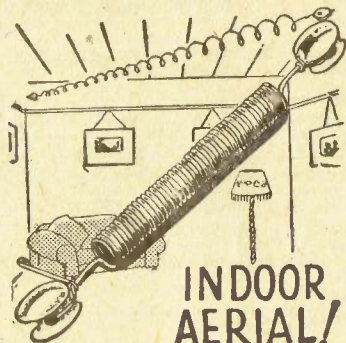


Cat. No. TA411—Galvanised Screw Eyes 4 D. ea.

LIGHTNING ARRESTORS



American type. Glazed porcelain with terminals.
Cat. No. TA429 1/6 ea.



INDOOR AERIAL!

An indoor spring type aerial that will stretch out to about 12 feet across an ordinary room, and will remain in its spiral form. Made from pure copper wire.
Cat. No. TA285 3/3 each

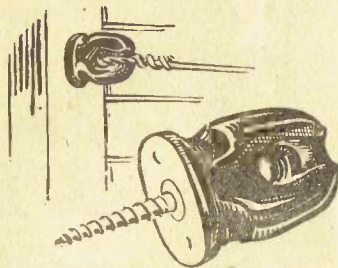
MASTLESS AERIAL



A neat, compact Aerial designed for use in crowded areas, where it is impracticable to erect a pole or horizontal type Aerial. Ideal for flat dwellers, etc. Composed of several 12 gauge solid copper leads mounted in heavy service insulator. The insulator can be simply attached to any firm structure. The Mastless Aerial can be erected in a space of 20 minutes.

Cat. No. TA296 19/-

HOUSE INSULATOR



Used for insulating electrical equipment from the house. Very solidly constructed; has a screw of 2 in. length and the porcelain portion measures 3 in. x 2 1/2 in.

Cat. No. TA327 2/4 each

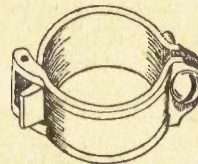
EARTH CLAMPS

Heavy brass type, N.Z. made. Will ensure a good permanent earth on a water pipe, etc.

Cat. No. TA436—
1/2 in. water pipe size
(will fit pipes up to
1 in. outside diameter).
Cat. No. TA437—
1/- each

3/4 in. water pipe size
(will fit pipes up to
1 in. outside diameter)
.. 1/- each

Cat. No. TA438—1 in. water pipe size (will fit pipe up to 1 1/2 in. outside diameter)—1/3 ea.



EARTH TUBES

Coppered Earth Tube. When hammered into the ground will make a good earth connection. Provided with screw for attaching earth wire. 27in. long.

Cat. No. TA433 .. 3/2 each

WIRE, TINNED EARTH



7/029 Bare Tinned Copper Earth or Aerial Wire.
Cat. No. TA264— Per foot 1 D.

THE NOTENNA AERIAL ELIMINATOR

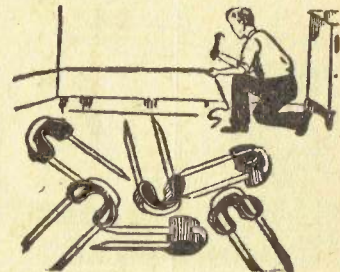


Equally successful on both broadcast and shortwaves. Replaces aeriels of all types. Very compact size. No lightning arrester required. Reduces noise, interference and man-made static. Simply attached between aerial and earth terminals on your set and to earth wire. Money back if you are not more than satisfied. Dimensions 4in. x 2 1/2 in. x 3 in.

Cat. No. TA310 8/5

INSULATED STAPLES

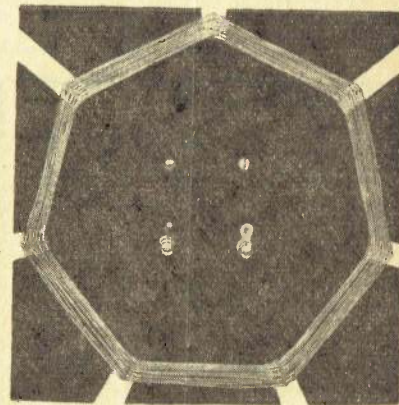
Makes a Neat Job!



Insulated Staples are used by all who wish to make a neat job. The fibre insulation in these staples protects the wire and guards against loss of signal strength. British made.

Cat. No. TS118 3 1/2 D. doz.
(2/3 packet of 100)

AERIAL FOR PORTABLES



Loop Aerial for portable receivers, matched for standard Ensign Coils and fitted with primary winding for use with ordinary aerial when required. Physical dimensions 8in. x 7 1/2 in.

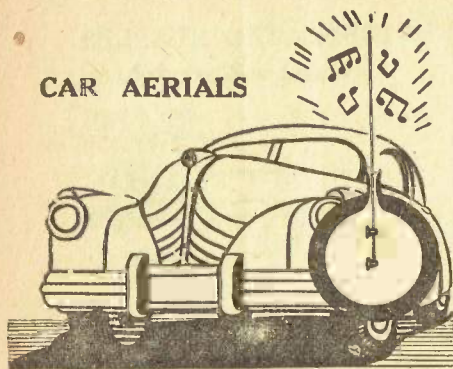
Cat. No. TA300 12/-

LOOP AERIALS

High efficiency Loop Aerials, suitable for any high gain portable receivers. Directional. Totally enclosed unit with two external leads for easy connection. Measurements, 11in. x 5 1/2 in.

Cat. No. TA301 23/6

CAR AERIALS



3-PIECE AUTO RADIO AERIALS

Well-made, guaranteed rust-proof Car Aerials, brass fittings, with fibre washers and bakelite accessories, for side mounting. Chromium plated. Aerial full out opens to 6ft.; 2-piece section, 4ft.; closed, 27in. A finished article.

Cat. No. TA702 50/- each

TRANSMISSION CABLE

Thin Twisted Transmission Cable (Lead-in Wire) for double doublet and similar aerial systems.

Standard Flexible 2-Core Wire, rubber-covered and covered over all in a Waterproof Braid. Flexible and long-lasting.
Cat. No. TW87 6D. per yard.

KNIFE SWITCHES



Single Pole Double Throw Aerial-Earth Switches. Bakelite base. British.

Cat. No. TS490 1/9

MAIL ALL ORDERS TO
THE ELECTRIC LAMPHOUSE, Ltd.,
11 MANNERS ST., WELLINGTON,
C1.

THE LAMPHOUSE INSTRUCTION COURSE

This 48-page attractively covered booklet has been compiled from courses in previous Lamphouse publications, completely revised, and printed for those Rahobs who having taken up Radio as a Hobby, would like to gain knowledge on Radio fundamentals and theory. We do not boast it as being a complete course as used in Radio Colleges or such, but simply a foundation study written in the language a beginner understands.

Now available—

Cat. No. TB101—Priced at 2/6 ea.

Postage 1d. extra.

LAMPHOUSE CIRCUIT BOOK

Contains 80 pages, with about 200 different circuits. This book has been prepared in response to hundreds of inquiries which we receive for a publication containing a comprehensive range of Radio circuits. All the circuits have already appeared in various numbers of the Lamphouse Annual or the "Radiogram," and no claim is made that the book contains new circuits.

Radio enthusiasts will find the book of great use for reference purposes. Circuit diagrams only are given, there being no constructional details. The circuits include Electric Fences, Power Packs, S.W. Converters, Wave Traps, Testing Equipment, Code Oscillators, Aerial Systems, Amplifiers, Crystal Sets, and Electric and Battery Sets of every description.

Cat. No. TB100.

PRICE 2/6 Postage 1d.

DRY BATTERIES

FAMOUS EVEREADY BRAND OF BATTERIES NOW MANUFACTURED IN N.Z.



STANDARD TORCH REFILLS

Cat. No.	Each
TB31—Standard Unit Cells (950) ..	9d.
TB32—Baby Unit Cells (935) ..	9d.
TB33—Midget (Bijou 2-Cell) (712) ..	11d.
TB36—Cycle (2-Cell Twin) (701) ..	1/11
TB30—Penlite Unit Cells (915) ..	9½d.
TB35—3-Cell Flat (136) ..	1/6



RADIO BATTERIES



"B" BATTERIES

45-VOLTS SUPERDYNE (770)—Large size "B" Batteries. Size 7½ in. x 4½ x 8½. Weight 11½ lbs. Tapped at 22½ volts.

Cat. No. TB42 28/9 each

BATTERIES (772).

45-VOLTS Medium Duty "B" BATTERIES—(772). Size 7½ in. x 3 in. x 8½ in. Weight 7½ lbs. Tapped at 22½ volts.

Cat. No. TB43 £11/1/9

45-VOLTS Light Duty "B" BATTERIES—(762). As used in portable Receivers, etc. Size 5½ in. x 2½ in. x 4½ in. Weight 2½ lbs.

Cat. No. TB44 16/3 each

BATTERIES

45 Volts Portable MINI-PACK "B" Batteries (C123). Used extensively in Portable Radios and Receivers using Miniature valves. Size: Height 3½ in., width 3 in., depth 2½ in. Weight 1½ lbs. Screw Terminals.

Cat. No. TB45 24/6 each

108 Volt Portable "B" Battery (C29). Used with "Vidor" Portable Receivers. Tapped with Fahnestock clips at 3v., 1½v., - G.B. - 67½ -108v. Size, 8 in. x 5 in. x 3½ in. Weight, 6½ lbs.

Cat. No. TB49— 42/- each

"A" BATTERIES

1½ VOLT "A" BATTERY (x250)—For home sets. Size 9½ x 4½ x 5½. Weight 10½ lbs.
Cat. No. TB55 £11/9/6 ea.

1½ VOLT "A" BATTERY (741)—For portable sets. Size 4½ x 2½ x 5½. Weight 3½ lb. 2oz.
Cat. No. TB56 11/- each

EVEREADY TYPE (742)—1½ volt A Battery for use with Portable Receivers. Dimensions 1½ in. x 2½ in. x 2½ in. Weight 1½ lb. 10ozs.
Cat. No. TB57 6/- each

6-VOLT "HOTSHOT" IGNITION BATTERY (1461)—Size 7½ x 10½ x 2½.
Cat. No. TB39 27/6 each

1½-VOLT IGNITION OR BELL BATTERY. No. 6 type Dry Cell. Size 6½ x 2½ in. round.
Cat. No. TB40 3/10 each

BIAS or "C" BATTERIES

9-VOLT "C" Battery (773)—Size 3½ in. x 1½ in. x 5½ in. Tapped at 1½, 3, 4½, 6, 9 volts.
Cat. No. TB51 4/10 each

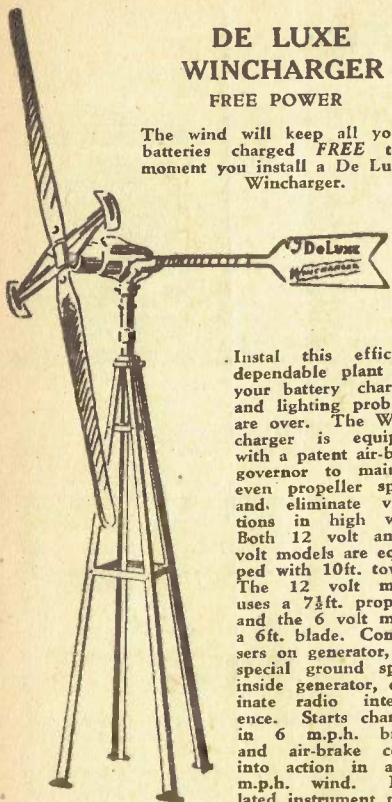
4½-VOLT "C" Battery (711)—Size 3½ in. x 1½ in. x 4 in. Tapped at 1½, 3, and 4½ volts.
Cat. No. TB50 3/8 each

Mail all orders to the Electric Lamphouse Ltd., 11 Manners St., Wellington.

DE LUXE WINCHARGER

FREE POWER

The wind will keep all your batteries charged *FREE* the moment you install a De Luxe Wincharger.



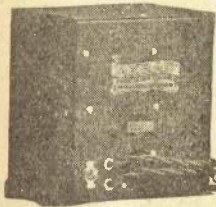
Instal this efficient, dependable plant and your battery charging and lighting problems are over. The Wincharger is equipped with a patent air-brake governor to maintain even propeller speed, and eliminate vibrations in high wind. Both 12 volt and 6 volt models are equipped with 10ft. towers. The 12 volt model uses a 7½ft. propeller and the 6 volt model a 6ft. blade. Condensers on generator, and special ground spring inside generator, eliminate radio interference. Starts charging in 6 m.p.h. breeze and air-brake comes into action in a 19 m.p.h. wind. Insulated instrument panel

completely wired with indicator showing amount of charge or discharge. Charging rate may be altered to suit charging conditions. Supplied complete in every detail as illustrated. The ideal installation for farms, baches, etc.

Cat. No. TA206—6-volt Model **£26/3/-**

Cat. No. TA207—12-volt Special Heavy Duty De Luxe Model **£39/17/6**

AKRAD VIBRATOR PACKS

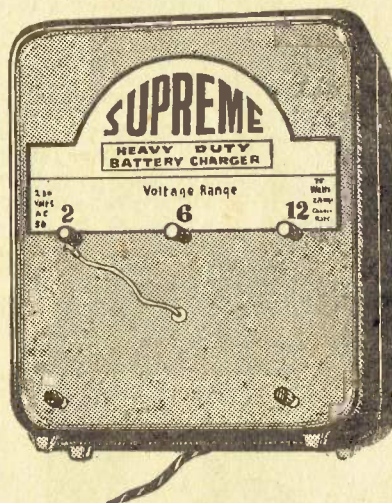


Compact, quiet in operation, and hash-free. Completely filtered A and B; equipped for 4-pin outlet Socket. The connections are Plate H.T. 135 Volts. Grid and adjacent filament pin. A and B negative and positive filament pin

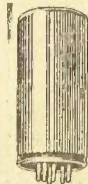
is filtered "A" positive. Use with 6 Volt Battery delivers 135 Volts.

Cat. No. TA213 **£6**

SUPREME BATTERY CHARGERS



Heavy duty type Battery Chargers. For operation from 230 Volt A.C. mains. Current consumption approximately 75 Watts. Will charge 2, 6, or 12 Volt Batteries at 2 amps. Size 9in. x 10½in. x 4in. deep. Complete with 3 wire cord, and instructions. Contained in strong metal case.
Cat. No. TA605 **£8/10/-**



VIBRATORS—UTAH.

Vibrator Units for replacements or for constructors. Positive starting long-life Vibrators. Low cost per hour. Trouble-free operation.

6-volt Non-synchronous 4-pin type.
Cat. No. TB60 **25/-**

6-volt Synchronous 5-pin type (for special Utah socket).
Cat. No. TB61 **27/6**

6-volt Synchronous 5-pin type (standard socket).
Cat. No. TB62 **10/-**

Cat. No. TB65—12 volt 7 pin Synchronous vibrators (ex Army stocks) **10/-** ea.

Sockets for Vibrators—5-pin special type.
Cat. No. TB63 **1/-**

SPARE BULBS FOR BATTERY CHARGERS

(TUNGAR TYPE.)

Cat. No. TA189—2 amp. **£1/18/6** each

Cat. No. TA190—6 amp. **£3/10/-** each

RECTIFIERS

Dry Rectifiers for replacement in Battery Chargers, etc.

Cat. No. TA175 **27/6** each

OXFORD RADIO BATTERIES

OXFORD NON-SULPHATING SPECIAL TYPE RADIO BATTERIES

Heavy duty solidly constructed leak-proof Batteries that deliver maximum power. Thick plates, carefully sealed cells; built for long, enduring, trouble-free service. With radio type terminals. 18 months' unconditional guarantee.



Cat. No. TA20—
2-volt, 100 amp., 4½ x 7 x 9½ **£1/17/-**

Cat. No. TA22—
2-volt, 140 amp., 4½ x 7 x 9½ **£2/3/-**

Cat. No. TA23—
6-volt, 100-amp. 7 x 9½ x 9½ **£4/7/10**

Cat. No. TA24—
6-volt, 140 amp., Type for Vibrators, 7 x 11½ x 9½ **£5/6/2**

Cat. No. TA26—
6-volt, 160 amp., Type for Vibrators, 7 x 12½ x 9½ **£6/3/3**

Batteries are supplied dry unless specially requested otherwise. They can also be supplied charged and filled with acid, at no extra cost, but freight is payable by purchaser on all charged batteries.

OLD BATTERIES MADE LIKE NEW!

"TAR-MAG" Battery Tonic



WORKS LIKE MAGIC

WHAT "TAR-MAG" DOES

TAR-MAG dissolves the gradual deposit of Basic Sulphate of Lead crystals which impregnate the active paste material on the plates, thus preventing the electrolyte contacting with it, with the result the battery ceases to function although there is still plenty of life and usefulness.

TAR-MAG dissolves the crystals and enables the battery to function as new.

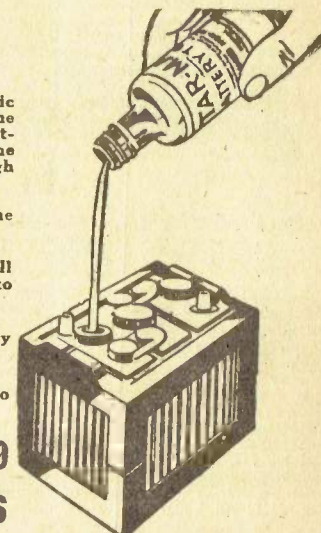
TAR-MAG will bring your old battery up to full strength—will increase life of new batteries up to 50 per cent.

For Better Lighting and Split-Second Starting, try TAR-MAG.

TAR-MAG is a liquid which is simply poured into the cells. Complete with instructions.

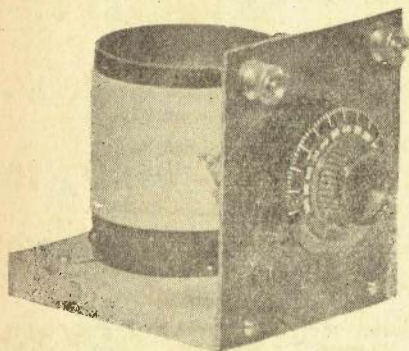
Cat. No. TA70—Charge for 6-volt Battery **2/9**

Cat. No. TA70A—Charge for 12-volt Battery **5/6**



AIDS TO BETTER RECEPTION

"WAVE TRAP"

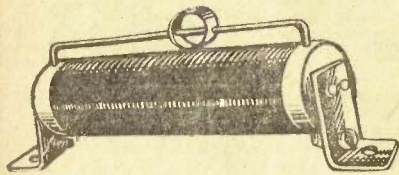


Used to separate stations which interfere or overlap each other. Gives sharper tuning to all size Receivers from Crystal Sets onwards. Will also act as a booster for strengthening weak stations.

Components mounted on a 4in. x 3½in. wooden baseboard. Front panel of light bakelite. Neat appearance. Printed instructions with every set.

Cat. No. TF504 Price **17/6**

ENSIGN 3 IN 1 TUNERS.

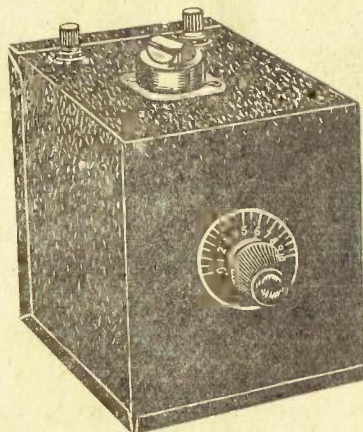


AERIAL TUNER WAVE TRAP AERIAL ELIMINATOR

Depending on the manner it is connected, this useful piece of apparatus serves any of the above functions. Operates on any make or model of radio receiver, greatly enhancing the performance. As an aerial tuner it will improve the reception of weak stations. As a wave trap it will prevent interference between stations and improve selectivity. As an aerial eliminator it makes an outdoor aerial unnecessary. The tuner can also be used as the tuning coil of a crystal or other small set. Supplied complete with instructions and can be fitted by anyone in a few minutes. Size 5 in. long x 2½ in. high and 1½ in. wide.

Cat. No. TC300 **4/6**

FIVE GOOD REASONS why
you will want an



"AERITROL"

FOR MARVELLOUSLY IMPROVED
RECEPTION.

- 1—It will separate interfering stations.
- 2—It will reduce noise level and interference.
- 3—It will increase volume of weak stations.
- 4—It will eliminate outdoor and indoor aeriels. Acting as a perfect aerial eliminator.
- 5—It controls volume from powerful local stations.

Installed in a few minutes without Tools!

TRY IT AT OUR RISK

A safe scientific device which uses no electricity and costs nothing to run, and works on all types of receivers, old or new, battery or electric. Increases volume equivalent to adding an extra valve. Strong metal case, in crackle finish. Full directions with each.

Send for an "AERITROL" today, try it in your own home for 7 days. If at the end of that time you are not thoroughly satisfied with it, return it, and we will return your money in full.

Cat. No. TA1—Price only **33/6**



ENSIGN LINE FILTERS

These useful Units have two distinct purposes.

1. To stop interference entering the A.C. Mains at the source of the trouble.
2. To stop interference coming over the Mains from entering the Receiver.

The best place to stop interference is at its source and if you have a small motor or other Appliance which causes interference in your own or anyone's else's Radio, it may be successfully cured by installing an Ensign Filter. The Filter is plugged in to the Power Point and the offending appliance plugged in to the Filter, no other installation is required. It can be used on any appliance not exceeding 750 watts. Should it be impracticable to stop the trouble at its source, we must try and stop it from entering the Receiver.

We must decide whether the man-made static, which is proving so troublesome, is being picked up by the aerial or is coming over the power lines or both. A good test is to tune the set to a point where the noise is particularly bad and turn the volume control well up. Now remove the aerial wire and attach it to the earth terminal, but do not remove the earth wire. The effect will be to reduce the noise level, but if the man-made static continues to be very severe you will at once know that at least portion of the interference is coming over the A.C. power mains, and you will at least need an Ensign Line Filter before you can overcome the trouble. On the other hand, if the noise is entirely eliminated you will know that the noise is being picked up by the aerial and some form of noise-reducing aerial will be required.

Designed for use with electrically operated radio receivers. Simply fits between the receiver and the wall plug. It will definitely stop all man-made static entering through either A.C. or D.C. Mains. Particularly successful in D.C. and on ships with D.C. generators.

Cat. No. TA298 **21/6**



Heavy Duty Motor Filters, 5 amp., CAT. No. TF501
45/- each

Ensign Coils

ENSIGN COILS, IRON CORE TYPE

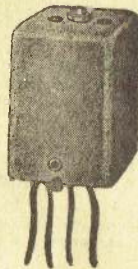
Iron Core Adjustable Permeability Litz Wound in 1½in. square by 1½in. cans broadcast.

Cat. No. TC301—Aerial	12/6
Cat. No. TC302—R.F.	12/6
Suitable Oscillator Coils for above (air core).	
Cat. No. TC306—465 K.C.	9/6
Cat. No. TC307—175 K.C.	9/6

AIR CORE TYPES

Air Core Litz Wound, mounted in 1½in. square by 1½in. cans broadcast.

Cat. No. TC303—Aerial	9/6
Cat. No. TC304—R.F.	9/6
Cat. No. TC305—Aerial Band pass	11/6
Cat. No. TC306—Oscillator, 465 KC	9/6
Cat. No. TC307—Oscillator, 175 KC	9/6



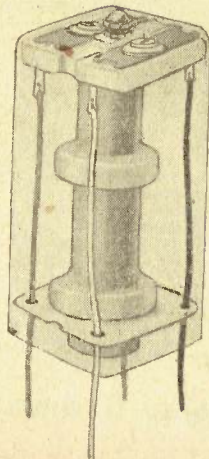
UNSHIELDED TYPES

Air Core Litz Wound Broadcast ½in. Former.	
Cat. No. TC310—Aerial Bandpass	9/6
Cat. No. TC311—Aerial	7/6
Cat. No. TC312—R.F.	7/6
Cat. No. TC313—Oscillator, 175 K.C.	7/6
Cat. No. TC314—Oscillator, 465 K.C.	7/6

ENSIGN INTERMEDIATE FREQUENCY TRANSFORMERS

ENSIGN I.F. TRANSFORMERS

have been carefully designed by experts to give maximum results. Types suitable for midget, commercial or high fidelity receivers are available. These factors allow the experimenter and home constructor more scope than before when designing a receiver.



ENSIGN SHORT WAVE COILS

Unshielded, wound on ½in. Formers, 19/50 Meters.

Cat. No. TC320—Aerial	6/- ea.
Cat. No. TC321—R.F.	6/- ea.
Cat. No. TC322—465 K.C. Oscillator	6/- ea.

ENSIGN TUNING UNITS

Completely wired and assembled unit for use in 5-valve receivers. Consists of aerial and oscillator sections and has a coverage on short wave from 19/50 meters and broadcast 550 to 1500 K.C. for use with Plessey Type K. 1842-11. Condenser and 6K8 Converter Tube. Price includes all coils, wave change switch already assembled, padders, by-pass condensers, and trimmers. Air tested and aligned. Full instructions.

Cat. No. TC350 **£6/10/-**

Dual Wave, assembled similar to the above, but containing Aerial R.F. and Oscillator Sections.

Cat. No. TC351 **£10**

ENSIGN TRIPLE WAVE UNIT

Similar to above, containing Aerial R.F. and Oscillator sections.

Cat. No. TC352 **£12**

PRICE ALTERATIONS

The prices in this book must be regarded as an indication only, and are subject to alteration without notice.

ECONOMY COILS

While retaining a reasonably high quality, these Coils are very low in price and are suitable for those constructors not wishing to use the higher priced lines. All Coils are wax impregnated and tested and are recommended for use with a .000385 MFD. Condenser.



BROADCAST UNSHIELDED

Cat. No. TC553—Midget Aerial	3/10 ea.
Cat. No. TC555—Midget R.F.	3/10 ea.

Cat. No. TC554—Oscillator	465 K.C. 3/10 ea.
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BROADCAST IN CANS

Cat. No. TC556—Aerial 6/11 ea.	
Cat. No. TC558—R.F.	6/11 ea.
Cat. No. TC557—Oscillator	6/11 ea.

SHORTWAVE UNSHIELDED (19-50 METERS)

Cat. No. TC550—Aerial	2/7 ea.
Cat. No. TC552—R.F.	2/7 ea.
Cat. No. TC551—Oscillator	2/7 ea.

ECONOMY I.F.

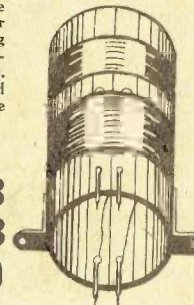
TRANSFORMERS

465 K.C. I.F. Iron-cored Transformers, in 1½ x 1½ cans.

Cat. No. TC522 **12/6** each

OXFORD T.R.F. COILS.

These Coils have been developed for constructors wanting low-priced yet well-made T.R.F. Coils. Wound with enamelled wire on bakelite former 1½in. diam.



Cat. No. IC530—Aerial	3/3
TC531—R.F.	3/3
TC532—R.F. With Reaction.	3/9

HIKER'S ONE COILS

Ready wound coils for the famous Hiker's One sets.

Cat. No. TC362 **3/9** each

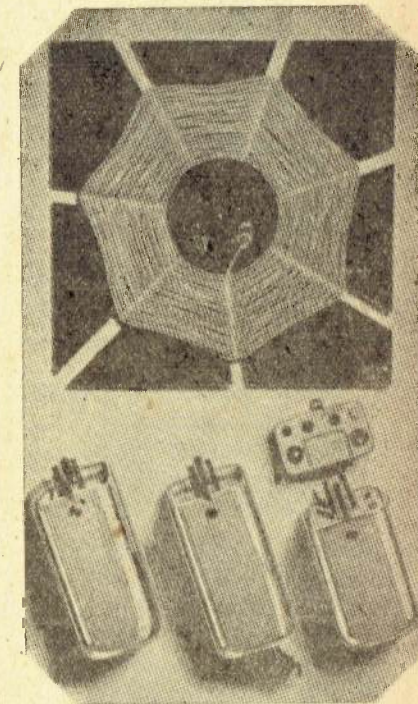
BUY UNDER THE LAMPHOUSE GUARANTEE

R.F. UNITS

This is a double wave unit covering the standard broadcast and short wave bands. In the mixer stage most types of pentagrid converters will operate satisfactorily, and in the R.F. stage standard pentodes will give good results. Individual Trimmers are fitted to each coil allowing for an accurate alignment. Used with an intermediate frequency of approximately 460 K.C. Complete with 3-gang Condenser.

Cat. No. TC370 **£7/3/6**

"ENSIGN" PORTABLE COIL KIT.



Special Coil Kit for portable sets. Consists of "Ensign" Loop Aerial, 8in. x 8in. (matched to standard "Ensign" coils and fitted with primary winding for use with outdoor aerial when required); Midget Oscillator Coil; 2 "Ensign" Midget I.F. Transformers and Padder.

Cat. No. TC449 **53/-** ea.

Aerial only. Cat. No. TA300 .. **12/-**

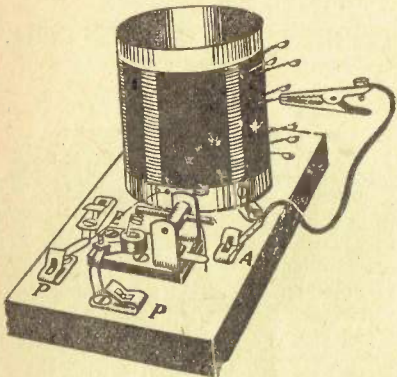
DETECTORS, RED DIAMOND



Red Diamond Detectors are the semi-permanent type. Can be adjusted by moving the plunger. Sensitive, and give good results.
Cat. No. TC254

Spare Pairs of Crystals for Red Diamond Detectors—
Cat. No. TC252

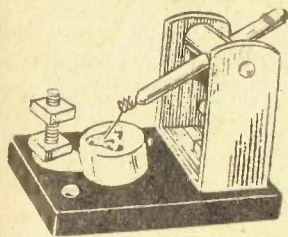
ECONOMY CRYSTAL SET



A very simple and inexpensively designed but efficient Crystal Set, comprising a multi-tapped Coil and Catswhisker type Crystal Detector mounted with Fahnestock Clips on wooden baseboard. Simple in operation. Full instruction enclosed with each.

Price does not include Headphones.
Cat. No. TC290 14/6 each

OXFORD CRYSTAL DETECTOR

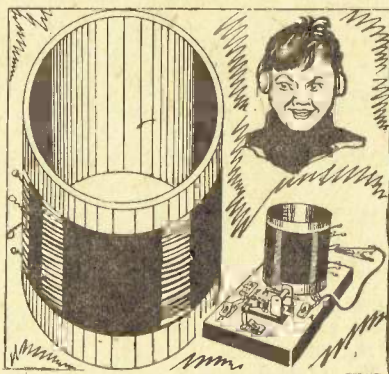


All brass Detector mounted on ebonite base. Supplied complete with crystal and catswhisker.
Cat. No. TC253 4/11 each

CORDS, HEADPHONE

Headphone Cords, 4 lugs one end, 2 tips the other. 6ft.
Cat. No. TC203 4/8

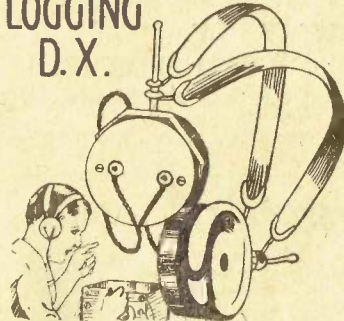
COILS—CRYSTAL SET



Coils for Crystal Sets. Consist of 70 turns, 24-gauge D.C.C. Wire on 3in. diam. bakelite former. Tapped every tenth turn.

Cat. No. TC266 4/- each

LOGGING D.X.



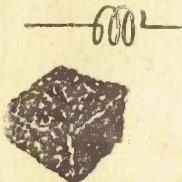
Limited Stocks of Genuine Brandes .2000 ohm matched Phones are now available.

Cat. No. TC242 25/6 pair

Spare Caps—TC288 3/6 each

Spare Diaphragms—TC289 1/3 each

CRYSTALS



Hertzite Crystals, packed in boxes, complete with tweezers and catswhiskers. British.

Cat. No. TC268—
1/4 each

Galena Crystals, in packets.
Cat. No. TC255 9D

CONDENSERS

FIXED CONDENSERS

TUBULAR CONDENSERS

Non-Inductive Condensers with wire ends.
350 volts. (Working).

Cat. No.	each
TC673—.05 mfd.	1/3
TC674—.1 mfd.	1/3
TC676—.25 mfd.	1/9
TC677—.5 mfd.	2/-
TC678—1 mfd.	3/-

600 VOLT WORKING.

Cat. No.	Each
TC700—.0001	1/-
TC701—.0002	1/-
TC702—.00025	1/-
TC703—.0003	1/-
TC704—.0005	1/-
TC705—.001	1/-
TC706—.002	1/-
TC707—.003	1/-
TC708—.004	1/-
TC709—.005	1/-
TC710—.006	1/-
TC711—.01	1/-
TC712—.02	1/2
TC713—.05	1/3
TC714—.1	1/3
TC715—.25	1/9
TC716—.5	2/-
TC717—1 mfd.	3/-

HIGH VOLTAGE CONDENSERS

MICA CONDENSERS

Cat. No. TC573 .0005 1.2 K.V.	4/8 ea.
Cat. No. TC630 .0005, 1800 volts, Test Mica	1/9 ea.
Cat. No. TC631 .002, 1800 volts, Test Mica	3/8 ea.
Cat. No. TC632 .005, 1800 volts, Test Mica	5/- ea.
Cat. No. TC633 .01 1800 volts, Test Mica	5/2 ea.

GENERATOR CONDENSERS



Special Condensers for noise suppression on motor car radio installations, etc. .5mfd. Metal case.

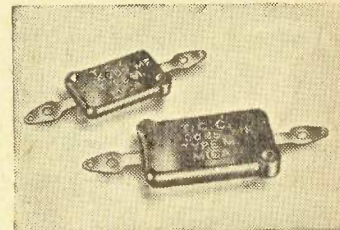
Cat. No. TC637 4/- each

JUST ARRIVED!

Fresh stocks of Mallory 8 x 8 M.F.D. Electrolytic Condensers, upright mounting in Aluminium Cans, 450 volts working.

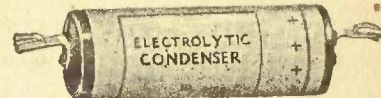
Cat. No. TC580 12/6

MICA FIXED CONDENSERS



Cat. No.	Each
TC692—.00005	1/-
TC679—.0001	1/-
TC679A—.00015	1/-
TC680—.0002	1/-
TC680A—.00025	1/-
TC681—.0003	1/-
TC682—.0005	1/3
TC683—.001	1/3
TC683A—.0015	1/3
TC684—.002	1/3
TC685—.003	2/-
TC691—.004	2/-
TC686—.005	2/-
TC687—.006	2/-
TC688—.01	2/6

ELECTROLYTIC CONDENSERS



ELECTROLYTIC CONDENSERS IN ROUND CARDBOARD CONTAINERS.

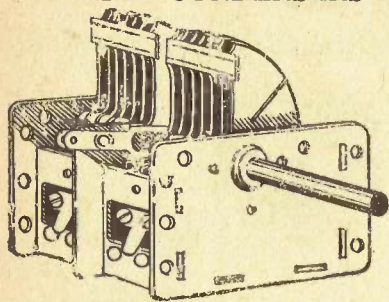
Tubular Type—Dry.

Cat. No.	Each
TC560—4 mfd.	5/6
TC564—8 mfd.	4/6
TC565—16 mfd.	7/6
TC570—50 mfd., 25 volt	3/2
TC571—25 mfd., 35 volt	3/-
TC572—10 mfd., 50 volt	3/2
TC566—12 v. 500 mfd.	5/6
TC567—50 mfd. 350 volt	8/6
TC578—32 mfd., 250 volt	6/9
TC579—8 mfd. in Cardboard Cases with bracket for upright mounting	5/6

ELECTROLYTIC CONDENSERS IN SQUARE CARDBOARD CONTAINERS.

Cat. No.	Each
TC562—8 mfd.	5/6
TC563—8 x 8 mfd.	10/6

GANGED CONDENSERS



PLESSEY GANGED CONDENSERS.

British-made reliable Condensers will match up with Ensign and Exelrad Coil Kits.. 1/2 in. shafts, anti-clockwise rotation. Capacity .000375. Supplied complete with trimmers.

Cat. No. TC922—2-gang **14/-**
Cat. No. TC923—3-gang **16/6**

PADDERS AND TRIMMERS

Single Trimming Condensers, capacity 30 mmfd. Each
Cat. No. TC886 **1/2**

2-Bank Trimming Condensers, capacity 30 mmfd. Cat. No. TC887 **1/6**

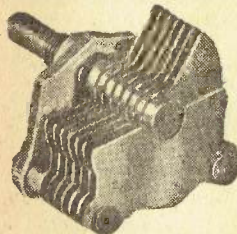
Padders, single hole mounting, 600 mmfd. Cat. No. TC889 **2/-**

Padders, single hole mounting, 1000 mmfd. Cat. No. TC890 **2/4**

MIDGET CONDENSERS. R.C.S.

Midget Condensers with high voltage trolital insulation end plates, single bearing type.

Cat. No.	Max. Cap.	Min. Cap.	Plates.	Price.
TC809	Mmfd.10	Mmfd.3	3	5/-
TC810	Mmfd.25	Mmfd.3.5	4	—
TC811	Mmfd.50	Mmfd.4	7	—
TC812	Mmfd.100	Mmfd.6	14	—

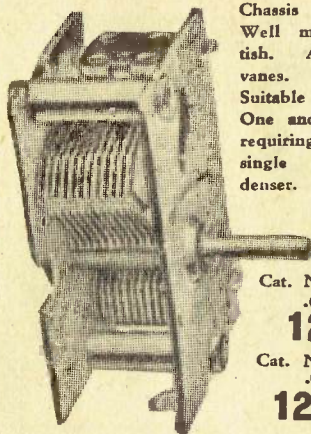


R.C.S. MIDGET CONDENSERS

Trolital high voltage insulation end plates and double bearing, suitable for ganging.

Cat. No.	Max. Cap.	Min. Cap.	Plates.	Price.
TC814	Mmfd.10	Mmfd.3	2	9/3
TC815	Mmfd.25	Mmfd.3.5	4	10/3
TC816	Mmfd.50	Mmfd.4	7	11/9
TC817	Mmfd.100	Mmfd.6	14	14/-

ENSIGN CONDENSERS.



Chassis mounting. Well made. British. Air-spaced vanes. 1/2 in. shaft. Suitable for Hiker's One and other sets requiring a good single gang Condenser.

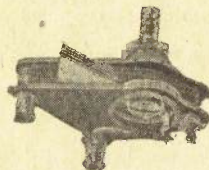
Cat. No. TC914
.0003 **12/4** each
Cat. No. TC915
.0005 **12/10** each

SPECIAL SHORT WAVE TYPE

.00015—Cat. No. TC913 .. **12/3** each

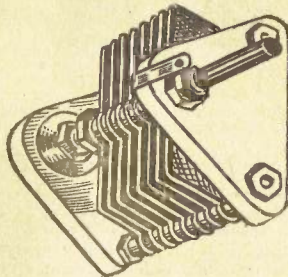
MIDGET VARIABLE CONDENSERS

Very compact Condensers for constructing small receivers, wave traps, and other apparatus. Solid dielectric type. 1/2 in. diam. shaft. Overall dimensions, 1 1/2 in. x 1 1/2 in. x 1/2 in. thick. Shaft assembly 1 in. long.



TC918, .0003—**7/6**
Cat. No. TC919—.0005 **8/9**
Cat. No. TC920—.0001 **7/-** ea.

ENSIGN MIDGET CONDENSERS.



Midget Variable Condensers, 15 plate. Ideal for short-wave work. British make.

Cat. No. TC912 .000065 mmfd. **12/2** ea.

CHOKES — KNOBS

CHOKES

H.F. CHOKES
Honeycomb wound
H.F. Chokes. 10M.H.
Cat. No. TC140



1/9 each

H.F. CHOKES.

2.5 M.H. Pye Wound (4-pye) Chokes, wound on Isolantite Former. We have overbought this line and are therefore prepared to sell them at a greatly reduced price. Usually 4/6 each.

Cat. No. TC47 .. **1/9**



L.F. CHOKES

30 hy. 50 M.A. Filter Chokes.

Cat. No. TC141 **16/6**

30 hy. 100 M.A. ditto.

Cat. No. TC142 **23/-**

KNOBS

The Knobs illustrated are new designs on bakelite, with hole for 1/2 in. shaft. Best make, with brass inset.

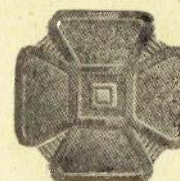
Octagon Knob.

Cat. No. TD8—**8D.** each



Round Knob, 1 in. diam., walnut finish.

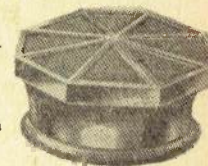
Cat. No. TD15. **1/-** each



Cross Knob.
Cat. No. TD7.
9D. each

Fancy Knob, mahogany 2-tone colour.

Cat. No. TD14. **10D.** each



Small Pointer Knobs. Black bakelite indicator type Knobs. Hole for 1/2 in. shaft. Brass inset. Cat. No. TD6—Small Pointer. **11D.** each.



BAKELITE POINTER KNOBS

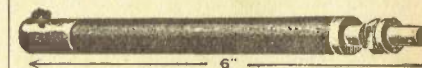
Ideal knobs for analyser, test equipment, for all types of transceivers, and electrical and radio test equipment. Hole for 1/2 in. diam. shafts. Black finish with engraved white line through centre of pointer.



Cat. No. TD46—2 1/2 in. **1/6** each

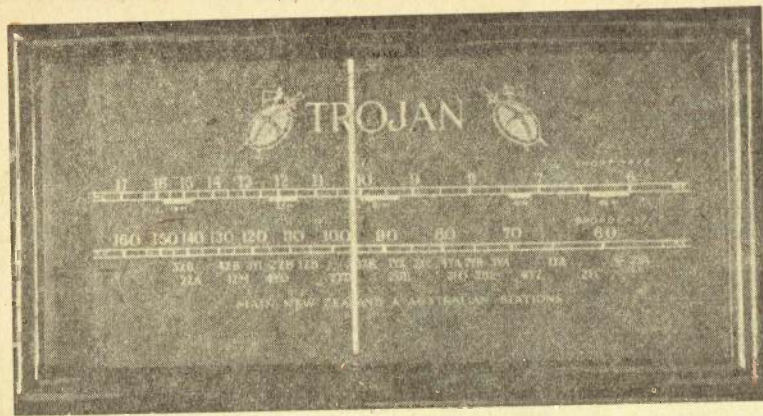
Cat. No. TD45—1 1/2 in. **1/-** each

EXTENSION SHAFTS FOR CONDENSERS



Tuning Condensers in short-wave receivers should often be placed some distance from the panel to minimise hand capacity effects. These extension shafts will fit all makes of condensers, having 1/2 in. diameter shafts. Fitted with 1/2 in. shaft for knob or dial, and complete with panel bush. Nickel-plated finish.

Cat. No. TS142 **4/6** each

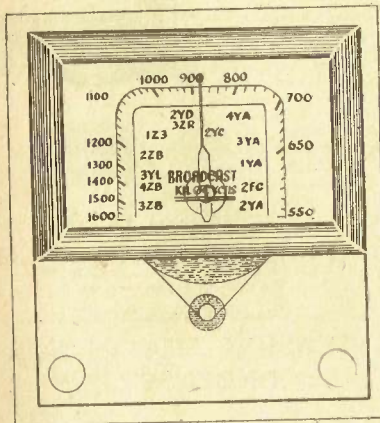


TROJAN DIALS

"Trojan" Slide Rule Type Dial. Attractive glass scale for edge lighting. Dual Wave, size 7in. by 4in., for anti-clockwise rotation. Lettering in Green colour, scale Yellow, and background Black. 3/4in. Bushing. Complete with Escutcheon.

Cat. No. TD101 **26/-** each

BROADCAST DIALS

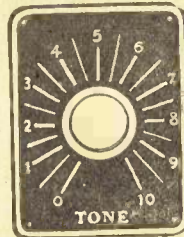


Small Broadcast Dials; ideal for Portables and small receivers. Marked in Kilo Cycles 550-1600. Station markings also given. Lettering in green colouring and scale in red.

3/4in. Bushing for Condenser. Bracket for Dial Lamp. Size 3 1/2in. by 2in. For Clockwise Rotation.

Cat. No. TD103 **16/-** each

INDICATOR PLATES



Metal Indicator Plates marked 0/10 with 20 divisions. Size 1 1/2in. x 2 1/2in.

Cat. No. TD33 **2/-** each

(Suitable Pointer Knobs are Cat. No. TD6, 11d. each.)

DIAL PLATE

Indicator Plates, engraved from 0 to 10 degrees. Diameter 1 1/2in., hole 1/2in.

Cat. No. TD341 **2/8**

(Suitable Pointer Knobs are Cat. No. TD6, 11d. each.)

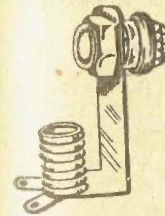
RUBY WINDOW BRACKET FITTING.

An inexpensive accessory, comprising nickel-plated bezel with ruby lens and bulb-holder. Fixed by 3 screws provided. Takes all M.E.S. bulbs.

Cat. No. TD501 **4/-** ea.



DIAL ACCESSORIES



PILOT LIGHT BRACKET

Red ruby jewel. Two lugs insulated from bracket. Jewel fits 7-16in. panel hole.

Cat. No. TD500—**2/6** each

LAMP HOLDERS FOR DIALS



With clip style bracket, made to clip over condenser, etc.

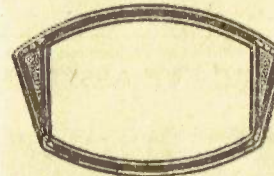
Cat. No. TD504—**9D.** each

As above, but without clip—TD506 **6D.** each

DIAL LAMP HOLDERS similar to above, but to take miniature bayonet type Dial Lamps.

Cat. No. TD505 .. **7D.** each

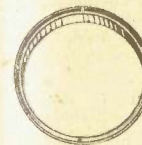
ESCUTCHEONS



A.—Oval shape. Black bakelite. Outside measurements 8 1/2 x 7 1/2; Inside, 6 1/2 x 5 1/2.

Cat. No. TD200 .. **2/6** each

(Glasses for above TD201, 1/3 each)

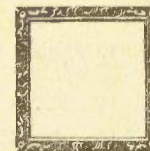


Round Black Bakelite. Outside diam. 5 1/2 in. Inside 4 1/2in.

Cat. No. TD206—**2/6** each

Square Brown Bakelite. Measurements: Outside 5 1/2in. x 5 1/2in. Inside 4 1/2in. x 4 1/2in.

Cat. No. TD214—**2/3** each

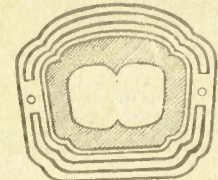


ESCUTCHEON

Square Brown Bakelite type, with Octagonal opening. Overall driven. 4 1/2in. x 4 1/2in. Opening is 3 1/2in.

Cat. No. TD218 **2/3**

ESCUTCHEON



Dial Escutcheon for disc drive dials. Maximum measurements, 1 1/2in. wide by 1 1/2in. high. Size of hole, 3/4in. x 1 1/16in. Florentine bronze finish.

Cat. No. TS219 **1/-** each

METAL MAGIC EYE ESCUTCHEONS.

Overall measurements 2 1/2in. x 1 1/2 in. Finished Florentine bronze.

Cat. No. TS226:

1/6



INSTRUMENT KNOB.



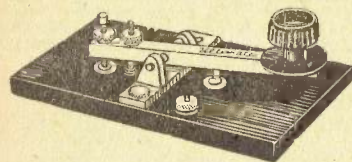
Black Moulded Instrument Knob, fits 1/2 in. shaft. Metal inset. (Knobs are slightly damaged.) Fixed by grub screw. Diam. 2in.

Cat. No. TD5 **2/6** each

SUBSTITUTES.—Owing to the present difficult of obtaining supplies we suggest that you indicate on your order whether or not you wish us to substitute with similar articles in the event of the goods ordered being out of stock.

Morse Keys at Half Usual Prices!

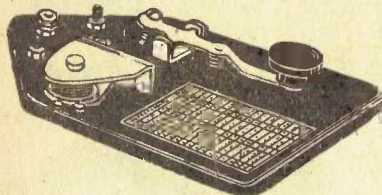
ULTIMATE MORSE KEY



Heavy brass arm and bridge. Fine adjustment of spacing and tension provided. Wooden knob, and finger rest flange, ensuring comfortable operation grip. Mounted on wooden base, finished in varnish. Measures 6 in. long, 3 in. wide,, 3 in. high (overall).

Cat. No. TH111—Were 17/8 Now **8/10**

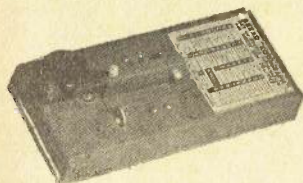
MORSE PRACTICE SETS



British-made Morse Practice Set has Morse Code embossed on base. Stroke of key can be adjusted to individual requirements. Terminals are provided so that the Set can be used in conjunction with another set. Containing Key and Buzzer on One Base. Light Pattern. Measurements 4½ in. long, 2½ in. wide, 1½ in. high.

Cat. No. TH110 **8/9** each

BUZZAGRAPH



A compact key, buzzer and battery combination practice set. Fits into the pocket. Uses high note buzzer, which is adjustable by means of wing screw. Key section incorporates adjustable spring tension and adjustable movement. Complete with two Standard torch cells. The Morse code is included on a gold and black transfer, as shown in the illustration. Unit measures 5 in. x 3 in. x 1 in. deep. The ideal unit for Morse practice.

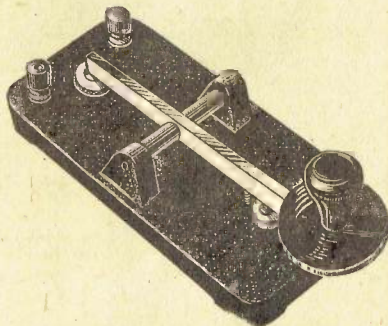
Cat. No. TH3—Were 25/6 Now **12/9**

PRACTICE KEYS.

Low-priced practice Keys. Good movements. Steel fittings.

Cat. No. TH4— Were 13/6 Now **6/9**

HEAVY MORSE KEYS



Measure 6 in. x 3 in. Heavy cast base; silver contacts, chrome-plated arm. Adjusting screw.

Cat. No. TH5—Were 25/- Now **12/6**

MAGIC EYE ASSEMBLY



For 6-prong Tubes. An easy method of adapting a Magic Eye or Electron Ray Tube to any standard radio receiver having a.v.c., or any Frequency Modulated receiver. Also used extensively for installing Magic Eyes as indicators in test instruments such as signal tracers, condenser testers, etc.

The metal encased socket is completely wired with a 5-wire colour-coded cable 22 in. in length. The necessary 1-megohm target-to-plate resistor is concealed and protected by the socket's metal shell.

Complete set of parts, without valve.

Cat. No. TS495 **9/3**

BUY UNDER THE
LAMPHOUSE GUARANTEE.

TEST YOUR BATTERIES



Telsen Double Range Voltmeter in neat bakelite case. Every battery owner should have one of these useful meters. Ranges 0 to 9 and 0 to 180 volts.

Cat. No. TM101

TRIPLE RANGE MODEL

Ranges, 0/9 Volts, 0/180 Volts, 0/30 M.A. Pocket Type Meters in Bakelite case. Made by Telsen, England.

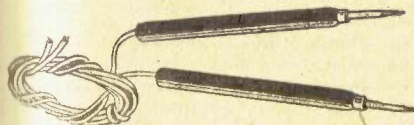
Cat. No. TM6 **27/-** each

METER FUSES

Spare Tubular Fuses for Pifco and other meters.

Cat. No. TM50 **9D.** each

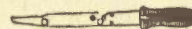
TEST PRODS



Polished ebonite handles and complete with flexible leads.

Cat. No. TM1 **7/-** pair

Midget Ball HYDROMETERS



These are accurate and the acid is tested by means of three coloured balls. The condition of the accumulator is shown instantly by the way the three balls of different specific gravities and colours sink or float, indicating fully charged, half charged, and discharged. (British.)

Cat. No. TM302 **3/4** each

HYDROMETERS



English Guidor brand. Patent guide in glass container prevents float from sliding and gives an instantaneous dead beat reading. Float is protected by rubber guide ring to prevent breakage. Glass parts protected by best quality rubber parts at each end to prevent breakage.

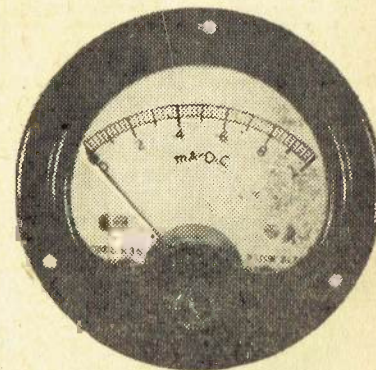
Cat. No. TM303

8/3

Spare Floats—Cat. No. TM304

3/6

0-1 M.A. METERS



0-1 M.A. Moving Coil D/C Meters. 1000 ohms per volt. Internal resistance 60 ohms.

THREE TYPES

DE JUR (U.S.A.), 2½ in. Round Scale, 3½ in. Outside Diameter.

Cat. No. TM15 **£2/10/-**

PALEC (Australian), 2½ in. Round Scale, 3½ in. Outside Diameter.

Cat. No. TM16 **£3/15/-**

BURLINGTON (U.S.A.), Square Case, 3 in. x 3 in.

Cat. No. TM17 **£4/15/-**

METER RECTIFIERS

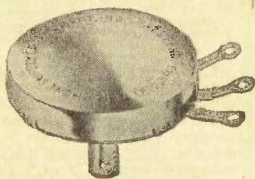
Westinghouse Dry Rectifiers for 0/1 M.A. Meters.

Cat. No. TM13 **29/6**

SUBSTITUTES.—Owing to the present difficulty of obtaining supplies we suggest that you indicate on your order whether or not you wish us to substitute with similar articles in the event of the goods ordered being out of stock.

POTENTIOMETERS—Carbon

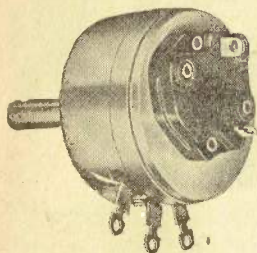
Carbon type employs a full wiping contact between the movable contact member and the hard smooth composition resistance element.



Cat. No.	Ohms.
TP46—	1,000
TP47—	2,000
TP48—	5,000
TP49—	10,000
TP50—	25,000
TP51—	50,000
TP52—	100,000
TP53—	250,000
TP54—	500,000
TP55—	1 megohm
TP57—	2 megohm

ALL
4/6 EACH

POTENTIOMETER with Switch



Cat. No. TP64—
500,000 ohms,
carbon—

7/- each

R.C.S. WIRE - WOUND POTENTIOMETERS

Made from moulded bakelite with brass spindles. Nickel-silver contacting ring ensures smooth action, 3/4 in. diameter shaft.

Cat. No. TP30A—400 ohm, 50 M.A.	6/9
Cat. No. TP31A—1000 ohm, 35 M.A.	6/9
Cat. No. TP32A—2500 ohm, 30 M.A.	6/9
Cat. No. TP33A—5000 ohm, 30 M.A.	6/9
Cat. No. TP24A—10,000 ohm, 20 M.A.	8/9

BULGIN POTENTIOMETERS

Best English Wire-wound Potentiometers.

Cat. No. TP34—30 ohms	9/6 ea.
Cat. No. TP35—50 ohms	9/6 ea.
Cat. No. TP39—500 ohms	9/6 ea.

CHASSIS PLUGS & SOCKETS



Miniature 3-pin type. Socket mounts on to chassis. Extremely useful unit for connecting external units such as microphones, pickups, &c.
Cat. No. TP270 1/3 pair

SPEAKER PLUGS

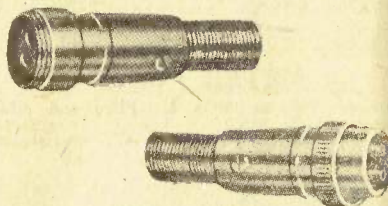
For use with Speakers, Battery Cables, etc. Metal top clips on to a bakelite base. Deep metal casing enables plug to be removed easily from socket and also allows good space for internal wiring.

Cat. No. TP252A—4-pin	1/- ea.
Cat. No. TP253A—5-pin	1/- ea.
Cat. No. TP251A—8-pin	1/- ea.

Black Bakelite Amphenol Type.

Cat. No. TP254—6-pin	1/- ea.
Cat. No. TP255—7-pin	10d. each

MICROPHONE CONNECTORS



Shielded Connectors for Microphones, Pickups, Speakers, etc., etc.

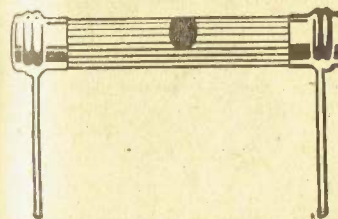
Cat. No.	
TC1—Female 1-wire Connector	3/-
TC3—Male 1-wire Connector	3/6
TC9—Female 2-wire Connector	5/-
TC8—Male 2-wire Connector	5/6
TC12—Female 3-wire Connector	6/-
TC11—Male 3-wire Connector	6/-
TC16—Female 4-wire Connector	6/6
TC15—Male 4-wire Connector	6/6



TC2—Female 1-wire Chassis mounting Socket	2/-
TC7—Female 2-wire Chassis mounting Socket	3/-
TC10—Female 3-wire Chassis mounting Socket	3/6

RESISTORS — POTENTIOMETERS

COLOUR CODED RESISTORS



Conservatively rated at 1 watt. They will stand up to 50 per cent. overload without injury. Colour coded to the R.M.A. standard. They are accurate to within 5 per cent. of stated values, which remain constant whether in use or in stock. Perfectly noiseless and completely free from hand capacity effects. All one watt size.

Cat. No.	Ohms.
TR210—	100
TR211—	200
TR212—	250
TR213—	300
TR214—	400
TR215—	500
TR216—	750
TR182—	1,000
TR183—	2,000
TR184—	3,000
TR185—	4,000
TR186—	5,000
TR187—	7,500
TR188—	10,000
TR189—	15,000
TR190—	20,000
TR191—	25,000
TR192—	30,000
TR193—	50,000
TR194—	75,000
TR195—	100,000
TR196—	150,000
TR197—	200,000
TR198—	250,000
TR199—	300,000
TR200—	500,000
TR201—	1 megohm
TR202—	2 megohm
TR203—	3 megohm
TR204—	4 megohm
TR205—	5 megohm
TR206—	6 megohm
TR207—	7 megohm
TR208—	8 megohm
TR209—	10 megohm

ALL

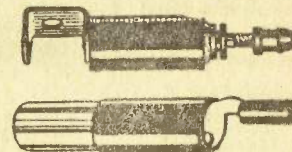
9d. each.

1/2 WATT RESISTORS.

TR150—	1,000
TR151—	2,000
TR152—	5,000
TR153—	10,000
TR154—	15,000
TR155—	20,000
TR156—	25,000
TR157—	50,000
TR158—	100,000
TR159—	200,000
TR160—	250,000
TR161—	300,000
TR162—	500,000
TR163—	1 megohm
TR164—	2 megohm
TR165—	3 megohm
TR166—	5 megohm
TR171—	10 megohm

8d. each

MOTOR RADIO SUPPRESSORS



Spark Plug Type (top illustration). A sturdy unit which meets the most exacting demands for spark plug suppression.

Cat. No. TR229	—
Distributor Type—Cat. No. TR228	—

The above suppressors will not affect power or petrol consumption of your engine.

WIRE-WOUND RESISTORS

Well-known I.R.C. brand Resistors.

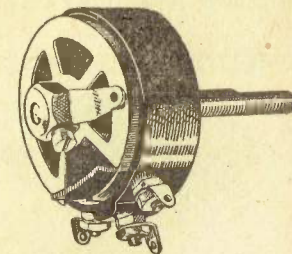
Cat. No.		Each.
TR20, 20 ohm 2w. centre tapped	3/6	
TR21, 50 ohm 2w. centre tapped	3/6	
TR22, 100 ohm, 2w. centre tapped	3/6	
TR30, 200 ohm 10-watt Resistors	3/4	
TR31, 250 ohm 10-watt Resistors	3/4	
TR32, 300 ohm 10-watt Resistors	3/4	
TR33, 400 ohm 10-watt Resistors	3/4	
TR34, 500 ohm 10-watt Resistors	3/4	
TR35, 750 ohm 10-watt Resistors	3/4	
TR36, 1,000 ohm 10 watt Resistors	3/4	

200 OHM RESISTORS

Special purchase of 200 ohm 150 M.A. Wire-wound Resistors enables us to sell them at 1/6 each.

Cat. No. TR7A	1/6 ea.
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R.C.S. RHEOSTATS



R.C.S. Rheostats, made from moulded bakelite with brass spindles, 3/4 in. diam. shaft. Nickel-silver contacting ring ensures smooth action.

Cat. No. TR507—6 ohm .25 amp.	6/9 ea.
Cat. No. TR508—10 ohm .25 amp.	6/9 ea.
Cat. No. TR509—20 ohm .25amp.	6/9 ea.
Cat. No. TR510—30 ohm .25 amp.	6/9 ea.

VALVE SOCKETS

WAFER SOCKETS

Ruggedly constructed. Certain connection with three points contacting each of the valve pins. Standard mounting centres.

Cat. No. TS631—4-pin	ALL
Cat. No. TS632—5-pin	6D.
Cat. No. TS633—6-pin	EACH
Cat. No. TS634—7-pin	
Cat. No. TS635—8-pin (Octal)	
Cat. No. TS636—Loctal	1/-
Cat. No. TS637—Sockets for Midget Valves (1S4 series)	each 2/-



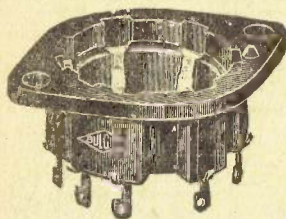
BASEBOARD MOUNTING VALVE SOCKETS



Amphenol Sockets mounted on raised metal shield to enable the sockets to be screwed on wooden baseboards, etc.

Cat. No. TS620—4-pin	2/6	ea.
Cat. No. TS621—5-pin	2/6	ea.
Cat. No. TS624—8-pin Octal	2/6	ea.

SIDE-CONTACT CHASSIS VALVE-HOLDERS.



8-CONTACT.

Moulded bakelite chassis valve holders for the side-contact valves. Fitted with eight leaf contacts and integral solder tags. Very efficient and reliable contact is made with valves of the type concerned.

Cat. No. TS638	1/7
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SOCKETS

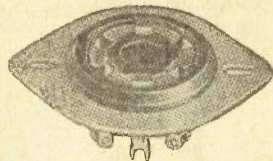
Baseboard Mounting.

For American base valves. Made of bakelite with screw terminals. Special spring contacts ensure a good connection.

Cat. No. TS605—4-pin (U.X.)	1/6
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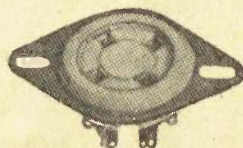
AMPHENOL VALVE SOCKETS



Amphenol Valve Sockets, complete with metal mounting plates.

Cat. No. TS614—4-pin	8d.	each
Cat. No. TS615—5-pin	8d.	each
Cat. No. TS616—6-pin	8d.	each
Cat. No. TS617—7-pin	8d.	each
Cat. No. TS619—8-pin	8d.	each

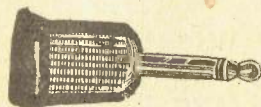
STEATITE SOCKETS



Made from entirely new dielectric, ultra low loss, phospho bronze silver-plated contacts. Steatite Sockets are particularly recommended for high frequency work and where high temperatures are encountered. Ideal for Transmitters and Amplifiers and other apparatus in excess of 20 watts.

Cat. No. TS641—4-pin	3/6
Cat. No. TS642—5-pin	3/6
Cat. No. TS643—6-pin	3/6
Cat. No. TS645—8-pin	3/6

BULGIN PHONE PLUGS



A Jack Plug with nickel-plated contacts. Easily wired and provided with internal cord grips. Black bakelite with mottled design on side. A useful and inexpensive plug.

Cat. No. TP268	each 4/-
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ROLA SPEAKERS

Prices as at 1/6/46.



Stocks of Speakers are still bad, but the Factory anticipate letting us have better deliveries during the currency of this Catalogue. We will always endeavour to procure your requirements should we be unable to supply from stock.

Electro-Dynamic.

Cat. No.	Type No.	Overall diameter.	Voicecoil diameter	Voicecoil impedance	Normal field excitation	Maximum weight of field coil.	Prices.
TS921	F-12	12½ in.	1 in.	2.3 ohms	8 watts	1½ lbs.	£2 18 3
TS922	K-8	8 in.	1 in.	2.3 ohms	8 watts	1½ lbs.	£2 11 0
TS923	F-5B	6½ in.	¾ in.	3.7 ohms	6 watts	¾ lb.	£2 1 6
TS924	F-4	5 in.	¾ in.	3.7 ohms	6 watts	¾ lb.	£2 1 6

Permanent Magnet.

TS926	12-20	12½ in.	1 in.	2.3 ohms	—	—	£3 10 8
TS927	8-20	8 in.	1 in.	2.3 ohms	—	—	£3 2 3
TS928	6-8	6½ in.	¾ in.	3.7 ohms	—	—	£2 2 5
TS929	5-8	5 in.	¾ in.	3.7 ohms	—	—	£2 2 5

ENSIGN SPEAKER EXTENSION ADAPTORS.



Extension Speaker Adaptors. The problem of fitting an extension speaker to your electric set has been solved! All you do is remove the output valve, plug in the adaptor, then put back the valve on top of the adaptor. The adaptor can also be used as a tone improver.

Can be used in conjunction with all P.M. speakers which have output transformers fitted.

Cat. No. TS780—4-pin	7/6	each
Cat. No. TS781—5-pin	7/6	each
Cat. No. TS782—6-pin	7/6	each
Cat. No. TS783—Octal	8/6	each

GOAT VALVE SHIELDS

Form fitting Valve Shields, complete with split ring and base mounting clips.

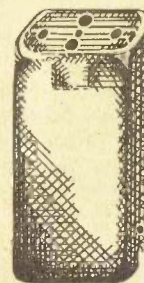
Cat. No. TS20—	1/-	complete
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I.F. CAN

Single piece I.F. Can, 1½ in. x 1½ in. x 3 in. high. All necessary holes provided.

Cat. No. TS25—	1/9	each
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SWITCHES

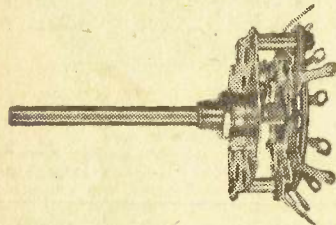
METER PUSH OR PUSH SWITCH



Designed for one-hole fixing to panels between 1/16 in. and 7/32 in. thick. With highly polished nickel-plated bush-nose and coloured insulation plunger. Silver-contacts make sure and trouble-free contact. With terminal screws, one pole live to bush. Rating: 1 amp. at 10 volts or 100 mA at 100 volts.

Cat. No. TS482 **4/6** each

WAVE CHANGE SWITCH



6 pole 2 position Wave Change Switches.
Cat. No. TS470 **6/6** each

RADIO SWITCH

10 Contact Rotary Switch, for Tapping Coils, etc. Complete with knob.
Cat. No. TS449 each **6/9**

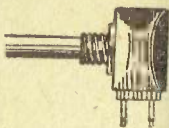
Lamphouse Annual

This Catalogue contains particulars of goods which we expect to have in stock during the 1946/7 Radio season. There are times when certain lines will be out of stock. When ordering, please advise whether you wish us to substitute with the nearest goods available, or not.

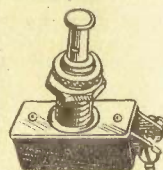
THE LAMPHOUSE, 11 Manners Street, Wellington, C.1.

ROTARY RADIO SWITCHES

Rated 230 volt, 2 amp. These are the rotating type of switches and are supplied with 3/16 in. shaft, so that a knob can be fitted to match the other controls on the set. One hole fixing. Switch mounted in hermetically sealed cases, perfectly reliable contact, durable construction.



Cat. No. TS445—S.P., on-off **6/4** ea



PUSH PULL SWITCHES.

Reliable Push Pull Battery Switches for motor-cars, or Radio, Single Hole Fixing.

Cat. No. TS439 **3/-** each

Telsen (4 point D.P. On/Off) Switches for panel mounting.

Cat. No. TS438 **3/5** each

MINIATURE SWITCHES

Here's a handy little switch suitable for radio and motor-car work. Positive action. Nicely finished (nickel plated).

British made.
Cat. No. TG118 **2/3**



As above, with coloured bakelite cover—
TG118A **2/3** each

BULGIN TOGGLE SWITCHES

British, quick make-and-break Toggle Switches. Rating 230 v., 3 amp.

Cat. No. TS441—
S.P. On-off **5/6**
Each

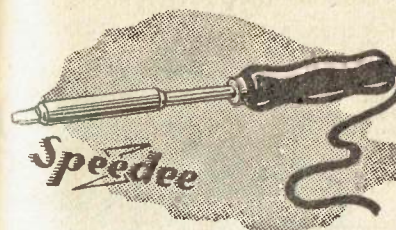
Cat. No. TS442—
D.P. On-off **7/6**
Each

Cat. No. TS443—S.P. Change-over **6/4**
Each

Cat. No. TS444—D.P. Change-over **7/6**
Each



"Speedee" SOLDERING IRONS



Consumes 100 watts—no more than a small light bulb. Indispensable to the handy man in workshop or home.

Cat. No. TS406 **15/6** each

Spare Elements for above—
Cat. No. TS407 **2/9** each

Spare Copper Bits—
Cat. No. TS403 **3/-** each



Soldering
Made Easy!

Resin Core Solder is recommended for the home constructor. It looks like wire and is filled with a resin preparation which eliminates the necessity for using flux or spirits of salts, etc.

Instructions for Using:

1. The joints to be soldered should be thoroughly cleaned and free from acid or grease. On plated parts (nickel or chromium) the "plate" should be filed away where the joint is to be made.

2. Heat the soldering iron just enough to melt the solder. "Tin" the copper bit by first filing lightly and then rubbing with the cored solder until coated. The area of this coat should extend about half-an-inch from the tip of the bit and completely round it.

3. Heat again for working, but not to red heat.

4. Apply the bit and the cored solder to the work, rubbing the bit well down to transmit the heat. It is important that the bit, cored solder and joint should come into contact simultaneously.

There is no necessity to clean the joints after soldering: the ratio of the flux to the solder is such as to obviate this.

Cat. No. TS411—
Small Reel, about 27 inches **7D.** each

Cat. No. TS413—1lb. reel **7/6**

SOLDER 34/66

Full size sticks.

Cat. No. TS418 **1/6** each

SOLDERING PASTE

Morton's Super Soldering Paste. An ideal paste for use instead of flux or resin. Can be used on all metals except aluminium.

Cat. No. TS423—2 oz. tins **1/8**

Cat. No. TS424—4 oz. tins **2/6**

"Speedee" HEAVY DUTY IRONS

Designed for commercial use requiring a heavy iron for long periods. Watts, 180. Weight, 3 1/2 lb.

Cat. No. TS396 **55/-** each

Spare Elements for above.
Cat. No. TS397 **19/-** each

ALUMINIUM SOLDER

For repairs in aluminium ware and die cast metals. No soldering iron or flux necessary. Recommended for aluminium saucepans, kettles. Full instructions supplied with each stick.

Cat. No. TS420—Small stick, 5in. x 3/16in. **1/8**

OLON ELECTRIC SOLDERING IRONS

Improved Bit.—The Bit is of tinned copper of oval section, allowing work to be done in a narrow space. It is designed to provide the maximum amount of heat at the working end with a minimum of heat loss due to radiation, as the heating element is totally enclosed in the bit.

Constant Heat.—Four minutes to heat up and the "Empire" Model SOLON is ready for continuous use if required.

Flexible Lead.—Six feet of Tough Rubber-Sheathed 3-core Flex.

Cat. No. TS410—Solon Domestic or Radio Soldering Iron **25/3**



FILAMENT TRANSFORMERS.

Cat. No. TT632—6.3 volts 2 amp. . . **25/-**

SPECIAL TRANSFORMER.

In response to many enquiries we have now available a special transformer for valve testers, experimenters, etc. It has a 230-volt primary and secondary tappings of 2 amps., as follows—1.5 volts, 2 volts, 2.5 volts, 4 volts, 5 volts, 6.3 volts, 7.5 volts, 12.5 volts, 25 volts and 30 volts.

Cat. No. TT616 **47/6**

ENSIGN REPLACEMENT TRANSFORMERS.

Made from the best stalloy steel and wire and under strict supervision these transformers are ideal for replacement, etc.

TT714—Single Pentode	}	12/6	
TT715—Push Pull Pentode			
TT716—Single Triode			Each.
TT717—Push Pull Triode			

ENSIGN SPEAKER TRANSFORMER COILS.

Will fit practically all types of Speaker Transformers, thus doing away with the necessity of replacing the complete transformer.

Cat. No. TT730—Single Pentode	6/10
Cat. No. TT731—Single Triode	7/6
Cat. No. TT732—P.P. Pentode	7/6
Cat. No. TT733—P.P. Triode	7/6

ENSIGN AUDIO TRANSFORMER.

Vacuum Sealed Inter-stage Audio Transformer. Wound on first grade core using best quality copper wire flexible leads to ensure higher efficiency. Ratio 3 to 1. Size, 2 1/2 ins. high, 3 ins. wide and 2 ins. deep.

Cat. No. TT606—
16/- each



VOLTAGE REDUCER. "OXFORD."

This reducer supplies 6 volts 5 amps. from the 240-volt light or power. A 2-pin plug outlet is provided.

Cat. No. TT623—
33/6 each

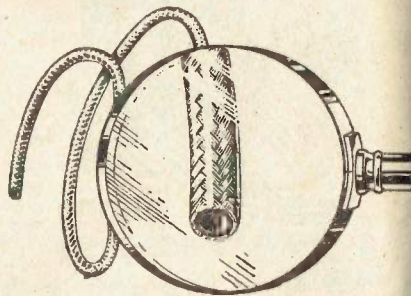


ENSIGN VIBRATOR POWER TRANSFORMERS.

Manufactured from the first grade material. 150 volt, 25 M.A.—6 volt.

Cat. No. TT625 **22/6**

SHIELDED BRAID



Metal screening tubing for slipping over insulated wires, etc. For shielding. In many modern A.C. circuits it is essential to screen grid and plate leads to prevent pick-up on these leads. Flexible.

Cat. No. TW163—3/8 in. **7^D.** ft.

Cat. No. TW164—3/16 in. **4^D.** ft.

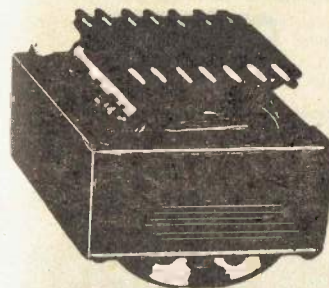
ELECTRIC HIKERS' TRANSFORMER

Power Transformers wound especially for use with the "Electric Hikers" and "Eaglet Two" Kitsets.

Cat. No. TT670 **£2** each

TRANSFORMERS

POWER TRANSFORMERS



The following types are available:—

230 VOLT PRIMARIES.

Secondary Windings: 350/350 Volts 60 M.A.; 5 Volt 2 amp.; 6.3 Volt 2 amp.

Cat. No. TT650 **33/3** each

385/385 Volts 100 M.A.; 5 Volt 2 amp.; 6.3 Volt 4 amp.

Cat. No. TT651 **37/6** each

400/400 Volts 150 M.A.; 5 Volt 3 amp.; 6.3 Volt 3 amp.

Cat. No. TT652 **59/6** each

350/350 Volt 60 M.A.; 5 Volt 2 amp.; 2.5 Volt 5 amp.

Cat. No. TT653 **33/3** each

385/385 Volts 100 M.A.; 5 Volt 2 amp.; 2.5 Volt 10 amp.

Cat. No. TT654 **37/6** each

CLASS B TRANSFORMERS.

Class B Interstage Transformers, for Battery sets, etc. Heavy robust job. Offered at special low price owing to our having made a fortunate purchase.

Cat. No. TT605 **12/-** each

UPRIGHT MOUNTING TRANSFORMERS

385/385 volts 100 M.A.; 5 volt, 2 amp.; 6.3 volt, 4 amp.

Cat. No. TT651A **43/6** ea.

PRICES

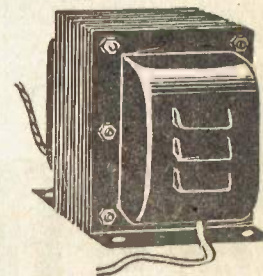
The prices in this Catalogue should be taken as an indication only. Prices are still fluctuating rapidly and all orders will be executed at the prices ruling at the date of supply.

UNIVERSAL OUTPUT TRANSFORMERS.

These Transformers have been designed to meet the needs of engineers, experimenters, and servicemen, for a single unit so constructed as to provide the correct impedance matching between various types of Audio Output Tubes in a single Push-Pull, Parallel, or Class B Circuit, and any Dynamic Speaker. Full instructions are given with each Transformer.

Cat. No. TT602 **17/6** each

STEPDOWN TRANSFORMER



Stepdown from 230 to 110 volts. Rating 60-80 watts.

Cat. No. TT622 **35/6**

Larger or special stepdown transformers can be made to order, provided material is available.

TERMINALS

Wood screw pattern, with hole. Nickel plated.

Cat. No. TT6 **6^D.** each



Cat. No. TT5—Large Brass Battery Terminal Spades **2^D.** each

TERMINALS

SOLDERING LUGS.

4 B.A. Double Ended
Soldering Lugs
(tinned).

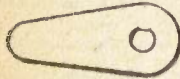
Cat. No. TT7 **3D.** doz.



PEAR-SHAPED LUGS

Small, 1/2 in. long, 5/32 in. hole.

Cat. No. TT2 **3D.** doz.



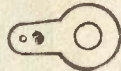
Large, 3/4 in. long, 5/32 in. hole.

Cat. No. TT3 **3D.** doz.

DROP-SHAPED LUGS

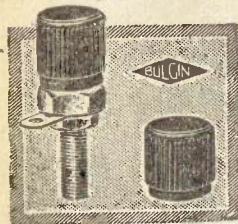
1/2 in. long, 7/32 in. hole.

Cat. No. TT4 **3D.** doz.

DALTON
TERMINALS

Insulated type supplied in either red or black. Spring grip makes easy connection or disconnection. Special design so that when fitted they are insulated from metal chassis.

Cat. No. TT10 Each **9D.**

SMALL INSULATED
TERMINALS, 4 B.A.

The illustration is approximately full size. These terminals fill the want of many who seek a small, inexpensive type. The heads are removable and have inserts. Without indications, in two colours, red and black.

Cat. No. TT31 each **10D.**

FAHNSTOCK CLIPS

N.P. on spring brass.
Size 1/2 in. x 1 in.

Cat. No. TT41 **2D.** ea.

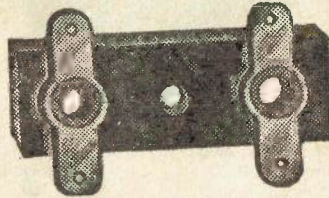


TERMINAL STRIPS



Terminal Screws mounted on insulated strips.
Cat. No. TT27 **7D.** each

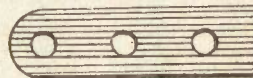
ANCHORING STRIPS



Used for supporting condensers, resistors, etc., above earth or chassis. Fixed by bolt through centre hole.

Cat. No. TT34 **3 1/2D.** each

TERMINAL STRIPS



Bakelite Terminal Strips, 1 1/2 in. long by 1/2 in. wide, 1/16 in. thick. Three holes provided for mounting terminals, etc. Handy little insulation pieces.

Cat. No. TT503 **1D.** each

Cat. No. TT504 (with two holes) **1D.** each

BANANA PLUGS
AND SOCKETS

Banana Plugs and Sockets have all sorts of uses, such as for aerial and earth connections, coil tapping, battery connections, etc.

Cat. No. TT23—Banana Plugs only **10D.** ea.

Cat. No. TT24—Sockets for above **1/-** each

Insulated.

SPADE ANCHOR LUGS



Steel cadmium plated for mounting coils, condensers, shield cans, etc., 6-32 thread. Hole in flat portion fits 9/64 in. diameter eyelets and 6/32 screws.

Cat. No. TT40 **1D.** ea.

RADIO HARDWARE

SELF-TAPPING SCREWS



For mounting components on radio chassis, etc. 1/2 in. long, No. 6 Gauge.

Cat. No. TT420 **5D.** per dozen

4/9 per gross

WOOD SCREWS.



Counter-sunk heads. Gimlet points. All sizes can be supplied. The following are in most popular demand:

Bright Mild Steel.

Cat. No.	Size.	Dozen.
TT470—	1/2 in. x 1	3d.
TT471—	1/2 in. x 2	3d.
TT472—	1/2 in. x 5	3d.
TT473—	1/2 in. x 3	3d.
TT474—	1/2 in. x 6	4d.
TT475—	1/2 in. x 4	4d.
TT476—	1/2 in. x 6	4d.
TT477—	1/2 in. x 8	5d.
TT478—	1 in. x 4	5d.
TT479—	1 in. x 6	5d.
TT480—	1 in. x 8	6d.
TT481—	1 1/2 in. x 8	6d.
TT482—	1 1/2 in. x 10	7d.
TT483—	1 1/2 in. x 6	7d.
TT484—	1 1/2 in. x 9	8d.

SCREWS AND NUTS

Best English quality. All Brass.

Cat. No. TT428—	1/2 in. x 6BA Screws and Nuts	8d. doz.
Cat. No. TT430—	1 in. x 6BA Ditto	9d. doz.
Cat. No. TT424—	1/2 in. x 4BA Ditto	10d. doz.
Cat. No. TT426—	1 in. x 4BA Ditto	11d. doz.
Cat. No. TT421—	1/2 in. x 2BA Ditto	1/2 doz.
Cat. No. TT423—	1 in. x 2BA Ditto	1/5 doz.
Cat. No. TT433—	6BA Brass Hex. Nuts	3 1/2d. doz.
Cat. No. TT432—	4BA Ditto	6d. doz.
Cat. No. TT431—	2BA Ditto	7d. doz.
TT436—	6B.A. Washers	2d. dozen
TT435—	4B.A. Washers	3d. dozen
TT434—	2B.A. Washers	4 1/2d. dozen

LAMPHOUSE GUARANTEE

Any goods that prove in any way unsuitable may be returned within seven days from receipt and your money will be returned in full.

RUBBER GROMMETS

Made of good quality black vulcanised rubber. For fitting in holes in chassis, etc., to insulate and protect cables.



Ditto to fit 1/2 in. hole. Inside diameter 3/4 in.

Cat. No. TS244 .. **3D.** each

INSULATING WASHERS



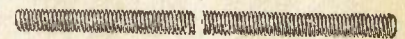
Insulating Washers for insulating potentiometers and other components from metal panels, etc. 1/2 in. diam. x 1/2 in. diam. hole x 1-16 in. thick.

Cat. No. TS230—Fibre. **6D.** dozen

Ditto, 1/2 in. x 1/2 in. x 1/16 in.

Cat. No. TS231—Fibre **6D.** dozen

RODS, THREADED—BRASS



Threaded Rod is useful for many odd jobs, 6 in. lengths, each with four nuts.

Cat. No. TS213—5/32 **8D.** each

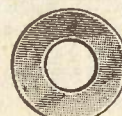
COIL TERMINAL BASE



Used for finishing Coil Windings and for connecting to the wiring of the Set. Provided with 4 lug Terminals. Mounting holes 1 1/2 in. apart. (Centres.)

Cat. No. TC529 **4d.** each

THICK RUBBER WASHERS



Dimensions:

Diameter 1 1/2 in.; diameter of hole, 1/2 in.; thickness 1/4 in.

Cat. No. TS143—**1D.** each; **9D.** dozen

RADIO HARDWARE

SPEAKER CORD TIPS



Nickel-plated tips for speaker and 'phone cords. Cat. No. TT28 **3**D. each

SOLDERLESS 'PHONE TIPS



A 'Phone Tip that does not need any solder. Especially constructed so that the wire makes a good connection without the use of solder. Cat. No. TT29 .. each **9**D.

PHONE TIP JACKS

Jacks to take Phone Tips. Have insulated top. Cat. No. TJ20 **1/1** each

TWIN TIP JACK UNITS

A strong spring firmly makes contact to any tip inserted within its grip. Mounted on bakelite strip. Metal parts are nickelplated.

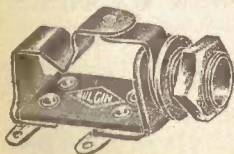


Jacks fit any standard 'phone tip. Cat. No. TJ8 **7**D. each

JACKS.



TJ22—Bulgin S.C. Jacks .. **2/10** each



TJ23 — Bulgin Single Closed Circuit Jacks **4/6** each

CLIPS, SCREEN GRID

For attaching leads to the top of screen grid valves, etc.

Cat. No. TC23 .. **1**D. each

Cat. No. TC24—Screen Grid Caps for metal valves ... **1**D.



UNIVERSAL BATTERY CLIPS



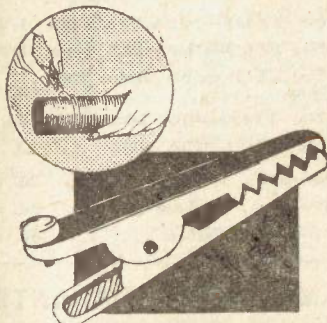
British made, these Clips have good strong springs that make a sure contact. Cat. No. TC20—5 amp. (Pee Wee) 6d. each
Cat. No. TC21—10/25 amps. .. 1/- each
Cat. No. TC22—50 amp. ... 1/9 each
Cat. No. TC22A—30 amp. clips (slightly different to illustration) .. 1/4 each

INSULATED CROCODILE CLIPS



Insulated Crocodile Clip. Useful for servicemen, experimenters, etc., when dealing with high voltages. Wire passes through insulator to grip sleeve and screw. Nickel-plated. Red and black insulated. Cat. No. TC18 **1/7** each

ALLIGATOR CLIP



Here's a Handy Clip for coil and battery connections. The strong spring ensures a good connection.

Cat. No. TC19 **8**D. each

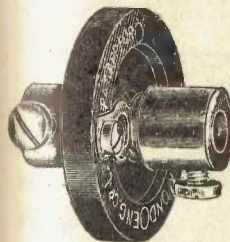
MINIATURE SCREW HOLDERS

Bakelite Lampholders, miniature screw thread which takes torch and similar lamps.

Cat. No. TS23—**1/3** each



COUPLING CONDENSER



Condenser Coupling used for ganging two single condensers.

Insulates one shaft from the other.

Cat. No. TC901: **1/3** each

FORMER

This Former Tube for coil winding has very high insulating properties, the surface being made of pure bakelite.



Cat. No.		Each
TF79—	1/2 in. diam., 1 1/2 in. lengths (for Midget Coils) ..	4d.
TF80—	1 in. dia., 6 in. lengths ..	1/3
TF81—	1 1/2 in. dia., 6 in. lengths ..	1/10
TF81A—	1 1/2 in. dia., 3 in. lengths ..	1/-
TF83—	1 1/2 in. dia., 6 in. lengths (valve base size) ..	2/3
TF86—	2 in. dia., 6 in. lengths ..	1/8
TF87—	2 1/2 in. dia., 6 in. lengths ..	2/4
TF88—	3 in. dia., 5 in. lengths ..	2/1

SPAGHETTI INSULATING TUBING

Cat. No. TS1—	1 mil., 1 yd. lengths ..	4 1/2d.
Cat. No. TS2—	2 mil., 1 yd. lengths ..	5d.
Cat. No. TS3—	3 mil., 1 yd. lengths ..	6d.
Cat. No. TS4—	4 mil., 1 yd. lengths ..	8d.
Cat. No. TS5—	6 mil., 1 yd. lengths ..	1/-

BATTERY SET CHASSIS

Battery Set Chassis, size 1 1/2 in. x 7 in. x 2 1/2 in., drilled and cut for Gang Condenser and Dial (mounted off centre). 10 Valve and coil, holes already punched.

Cat. No. TC1003 **6/6** each

PANICA RADIO PANELS

Panica Radio Panelling is practically indestructible. It has high insulating properties, is non-hydroscopic, and has great tensile strength. Panica is easily worked and can be cut, sawn and drilled, has a high polished black mirror finish on both sides, suitable for panels of Radio Sets, test instruments and other apparatus. The sizes given below are approximate, but each panel supplied will cut size stated.

Cat. No. TP150—	5 1/2 in. x 6 3/4 in. x 1/16 in.	2/-
Cat. No. TP511—	8 3/4 in. x 6 3/4 in. x 1/16 in.	3/-
Cat. No. TP512—	11 1/2 in. x 6 3/4 in. x 1/16 in.	4/-
Cat. No. TP513—	5 1/2 in. x 6 3/4 in. x 1/16 in.	4/-
Cat. No. TP514—	8 3/4 in. x 6 3/4 in. x 1/16 in.	6/-
Cat. No. TP515—	11 1/2 in. x 6 3/4 in. x 1/16 in.	8/-
Cat. No. TP516—	5 1/2 in. x 6 3/4 in. x 3/16 in.	9/-
Cat. No. TP517—	8 3/4 in. x 6 3/4 in. x 3/16 in.	9/-
Cat. No. TP518—	11 1/2 in. x 6 3/4 in. x 3/16 in.	12/-

BAKELITE SHEETS

Thin Bakelite Sheets for all insulating purposes

Cat. No. TP530—	12 in. x 12 in. x 1/64 in.	1/-
Cat. No. TP531—	6 in. x 6 in. x 1/64 in.	6d.
Cat. No. TP534—	6 in. x 3 1/2 in. x 1/64 in.	4d.
Cat. No. TP532—	12 in. x 12 in. x 1/32 in.	2/10
Cat. No. TP533—	6 in. x 6 in. x 1/32 in.	10d.
Cat. No. TP535—	6 in. x 3 1/2 in. x 1/32 in.	6d.

INSULATING MATERIAL

Ebonite Rod and Tube.

Cat. No. TS150—	Rod 12 in. long x 1/2 in. diam.	1/-
Cat. No. TS151—	Rod 6 in. x 1/2 in.	7d.
Cat. No. TS152—	Rod 12 in. x 1/2 in.	3/6
Cat. No. TS153—	Rod, 6 in. x 1/2 in.	1/10
Cat. No. TS154—	Tube 12 in. x 1/2 in.	1/6
Cat. No. TS155—	Tube, 6 in. x 1/2 in.	10d.
Cat. No. TS156—	Tube 12 in. x 1/2 in.	2/6
Cat. No. TS157—	Tube, 6 in. x 1/2 in.	1/4

RADIO WIRES

MICROPHONE CABLE

Insulated and shielded Microphone Cable for connecting Pickups, Microphones, Speakers, etc.

Cat. No. TW160—	Single	1/3 ft.
Cat. No. TW162—	Twin	1/3 ft.

THIN FLEXIBLE WIRE

10/.010 PVC. Insulated Flex, suitable for battery connections, indoor aerials and for any other purpose requiring a light thin stranded insulated flexible wire.

Cat. No. TW159—	Single	1 1/2 D. ft.
Cat. No. TW168—	Twin Twisted	3 1/2 D. ft.

RAVINE SINGLE WIRE

Similar to above, with a Cotton Braid over the PVC. Insulation.

Cat. No. TW161—	Single	3 D. ft.
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RADIO WIRE

WIRES, ENAMELLED.



Only the Best British Wires stocked.
Prices per reel.

When in stock supplied at ruling prices.

S.W.G.

1lb. Reels.	1lb. Reels.
16—Cat. No. TW1	Cat. No. TW34
18—Cat. No. TW2	Cat. No. TW35
20—Cat. No. TW3	Cat. No. TW36
22—Cat. No. TW4	Cat. No. TW37
24—Cat. No. TW5	Cat. No. TW38
26—Cat. No. TW6	Cat. No. TW39
28—Cat. No. TW7	Cat. No. TW40
30—Cat. No. TW8	Cat. No. TW41
32—Cat. No. TW9	Cat. No. TW42
34—Cat. No. TW10	Cat. No. TW43
36—Cat. No. TW11	Cat. No. TW44
38—Cat. No. TW12	Cat. No. TW45
40—Cat. No. TW13	Cat. No. TW46

WIRES, D.S.C.

S.W.G.

1lb. Reels.	1lb. Reels.
16—Cat. No. TW14	Cat. No. TW47
18—Cat. No. TW15	Cat. No. TW48
20—Cat. No. TW16	Cat. No. TW49
22—Cat. No. TW17	Cat. No. TW50
24—Cat. No. TW18	Cat. No. TW51
26—Cat. No. TW19	Cat. No. TW52
28—Cat. No. TW20	Cat. No. TW53
30—Cat. No. TW21	Cat. No. TW54
32—Cat. No. TW22	Cat. No. TW55
34—Cat. No. TW23	Cat. No. TW56
36—Cat. No. TW24	Cat. No. TW57

WIRES, D.C.C.

S.W.G.

1lb. Reels.	1lb. Reels.
20—Cat. No. TW25	
22—Cat. No. TW26	Cat. No. TW58
24—Cat. No. TW27	Cat. No. TW59
26—Cat. No. TW28	Cat. No. TW60
28—Cat. No. TW29	Cat. No. TW61
30—Cat. No. TW30	Cat. No. TW62
32—Cat. No. TW31	Cat. No. TW63
34—Cat. No. TW32	Cat. No. TW64
36—Cat. No. TW33	Cat. No. TW65

SPEAKER EXTENSION CABLE



Twin Twisted Flexible Cable for Extension Speakers and similar apparatus contained in an over all Water Proof Braid.

Cat. No. TW87 6D. per yard

BATTERY CABLE



5-Wire Battery Cable, insulated with P.V.C. in distinctive colours, bound over all in cotton braid.

Cat. No. TW101 1/- per ft.

CONNECTING WIRE



ENSIGN PUSH BACK WIRE

Best quality solid push back wire in assorted colours. 10ft. coils.

Cat. No. TW157 1/- Coil

Stranded push back wire in assorted colours, 10ft. coils.

Cat. No. TW156 1/- Coil

(Any length of push back wire can be supplied at rate of 1/- for 10 feet.)

METALLIC SHIELDED WIRE

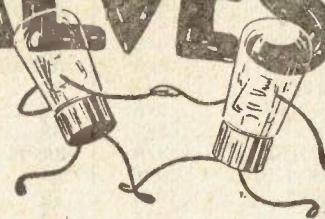
Metal shielded wire. Suitable for grid leads, input leads on Amplifiers, Microphones, Electric String Instruments, etc.

Cat. No. TW158 5 1/2 D. per ft.

230 Volt POWER FLEX

See Page 16

VALVES



AMERICAN TYPES

If it's Valves you require—why, the Lamphouse, of course, Radiotron, Tungsol, Raytheon, Kenrad, Philips, Brimar, etc. Owing to the import restrictions we cannot guarantee supplies of all types in all brands, and suggest you state 1st and 2nd preference of brand on your orders.

Type.	Price.	Type.	Price.	Type.	Price.
01A	9/6	1P5GT	14/-	6B6G	11/6
0A4G	17/6	1Q5GT	11/3	6B7	11/3
0Z4	12/-	1R5	12/6	6B7S	11/-
0Z4G	12/-	1S4	12/6	6B8	13/2
1A4P	12/8	1S5	12/6	6B8G	11/9
1A5G	14/2	1T4	12/6	6C5	9/10
1A5GT/G	14/2	1T5GT	16/6	6C5G	10/-
1A6	11/11	1-V	8/6	6C6	9/-
1A7G	14/3	2A3	14/-	6C8G	12/-
1A7GT	11/6	2A5	9/5	6D6	9/3
1A7GT/G	13/6	2A6	9/5	6D8G	12/7
1B4P	13/9	2A7	11/1	6E5	12/4
1B5/25S	10/-	2B7	11/1	6F5	10/10
1C4	13/6	2E5	12/-	6F5G	9/4
1C5G	13/11	2X2/879	19/6	6F5GT	9/6
1C6	18/-	3Q5GT	13/-	6F6	9/6
1C7G	15/6	5T4	13/6	6F6G	9/-
1D4	13/6	5U4G	8/6	6F6GT	10/8
1D5GP	12/-	5V4G	13/6	6F7	13/2
1D7G	13/1	5W4	9/6	6F8G	11/10
1D8GT	20/5	5W4GT	10/-	6G6G	12/8
1E5GP	12/6	5X4G	8/6	6G8G	14/-
1E7GV	18/6	5Y3G	6/9	6H6	9/-
1F4	12/-	5Y4G	6/4	6H6G	8/6
1F5G	13/-	5Z3	8/2	6J5	9/5
1F6	13/3	5Z4	12/-	6J5G	9/3
1F7GV	14/4	6A3	16/6	6J5GT	9/3
1G4G	11/6	6A4	11/6	6J7	10/11
1G5G	11/6	6A6	12/-	6J7G	9/11
1G6G	11/6	6A7	10/-	6J7GT	9/11
1H4G	7/3	6A8	12/8	6J8G	12/2
1H5G	13/5	6A8G	10/5	6K5G	9/6
1H5GT	10/6	6A8GT	10/5	6K6G/GT	10/-
1H6G	12/-	6AB5/6N5	12/9	6K7	10/6
1J6G	10/5	6AB7/1853	18/-	6K7G	9/5
1K4	11/6	6AC5G	10/-	6K7GT	9/11
1K5G	13/6	6AC7/1852	20/-	6K8	12/5
1K6	15/6	6AD7G	12/-	6K8G	13/6
1K7G	14/9	6AEG	12/6	6L5G	9/6
1L4	9/6	6AE5GT	—	6L6	16/11
1L5G	12/6	6AE7GT	—	6L6G	14/6
1M5G	11/3	6AF6G	10/-	6L7	12/5
1N5G	12/9	6AFG	10/-	6L7G	11/6
1N5GT	18/-	6B5	17/6	6N6G	18/-

Type.	Price.	Type.	Price.	Type.	Price.
6N7	12/5	10	19/6	35A5	13/-
6N7G	11/6	12A5	14/-	35A5LT	13/-
6N7GT	11/11	12A7	14/4	35L6GT/G	10/2
6P5G	9/4	12A8GT	10/-	35Z3	13/6
6Q7	11/4	12B8GT	13/9	35Z4GT	9/6
6Q7G	9/5	12C8	12/11	35Z5	13/-
6Q7GT	9/10	12F5GT	10/3	35Z5GT	9/8
6R7	11/6	12J5GT	9/9	35Z5LT	13/-
6R7G	10/4	12J7GT	10/-	36	9/5
6S7	12/-	12K7GT	9/6	37	9/4
6S7G	11/10	12K8	13/-	38	9/-
6SA7	9/6	12Q7GT	9/9	39/44	9/2
6SC7	11/-	12SA7	10/6	41	8/10
6SF5	9/9	12SC7	10/6	42	8/10
6SF7	—	12SF5	9/6	43	9/4
6SJ7	9/9	12SJ7	9/8	45	7/2
6SK7	9/6	12SK7	9/6	45Z5GT	9/6
6SN7—GT	12/-	12SQ7	9/6	46	11/2
6SQ7	10/6	12SR7	—	47	9/11
6T5	16/-	12Z3	9/6	48	21/-
6T7G	12/1	15	16/4	49	10/2
6SR7	11/-	19	10/6	50	20/9
6U5/6G5	12/-	20	19/-	50L6GT	11/5
6U7G	9/10	24A	9/5	53	13/-
6V6	13/5	25A6	13/10	55	9/6
6V6G	10/6	25A6G	13/10	56	6/5
6V6GT	10/-	25A6GT	10/9	57	8/11
6V6GT/G	10/-	25A7G	13/6	58	8/10
6W7G	12/6	25A7GT	12/6	59	13/4
6X5	12/5	25B6G	12/6	70L7GT	15/6
6X5G	10/6	25B8GT	13/6	71A	8/9
6X5GT	10/6	25L6	12/6	75	8/9
6X5GT/G	10/10	25L6G	10/-	76	6/4
6Y6G	13/6	25L6GT	10/3	77	9/5
6Z7G	13/6	25L6GT/G	10/5	78	9/2
6ZY5G	13/-	25Y5	19/6	79	11/2
7A5	13/-	25Z5	8/9	80	5/6
7A6	13/-	25Z6	11/11	81	18/2
7A7LM	13/-	25Z6G	9/6	82	10/6
7A8	13/-	25Z6GT	9/6	83	10/-
7B4	13/-	25Z6GT/G	10/-	83V	13/8
7B5LT	13/-	26	6/2	84/6Z4	9/2
7B7	13/-	27	6/2	85	9/-
7B6LM	13/-	30	6/11	85AS	16/-
7B8LM	13/-	31	7/6	89	9/5
7C5LT	13/-	32	11/9	112A	9/6
7C6	13/-	33	11/7	302	13/6
7C7	13/-	34	11/6	117Z6GT	15/-
7Y4	13/-	35	9/3	117Z5GT/G	15/-

PRICES ARE SUBJECT TO ALTERATION

All prices in this book must be regarded as an indication only—all orders will be executed at ruling prices.

THE ELECTRIC LAMPHOUSE LIMITED,
11 MANNERS STREET, WELLINGTON, C.1.

PHILIPS VALVES

METAL CLAD "E" SERIES (6.3 volt A.C.) "p" BASE.

HAB1	Triode Diode	12/6
HB4	Duo Diode	12/6
HBC3	Duo Diode Triode	12/9
HBF1	Duo Diode Penthode	13/-
HBF2	Duo Diode Penthode (Variable Mu)	12/6
HBL1	Duo Diode Output Penthode	15/2
HCH3	Triode Hexode Mixer	16/6
HF5	RF Penthode (Variable Mu)	13/-
HF6	RF Penthode	12/9
HF8	Silentode HF pre-amp.	13/-
HF9	HF, IF or LF Penthode	13/-
HH2	Hexode Mixer	15/11
HK2	Octode (Self Neutralised)	15/5
HK3	Octode (Beam)	16/6
HL2	Power Penthode	12/3
HL3	Power Penthode (High Mu)	12/9
HM1	Tuning Indicator	14/7
HM4	Tuning Indicator (Double Sensitivity)	14/7
HZ2	Full-Wave Vacuum Rectifier	9/10
HZ3	Full-Wave Vacuum Rectifier	10/8

METAL CLAD "E" SERIES, OCTAL BASE.

HBC33	Duo Diode Triode	13/-
HBF32	Duo Diode Penthode	13/-
HBL31	Duo Diode Output Penthode	15/2
HCH35	Triode Hexode Mixer	16/6
HFP9	HF, IF Penthode (Variable Mu)	13/-
HL33	Steep Slope Output Penthode	13/-

METAL CLAD "A" SERIES (4 VOLT A.C.) "p" BASE.

ABC1	Duo Diode Triode	12/9
AF3	HF Penthode (Variable Mu)	12/9
AF7	HF Penthode	12/9
AH1	Flexode Mixer	15/5
AK2	Octode Frequency Changer	15/5
AL2	Power Penthode	14/10
AL3/4	Power Penthode (High Mu)	12/3
AZ1	Full Wave Rectifier (direct heating)	10/8
AZ3	Full-Wave Rectifier	10/8
AZ31	Full-Wave Rectifier, Octal Base	10/8

METAL CLAD SERIES (4 VOLT A.C.) (English or American base indicated.)

See reference below.

AB1	Duo Diode (2)	10/1
ABC1	Duo Diode Triode (4)	12/9
ABL1	Duo Diode Power Pent. (High Mu) (4)	14/4
AF2	HF Penthode (2) (8)	12/3
AF6	HF Penthode (4)	12/9
AK2	Octode Frequency Changer (4)	15/5
AL4	Power Penthode (4)	12/3
B443	Power Penthode (1) (2) (5)	18/4
C443	Power Penthode (2)	17/3
H409	Triode Amplifier (2)	13/3
H415	Triode Amplifier (2)	14/4
H424	Special Det. Amp. (2) (6)	14/4
H438	High Gain Det. Amp. (2)	14/7
H442	S/g Amplifier (2)	15/5
H443H	Power Penthode (dir. heat.) (2) (6)	15/11
H444	Diode Tetrode (3) (4)	13/10
H446	HF Penthode (2)	13/3
H447	HF Penthode (Variable Mu) (4) (8)	14/4

E452T	S/g Amplifier (2)	14/4
E454	Duo Diode Triode (8)	12/3
E463	Power Penthode (4)	12/11
E499	Special High Gain Det. (2)	13/10
506	Full Wave Rectifier (1)	12/9
1561	Full Wave Rectifier (1) (5)	12/9

METAL CLAD "C" SERIES (200 MA. A.C.-D.C.) "p" BASE.

CB1	Duo Diode	10/4
CBC1	Duo Diode Triode	13/10
CC1	Triode: Oscillator Amplifier	13/3
CF1	HF Penthode	14/7
CF2	HF Penthode (Variable Mu)	14/7
CF3	HF Penthode (Variable Mu)	14/10
CK1	Octode Frequency Changer	14/4
CL2	Power Penthode	14/10
CL4	Power Penthode (High Mu)	14/4
CY2	Full Wave Rectifier	11/8
CCH35	Triode-Hexode Mixer: Octal base	16/6
CL33	Power Penthode: Octal base	13/-
CY31	Full-Wave Rectifier: Octal base	13/-

METAL CLAD "K" SERIES (2 VOLT BATTERY) "p" BASE.

KC3	Triode, Amplifier, Driver	11/8
KF3	HF Penthode (Variable Mu)	14/7
KK2	Octode Frequency Changer	16/2
KDD1	Twin Triode Output (Class B)	14/4
KL4	Power Penthode	14/10

REFER BASE REFERENCE.

KF2	HF Penthode (Variable Mu) (7)	13/10
KK2	Octode Frequency Changer (8)	16/2
B217	Triode, Amplifier, Driver (1) (5)	10/1
B240	Twin Triode (Class B) (7)	14/4
C423N	Power Penthode (6)	15/5

STANDARD D.C. TYPES.

(The first figure represents filament volts.)

A409	General Purpose Triode (5)	14/4
A415	Triode Detector Amplifier (1) (5)	15/8
A425	Triode Amplifier (5)	13/10
A442	S/g Amplifier (1)	16/6
A609	General Purpose Triode (5)	13/10
A615	Triode Detector Amplifier (5)	13/10
A642	S/g Amplifier (5)	16/6
B405	Power Triode (5)	14/4
B406	Power Triode (5)	14/4
B442	RF Tetrode (5)	14/4
B605	Power Triode (5)	14/4

BASE REFERENCES.

- (1) = English 4 pin (Cap A)
- (2) = English 5 pin (Cap O)
- (3) = English 6 pin (Cap B)
- (4) = English 7 pin (Cap M)
- (5) = American 4 pin (Cap G)
- (6) = American 5 pin (Cap N)
- (7) = American 6 pin (Cap J)
- (8) = American 7 pin (Cap E)

MULLARD VALVES

Type.	Base.	Price.	Type.	Base.	Price.
AC044	A	16/6	Pen4VA	M	12/11
AZ1	P	10/8	Pen428	M	14/3
AZ31	K	10/8	PM1HF	A	12/3
CBL1	P	13/-	PM12M	A	12/3
CCH35	K	16/6	PM14	A	16/6
CL33	K	13/-	PM2A	A	10/6
CY1	R	13/-	PM2B	M	14/4
CY31K	K	13/-	PM22A	O	14/13
DW2	A	12/9	PM24	A	18/4
DW4/350	A	12/9	PM24M	O	15/11
DW4/500	A	12/9	PM2DX	A	10/1
EAB1-EB4	P	12/6	PM2HL	A	11/8
EBC3	P	12/9	SP13C	M	12/-
EBC33	K	13/-	SP4	O/M	16/6
EBF1-EBF2	P	12/6	S4VB(A)	O	14/4
EBF2	P	12/6	TDD13C	M	13/10
EBF32	K	13/-	TDD2A	O	14/4
EBL1	P	15/2	TDD4	M	12/9
EBL31	K	15/2	TH21C	M	20/-
EB4	P	12/6	TH30C	M	18/4
ECH2	P	16/6	TH4	M	13/-
ECH3	P	16/6	TH4B	M	16/6
ECH35	K	16/6	UR1C	O	12/3
EF39	K	13/-	UR3C	M	11/8
EF5-EF9	P	13/-	VP13C	M	14/7
EF6	P	12/9	VP2	M	14/7
EF8	P	13/-	VP2B	M	13/10
EF9	P	13/-	VP4	M	14/4
EH2	P	15/11	VP4A	M/O	12/3
EK2	P	15/5	VP4B	M	12/9
EK3	P	16/6	1W4/350	A	10/8
EL2	P	12/3	1W4/500	A	11/8
EL3	P	12/9	1561	A	12/9
EL33	K	13/-	164V	O	14/4
EL35	K	14/9	1821	A	12/9
EM1-EM4	P	14/7	2D4A	O	10/1
EM3	P	12/-	2D4B	M	10/6
EM4	P	14/7	354V	O	14/9
FC2	M	16/6	904V	O	14/4
FC2A	M	16/6			
FC4	M	15/5			
KBC1-TDD2A	O	14/4			
KF3-VP2B	M	13/10			
KK2-FC2A	M	16/6			
KI4	P	14/10			
PenA4	M	12/3			
Pen36C	M	14/4			
Pen4DD	M	14/4			

Definition of Bases.

A = 4-pin English.

K = Octal.

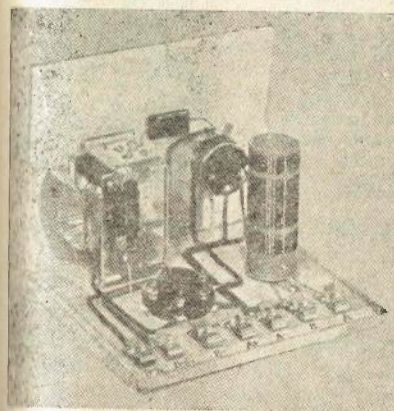
M = 7-pin English.

O = 5-pin English.

P = Side Contact.

MARCONI (H.M.V.) VALVES

Type.	Price.	Type.	Price.	Type.	Price.
D41	8/3	MH41	16/-	VMS4	12/8
DSB	16/6	MHL4	13/3	VMS4B	13/3
DPT	16/6	MPT4	13/3	VS2	17/7
DH63	12/1	MKT4	13/3	VS24	12/1
DH42	16/6	MS4	13/9	W21	18/3
DH	12/1	MS4B	15/5	W42	13/9
D63	8/3	MSP4	16/-	X21	16/6
DSB	16/6	MU12	12/8	X22	17/7
HL21	9/4	MU14	13/3	X41	14/10
HL2	8/3	MX40	16/-	X42	16/-
DH23	13/3	PX4	13/3	X63	15/5
HD21	16/6	PX25	19/10	X64	18/3
KT2 (PT2)	11/-	QP21	19/3	X65	15/5
KT41 (N41)	12/8	S23	13/3	Y63	14/4
KT42	13/3	T165	15/5	W63	11/-
KT63	11/-	U12/14	9/11	KT31	14/4
KT66	15/5	U50	7/9	U30	13/3
KTW61	11/-	U52	14/4	Z63	11/-
KTW63	11/-	VDS	17/1	HD	13/3
KTZ63	11/-	VDSB	17/7	KT61	11/-
MHD4	13/3	VMP4K	13/3	E13	—
MH4	14/4	VMP4G	11/7	HD24 (HD22)	—



WHAT A THRILL!

Yes, it's a real thrill for a boy to build his own Radio. And really, it's not a difficult task. We supply full constructional details with every Kitset, and any boy capable of using a soldering iron would have no difficulty in assembling any one of the Kits listed below.

All Kits less Headphones.

TK2004—Improved "Hiker's One," with Batteries **£2/13/6**

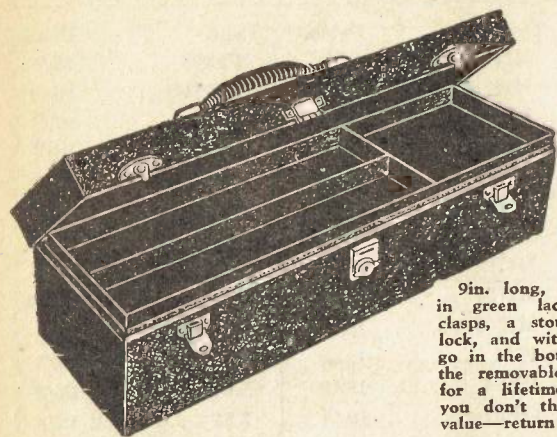
TK2005—"Popular One" (Midget Series), with Batteries **£2/7/6** Post Free

TK2006—"Oxford" Crystal Set Kit **17/6** Postage 8d.

MAIL ALL ORDERS TO

THE ELECTRIC LAMPHOUSE LIMITED,
11 MANNERS STREET, WELLINGTON, C.I.

SAVE TIME AND TEMPER! Get one of these



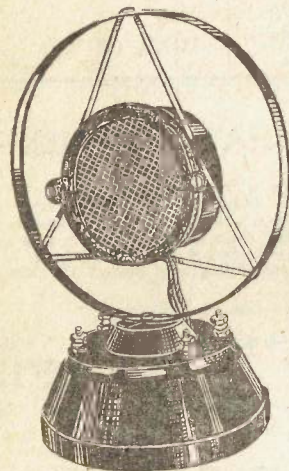
ALL-STEEL Radio Tool Boxes

9in. long, 6in. wide, 6½in. deep. Finished in green lacquer, with two plated spring clasps, a stout metal handle, a good strong lock, and with a place for everything. Tools go in the bottom, and all the small things in the removable tray. It's a dandy job—good for a lifetime. Send for one today, and if you don't think it just the thing and grand value—return it, and we will refund your money.

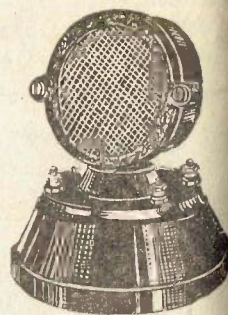
Cat. No. TU141—

40/- Post Free

TELSEN MIKE



Suitable for the experimenter and home amusement. Fitted in a bakelite case containing all the terminals necessary and special matching transformer. Only requires a 4½ volt battery to energise it. Complete with full instructions.



Cat. No. TM511 **19/-** each

← Is the same as the above, but mike is suspended from circular frame as illustrated.

Cat. No. TM510 **24/3** each

IMPORTANT!

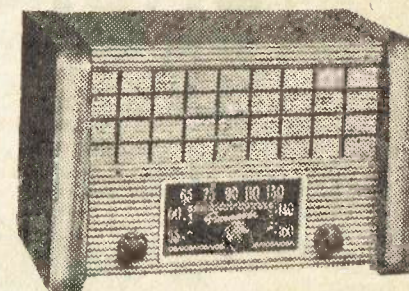
All prices in this Catalogue are an indication of value only.
All orders will be executed at prices ruling at time of supply.

Enjoy REAL Reproduction

Listen to "PACE-MAKER" RADIO for two minutes, and MARVEL! You won't believe it's radio, because, for the first time, you will be listening to REAL REPRODUCTION—just as if the actual performance was taking place in your very home.

Cat. No. TR929—

£19/12/6



We feel we have a right to be excited about this new 1946 Pacemaker 5, and you'll be excited too, because there's never been a more beautiful cabinet design, never so much real performing ability or so many fine and practical features at so low a price. Here's our Value Leader for 1946—a real gem of a radio, whose looks, quality and price can't be beat anywhere.

Powerful reception—you'll find this new Pacemaker 5 one of the strongest radio performers of its size. Covers the broadcast band; brings in all stations with uncanny ease and precision.

"All these features"—Has full-acting A.V.C. to prevent fading and so keep volume uniform on all stations. Develops amazing 2 watts output seldom possible in a set of this size. Uses the latest type of fine fidelity 5in. A.M. Dynamic Speaker.

The Pacemaker 5 is quality built; uses only the finest standard parts throughout for the most dependable radio results.

Dimensions: 14in. x 8½in. x 8½in.

"Tone Comes First"—And you'll hear a striking difference the moment you first listen to the Pacemaker 5. We set out to bring you the clearest toned table model Radio that could be built—and we've succeeded! You'll get a real listening thrill on every programme you tune.

The Radio that brings you Studio Realism!

ENSIGN

Features SPREAD BAND TUNING

Here's a superb new tuning feature that increases tuning ease on the short-wave bands. Provides 20 times more space between dial calibration, giving each foreign band a wide tuning range. Makes it possible to tune foreign stations just like locals. S-P-R-E-A-D-S out the tuning area on the dial so that you can't miss the stations.

RUBBER-FLOATED 3-GANG TUNING CONDENSER gives sharper tuning and greater dependability.
BIG SLIDE RULE DIAL with spinner for quick travel across dial.

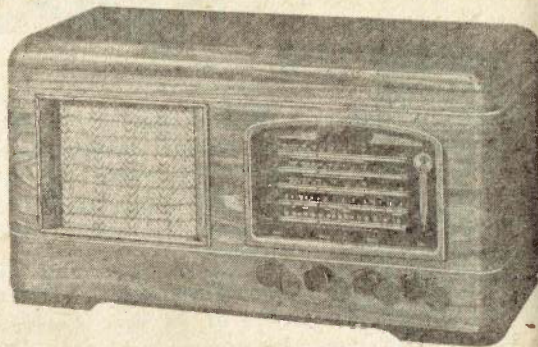
BASS TREBLE TONE CONTROL emphasizes bass or treble as desired.

WAVE BAND INDICATOR Indicates what band you are operating on.

MAGIC EYE—Makes tuning accurate, also makes possible tuning in stations without inter-station noises, retarding the volume control to off position and tuning by eye only.

A.V.C.—There's full acting A.V.C., for greater efficiency keeps volume uniform on all stations; prevents fading.

RF AMPLIFICATION—A T.R.F. stage on all tuning bands increases sensitivity enormously, reducing interference and background noises.



Every **NOTEWORTHY 1946 FEATURE** for greater efficiency is incorporated in the Ensign 7.

FULL WORLD-WIDE COVERAGE.—Enjoy everything that's broadcast in the world today, direct. Five full tuning bands give you complete coverage of the world's most important stations. Each is easy to tune, and the following ranges are covered:—

Regular broadcast band, 550—1600 KC.
Short-wave inter band, 6—19 MC.

Spread band tuning for the following short-wave bands:—

15.10 to 15.50 MC; 11.65 to 12.30 MC; 9.475 to 9.80 MC.
Valve Combination:—6U7G R.F., 6K8G.T. Mixer, 6U7G I.F., 6Q7 G.T., 2nd Det., 6V6G Power Amplifier, 6X5GT Rectifier, 6U5 Tuning Indicator.

Size of Cabinet, which is finished in rich veneers:—24 x 13 x 11.
Cat. No. TR930 **£45/10/-**

The Passport to True Radio Enjoyment

SPECIAL OFFERINGS

GOODS ON THIS PAGE CANNOT BE REPEATED AFTER PRESENT STOCKS ARE SOLD.

DUAL WAVE COIL KITS

Dual Wave Band Pass Coils, consisting of Aerial and Oscillator 175 K.C. Coils in 2 in. x 4 in. Aluminium Cans. Suitable for 6A7 or 6A8 Converter. Short Wave range 16-50 metres.
Cat. No. TC488 **5/-** set

MANSBRIDGE TYPE CONDENSERS

(Block Type.)
German make. 500 V. D.C. Test.
Cat. No. TC694 .25 mfd. 9d. each
Cat. No. TC695 .5 mfd. 9d. each

HIGH QUALITY RESISTORS

Order early and obtain a supply of these really good Resistors. Wire ends. Carbon type.

$\frac{1}{2}$ watt type.
Cat. No. TR304 100,000 ohm (M1)
Cat. No. TR305 1 meg (1M)
6D. each.

1 Watt Type.
Cat. No. TR307 4.7 megohm (4M.7R)
6D. each.

LOW VOLTAGE LAMPS

Special purchase of 6 and 12 volt Electric Lamps with standard bayonet cap. These lamps have had their caps converted from the motor-car size to standard bayonet cap. This adaptation makes them look a little rough, but they are brand new and give excellent service in use.

Cat. No. TL489—6 volt 17 c.p. ... **1/-** each
Cat. No. TL509—12 volt 24 c.p. ... **1/6** each

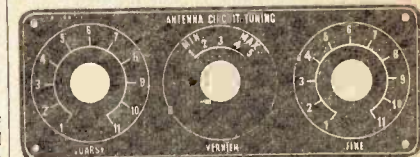
METERS.

DE JUR MILLIAMP METERS—Moving Coil Reconditioned 0/3 milliamps. 2in. scale. Flush mounting.

Meters in first-class condition—
Cat. No. TM11 **£2/-**

Meters with case slightly damaged, but otherwise in first-class condition—
Cat. No. TM11A **£1/10/-**

TUNING SCALE PLATES



Tuning Scale Plates, 6in. x 2½in. Brown plate with white markings. ½in. Control holes.
Cat. No. TD34 **4/-**



This year's Surprise Packet is the Daddy of them all. All sorts of odds and ends, and new and used radio parts of all types and descriptions. Trust us with 5/- and if you are not more than satisfied you can have your money back, and you are the sole judge.

Order 1946 Surprise Packet **5/-**

LAMPHOUSE GUARANTEE

Any goods which prove in any way unsuitable may be returned in good order within seven days and your money will be refunded in full.

SPECIAL PURCHASE The stock of goods on this page is strictly limited and orders will not be able to be executed after present stocks are sold.

**COMPONENTS USED IN THE ARMY ZC1
TRANSCEIVERS. USED BUT TESTED AND
FOUND IN GOOD WORKING ORDER.**

**SHORT WAVE AERIAL
RECEIVING COILS**

Wound on $\frac{1}{2}$ in. diam. former. Fitted on to mounting terminal base. Lug connections. Shielded in can.

Cat. No. TX229 **2/6** ea.

Coils as above, unshielded.
Cat. No. TX230 **2/-** ea.

OSCILLATOR COILS

465 K.C. Air Core shielded in $1\frac{1}{2}$ in. square can.

Cat. No. TX240 **2/6** ea.

Cat. No. TX259—Unshielded **2/-** ea.

**R.F. INTERSTAGE RECEIVER
COILS**

Mounted in $1\frac{1}{2}$ in. square cans.
Cat. No. TX231 **2/6** ea.

R.F. Coils as above, unshielded.
Cat. No. TX232 **2/-** ea.

I.F. TRANSFORMERS

465 K.C. Iron Core Type in cans, complete with Trimmers.
Cat. No. TX238 **7/6** ea.

I.F. TRANSFORMERS

465 K.C. Iron Core type in cans, complete with slug type Trimmers.
Cat. No. TX242 **7/6** ea.

Shielded driver tuning coils.
Cat. No. TX252 **2/6** ea.

**SHIELDED MASTER
OSCILLATOR TUNING COILS**

Unshielded
Cat. No. TX257 **2/-** ea.

**UNSHIELDED POWER
AMPLIFIER TANK COILS**

Cat. No. TX258 **2/-** ea.
As above, but less link coupling coil.
Cat. No. TX260 **1/6** ea.

**BEAT FREQUENCY
OSCILLATOR COILS**

For use with 465 I.F. Transformers and complete with .0001 and .0005 Mfd. 5% Tolerance Mica Condensers.
Cat. No. TX244 **4/6** ea.

**MODULATION
TRANSFORMER**

Suitable for plate modulation (choke type). Secondary winding designed to provide side tone for Headphones for checking transmission.
Cat. No. TX233 **7/6** ea.

OUTPUT TRANSFORMER

For matching to Headphones to 400 ohm lines, also suitable for use as Audio Coupling Choke.
Cat. No. TX235 **6/6** ea.

**MICROPHONE
TRANSFORMER**

For Carbon Microphones.
Cat. No. TX234 **6/6** ea.

LAMPHOUSE RADIO CIRCUIT BOOK



AN 80-page booklet containing nearly 200 different Circuits. Circuits of all types, from Crystal Sets to a 26 Valve De Luxe Receiver. Amplifiers, power packs, electric fence units, testing equipment, short-wave converters, wave traps, oscillators, aerial systems—in short, a Circuit to meet every requirement. Schematic diagrams only are given and not constructional details. No claim is made that this book contains any new Circuits all having previously been published in Lamphouse Annuals or Radiograms.

Enthusiasts, whether beginners or experienced servicemen, will find this book invaluable as a reference medium. Your Radio Library will not be complete without a copy.

Cat. No. TB100—Radio Circuit Book.
Priced at 2/6. Postage 1d. extra.

**LAMPHOUSE INSTRUCTION
COURSE**

THIS 48-page, attractively covered booklet contains a simple yet most thorough Radio course. Compiled from previous Lamphouse publications, revised and rewritten in simple everyday language, for those enthusiasts starting out in Radio as a hobby or a career. Devoid of any deep technical terms as used by Radio veterans. Just a straight-out study in basic radio principles and theory. Questions set and answers given on each chapter.

Cat. No. TB101—Instruction Course, Price 2/6.
Postage 1d. extra.



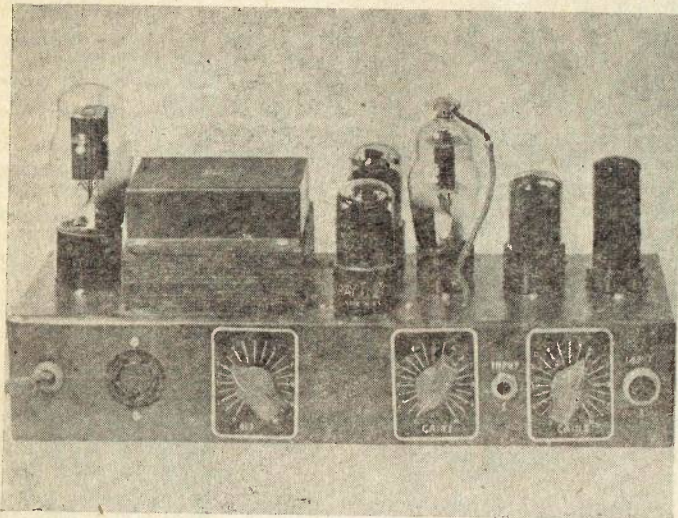
LAMPHOUSE DATA BOOK

A 96-PAGE BOOKLET containing a veritable goldmine of both Radio and Electrical Data. Facts, figures, tables and charts gathered from various Radio and Electrical textbooks and manuals, and placed between two covers to form the handiest reference guide an experimenter or serviceman could wish for. **BE SURE AND GET YOUR COPY.**

Cat. No. TB103—Lamphouse Data Book **3/6**
Postage, etc., 2d.



VICTORY SENIOR AMPLIFIER



Features include DUAL CHANNEL MIKE and GRAMOPHONE INPUT

POLARIZED CONNECTIONS. BEAM POWER OUTPUT FULL-TONE CONTROL. BALANCED PHASE INVERTER.

A high-quality low-cost Amplifier intended for installations where moderate coverage is required. Suitable for Dance Halls, Public Meetings and small Outdoor gatherings. Comes complete, ready to connect up quickly and easily. Has Pre-Amp Stage.

Full 10w. output with remarkably true Tonal Fidelity. Variable Tone Control is provided to accentuate bass or treble as desired and to aid in compensating for varying accoustical conditions. Each Amplifier is carefully tested before despatch to make sure of perfect operation when it reaches you.

LATEST CIRCUIT—6 VALVES.

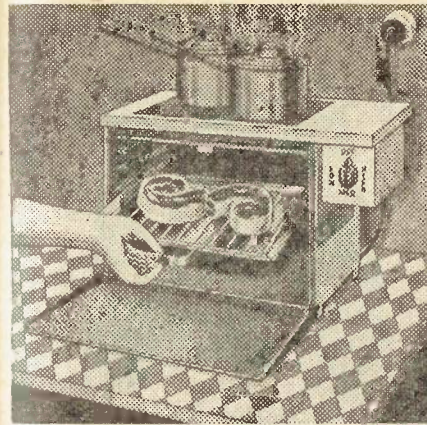
Latest valves used: One 5Z4, one 6F8G, two 6N7, two 6V6G.

Suitable Speaker for the above Amplifier is Rola Model F.12 1000 ohm (Extra).

Cat. No. TR852 **£13/12/6**

Cat. No. TR853—As above, but with Pre-Amp. Stage **£15/-.**

THE NEECO PLUG-IN ELECTRIC TABLE COOKER



No wonder it's so much in demand. It Grills, Boils, Toasts, Bakes, in fact, provides the benefits of electric cooking for the small family, the roomer, or for the week-end bach, and at a minimum of current consumption.

PLUGS IN TO A HOTPOINT

Will accommodate two or three small pots on the boiling plate on top—and, at the same time, make toast or grill chops, steak, etc., in the oven griller below. The oven is quite capacious, and even the simpler forms of baking can be done successfully.

DIMENSIONS:

Height (overall) 11½ inches.

Cooking Top (overall): 16½in. x 10½in.

Boiling Plate: 10in. x 8in.

Griller and Oven: 12½in. wide, 8½in. high, 9½in. deep.

FEATURES:

BOILING PLATE.—The griller-boiler element is of the open spiral type, heating the boiler plate above and allowing of grilling below. As its consumption on high heat is only 1700 watts, it is particularly economical in use.

OVEN AND GRILLER.—The oven is fitted with an interior lining with louvres which serve the dual purpose of providing supports for grilling pan or toaster rack, and also allows of a full circulation of heat to all parts of the oven. Six adjustments of grilling or baking height are possible, and a baking dish with griller rack and a nickel-plated reflector

for use when boiling or baking are provided. Plates may be warmed in the lower part of the oven, while grilling is being done above.

SWITCH.—A self-indicating three-heat switch with "High," "Low," and "Medium" positions, is fitted.

CORD.—5ft. 6in. of three-core insulated asbestos protected cord is provided ready for attaching to plug.

FINISH.—The finish is vitreous enamel inside and out. Standard colour is mottled grey.

SUPPLIES EXPECTED SHORTLY.

VICTORY JUNIOR AMPLIFIERS

Features include Mike and Gramophone Input, Full Range Tone Control, Inverse Feedback, 5 watt output.

A small Amplifier which will give astounding reproduction. Compact and attractive, suitable for Velocity, Crystal and Dynamic Microphones, continuously Variable Tone Control.

Wide range frequency response, Hi-Fidelity Phone Reproduction.

TECHNICAL SPECIFICATIONS.

Peak Output, 8 watts; Rated Output, 5 watts; Input, Microphone and Gramophone; Gramophone gain, 76 D.B.; Hum Level, 55; Variable Tone Control; Output Impedance, 5,000 ohms to Speaker Transformer.

HERE IT IS! New Zealand's Miracle Amplifier Value!

This 5-watt Amplifier offers to users of small P.A. equipment the Lowest price high-gain Amplifier available on the market to-day, its competition-defying price indicates no compromise in quality.

VARIABLE TONE CONTROL.

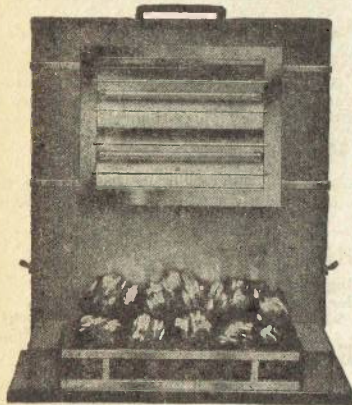
Control is provided for compensation of acoustics when using in various locations. An ideal Amplifier for offices, Stock Rooms, Cafeterias, and Restaurants, Factories, Window Demonstrations, Meetings, and Small Orchestras, etc.

The Victory Amplifier offers for the first time an intermediate Power Amplifier with every feature usually found in units selling at double the price. Splendid for use in Meeting Halls, Office Systems, Night Clubs, Auction Rooms, etc.

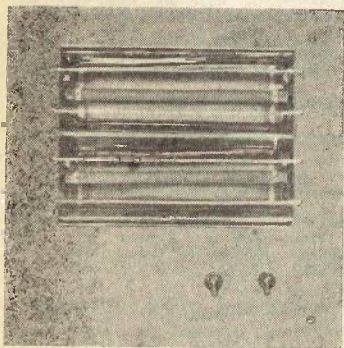
Cat. No. TR851. (Speaker Extra) Price **£8/19/6**

Electroway

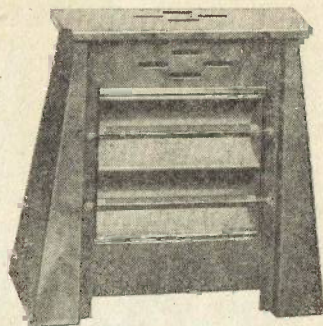
EXPECTED SOON



Cat. No. TE850 .. £16/14/-



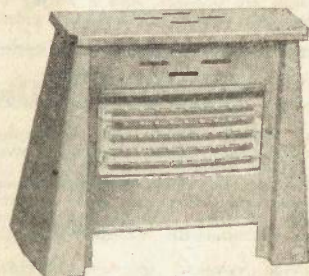
Cat. No. TE858 ..



Cat. No. TE853 £4/11/-



Cat. No. TE854 .. £6/14/-



Cat. No. TE856 £2/10/6

• At the time of going to press all types of Electric Fires are out of stock, but supplies are expected during the currency of this Catalogue.

• Send us your enquiries.
A permit is required
for each Fire purchased.

ADDITIONS TO LAMPHOUSE LINES.

Chrome Wall or Table Lamps

BEDSIDE LAMP

Chrome plated Lamp which will stand on dressing table or hang on the wall. Attractive parchment shade can be adjusted so that you can get the light just where you want it. On-off switch in base. Supplied complete with 9 feet flexible cord. A really nice wall or table lamp..

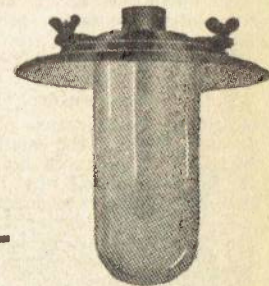
Complete with shade, cord, adaptor and lamp.

Cat. No. TF921 52/6 ea.



Well-Glass Fittings

Watertight fittings for outside lighting.
Cat. No. TE842—60 watt size. Complete 16/-

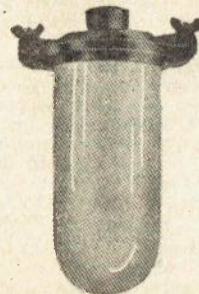


Cat. No. TE841—100 watt size. Complete 21/-

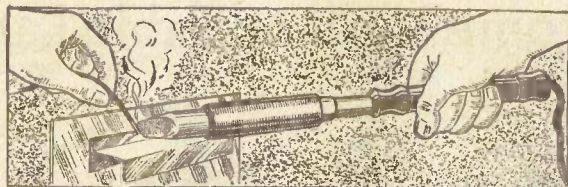
Similar to above, but with enamelled reflector.
Cat. No. TE857—100 watt size. Complete 25/-

Spare Glasses—
Cat. No. TE844—60 watt size 3/4

Cat. No. TE843—100 watt size 7/-



SOLDERING



The correct angle to hold the iron is flat to the work.

Every home constructor knows, or should know, that to ensure noiseless and consistent radio reception it is advisable to solder all joints and connections.

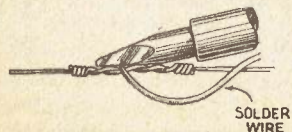
Connections screwed together often become loose and cause erratic performance or noise; another point usually overlooked is that after a time oxidation occurs under locking down nuts and what was originally a good connection develops into a high resistance joint.

There is only one method of making a perfect, soldered joint. The pieces of metal to be soldered must be raised to the melting temperature of the solder used. It is most important to keep the soldering iron (Here's one of radio's paradoxes—the soldering "iron" is not an iron but a copper!)—at the correct temperature. An "iron" too cold or too hot will not solder properly—if at all.

Temperature.

The correct temperature of the copper tip is indicated by the condition of the tinning. An experienced solderer knows by the appearance of the iron and by the "zip" it makes when brought into contact with the soldering flux and solder, just when the right temperature is reached. Only a little practice is needed to acquire this knowledge.

If the tip is overheating, there will be a tendency for the tin to burn off. That is, instead of the tinning on the copper tip remaining bright, it will become discolored and burn away, permitting the bare copper to oxidize and consequently form a heat-insulating crust. The heat



is thus prevented from melting the solder and raising the parts to the soldering temperature. Overheating can be prevented by disconnecting the iron from time to time as required.

Clean Metal.

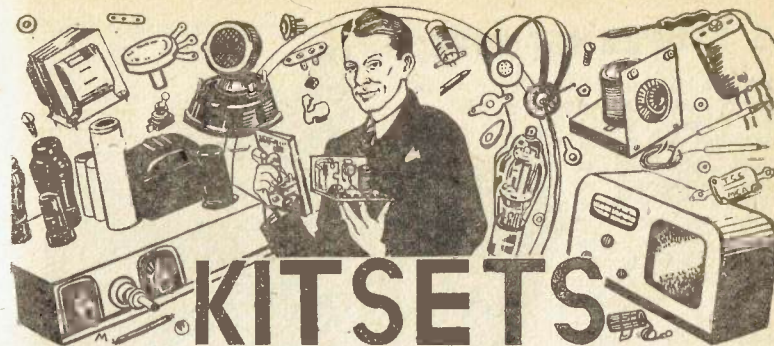
The metals to be soldered must be bright and clean, free from grease, dirt or oxide and preferably tinned (coated with pure tin or solder). Nickel-plated parts are very difficult to solder because nickel does not readily enter into solution with the solder or "alloy" with it. Electro-plated tin parts are not so satisfactory as those that have been hot dip-tinned because the solder tends to alloy only with the plating which frequently flakes off. There are many cadmium-plated parts on the market which solder readily.

The Flux.

The flux should be selected to suit the job. For all fine electrical connections, resin (pronounced "rosin") is by far the best. It has no corrosive action at any time after the joint has been made. It is non-poisonous; it can be used in lump, powder form, or dissolved in alcohol. For convenience, resin-core solder, a hollow wire filled with resin in the proper proportion to the solder, is used extensively. Never apply resin-core solder to any part of the copper tip except at the point of contact between the tip and the work. Resin quickly loses its fluxing action after it is heated. For this reason never pick up resin-core solder with the iron and then apply to the work.

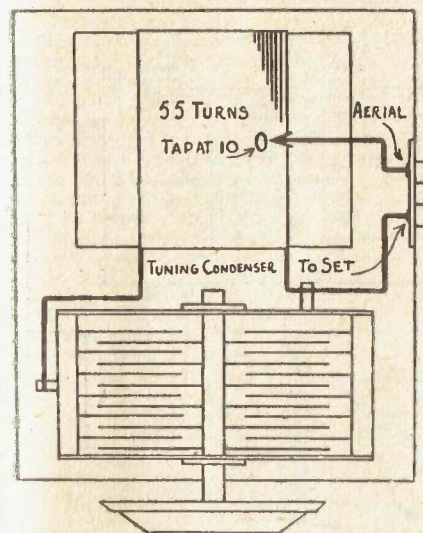
Acid flux may cause considerable trouble if used stronger than necessary. It eats away the soldering copper, and sooner or later produces corrosion at the soldered joints. The brighter and cleaner the metals, the weaker should be the acid flux. The more diluted the acid flux, without being too weak, the better.

Solder is an alloy of tin and lead and should be free from impurities. It is well to use only solder made by a reputable manufacturer. The most common type is known as 50-50 solder, which is half tin and half lead.



All the KIT SETS illustrated are now available from stock. Every Lamphouse Kit Set is supplied complete to the last nut and bolt, together with a ready-drilled chassis. Novices are advised not to attempt to build complicated sets, unless they are able to read the schematic diagram given.

All Kits are supplied with detailed duplicated constructional details, but should there be any small difficulty you are unable to overcome, The Lamphouse Mail Service Dept. will always be at your service to help you out.



"WIRELESS WEEKLY" WAVE TRAP

A simply constructed unit for separating interfering stations. Can be assembled in a short space of time and is worth its weight in gold to anyone who has experienced the trouble of having stations "over-ride" each other.



PARTS LIST FOR THE "WIRELESS WEEKLY" WAVE TRAP.

One Baseboard.
One Bakelite Panel.
One .0005 mfd. Variable Condenser.
One 2in. Instrument Knob.
Two Terminals.
One 2½in. x 3in. Coil Former.
1oz. 22 Gauge Wire.

One Pkt. Push-back Wire.
Solder Lugs, Wood Screws.

Complete; Kit of Parts (as listed above).
Catalogue No. TK2017 ...

17/3

THE "SUPERHET FIVE"

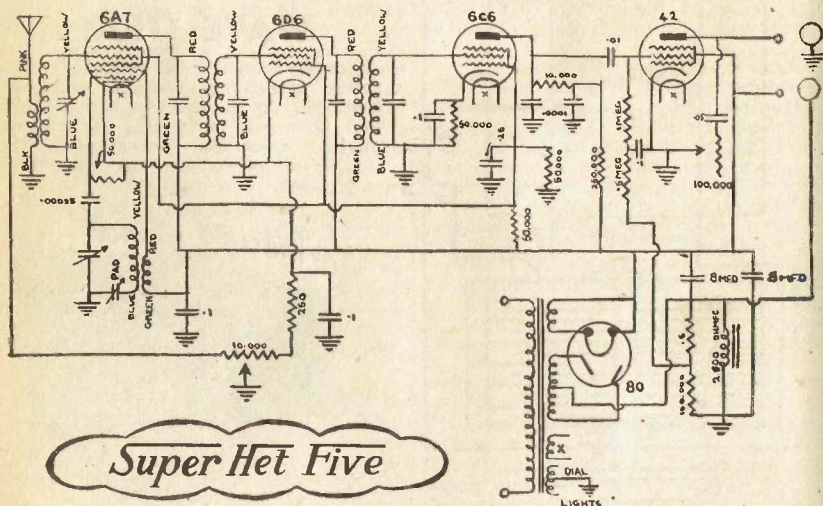
As the name implies, this Receiver is a straight-out Superhet circuit, devoid of all "frills" and snags. There are hundreds of amateur constructors in N.Z. who want to make a simple yet powerful Broadcast Receiver, and to them we heartily recommend The Straight Superhet 5. In designing this receiver we have eliminated all fancy touches such as short waves, A.V.C., etc., all of which may be plain sailing for an experienced Multi Valve Set constructor; but so much deep water for the novice.

It's just a 5 Valve Kit of conventional design, which will bring in all the usual N.Z. & Australian Stations with good tonal quality and Speaker strength.

However, we don't wish to make it sound too easy and to ask a beginner to commence on a receiver of this nature



without previous radio constructional experience. Try your hand first on a One or Two Valver, then step up to this Receiver and you should be able to take it in your stride.



Super Het Five

PARTS LIST FOR STRAIGHT SUPERHET FIVE"

One Chassis.
One each 6A7, 6D6, 6C6, 42, 80 Valves.
One 60 M.A. Transformer.
One Aerial, one Oscillator Coil (Shielded)
One 2-Gang Condenser.
Two I.F. Transformers.

One Padder.
Six Valve Sockets.
Two 8 mfd. Electrolytics.
Two 10,000 ohm Wire-wound Potentiometers.
Eleven One-watt Resistors.

Parts List for Straight Superhet Five—Continued.

Three pairs Goat Shields.
One Dial.
Two .0001 Mica Condensers.
One .00025 Mica Condenser.
One .05 Tubular Condenser.
One .01 Tubular Condenser.
Four .1 Tubular Condensers.
One .25 Tubular Condenser.
Three Knobs.

Two yds. Flex.
Sundries, Push-back Wire, Nuts & Bolts,
Solder Lugs, Terminals.

Complete Kit of Parts (as listed above).
Cat. No. TK 2009 **£10/15/-**
(Without Speaker).

THE "OUTDOOR PORTABLE"



The ideal Receiver for picnickers, week-enders or travellers, or anyone requiring a light, portable, self-contained radio. This set is probably one of the best 3-valve Portables we have described. Using 1.4v. tubes, it is very economical to run, and the results obtained are excellent. Each Kit is supplied with an enclosed type Loop Aerial (as illustrated).

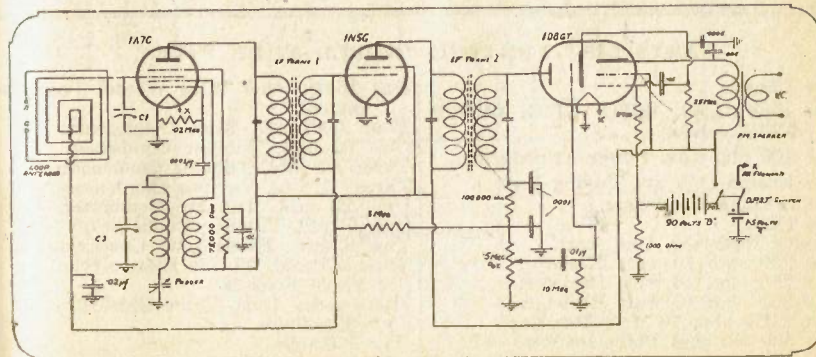
PARTS LIST FOR THE OUTDOOR PORTABLE.

One Chassis, One Dial.
One each 1D8GT, 1N5GT, 1A7GT Valves.
One Loop Aerial.
Two Iron Core I.F. Transformers.
One Padder.
One Oscillator Coil, Shielded.
One 2-Gang Condenser.
One 500,000 ohm Potentiometer.
Three Octal Valve Sockets.
Three .0001 mfd. Mica Condensers.
One .0005 mfd. Mica Condenser.
One .005 mfd. Tubular Condenser.
One .05 mfd. Tubular Condenser.
Two .01 mfd. Tubular Condensers.
One .02 mfd. Tubular Condenser.
Seven Resistors.

One D.P.S.T. Switch.
Two pkts. Hook-up Wire.
Two doz. Solder Lugs.
One and a-half doz. Nuts and Bolts.
Two Knobs.
Two 45v. Portable Batteries.
One 1.4v. A Battery.

Complete Kit of Parts, as listed above.
Cat. No. TK2014 **£9/17/6**
(Without Speaker)

Without Batteries and Speaker
Cat. No. TK2014A **£8/2/6**

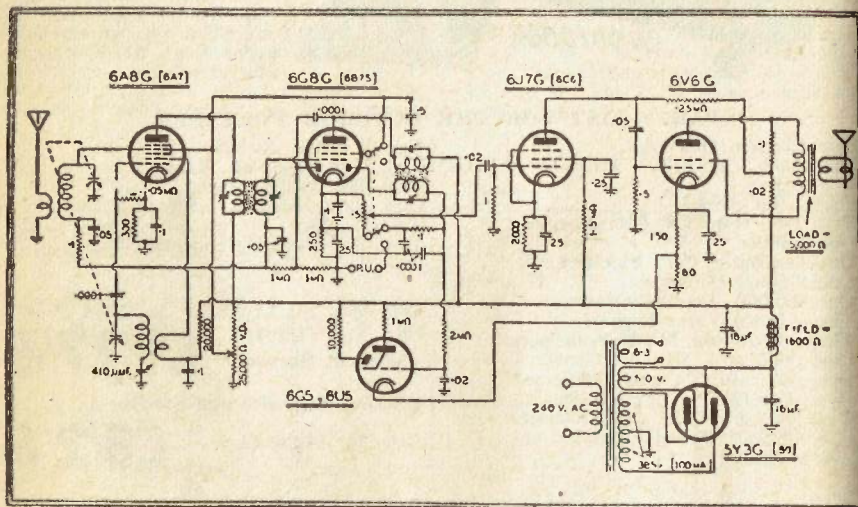


"WORLD WIDE DUAL WAVE FIVE"

If you have constructed an A.C. set of any description, then we feel sure that the "World Wide Five" Dual Waver will present no "snags." Just because it is a dual wave receiver it does not mean that it is difficult to build. On the contrary, this set is quite simple and can be depended upon to give complete satisfaction. It is an up-to-date circuit using octal-based valves and incorporates the use of a magic eye. The Dual-Wave Coil Box is supplied ready wired, so there are no worries in this respect. The performance of this set compares well with the standard of any commercial receiver in its class.



The "WORLD WIDE D/W FIVE"



PARTS LIST FOR THE "WORLD WIDE FIVE."

One Chassis.
One each 6A8G, 6G8G, 6J7G, 6V6GT,
5Y3G valves.
One 100 ma. 6.3v. Power Transformer.
One Ensign D/Wave Tuning Unit
One 2 Gang Condenser.
One Dial.
Twelve Resistors, One watt.
One 200 ohm 10 watt Resistor.
One 250 ohm 10 watt Resistor.
One 300 ohm 10 watt Resistor.
Two 1000 ohm 10 watt Resistors.
One 500,000 ohm Potentiometer.

One 25,000 ohm Wire Wound Potentiometer.
Four .0001 mfd. Mica Condensers.
One .02 mfd. Tubular Condenser.
Three .05 mfd. Tubular Condensers.
Three .1 mfd. Tubular Condensers.
One .25 mfd. Tubular Condenser.
One .5 mfd. Tubular Condenser.
Two 8 mfd. Electrolytic Condensers.
Three 25 mfd. 25-volt Electrolytics.
Six Valve Sockets.
Three pairs Goat Valve Shields.
Two Terminals.
Three Knobs.

Parts List for the World Wide Five—Continued.

Sundries, including Nuts and Bolts, Solder Lugs, Push Back Wire, Grid Clips, Power Flex, etc., etc.

Cat. No. TK2019A

£15

Complete Kit of Parts (as listed above).

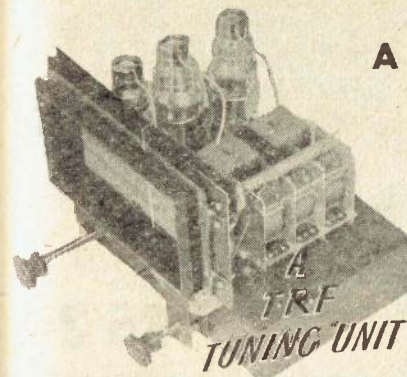
Cat. No. TK2019

£13/17/6

(Without Speaker)

Kit as above, plus material for Magic Eye Assembly.

One 6U5/6G5 Valve.
One Magic Eye Assembly.
Three Resistors.
One .02 Tubular Condenser.



A T.R.F. TUNING UNIT

This Tuner has been designed for the music lover who has an amplifier for his favourite recordings. The finest radio reception possible from both local and distant stations can be obtained by using this Tuner in conjunction with a good quality Amplifier such as the "Versatile 4 Watt" Amplifier described elsewhere in this issue.

T.R.F. UNIT PARTS LIST

One Chassis.
One Dial.
One Aerial, 2 R.F. Coils (Shielded).
One 3 Gang Condenser.
Eight Resistors.
One 5000 ohm Potentiometer.
One 8 mfd. Tubular Electrolytic.
One .5 mfd. Tubular Condenser.
Two .1 mfd. Tubular Condensers.
One .05 mfd. Tubular Condenser.
Two .0002 mfd. Mica Condensers.
One .0005 mfd. Mica Condenser.
Four Valve Sockets.

Two 6D6 Valves, 1 6C6 Valv.

Or

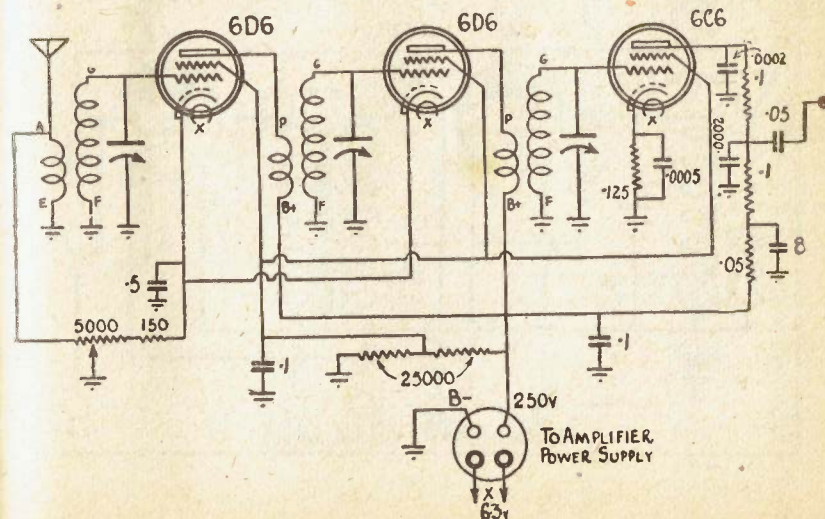
Two 6K7 Valves, 1 6J7 Valve.
Three pairs Goat Shields.
Three Terminals.

Two Knobs.

Sundries, including Hook-up Wire, Nuts and Bolts, Grid Clips, 5-wire Cable, Solder Lugs.

Complete Kit of Parts (as listed above).
Cat. No. TK2016

£5/19/6



THE "DRY CELL TWO"

Yet another good 2-valve Battery Receiver, economical to operate and a real powerful station-getter. The 1N5G is used as the detector, and the 1A5G as the pentode output valve. Neat and compact, the "Dry Cell Two" could conveniently be built into a portable cabinet of small dimensions.



"DRY CELL TWO" PARTS LIST.

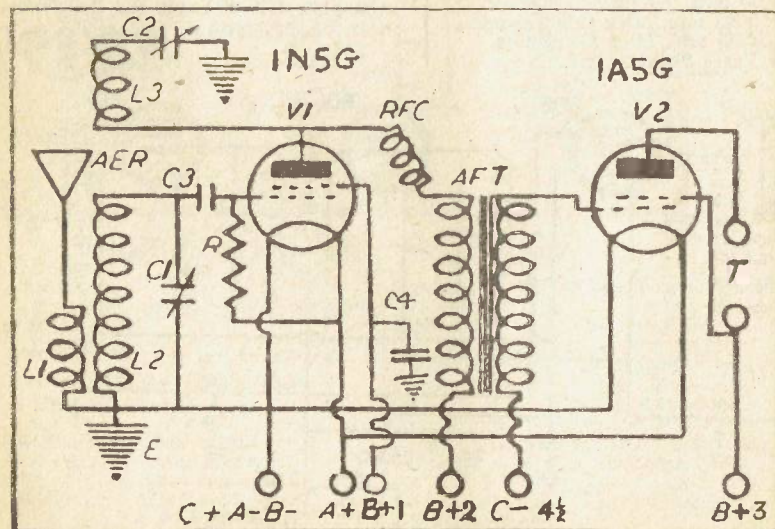
One Chassis.
 One each 1N5G, 1A5G Valves.
 One 3-plate Midget Variable Condenser.
 One .0005 mfd. Single Gang Condenser.
 One Oxford Coil.
 One Small Broadcast Dial.
 One Audio Transformer.
 Two Octal Valve Sockets.
 One R.F. Choke.
 Two Twin Tip Jacks.
 One .25 mfd. Tubular Condenser.
 One .0002 mfd. Mica Condenser.
 One 1 meg. Resistor.
 One S.P.S.T. Switch.
 Two Knobs.
 One yd. 5-wire Battery Cable.

One pkt. Pushback Wire.
 Sundries, including Nuts and Bolts, Grid Clip, Solder Lugs, etc.

Cat. No. TK2023 **£5/2/6**

Complete Kit of Parts, with Batteries.
 Cat. No. TK2023A .. **£7/12/-**

One 108v. B Battery (tapped)
 One 4½v. C Battery
 One 1½v. Dry Cell.



THE "POPULAR SKYSWEEPER"

This Receiver incorporates a favourite T.R.F. Circuit which has many desirable features; perhaps the most outstanding being an extremely mellow tone and the ease with which the final lining up may be carried out. Can be assembled by any amateur radio constructor in an evening, and is extremely free from

"snags" and complications. Satisfied users of the Popular Skysweeper advise that results compare favourably with factory-built machines.

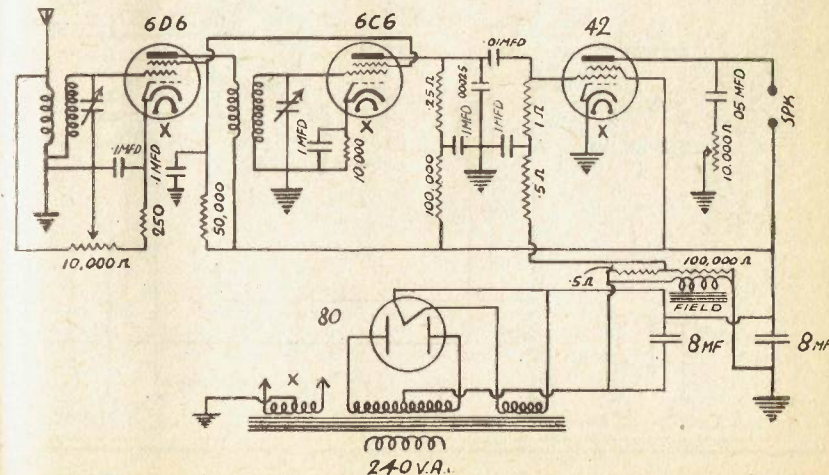
Main N.Z. and Australian Stations at good speaker strength.

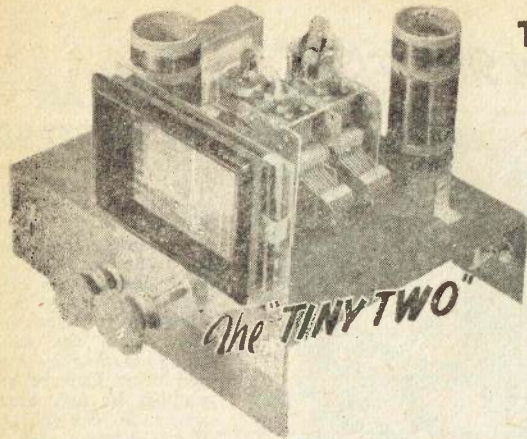
PARTS LIST FOR THE "POPULAR SKY SWEEPER KIT"

One Chassis.
 One each 6D6, 6C6, 42, 80 Valves.
 One 60 M.A. 6.3V. Power Transformer.
 One Oxford T.R.F. Aerial Coil.
 One Oxford T.R.F. R.F. Coil.
 Five Valve Sockets.
 One 2 Gang Condenser.
 Two 10,000 ohm Wire Wound Potentiometers.
 Two 8 mfd. Dry Electrolytic Condensers.
 One Dial.
 Five .1 mfd. Tubular Condensers.
 One .05 mfd. Tubular Condenser.
 One .01 mfd. Tubular Condenser.

One .00025 mfd. Tubular Condenser.
 Nine Resistors.
 Three Knobs.
 Two Terminals.
 Two yards Power Flex.
 Two doz. Nuts and Bolts.
 Two pkts. Hook-up Wire.
 Two doz. Solder Lugs.
 Two Grid Clips.

Complete Kit of Parts, as above (without Speaker) **£8/7/6**
 Cat. No. TK2013.





THE "TINY TWO"

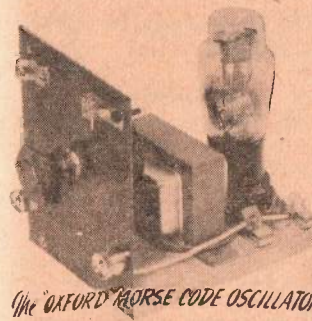
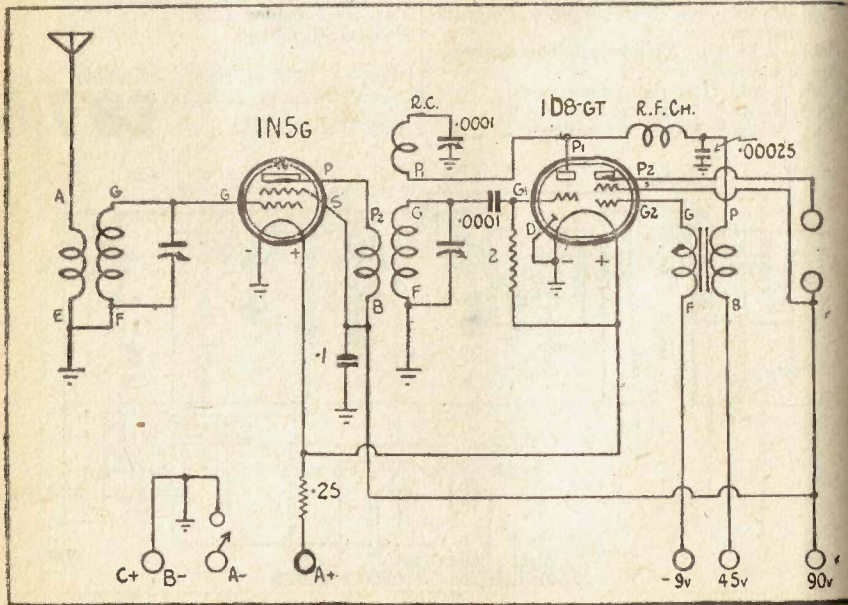
A Receiver intended primarily for beginners; easy to construct and giving superb performance. Using two 1.4 volt Valves, this set is capable of bringing in the main N.Z. Stations at Speaker Strength. The 1N5G is used as the R.F. Amplifier and the 1D8GT which is a Dual Purpose Tube is used as both a Detector and Output Valve. Literally speaking, this set actually gives the performance of a 3 Valve Receiver. This is a tried and tested circuit which we can heartily recommend.

PARTS LIST FOR THE "TINY TWO" RECEIVER.

One Chassis.
One each 1N5GT, 1D8GT Valves.
One 2 Gang Condenser.
One .0001 mfd. Midget Variable Condenser.
One Aerial, 1 R.F. with Reaction Coils.
One Broadcast Dial.
One 3-1 Audio Transformer.
One S.P.S.T. Toggle Switch.
One R.F. Choke.
Two Resistors.
One .0001 mfd. Mica Condenser.
One .00025 mfd. Mica Condenser.
One .1 mfd. Tubular Condenser.

Three Valve Sockets.
Two Terminals.
One 6-pin Plug.
Three Knobs.
Sundries, Nuts and Bolts, Hook-up Wire,
Solder Lugs.

Complete Kit of Parts (as above)
Cat. No. TK2012 **£6/2/6**
Cat. No. TK2012A—Complete with Batteries **£8/2/6**



THE "OXFORD" MORSE CODE OSCILLATOR

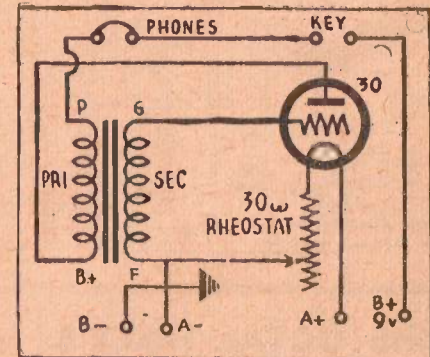
The Morse Code is one of the first things to learn if you have ambitions to become a radio operator or "Ham." The short-wave fan will also get much more fun from his set if he can understand dot dash messages flashing all over the world.

The "Oxford Oscillator" can be constructed within an hour by even a beginner. There's hours of constructive fun and enjoyment in learning the "Code" on this unit.

PRICE LIST FOR THE "OXFORD" MORSE CODE OSCILLATOR

One Baseboard.
One Bakelite Panel.
Two Terminals.
One 30 ohm Rheostat.
One 30 Valve and Socket.
One Audio Transformer.
Two Fahstock Clips.
One 9v. Battery.
Hook-up Wire, Knob, Solder Lugs,
Screws, etc.

Complete Kit of Parts (as listed above).
Cat. No. TK2015 **36/6**
(Without Key)



THE "RAHOB" SINGLE

Here is a good single valve Battery Receiver using a 1.4 volt valve, and which will get excellent reception from a wide range of stations. The 1N5G Tube used is a low drain high gain pentode which will operate from a single Torch Cell for the filament current, and a single 45 Volt Battery for the "B" supply. For those who want a small Portable Receiver for tramping, etc., will find that they can mount the parts of this set in a very compact space. A cigar box would make an excellent case and would hold all the parts with ease. However, with the standard Kit of Parts a baseboard and wooden panel similar to that used for the Hiker's One is supplied. The same coil as used for the Hiker's One is quite suitable, and owners of a Hiker's should have little difficulty in

changing their circuit to the Rahob Single. The Coil and Tuning Condenser are exactly the same.

THE "RAHOB SINGLE" PARTS LIST.

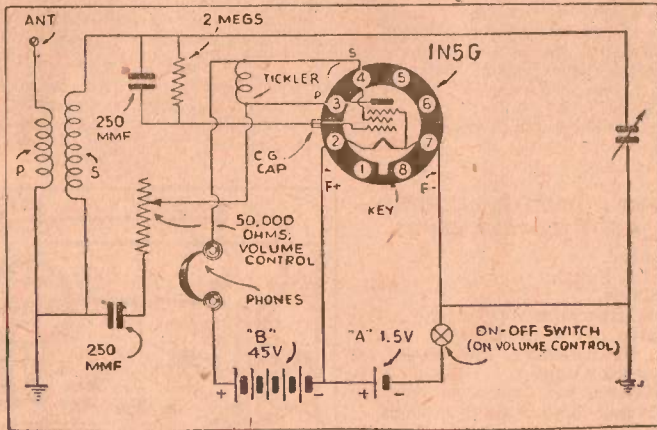
One Baseboard.
One Panel.
One 1N5G Valve and Octal Baseboard Socket.
One .0005 Single Gang Condenser.
One 50,000 ohm Potentiometer.
One S.P.S.T. Switch.
Eight Fahstock Clips.



The Rahob Single Parts List—Continued.

- Two .00025 mfd. Mica Condensers.
- One 2 meg. Resistor.
- Two Knobs.
- Coil Former and Wire.
- Sundries including Hook-up Wire, Solder Lugs, Screws, Clip, etc., etc.

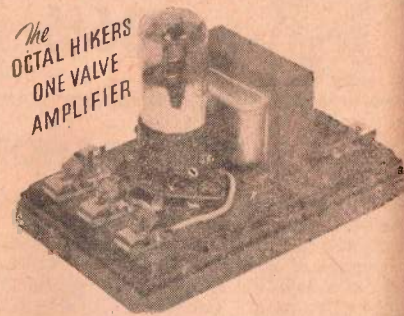
Complete Kit of Parts (as above).
 Cat. No. TK2022 **45/-**
 With Batteries.
 Cat. No. TK2022A .. **£3/3/-**



THE OCTAL HIKER'S ONE" VALVE AMPLIFIER

Description given on Page 127.
 COMPLETE KIT OF PARTS.

Cat. No. TK2010 **36/-**
 With Batteries.



The OCTAL HIKER'S ONE VALVE AMPLIFIER

WING NUTS

When I have found a small winged nut is required in a radio, etc., and haven't one small enough, I get a bolt



that is the size required and I solder a piece of very stiff wire on to the top of it. To fix the wire firmly, widen the slot and place wire into it, then solder over the top of it. I think it is original, as I haven't seen it done before.—Rahob 14168.

FIXING LOOSE VALVE SOCKETS



Here is a tip that I hope many other Rahobs will use. When a valve becomes loose in its socket and is liable to twist away the wires inside, a few drops of sealing wax will soon remedy the matter.—Rahob 8662.

R.F. CHOKES AS INDUCTANCE COILS

(Reprinted with kind permission of "Radio Craft.")

Since their introduction several years ago, I have found many uses for the popular R.F. chokes of about 2.5 mh. inductance, wound in four pies on Isolantite or ceramic cores. They are indeed quite versatile, and with very slight alteration lend themselves to use as inductance coils in a variety of applications. Especially do I find them useful as I.F. transformers and coupling impedances in ultra-compact receivers, or anywhere I wish to keep size at a minimum. Also they are ideal for use in electron coupled circuits for beat oscillators—in fact, they are more useful to me as basic coil foundations than they are as R.F. chokes.

Several diagrams herewith show some of the many circuits in which I use these coils, together with the data on what alterations are necessary to adapt the chokes to these specific circuits. A table of the various frequency ranges, and the capacities necessary to tune to their specific frequencies is also given. In cases where there are two or more choices of capacity-inductance combination, it is better practice to select the combination having the higher inductance, as the use of higher inductance and lower capacity to tune to a given frequency usually results in higher efficiency.

The constructor or experimenter who decides to experiment with these flexible little coils will find, as I have, that they are very handy to have around when you want a neat, efficient coil of extremely small size and can't find just what you want at the supply house. Besides, these chokes, and condensers to tune them, cost a lot less than any I.F. transformer on the market.

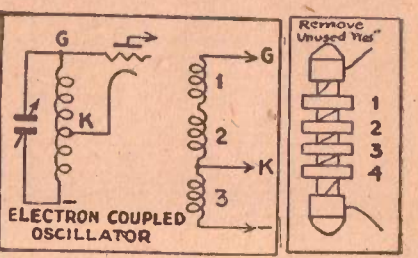
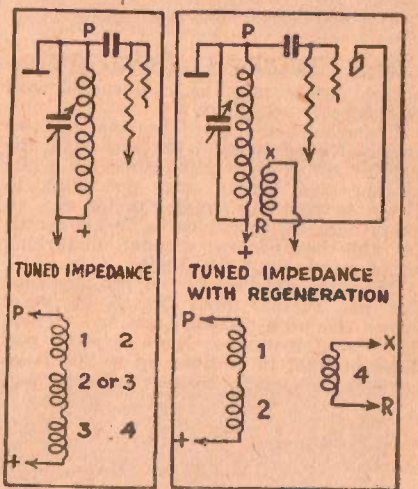
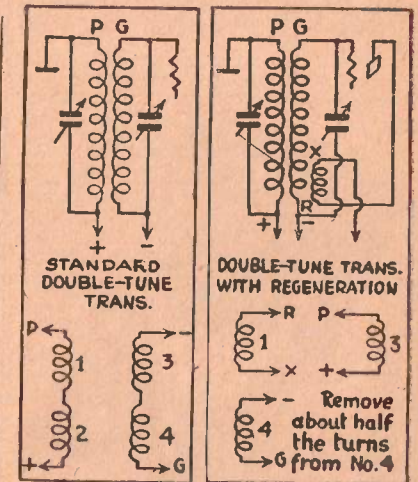
Since the "four-pi" choke as a whole has an inductance of 2.5 millihenries, each individual section, or "pie," has an inductance of 0.625 M.H. Two pies, therefore, would have an inductance of 2 times 0.625 or 1.25 M.H.; three pies an inductance of 1.875 M.H.

An inductance of 0.625 M.H. (one pie) tunes to 850-375 kilocycles, with a condenser of 58-325 micro-microfarads.

An inductance of 1.25 M.H. (2 pies) tunes to 875-325 kilocycles with 27-180 mmf.

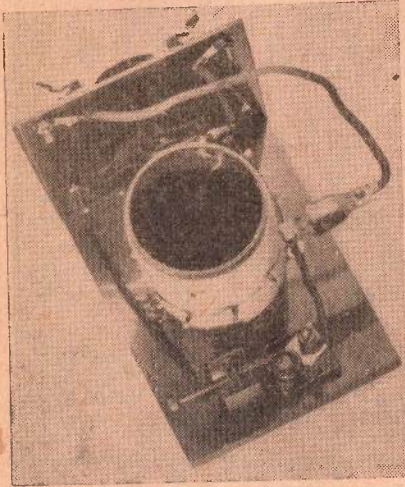
An inductance of 1.875 m.h. (3 pies) tunes to 1250-425 kilocycles with a 7-80 mmf. condenser. A large condenser could be used to extend this range.

The above values were chosen especially for working around 465 kilocycles.



THE EVER-POPULAR CRYSTAL SET

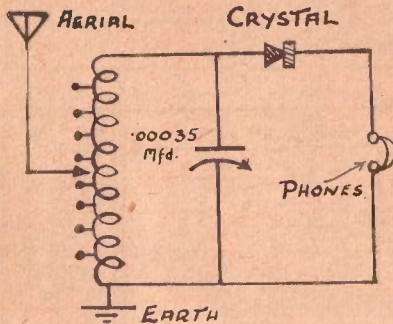
Though progress is being made rapidly in the radio world there will always be a place for the Crystal Set, that reliable and compact little receiver that works "for a song."



The "OXFORD" CRYSTAL SET described below may be constructed with ease by any schoolboy.

Though there may be one or two multivalve receivers in the household, the crystal set is still practicable, for while mother and father may not wish to listen to the "big" radio, junior can always dash away and listen to his serials on the headphones without disturbing other members of the family.

However, this set is not recommended for use further than 30 to 40 miles away from a strong station. There have been instances where crystal sets have brought in stations up to 200 miles away and sometimes even overseas, but



"OXFORD" CRYSTAL SET PARTS

One Crystal Detector
 One Variable Condenser, .00035 mfd. or .0005 mfd.
 One 3½ in. x 2 in. or 3½ in. x 2½ in. Coil Former
 Two Coil Feet
 One oz. 24 gauge S.C.C. or D.C.C. Wire
 One Baseboard.
 One Panel
 One Knob
 Four Fahstock Clips
 One Crocodile clip
 Screws, Solder, Lugs, Nuts and Bolts, Etc.

COMPLETE KIT OF PARTS

Cat. No. UK2006 17/6

this must be considered an exception to, and not the general rule.

80 turns should be wound. If 2½ in. former, 60 turns, both using 24 gauge D.C.C. wire with tappings at every 8th turn. Do not try to rush the coil winding, as a neat job is imperative. It is a tedious undertaking, but you will be well repaid for your time and trouble. On completion of the coil attach the feet and screw to the baseboard. Now screw the front bakelite panel to the baseboard and mount the crystal detector. The variable condenser should now be fastened to the front panel. At the top of the panel on either edge fix two Fahstock clips or other suitable terminals for the Aerial and Earth connections. At the bottom of the panel mount two further terminals for the phones.

The mounting of the components is now completed.

Wire the set as follows:—

Wire from the top of the coil winding to the fixed plates of the condenser, then on to the crystal detector. From the other terminal of the crystal detector wire to one phone terminal. Connect the bottom of the coil to the moving plates of the condenser, and then on to the Earth terminal. The remaining phone terminal is also wired to Earth. On to a piece of push-back or similar wiring connect an alligator or bulldog clip, the other end of this wire going to the Aerial terminal. Screw the knob on

to the shaft of the variable condenser, and that's all there is to it. The set is

AERIAL SYSTEM

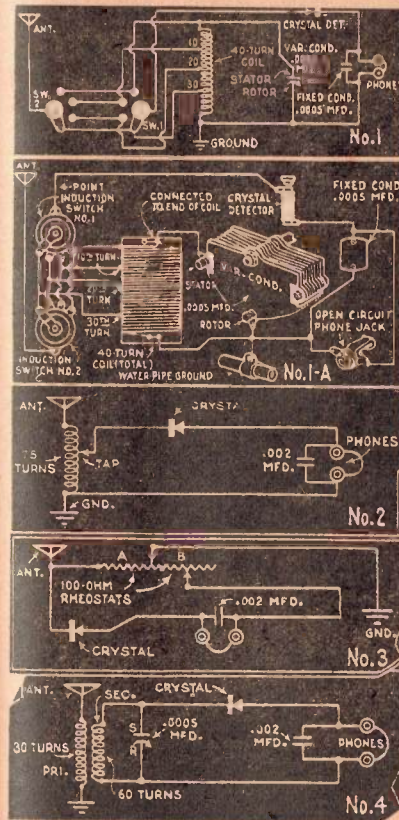
There is a saying in radio circles that a receiver can only be as good as the aerial allows it to be. This is correct with ordinary receivers, and even more so in the case of crystals, where the Aerial and Earth govern 90 per cent. of the reception. The ideal aerial should be approximately 75ft long and 40ft high. While it is not advisable to make it any longer, because of stations over-riding one another, the height may be increased as much as possible; the higher the better.

The Earth could be a copper pipe driven into the ground or else an earth clip attached to a water pipe.

Remember, the better the Aerial and Earth the better the reception.

CONSTRUCTIONAL DETAILS

The first project should be to wind the coil. This is done on either 2 in. or 2½ in.



bakelite former. If 2 in. former is used, finished and you can boast that you have built yourself a Radio.

THE CRYSTAL

Should the occasion arise for you to remove the crystal from the Detector, do so with a pair of tweezers. Never handle the crystal with your fingers. It is a wise plan to periodically clean the crystal with a little petrol, removing grease and dust.

OPERATION

Connect the Aerial and Earth leads and the phones to their respective terminals. Select a tapping on the coil by means of the Alligator clip and tune the variable condenser on to a station. Adjust the catswhisker on the detector for the best results.

HEADPHONES

While one does not feel inclined to pay a big price for a good pair of headphones for such a low cost set, we would like to stress the point that if superior quality phones are used, the better the tonal quality and volume will be. However, the set will certainly operate with a pair of cheap headphones, providing the resistances of the phones is not less than 2000 ohms rating.

SIX UNUSUAL CRYSTAL SET CIRCUITS

THE POPULAR "ONE"

(By C. V. CRIGHTON)

In response to numerous requests for a neat and compact receiver, we present "The Popular One," the little fellow with a big heart. Simple circuit—brilliant performance. Easy to build and gives exceptionally good results. Uses a miniature tube. It's small, and may in fact be carried in the average size coat pocket.

CONSTRUCTION

In building this small receiver our first thought was for a small pocket size set, yet big enough to allow for neat wiring and soldering.

The size of the cabinet, 5½ in. x 4½ in. x 2½ in. deep, was constructed of 5-ply wood round the sides and the front and back of 3-ply. A coat of stain adds to the appearance.

First mark the position of the holes to take the shafts of the condenser and potentiometer. The condenser mounted at the bottom in the corner and the pot. opposite. Make sure the holes are at the same height and distance from the edge of the cabinet. The aerial and earth terminals can be mounted at the top, one in each corner. In the centre the switch is mounted and above this the twin tip jack is screwed into position. This completes the front of the set.

Next we do a little soldering, and here we might mention that the best results in soldering are achieved by applying a little soldering paste to the joint, then with resin core solder and soldering iron complete the joint. All wiring should be as short as possible.



Solder two wires to the earth terminal, one going to the moving plate terminal of the condenser, the other being about 6 in. long is left to be attached to the A + B — battery connections later.

Wire the .00005 mica condenser from aerial terminal to fixed plates of condenser. Wire from centre contact on pot. to one phone terminal. Solder wire to other phone terminal, leaving 6 in. for connecting to B + 9v. later.

Wire the .002 mica condenser from centre contact on pot. to moving plate terminal of condenser.

Next comes the mounting of the valve socket. Mark the position of the holes for mounting the socket on the side of the cabinet. Make sure there is ample

room for the valve without touching other components. Before mounting socket, solder wires to socket connections, leaving ample length of wires to connect to the various components.

Mount the socket and solder the leads in their respective positions. F — (1) to switch; P (2 or 6) and G2 (4) connected together to left lug on Potentiometer. F + (7) left to connect to the "A" Battery later. Place 2 meg Resistor and .00025 Mfd. Mica Condenser side by side and twist the pigtailed of these together and run the soldering iron along them. Connect one end to G1 (3) on valve socket and the other end to the fixed plate terminal of the variable condenser.

Mount the coil in a convenient position beside the valve, being secured to the cabinet by a strip of metal passed through the hole in the former and bolted at either end. Make sure the lugs of the coil do not touch the switch or any other component. The colour code of the coil is as follows:—

White: Top of first winding.

Red: Bottom of first winding.

Green: Bottom of second winding.

Black: Top of second winding.

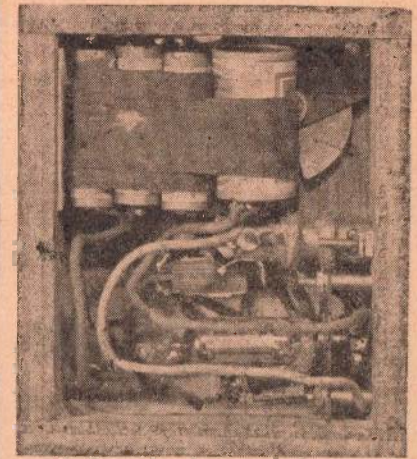
Wire from white lug to centre lug of pot.

Wire from red lug to left lug of pot. Wire from green lug to fixed plates of condenser.

Wire from black lug to moving plates of condenser.

This completes the wiring of the set. Next the wiring up of the batteries.

The six pen-lite cells are connected in series to make a neat 9-volt pack. A 935 Eveready cell used as an "A" Battery is strapped to the "B" Battery. Solder the battery leads from the set to their respective terminals. A small piece of cardboard placed around the batteries avoids any part of the set shorting the cells. The wiring is now finished all but the checking. Put the knobs on the two shafts protruding from the front of the set. Plug the phones in the twin tip jack; connect the aerial to the aerial terminal and earth to earth terminal.

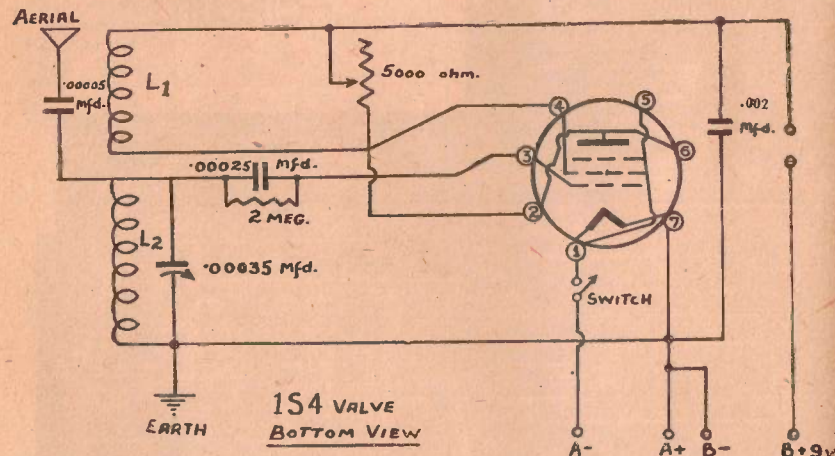


PARTS LIST

- 1 1S4 valve.
- 1 Midget valve socket.
- 1 .00035 mica spaced condenser.
- 2 Small pointer knobs.
- 1 Twin tip jack.
- 1 2 meg. ½ watt resistor.
- 1 5000 ohm volume control.
- 1 Switch.
- 1 only .00025 mica condenser.
- 1 .002 condenser.
- 1 .00005 mica condenser.
- 1 Midget R.F. coil.
- 6 Penlite cells.
- 1 1½ v. unit cell.
- 2 Fahnstock clips.
- 3 ft. Pushback wire.
- 8 Nuts and bolts.

COMPLETE KIT OF PARTS

Cat. No. UK2005 .. 47/6 Post Free

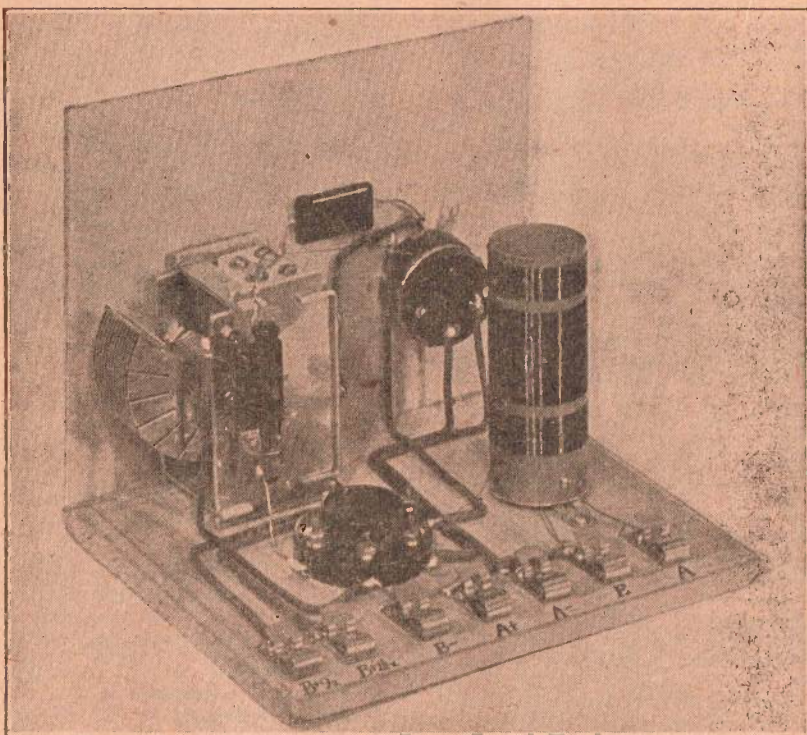


KIT SETS

Send us a list of the components you require for your next Receiver, Amplifier or Tuner and we will be only too pleased to quote you on the individual items or in Kit Set form. If unable to send a parts list, just supply us with the circuit diagram and we will do the rest. This is another Lamphouse Service and places you under no obligation to us whatever.

THE "IMPROVED HIKER'S ONE" RECEIVER

Still as Popular as it was in 1939



This set has stood the test of time and there are now thousands of "Hikers' Sets" in use throughout the Dominion. Practically the only failures have been due to bad and untidy workmanship. When making your set be neat, particularly with the coil and soldering. Attention to these points and success will be yours.

In country districts (away from powerful local stations) reception of all the main New Zealand stations and many Australians can be had in the evenings; whilst your nearest YA station will come in during daylight even in summer, and all this without the need of a large and expensive "B" Battery.

CONSTRUCTIONAL DETAILS

First, screw the panel to the baseboard. Then slide the condenser up to the panel and mark the position for the hole to take the shaft. Now mark another hole on the opposite side of the panel in the same relative position for the potentiometer. Make both of these holes large enough to take the threaded bush on the condenser and the potentiometer.

You can now mount these two, fastening them to the panel by means of the mounting nuts provided. Now mount the two terminals for the phones, making sure that the one nearest the tuning condenser does not touch the tuning condenser frame. This finishes the panel.

Next, drill seven holes through the baseboard and mount the Fahnsstock

Clips. Looking at the back of the set, mark these clips from left to right as follows:—B+9V, B+1½V, B-, A+, A-, E A. Screw down the valve socket behind the condenser.

Now the coil. It is essential that a neat job be made of this, otherwise tuning will be erratic and oscillation awkward to avoid. All three windings MUST be in the same direction and spaced ¼ in. apart. Make a small hole ¼ in. away from one end of the former and pass the wire through this twice, looping it the last time and leaving about 6 in. to connect up the A terminal afterwards. Wind on closely and neatly 35 turns, finishing the end off by passing the wire through two small holes in the former spaced about ¼ in. apart and leaving about 6 in. of wire for connecting up. One-eighth inch below this winding make two more small holes and commence the next winding of 100 turns, finishing off the same as the first winding. The third winding is put on the same way ¼ in. below the second winding and has 40 turns. You should now have about ¼ in. former left below this winding to which the coil feet are attached. Do not mount the coil yet, but commence the wiring. All joints should be soldered—and not with liquid solder or spirits of flux—use resin core solder for a good electrical joint, and make sure that parts to be soldered are clean, preferably sand-papered clean. The following is a complete wiring list:—

All wires should be laid flat on the baseboard and be as short as possible. Neatness here will count a lot. Wire from the A-clip to one side of the switch on the potentiometer. Wire from the other side of the switch on potentiometer to F- on valve socket. Wire from centre contact on potentiometer to nearest phone terminal. Wire from the top of the third winding on coil to centre contact of the potentiometer.

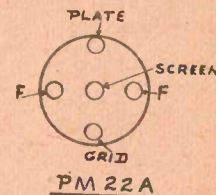
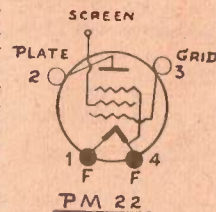
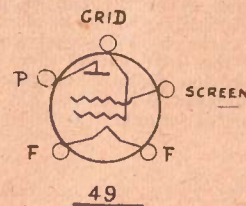
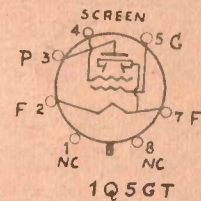
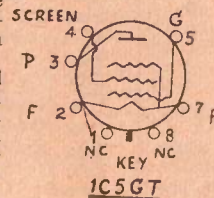
One side of .0001 mica condenser to frame of tuning condenser—the coil should now be mounted—and the other side also to the centre contact of potentiometer. Wire other phone terminal to clip marked B+9V. Wire S on valve socket to terminal marked B+1½V. When using Octal based valves (1C5GT and 1Q5GT) an improvement is effected by using 9 volts on the 1½ volt lead from valve socket instead of the 1½ volts as stipulated.

Wire from tuning condenser frame to F+ clip on valve socket and on to clip marked B-, on to A+ and thence to E. The bottom of both the first and second coils are now also wired to E. Bottom of third coil to P connection on valve socket. Wire from left lug of potentiometer also to P on valve socket. Note that right lug on potentiometer is not used. Top of first coil to clip marked A. Top of second coil to fixed plate terminal on tuning condenser. Place resistor and remaining .0001 condenser side by side, and twist together the pigtailed of these and run the soldering iron along them. Connect one side of this combination to G connection on valve socket. Connect other side to fixed plate terminal on tuning condenser.

The wiring is now finished, all but the checking. It is important to check the wiring, as a mistake might mean burning out the valve. Put the knobs on the two shafts protruding from the front of the panel, and connect the phones to the phone terminals. Now connect the aerial (which must be a good one) and the earth (which also must be good) to the clips marked A and B respectively.

BATTERY CONNECTIONS

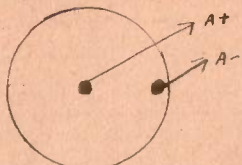
Clip A- goes to side terminal on No. 6 Cell.



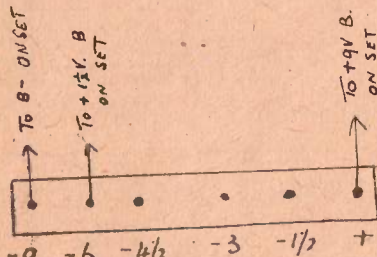
UNDER SOCKET VIEW.

NC shown on 1Q5GT and 1C5GT
Valves = No Connection.

Clip A+ goes to the centre terminal on No. 6 Cell.
 Clip B- goes to the -9 volt socket on the C Battery.
 Clip B+1½V goes to the -6 volt socket on the C Battery.
 Clip B+9V goes to the + socket on the C Battery.



No. 6 1½ Volt BATTERY
 WIRES go TO A+ & A- ON SET



9 Volt Battery.

The last three connections may seem wrong, but you must remember a C Battery is usually used for giving negative bias to valves, and consequently, marked with one + socket and tapped - sockets. Actually the -9 socket gives us -0V; the -7½V socket gives us +1½V, and the +0V socket gives us +9V. In operation it might be found necessary to increase B+1½V to 3V, or 4½V, to obtain satisfactory oscillation.

If this is so, move the connection from -7½V to -6 or -4½ sockets.

OPERATION

Turn the volume control clockwise to the point just before the set goes into oscillation. Should you advance this control too far, a whistle will be heard in the phones, which indicates the set is oscillating. To operate a set in this condition not only causes interference in nearby receiving sets, but is also an offence against the broadcasting regulations.

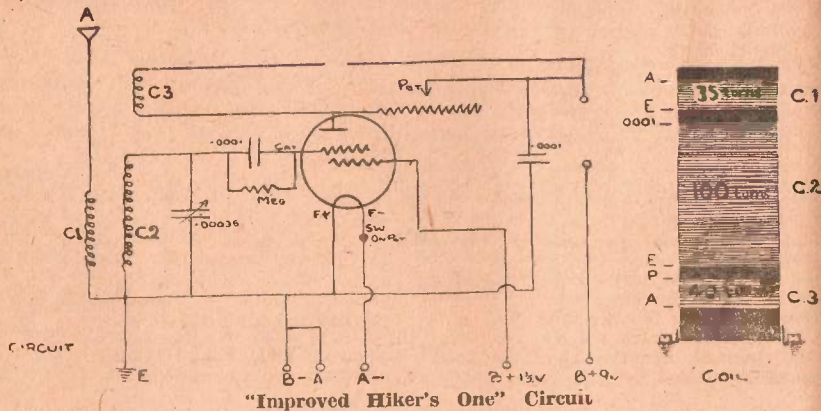
In conclusion, may we wish you 365 days and nights of good reception with your "Hiker's One."

IMPROVED HIKER'S ONE PARTS LIST

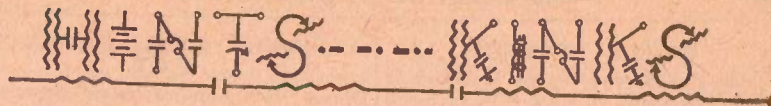
- Two .0001 mfd. Mica Condensers
- One 1 meg. Resistor
- One Variable Single Gang Condenser, .00035 or .0005 mfd.
- One 500,000 Potentiometer with Switch
- Nine Fahstock Clips or Terminals
- One Valve, 49, 1Q5GT, 1C5GT
- One Valve Socket
- One 1½in. x 3½in. Coil Former
- 1oz. 32 gauge Enamelled Wire
- Two Coil Feet
- 14 Wood Screws
- Two Nuts and Bolts
- One Coil Pushback Wire
- One Baseboard
- One Panel
- Two Knobs
- One 1½v. Dry Cell
- One 9v. C. Battery

COMPLETE KIT OF PARTS, with Octal Valve and Batteries

Cat. No. TK2004 £2/13/6



"Improved Hiker's One" Circuit



SAVE THE OLD PLIERS

When you have trouble with the breaking and bending of long-nosed



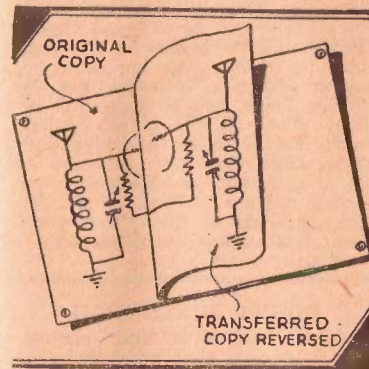
pliers, making them useless for the purpose intended, grind off the noses.

Instead of having to discard them, you have a novel pair of diagonal cutting pliers.—"Radio Craft."

COPYING DIAGRAMS

When a large and complicated diagram must be copied, it requires a great deal of time and effort, even if one uses tracing paper or carbon paper. Still worse, one is very apt to make mistakes or omissions.

However, after a little experimenting, I have found a much easier, quicker method. I simply apply a little turpentine to a wad of cotton or soft brush and spread it over the entire surface of the diagram. Next, I lay a clean sheet of white paper over the diagram, and finally I rub this all over with a hard,

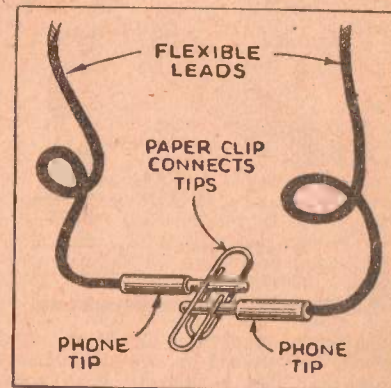


smooth object, such as the bowl of a spoon.

Of course, the diagram appears on the white paper in reverse, but this is not usually much of a handicap. If you must have the diagram appear exactly as the original, simply repeat the process, recopying it from the paper.

JIFFY CONNECTOR

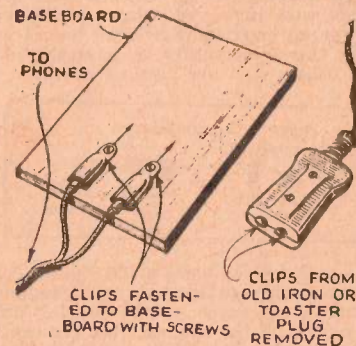
It seems that there are no end to uses for the "old faithful" paper clip. I find that it serves excellently as a connector



where temporary test connections are to be made. While the drawing shows two phone tips held together with a paper clip, almost any connection may be made in a similar manner. Flexible wires, of course, as well as solid wires, may be joined together without the trouble of twisting them.

EMERGENCY PHONE JACKS

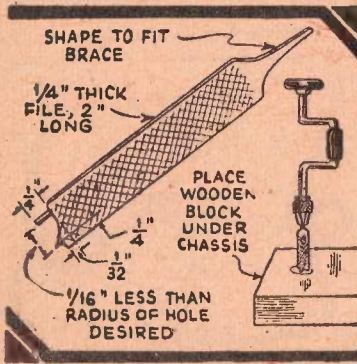
When doing experimental work using bread-board type mountings, I ran short of phone posts. However, I had some



old plugs of the type used for electric irons and toasters. I removed the clips from these plugs and screwed them to the board, where they worked fine as phone jacks.

CIRCLE CUTTER

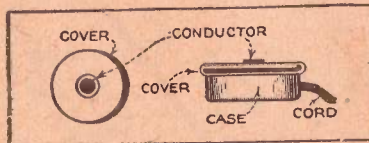
A cheap and effective circle cutter is an essential when building sets on metal chassis or when cutting panels. The drawing herewith shows a cheap but highly effective cutter of this type,



which can be made from an old file. The file may be softened by annealing it in a gas stove. This is done by heating the file to cherry red, then allowing it to cool slowly. The end is then sawn and filed into the form shown in the illustration. After this, it is reheated to cherry red and plunged into cold water to temper it. The tang (or handle end) should be filed down to fit the jaws of a standard brace. If it does not fit securely it will wobble, resulting in a ragged cut. This home-made tool will prove an aid to the experimenter.

HOME-MADE BONE CONDUCTOR

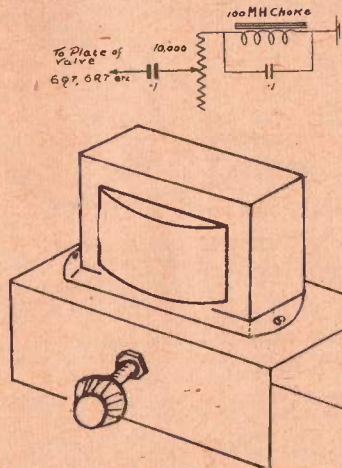
Having been so successful in converting my hearing-aid earpiece to bone conduction with improved volume and better tone for my particular hearing loss, I am taking this opportunity to pass the idea on to others who are hard of hearing.



To make this home-made bone conductor, simply take a single headphone (matched, of course, to the hearing aid) and scrape off the enamel from the centre of the diaphragm. Next, solder a small piece of iron or copper rod approximately 3-16th or 1/4 inch in diameter by about 1/2 inch in height so that it just protrudes above the earpiece cover, and can be set against the bone back of the ear.

A SIMPLE TONE-COMPENSATOR UNIT.

(From "Radio and Hobbies," Sept. 1940)
This little unit can be adapted to many receiver or amplifier circuits to "boost up" the bass notes. It is totally



different from a tone control, which makes a receiver "woolly" because of definite high note chopping. In this scheme the high notes are merely reduced in strength more than the lows, but they are not suppressed.

The idea of the variable resistor is to change the amount of high note cut at will. Thus with the resistor all out, about all you will hear are the bass notes. The over-all amplification of the audio section will be reduced slightly.

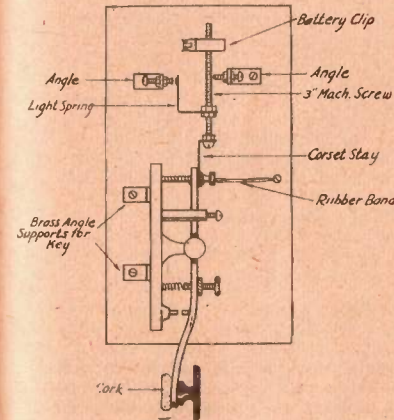
The unit is suitable only for triode valves of medium to low plate impedance. Any triode amplifier in a radio set, or an audio amplifier, can be employed in the circuit. The unit is simply connected between the plate of the valve and the chassis. The blocking condenser of .1 mfd. or more will prevent a short-circuit of plate voltage. There is no current flowing through the choke, so if you have a very good audio transformer, try using one of the windings.

BURNT FIELD COILS

Speaker field coils and phonograph motor field coils that have their insulation badly charred and are loose through overheating from shorts, etc., but which have continuity of winding, can be repaired by placing the winding in a can of high melting point insulating pitch or compound. The same compound that transformers are sealed in. Boil the unit for about ten minutes, remove and hang up to drip. This will reinsulate each wire and will make the winding tight and safe again.

MAKING A BUG KEY

A home-made bug key which eliminates the machine shop, mechanical engineers, cranes, etc., which are usually required in the making of even the simplest home-made bug, is being used here at my home, and although it has a rather strange and startling appearance, it works quite decently and can be made in any well-equipped kitchen or bathroom with very little struggle.



Briefly, the idea is to use a straight key set up on its right side with a couple of angles for the main part of the terminal and screw the vibrating spring on to the end of the arm. Thus in one swoop the tough question of bearings, main arm and one of the springs is disposed of.

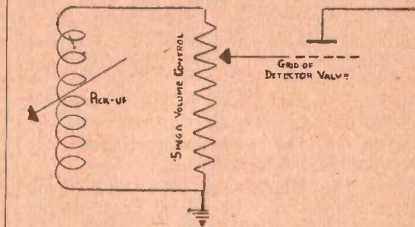
The diagram gives all the necessary details. The universal clips used for weights are easily adjustable for various speeds. The light spring carrying the dot contact is a prong contact from a Benjamin spring socket. Almost any light spring would do here. The vibrator spring is a one-inch piece of half-inch corset stay, with one-quarter inch bent at a right angle (it must be bent slowly as it is brittle) and drilled or punched at the unbent end for the back adjustment screw on the key. It is clamped under the locknut on this screw. The screw is lock-nutted to the bent end of the vibrator spring; a hole should be punched and the vibrating arm fastened securely. The rubber band balances the tension of spring near the dash contact so that the arm comes back to a middle position after a flock of dots. A light spring under the adjusting screw at the back of the key would look less queer, undoubtedly. The two sets of contacts should, of course, be connected in parallel.

It was necessary to solder over each of the contacts on the dash end, making a solder to solder contact, as the high resistance of whatever Signal uses in his contacts made the dashes sound different from the dots (which have a low resistance path) in my monitor. A piece of cork glued to the under side of the knob makes the dot knob.

The adjustments of the thing call for much cut-and-try. The rubber band, the dash spring and the set screw at the back of the key are adjusted for about one-eighth-inch swing on the dot side and one-sixteenth on the dash side, with enough tension on each spring to bring the bar back firmly to the middle position. With the bar all the way over in the dot position, the contacts should touch with a slight tension on the spring carrying the dot contact. This makes a heavy dot. But the adjustments of home-made bugs have been explained many times; there is nothing different about this bug except the use of the straight key, which really makes it a simple matter any ham can build. No more glass arms.—A.R.R.L. Handbook.

CONNECTING A PICK-UP OR MIKE TO YOUR RADIO

Connecting a pick-up to your radio will give you endless joy from your own records, and, if a microphone is also used, great fun can be had making up

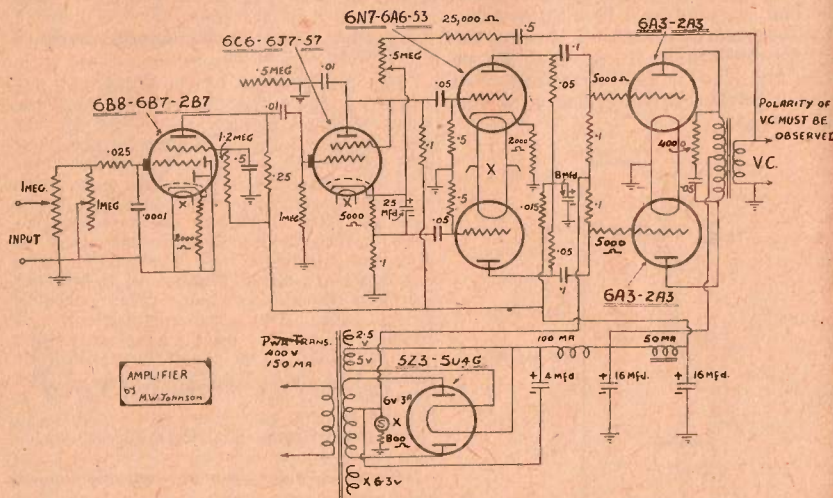


and announcing your own programmes. Our circuit diagram shows the connections to be made. On most sets the detector valve is the shielded one with the grid clip on top and which is nearest to the two or more valves which have no cap on top. Usually it will be one of the following numbers: 57, 55, 6C6, 6B7, 2B7, 224, 24A, 6B8, 75, 6Q7.

The grid clip, to which a wire is connected, is removed, and in its place the wire from the volume control on the pick-up or mike is fitted—preferably by means of a small clip. The other wire from the pick-up is connected to the chassis of the receiver, probably to the earth terminal will be simplest.

THE "SUPERGAINER" AMPLIFIER

(By Rahob 5851)



On paper it may seem that a pair of 6A3's with back bias have an output of 15 watts. This, however, is very difficult to obtain, but a useful output of over 10 watts may be expected with resistance capacity coupling.

The diagram of the Amplifier shows that a total of six tubes are employed which are as follows:—6B8, 6C6, 6N7, a pair of 6A3's and a 5Z3. Alternatives may be used in the following line up:—

Type 6B7, 6J7, 6A6, 2A3's and 5U4G as Rectifier.

Given in the schematic diagram is also a set of 2.5 volt Tubes.

Since the 6B8 is a Duo-Diode Pentode, a Tuner may be added very simply by using these diodes for detection. In this manner a high quality local station receiver could be developed, thus the 6B8 is the logical choice for this position. Next the 6C6 is utilised in the usual manner as a phase inverter, feeding the 6N7, which in turn drives the 6A3's in push pull. The rectifier used must be a 5Z3 or a similar high power type. A type 80 would definitely be unsuitable.

FEED BACK

Feed back is of a limited type and is developed from the voice coil, where the desired amount is fed back through a .5 mfd. blocking condenser and a 25,000 ohm resistor. From here, through the ½ meg. pot. on to the cathode of the 6C6. The condenser prevents any DC being fed on to the cathode, while

the resistor stops the maximum voltage from being fed back. At full output a small amount of feed back is desired. It is very important to notice that the voice coil has polarity, and if this is not observed strong oscillations occur. The best idea is to put the amplifier into operation, earth one side of the voice coil, and apply feed back; if you have the wrong polarity the loud speaker will soon let you know!

There are two tone controls included in the circuit. One is the usual high note cut obtained from a .01 condenser connected to the plate of the 6C6 and to earth through a ½ meg. pot. The other is a pot. shunted across the volume control which changes the load for various pickups, and when playing old or worn records needle scratch may be eliminated to a certain extent with this control.

The filter in the input section of the 6B8 is to prevent any stray RF signals entering the tube, and all this wiring should be shielded. It is also important that the .1 resistors in the plate and cathode of the 6C6 have the same value. For best results they should be checked on a meter, and the one with the lower value should be filed until both resistors are identical. This is necessary for correct phase inversion. The 15,000 ohm resistor in the plate circuit of the 6N7 should be of the 3 watt variety, and this, with the 8 mfd. electrolytic condenser steadies the voltage across the driver plates.

Passing on to the output tubes; 5,000 ohm grid stoppers prevent strong

parasitic oscillations, which are likely to be troublesome if stoppers are omitted. Tone compensation across the 6A3's consists of a .05 mfd. Condenser (600-1,000 volt working) and a resistor of 4,000 ohms (approximately 1.3 times the load impedance of the tubes. This arrangement keeps the load impedance reasonably constant, since, that when the frequency rises the impedance of the voice coil rises also, but at the same time the impedance of the condenser falls. Thus a fairly even balance is maintained with the use of this filter.

Another very important point in connection with the 6A3's is that the output transformer must provide the correct matching between the tubes and the speaker. Should the matching be incorrect, tone and volume drop off quickly making the amplifier quite useless for the work intended. Back bias for the 6A3's is used. The bias resistor has a 6.3v. .3 amp. bulb in series with it to act as a pilot light and a HT fuse. Normal operating current drawn through this bulb causes a faint glow.

SPEAKER

We recommend a Rola 12in. P.M. Speaker mounted on a large baffle board 4ft. square for an excellent bass response. A 12in. E.M. Speaker with a 1,000 ohm field would be used as an alternative by connecting the field in place of the 800 ohm bias resistor.

With such a high gain it may be difficult to eliminate all the hum; however, this may be tracked down as follows.

On earthing the grid of the 6C6 the hum will probably disappear, and if so it is obvious that the hum is arising from the previous stage. This may be eliminated by connecting all the earthed points of the suspected valve to a point insulated from earth, and then probe around with a length of flexible wire until a neutral point is found. The volume control should be earthed in this manner.

CHASSIS

The chassis, which is made of heavy gauge tinned steel, measures 15 x 7 x 2½ inches. Although the general lay-out should be adhered to, the chassis may

SELECTIVITY

A pre-set Condenser in the aerial lead-in will be found helpful when two stations on approximately the same wave-length are interfering with each other. In some cases it will not only allow the stations to be separated, but by careful adjustment of the condenser the reception is louder than without it.

This diagram shows how to connect the Condenser:—

be altered slightly to suit the larger components available to the constructor. It is advisable to keep the power leads away from the volume control and the in-put circuit. This is accomplished by putting the power-switch on the feed-back control.

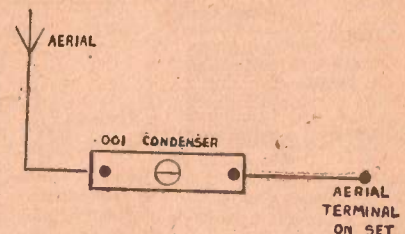
With regard to the results, it will be found that this amplifier will give good reproduction and ample power for the gramophone enthusiast, while it might also serve for a small dance hall or public address amplifier.

THE "SUPER-GAINER" AMPLIFIER

- One Chassis
- One 6B8 or 6B7 Valve
- One 6C6 or 6J7 Valve
- One 6N7 or 6A6 Valve
- Two 6A3 or 2A3 Valves
- One 5Z3 or 5U4G Valve
- One 150 MA Power Transformer
- One 100 MA 30 h. Choke
- One 50 MA 30H Choke
- Two 500,000 Volume Controls
- Two 1 meg. Volume Controls
- One Speaker Plug and Jack
- Twenty Resistors
- Seven Valve Sockets
- Two 16 mfd. Electrolytics
- One 8 mfd. Electrolytic
- One 4 mfd. Electrolytic
- One 25 mfd. 25v. Electrolytic
- Two .1 mfd. Tubular Condensers
- Three .05 mfd. Tubular Condensers
- Two .01 mfd. Tubular Condensers
- Two .5 mfd. Tubular Condensers
- One .0001 mfd. Mica Condenser
- One 6v. Dial Lamp
- One 800 ohm 10 watt Resistor
- Four Knobs
- Sundries, Power Flux, Hook-up Wire, Solder, Lugs, etc.

COMPLETE KIT OF PARTS, as above

TK2008 £13/17/6



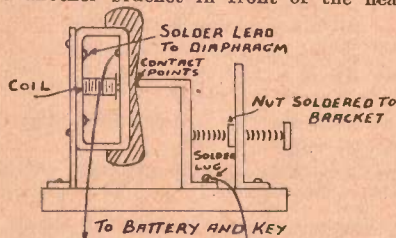
homa, South Dakota, Tennessee, Texas, Wisconsin), Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Winnipeg.

5.00 a.m.—Mountain Standard Time (Arizona, Colorado, Idaho, Montana, New Mexico, Utah, Wyoming), Calgary.

HIGH FREQUENCY BUZZER.

The sketch below illustrates the construction of a high-frequency buzzer made out of a single earpiece from a pair of 'phones.

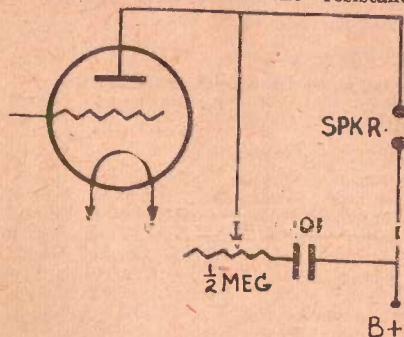
The 'phone is mounted vertically on to a heavy bracket, a contact point being soldered on to the diaphragm. On to another bracket in front of the head



phone there is also a second contact point, while a third, in which there is a bolt to adjust the pitch of the buzzer, is directly behind. The buzzer must be very firm for best results.

TONE CONTROL FOR "HIKER'S ONE"

Here is a simple yet very effective variable tone control for use with an amplified Hiker's or similar set. It is an old dodge but may be unknown to some Rahobs. Put a variable resistance in series with a fixed condenser across the speaker terminals. The resistance



may be anything from $\frac{1}{4}$ to $\frac{1}{2}$ meg. and the condenser can be anything from .01 to .1 mfd. Try this and you will be surprised with the variation in tone it will give.—Rahob 8107.

4.00 a.m.—Pacific Standard Time (California, Nevada, Oregon, Washington), Vancouver, Baja California*, Alaska (Ketchikan).

3.00 a.m.—*Alaska (Juneau).

2.30 a.m.—Hawaii.

2.00 a.m.—*Alaska (Fairbanks).

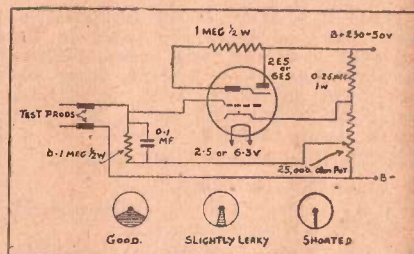
A GOOD CONTACT MIKE

A single headphone makes a very good contact mike. This is a mike that is placed on the body of a string instrument so that the music can be amplified through your phone oscillator or amplifier.

A phone in which the magnet has become quite weak is the best. If the notes do not come through, cut washers from thin writing paper. Place them between the diaphragm and shell one at a time. The object is to increase the space between the diaphragm and the armature. Next glue a piece of felt or flannel with a hole in the centre to the ear piece of the phone. Mount the mike on the bass side of the tail piece, just behind the bridge, using scotch tape to make it secure. Plug it into the input of your phone amplifier and you are ready to go places.

CONDENSER TESTER

Here is another use for the magic eye tube. The circuit shows how to test paper condensers with it. When connecting a condenser the eye shadow will



close momentarily until the condenser is charged. This charging takes from a fraction of a second to a few seconds, depending on the capacity of the condenser.—Rahob A530.

INCREASING CONDENSER CAPACITY

To increase the capacity of a Variable Condenser, cut out a number of pieces of mica the same size as the rotor plates of the condenser, and glue one sheet of mica to each side of each rotor plate. Doing this increases both the minimum and the maximum capacity.—Rahob 3675.

AMATEUR TRANSMITTERS LOG

An up-to-date log containing the name, address and call sign of every "Ham" Station operating in New Zealand.

AUCKLAND DISTRICT

Call Sign. Name and Address.

- ZL1AA—Edwards, C.N., 26 Meola Road, Point Chevalier, W.3.
 1AB—Waite, S. G., 57 Anzac Street, Takapuna, Auckland, N.2.
 1AC—Spackman, L. S., 29 Faulder Avenue, Westmere.
 1AF—Penny, V. G. M., 411 Mt. Eden Road, Mt. Eden, Auckland, S.1.
 1AG—Pope, C. R. W. L., 30 Sixth Avenue, Tauranga.
 1AI—McLean, C., Braigh Road, Waipu.
 1AJ—Brown, A. J. C., 12 Northall Road, New Lynn, Auckland.
 1AL—Bartrum, R. G., 158 King Street, Cambridge.
 1AN—Arthur, H. B. M., 242 Dominion Road, Auckland, S.2.
 1AO—White, R. G., 5 Gilgit Road, Epsom, Auckland.
 1AS—McRae, I. H., 24-26 Hellaby's Bldg., 27 Queen Street, Auckland.
 1AT—Swain, G. S., Carlton Street, Te Awamutu.
 1AU—Walker, E. M., Norwood Road, Bayswater, Auckland, N.3.
 1AV—Reardon, F. C., 85 Paice Ave., Sandringham, S.W.1.
 1AX—Orbell, R. J., 41 Paunui Street, St. Heliers Bay, Auckland.
 1AY—Henry, A. E. J., Portland, North Auckland.
 1AZ—Sherson, J. R., 10 Radnor St., Hamilton.
 1BA—Scarborough, W. A., Hattaway Avenue, Bucklands Beach.
 1BB—Bunting, A. B., 45 Monte Le Grande Road, Mt. Eden.
 1BD—Wadham, W. H., 22 Sefton Ave., Grey Lynn, Auckland, W.2.
 1BE—McKay, E. K., 19 Martin Ave., Remuera, Auckland.
 1BH—Hudson, A. H., 121 Arney Road, Remuera.
 1BL—Cosgrave, P. G. M., 1 Paunui Street, St. Helier's Bay, Auckland.
 1BM—Palmer, P. R., 102 Hillsborough Road, Mt. Roskill.
 1BO—Smith, I. E. L., 14 Crescent Road, Epsom, S.E.3
 1BP—Surman, J. D., Temata, Hamilton.
 1BR—Sweetman, T. C., 25 Shelbourne St., Grey Lynn, Auckland.
 1BS—Bisley, A. F. S., 34 River Road, Hamilton.
 1BT—Moore, R. J., 5 Springfield Street, Auckland.
 1BY—Wilson, W. A., Beachlands, Auckland.
 1CB—Nobes, J., Mangapiko Street, Te Awamutu.
 1CD—Baxendale, J., Car. Terry and Whitney Sts., Blockhouse Bay, Auckland, S.W.3.
 1CE—Sargent, T. A., 71 Perry Road, Mt. Eden, Auckland.
 1CG—Hutchinson, B. R., Waikino.
 1CH—Boyd, H. A., 13 Budock Road, Auckland, S.E.5.
 1CK—Salt, G. McB., 44 Pukeora Avenue, Auckland, S.E.2.
 1CN—Ireland, A. E., Goodfellow Street, Te Awamutu.
 1CO—Lee, W. L. W., Awhitu Central R.D., Waiuku.
 1CR—Hunter, W. E., 16 Joan Street, Point Chevalier.
 1CS—Williams, J. H., 60 Lake Road, Devonport, Auckland.
 1CV—Wood, L. H., George Street, Te Aroha.
 1CW—Dick, M. L. C., 14 Hutchison Avenue, New Lynn, Auckland.
 1CY—Johnson, W. A., 37 Wynyard Road, Mt. Eden.
 1CZ—Pooley, J., Long Street, Raglan.
 1DA—Quigg, L. G., Takutai Avenue, Bucklands Beach.
 1DB—Dugmore, F. R., 16 Briarley Street, Tauranga.
 1DC—Townsend, R. G., 79 Kiwi Road, Pt. Chevalier, W.3.
 1DD—Foster, E. B., 20 Rowan Road, Three Kings, Auckland, S.E.3.
 1DE—Adsheed, G. O., 22 Taylor Street, Avondale, Auckland, S.W.3.
 1DF—Gordon, P. P., 1287 Great North Road, Point Chevalier, W.3.
 1DH—McDonald, T. C., 17 Casey's Avenue, Claudelands, Hamilton.
 1DI—Lindgreen, G. S., 3 Calgary Street, Sandringham, Auckland.
 1DJ—Fielder, A., 24 Fairlands Avenue, Avondale, Auckland.
 1DK—Glucina, G. J., Carter Road, Oratia, Auckland.
 1DM—Cottam, S. L., 102 Grange Road, Mt. Eden, Auckland
 1DN—Appleyard, C. B., 10 Folkes Street, New Lynn, Auckland, S.W.4.
 1DO—Harvey, G. F., 23 Ayr Street, Parnell, Auckland, C.4.
 1DQ—Warden, C., 25 Maxwell Avenue, Grey Lynn, Auckland.
 1DS—Day, H. F. W., 1449 Great North Road, Avondale, Auckland.
 1DT—Rowe, E. G., 23 Frost Road, Mt. Roskill, S.3.
 1DU—Parkinson, J. H., Tirohanga, Opotiki.
 1DV—Gibbs, S. B., Great South Road, Manurewa.
 1DW—McNamara, F. R. S., 20 Cambria Avenue, Mt. Roskill, S.2.
 1DY—Crickett, J. L., Thames Street, Morrinsville.
 1DZ—Elliot, H. N., 71 Selbourne St., Grey Lynn.
 1FB—Hulme, F., 19 Rata Street, New Lynn, Auckland.
 1FD—Davidson, J. F., Victoria Avenue, Waiuku.
 1FE—Wood, A. F., 96 Peachgrove Road, Claudelands, Hamilton.
 1FF—Gifford, A. B., Sloane Street, Te Awamutu.

Call Sign. Name and Address.

1FH—Cross, C. T., 19 First Avenue, Tauranga.
 1FI—Goodwill, C. S., Jellicoe Street, Te Puke.
 1FK—Hamlin, S. M. Y., Mt. Wellington Highway, Auckland, S.E.6.
 1FL—Wark, A. J., 123 Hinemoa Street, Rotorua.
 1FM—Warn, J. E. B., Katikati.
 1FN—Duthie, D. A., Great North Road, Henderson, Auckland.
 1FR—Andrews, F. R. W., House 31, R.N.Z.A.F. Station, Whenuapai.
 1FS—Martin, F. J., 60 McFarlane Street, Hamilton East.
 1FT—Walding, N. N., c/o. 362 Karangahape Road, Auckland.
 1FU—White, G. D., Ford Street, Opotiki.
 1FX—Carpenter, S., 161 Queen Street, Northcote, Auckland.
 1FZ—Coates, K. J., 2 Blomfield Spa, Takapuna, Auckland.
 1GA—Dervan, M. E., 34 Devonport Road, Tauranga.
 1GD—Tucker, S. A., 38 Clifton Road, Herne Bay.
 1GE—Benson, G. S., 39 Henley Road, Mt. Eden, Auckland.
 1GF—Fish, J. F., 19 Lake Road, Devonport, Auckland.
 1GG—Eaton, R. E., 47 Pencarrow Avenue, Epsom, S.E.3.
 1GI—Smerden, A. D., 7 Claude Road, Epsom, Auckland, S.E.3.
 1CK—O'Hara, P. J., 63 Meadowbank Road, Remuera, S.E.2.
 1GM—Parr, J. W., Ngaroto, Te Awamutu.
 1GP—Merriman, E., 50 Nelson Street, Auckland.
 1GQ—Coates, W. W., Borwood Road, Matamata.
 1GU—McLaughlin, J., P.O. Box 434, Hamilton.
 1GV—Spackman, B. C. W., 34 Seabrook Avenue, New Lynn, Auckland, S.W.4.
 1GW—Ross, P. R., Arapuni.
 1GX—Hawthorne, F. L., 10 King Edward Street, Auckland.
 1GY—Glassey, R. B., 76 St. Luke's Road, Mt. Albert, S.W.1.
 1GZ—Amos, A. M., 1 Castor Bay Road, Castor Bay, Auckland.
 1HA—Miller, R. C., 7 Arawa Street, New Lynn, Auckland, S.W.4.
 1HD—Harrison, H. B., 40 Raynor's Road, Huntly.
 1HF—Fitton, E. L., Victoria Street, Pukekohe.
 1HH—Smith, A. E., 42 Endeavour Street, Auckland, S.W.3.
 1HI—Douglas, M., Manly, Whangaparaoa.
 1HJ—Snow, A. N. H., 18 Wallace Street, Whangarei.
 1HM—Wyman, R. S., Pahinui Road, Papatotetoe.
 1HN—Philip, R. F., 24 Rata Street, New Lynn, Auckland, S.W.4.
 1HO—Jarman, A. W., 53 Disraeli Street, Epsom, Auckland.
 1HQ—Batty, H. W., 61 Hinemoa Street, Birkenhead, Auckland, N.5.
 1HR—Goodwin, L. W., 57 Grey Street, Hamilton.
 1HT—Bettany, A. W., 7 Beale Street, Hamilton East.
 1HV—Auckran, T. W. B., West Coast Road, Glen Eden.
 1HW—Evans, G., 51 Wallace Road, Papatotetoe.
 1HY—Brown, D., 9 Clarke Street, Waihi.
 1LA—Petty, G. A., R.N.Z.A.F. Station, Whenuapai.
 1IB—Brown, E. E. A., Maniatutu Road, Te Puke.
 1ID—Gooch, R. A., Bonnetts Road, Kaitiaki.
 1IH—Fleming, J., 4 Pupuke Road, Birkenhead, Auckland.
 1II—Skinner, H. R. G., 35 Aliford Avenue, Ellerslie, Auckland.
 1IJ—Scannell, F. N., 18 Schofield Street, Grey Lynn, Auckland, W.2.
 1IM—Sutcliffe, D. B. G., 126 Titirangi Road, New Lynn, Auckland.
 1IN—Pearce, R. M., 27 Epsom Avenue, Epsom, Auckland, S.E.3.
 1IO—Calander, H. J., 8 Bourne Street, Mt. Eden, Auckland.
 1IS—Olson, C. M., Cranley Street, Dargaville.
 1IT—Hayman, G. L., 113 Great South Road, Remuera, Auckland.
 1IV—Scott, I. E., Newington Road, Henderson.
 1IX—Taylor, W. R., 37 Denbigh Avenue, Mt. Roskill, Auckland.
 1IZ—McDonald, J. P., 23 Williamson Street, Cambridge.
 1JA—Sager, J. H., 8 Renton Road, Mt. Albert, Auckland.
 1JB—Piesse, G. F., 29 Benson Road, Remuera, Auckland.
 1JD—Colmore-Williams, D. C., 10 Cameron Street, Whangarei.
 1JE—Gaukrodger, H. W., Tirarau Street, Dargaville.
 1JI—Smith, J. R., 34 Kingsland Avenue, Kingsland, Auckland.
 1JJ—Tatton, L. A., 17 Grove Road, Mt. Albert, Auckland.
 1JK—Schofield, J. R., 215 Great North Road, Grey Lynn.
 1JL—Lockie, A. A., 100 Bowen Street, Thames.
 1JM—Acton, F., 32 Hinemoa Street, Hamilton.
 1JN—Walker, W., 5 Manning Street, Hamilton.
 1JO—Henry, H., P.W.D. Sub-station, Penrose.
 1JQ—Allen, A. E., 39 Fairlands Avenue, Avondale, S.W.3.
 1JR—Adams, N. A., 21 Maidstone Street, Grey Lynn, Auckland.
 1JS—Jones, M. W. S., 21 Hanene Street, St. Heliers, Auckland, E.1.
 1JV—Bunn, H. R. W., 40 Para Street, Taumarunui.
 1JW—Tonson, A. E., 67 Sussex Street, Grey Lynn, Auckland, W.2.
 1JX—Hayward, C. A., Campbell Road, Judea, Tauranga.
 1JY—Doyle, E. A. L., 23 Mangere Road, Otahuhu, S.E.7.
 1JZ—Robertson, C. S. L., 39 Wallace Street, Herne Bay, Auckland.
 1KA—Kay, R. MacD., 13 Kitenui Avenue, Mt. Albert, Auckland.
 1KB—Thomson, D. D., 17 Byron Avenue, Takapuna, Auckland.
 1KD—Dodd, C. E., 514 Riddell Road, St. Heliers Bay, E.1.
 1KE—Lockie, L. W., 31 Bond Street, New Lynn, Auckland.
 1KG—Needham, R. C., West Street, Pukekohe.
 1KH—Shepherd, N. C., Faranui Valley Road, Whangarei.
 1KI—Johnson, J., Kaingaroa Forest, via Rotorua.

Call Sign. Name and Address.

1KJ—Harvey, R. S., 15 Epworth Avenue, Epsom, Auckland, S.E.3.
 1KK—Carter, N. A. W., 38 Victoria Avenue, Whakatane.
 1KM—Gardner, D. R., 111 Hineroa Street, Rotorua.
 1KN—McLeod, R. McD., 25 Greenwood Street, Frankton.
 1KO—Barlow, R., Banks Road, Matamata.
 1KP—Sutherland, G., Okauia, Matamata.
 1KQ—Small, J., 23 Grange Road, Auckland, S.1.
 1KR—Crocker, G., 23 Edinburgh St., Newton, Auckland.
 1KV—Palmer, J. E., 28 Stewart Road, Mt. Albert, S.W.2.
 1KX—Moberley, E. N., 11 Challinor Cresc., Mt. Albert, S.W.2.
 1KW—Moorhead, I. J., 36 Parkstone Ave., Mt. Albert.
 1LA—Lawson, L. A., 17 Springleigh Avenue, Mt. Albert.
 1LC—Martin, J. L., 6 Saltburn Road, Milford, N.2.
 1LD—Papesch, J. H. E., 3 Hampstead Road, Mt. Albert.
 1LF—Neilson, A. K., c/o. N.Z. Railways, Maungaturoto.
 1LG—Morgan, G. S., 5 Gattendon Road, St. Heliers, Auckland.
 1LH—Bownes, W. S., 2 Volcanic Street, Auckland.
 1LJ—Speight, R. R., Horotiu.
 1LL—Cook, S., 7 Nottingham Street, Westmere, Auckland, W.2.
 1LM—Wellington, K., 49 Anzac Street, Takapuna, Auckland, No. 2.
 1LQ—Ball, W. G., Mt. Wellington Highway, Otahuhu, S.E.7.
 1LR—Whiteley, A. J., 33 Kupe Street, Orakei, Auckland.
 1LS—Sherman, L. G., 9 Taumata Road, Sandringham, Auckland.
 1LT—Thain, R. S., 22 West View Road, Grey Lynn, Auckland, W.2.
 1LU—Williams, E. P., 39 Stewart Road, Mt. Albert.
 1LX—Bartrop, C., 228 Taupo Road, Taumarunui.
 1LY—Wilson, L. G., 13 Garland Road, One Tree Hill, Auckland.
 1LZ—Mingins, C. R., 32 Pencarrow Avenue, Epsom, S.E.3.
 1MB—Herbert, C. L., 481 Manukau Road, Epsom, Auckland.
 1MC—Evetts, B., 12 Halston Road, Mt. Eden, S.2.
 1MF—Crabtree, A. W., Mt. Pleasant, Thames.
 1MG—Parkin, E., 43a Hamilton Road, Herne Bay, Auckland.
 1MH—Shove, A. R. H., 7 Dudley Avenue, New Lynn, Auckland.
 1MK—Keeley, A. L. D., Moore Street, Leamington, Cambridge.
 1ML—Jackson, B. E., 31 Te Arawa Street, Orakei, Auckland, S.E.2.
 1MN—Bettany, A. C., Queen Street, Pukekohe.
 1MP—Blair, R. L., 12 Weona Place, Westmere, Auckland.
 1MQ—Betsen, C. W., 59 Kiwi Road, Point Chevalier, Auckland, W.3.
 1MR—Barnes, R. E. M., 304 Ponsonby Road, Auckland, W.1.
 1MU—Necklen, G. W., 13 Gillies Avenue, Claudelands, Hamilton.
 1MW—Wiggins, H., Musick Radio, Auckland.
 1MV—Llewellyn, J. D., 14 Waimoni Avenue, Point Chevalier, W.3.
 1MX—Fisher, B. D. B., 16 Stokes Road, Mt. Eden, Auckland.
 1MY—Carrs, J. R., 19 Sayehg Street, St. Heliers, E.1.
 1NA—Wilson, G. D., Mt. Roskill Road, Mt. Roskill, Auckland.
 1NC—Moore, W. E., 34 Grande Avenue, Mt. Albert, S.W.2.
 1ND—Cobbe, D. J., Beach Road, Howick.
 1NE—Bustard, A. J., Bowen Street, Thames.
 1NG—Phillips, T. H., 8 Huntingtree Avenue, Sandringham, S.W.1.
 1NH—Hart, F. M., 18 Wairakei Street, Ellerslie.
 1NI—Sharp, H. L., 40 Taitua Street, Taumarunui.
 1NK—Field, A. N., 141 Eruera Street, Rotorua.
 1NN—Douglas, J. W., 19 Maranui Avenue, Point Chevalier, Auckland.
 1NT—Irwin, P. N., R.N.Z.A.F. Station, Hobsonville.
 1NU—Connolly, P. V., 90 Kiwi Road, Point Chevalier, Auckland.
 1NV—Page, I. T., Glen Afton, Hamilton.
 1NW—Waugh, D. H., 12 Sarsfield Street, Herne Bay.
 1NX—Thompson, J., Musick Radio, Auckland.
 1NY—Hickman, R. E., 411 Riddell Road, Auckland, E.1.
 1NZ—Reid, R. A. K., 46 Tawhiri Road, Onehunga.
 1OB—Laskey, J. J., 9 Victoria Road, Maeroa, Hamilton.
 1OC—Foster, A. E. G., 4 Kelmarna Avenue, Herne Bay.
 1OD—Duncan, A. McL., 15 Ingram Road, Remuera, S.E.2.
 1OE—Hammond, T. L., 11 Scherff Road, Remuera, Auckland, S.E.2.
 1OF—Reid, D., 4 Hillside Crescent, Mt. Eden.
 1OH—Barrie, A., 6 Boston Road, Mt. Eden, Auckland.
 1OI—Shead, K. F. S., 49 Birdwood Avenue, Parnell, Auckland.
 1OJ—Snow, A. N. H., Tutukaka, Whangarei.
 1OK—Moir, E. V., 11 Stanley Street, Whangarei.
 1OI—Walker, A. B., 3 Tasman Avenue, Point Chevalier.
 1OM—Windsor, K. W., 360 Remuera Road, Auckland.
 1ON—Eglinton, G. K., Arapuni, Waikato.
 1OO—Duncan, K. J., Technical High School, Anglesea Street, Hamilton.
 1OP—Pearce, R. M., Whangaparaoa Road, Whangaparaoa.
 1OQ—Hodder, A. A., 68 St. Leonard's Road, Epsom, S.E.3.
 1OR—Adams, F. H., 3 Lowery Avenue, Mt. Roskill, S.3.
 1OS—Rogers, G. V., Arapuni.
 1OT—Jacobson, E. J., Maromaku, Bay of Islands.
 1OU—Avenell, H. N., 33a Nixon Street, Hamilton East.
 1OV—Kirtton, F. N., 10 Carlton Gore Place, Auckland.
 1OW—Burrows, J. W. L., 18 Carrick Place, Auckland.
 1OX—Howarth, A., 76 Empire Road, Epsom, Auckland.
 1OY—Clark, J. S., Stanley Road, Gordon, Te Aroha.

- Call Sign. Name and Address.
- 10Z—Mason, J. A., 88 Newton Road, Auckland.
 1PA—Papworth, A. G., c/o. T. W. Collins, Warkworth.
 1PB—Fitzgerald, N. C., R.N.Z.A.F., Whenuapai.
 1PC—Lewis, E. C., Allen Street, Morrinsville.
 1PD—Edgar, J. E. R., 17 Seafield View Road, Grafton, Auckland.
 1PE—Ward, M. R., c/o. A. G. Taylor, The Esplanade, Eastern Beach, Auckland.
 1PF—Birch, A. R., R.N.Z.A.F., Group 8 Sigs., Whenuapai.
 1PG—Lambie, W. L., c/o. Mr. J. C. Holl, Te Hoe, Ohinewai.
 1PI—Worsley, C. E., 3 Browning Street, Grey Lynn, Auckland.
 1PL—Ower, J. R., 3 Ada Street, Newmarket, Auckland.
 1PM—Steele, J. M., 502 Smith's Bldgs., Albert Street, Auckland.
 1PN—Briden, W. J., 31 Tainui Road, Devonport.
 1PO—Morgan, R. S. H., 4 Ruapehu Street, Mt. Eden, Auckland.
 1PP—Smithson, G. W., 88 Te Aroha Street, Hamilton.
 1PQ—Spackman, M. L., 18 Kingsview Road, Mt. Eden, Auckland.
 1PR—Jillings, M. A., 48 Amaru Road, Onehunga, Auckland, S.E.S.
 1PS—Brown, T. G., 51 Pleasant Street, Onehunga, Auckland.

WELLINGTON DISTRICT

- 2AB—Wilkinson, D., School Residence, Glen Oroua.
 2AC—O'Meara, I. H., 555 Childers Road Gisborne.
 2AG—Ludwig, M. F., 163 The Terrace, Wellington.
 2AI—Sandford, H. D., Ballance Street, Raetihi.
 2AK—Sinclair, W. J., 34 Rawiri Street, Gisborne.
 2AL—Chew, J. B., 6 Burgess Road, Johnsonville.
 2AM—Buist, Dr. W. F., Collins Street, Hawera.
 2AN—Barcham, P., 603 Ellison Road, Hastings.
 2AO—Branigan, C. K., 3 Central Terrace, Lower Hutt.
 2AP—Eade, A., 1 Camden Street, Feilding.
 2AU—Fever, W. H., 302 Tinakori Road, Wellington.
 2AV—Chatfield, R. G., 42 Raroa Road, Kelburn, W.1.
 2AW—Fownes, H. G., 34 Kelburn Parade, Wellington (Portable).
 2AX—Kyle, J. V., 33 Waldegrave Street, Palmerston North.
 2BA—Elsmore, C. E., 520 Ferguson Street, Palmerston North.
 2BC—Perry, S. H., 6 Morley Street, Karori, W.3.
 2BD—Hollis, W. G., 84 Kinghorne Street, Strathmore Park, E.4.
 2BE—Mills, J. C., 311 W. Queen Street, Hastings.
 2BF—Clark, J., 143 Lemon Street, New Plymouth.
 2BH—Hall, W. M., 1 Hutt Road, Lower Hutt.
 2BI—Liddell, C. G., 16 Lerwick Terrace, Lyall Bay.
 2BN—Holden, J. W., Te Awanga, Haumoana R.D., Napier.
 2BM—Griffiths, W. H., Liverpool Street, Levin.
 2BP—Macklin, W. N., 3 Rewa Terrace, Tawa Flat.
 2BQ—Cocksedge, B. J., 6 Mamari Street, Rongotai, Wellington.
 2BR—Lambert, K. A., 147 Hill Street, Wanganui.
 2BS—Hester, H. A., 28 Arthur Street, Blenheim.
 2BT—Tanner, A. R., Karire Road, Kairanga, Longburn.
 2BV—Ching, H. W., Spring Grove R.M.D., Wakefield, Nelson.
 2BW—Smith, J. B., c/o. R. Wright, Flat 1, 11 Chnrch Street, Wellington.
 2BX—Black, R. G., 31 Karepa Street, Wellington, S.W.1.
 2CA—Turnbull, W. G., 17 Stowe Hill, Thorndon.
 2CB—Huggard, F. J., Smart Road, Fitzroy, New Plymouth.
 2CC—Rowe, C. F., 7 Pharazyn Street, Lower Hutt.
 2CE—Chisnall, L. G., Waverley Private Hotel, Palmerston North.
 2CF—Speedy, S., Herbertville, Hawke's Bay.
 2CJ—Upchurch, E. G., Whiteman's Valley Road, Upper Hutt.
 2CL—Auridge, E., 18 Oriental Terrace, Wellington.
 2CM—Cannons, L., 22 Fremont Street, Wanganui.
 2CP—Cormack, J. B. B., Beach Road, Levin.
 2CR—Pharazyn, D. H., 130 Hardy Street, Nelson.
 2CT—Schofield, S., Cape Campbell Lighthouse, P.B. Blenheim.
 2CU—Bell, C., 287 Grey Street, Gisborne.
 2CW—Jensen, W. H. E., 22 Randwick Crescent, Lower Hutt.
 2CX—Copp, L. F., 63 Wellington Road, Kilbirnie, Wellington.
 2CY—Francois, L. G., William Street, Richmond, Nelson.
 2CZ—Vincent, H. F., 1 Onslow Road, Wellington.
 2DA—Newlands, G. B., 6 Frickleton Grove, Lower Hutt.
 2DD—Redshaw, L. R. L., 18 Totara Street, Nelson.
 2DE—Brooker, A. D., Calico Line, Marton.
 2DH—Beddingfield, D. L., Tirohanga Road, Melling, Lower Hutt.
 2DJ—Peterson, E. A., 16 Edinburgh Terrace, Wellington, S.1.
 2DK—Barclay, B., 153 Wellesley Road, Napier.
 2DL—Carr, R. A. J., 36 Kenya Street, Ngāio.
 2DM—Smith, H. C., 558 Childers Road, Gisborne.
 2DO—Wiffen, M. A., c/o. 2YH Transmitting Station, Opapa, Hawke's Bay.
 2DP—Stretch, J. H., 249 Ohiro Road, Brooklyn, Wellington.
 2DS—Kirkcaldie, K. R., Mahunua East, Ohau.
 2DT—Duffield, A. W., Manawatu Heads.
 2DU—Lynch, J. S., 682 Railway Avenue, Upper Hutt.
 2DV—Shepherd, N. C. C., Hayward Street, Featherston.

- Call Sign. Name and Address.
- 2DW—Hughes, W. J. T., 25 Cobden Street, Gisborne.
 2DX—Patchett, G. P., 42 Beachville Crescent, Nelson.
 2DZ—Griffiths, H. M., Nikau Street, Tokomaru.
 2FA—Butler, G. B., 46 Winter Street, Gisborne.
 2FB—Bullivant, W. E., Ormond Road, Gisborne.
 2FE—Falkner, B. A., 49 Karina Terrace, Palmerston North.
 2FF—Hands, C. T. C., 229 Gladstone Road, Gisborne.
 2FH—Fitzgerald, T. M. F., 12A Victoria Street, Hawera.
 2FI—Knight, A. A., Montreal Road, Nelson.
 2FL—Parsons, John, 25 Guy Avenue, Palmerston North.
 2FO—Savell, I. S., 471 Ferguson Street, Palmerston North.
 2FP—Hoare, P. R., 56 Nottingham Street, Karori, W.3.
 2FQ—Addison, R. H., 56 Larikaka Street, Ngāio.
 2FS—Wastney, G. C., 118 Karori Road, Wellington, W.3.
 2FT—Lane, F. J. K., 8 Karaka Street, Palmerston North.
 2FU—Fooks, A. C. L., 106 Queens Road, Nelson.
 2FV—McCann, J. E., Merton Street, Trentham.
 2FW—Blake, Mrs. M. H. A., 91A Beauchamp Street, Karori, W.3.
 2FX—Blake, R. G. F., 91A Beauchamp Street, Karori, W.3.
 2FZ—Dickson, L. R., 2YH Transmitter, Opapa, Hawke's Bay.
 2GC—Grainger, R. E., 70 Mitchell Street, Brooklyn, Wellington.
 2GH—Attwell, B. E., 785 Childers Road, Gisborne.
 2GK—Perkin, S. R., 42 Puru Crescent, Lyall Bay, Wellington.
 2GL—Gabriel, M. T., 239A The Terrace, Wellington, C.1.
 2GM—King, G. T., 9 Clyde Street, Island Bay, S.2.
 2GN—Humphrey, E. H., Queen Street, Levin.
 2GO—Fownes, H. G., 34 Kelburn Parade, Wellington.
 2GP—Taylor, J. T., 14 Antico Street, Wellington, E.3.
 2GS—Green, H. E. H., Clifford Road, Johnsonville.
 2GT—Goodwin, L. J., Manuka Street, Tasman Beach, Otaki.
 2GX—White, J. McD., Patutahi, Gisborne.
 2GZ—McKenzie, A. J., Kaihoka Road, Collingwood.
 2HA—McCabe, H. C. C., 42 Adams Terrace, Wellington.
 2HO—Hunt, P. W., Jocelyn Crescent, Pinehaven, Silverstream.
 2HL—Hill, C. P., 115 Creswick Terrace, Wellington, W.2.
 2HU—White, L., Ladies' Mile, Eltham.
 2HR—Stevens, W. A. W., 19 Morrissey Street, Hawera.
 2HS—Shennan, C. V., 55 Overton Terrace, Hataitai.
 2HT—Bradfield, A. G. S., 70 Te Awe Awe Street, Palmerston North.
 2HV—Bennett, A. K., 13 French Street, New Plymouth.
 2HX—Cossgrove, D. A., 7 Torquay Terrace, Wellington, S.1.
 2IC—Austin, E. S., 51 Brecon Road, Stratford.
 2ID—Frame, A. F., R.N.Z.A.F., Rongotai.
 2IG—Jackson, W. L., 52 Nuffield Avenue, Napier.
 2IH—Dodds, I. N., Redwoods Valley, Nelson.
 2II—Bird, A. W., 20 Worksop Road, Masterton.
 2IQ—Cassey, R., 40 Rangiora Avenue, Wellington.
 2IR—Thevenard, C. M. H., Sandon Road, Feilding.
 2IS—Borman, C. A., 95 Adelaide Street, Petone.
 2IT—Martin, L. H., 260 The Terrace, Wellington, C.1.
 2IU—Purdy, R. G., 17 Akatea Street, Berhampore, Wellington.
 2IV—Aroa, I. V., 1 Clemow Road, Fitzroy, New Plymouth.
 2IW—Cockburn, I. L., 48 Jellicoe Street, Wanganui.
 2IX—Parker, C. H., Hukanui.
 2IY—Gorman, W. D., 27 Kenwyn Terrace, Newtown, S.1.
 2IZ—Trimmer, C. W., 26 Aurora Street, Petone.
 2JA—Chisholm, D. H., 16 King's Avenue, Wanganui.
 2JB—French, E. J. S., Lyndhurst Road, Hastings.
 2JC—Way, C. J., 9 Manchester Street, Feilding.
 2JD—Griffin, W. G., 30 Grey Street, Gisborne.
 2JF—Guilliard, B. H., 4 Barraud Street, Dannevirke.
 2JG—Anderson, G. A., 10 Cargill Street, Karori, Wellington.
 2JH—Law, R. G., 22 Orlando Street, Reefton.
 2JJ—Newman, J. E., 149 Hardy Street, Nelson.
 2JL—Prime, D. R., Taoroa Road, Taihape.
 2JM—Moore, J. A., 7 Courtenay Place, Wellington, C.2.
 2JN—Down, A. R., 35 Cubbaballa Street, Marton.
 2JO—Souper, T. N., (M/s.), 32 The Terrace, Wellington, C.1.
 2JS—Johnson, H. B., 45 Roy Street, Newtown, Wellington, S.1.
 2JT—Hutana, H. T., Porangahau.
 2JU—Fanthorpe, J. K. L., 7 Mamari Street, Kilbirnie, Wellington.
 2JV—Crawford, C. R. H., Fort Kelburn, Ngahauranga.
 2JY—Hutan, H. T., Waipawa.
 2JZ—Dawson, A. H., Mangaroa, Wellington.
 2KA—Cuthbert, G. A., 186 Derwent Street, Island Bay, Wellington.
 2KC—Moess, C. R. D., Sanson.
 2KE—Smith, W. A. D., Garage, Urenui.
 2KF—Gould, A. G. de T., 164 Tasman Street, Nelson.
 2KG—Sharland, K. O., 11 Cleveland Road, Nelson.
 2KH—Bennett, V. H., 440 Church Street, Palmerston North.
 2KJ—Pettifer, M. F., 99 Shakespeare Road, Napier.
 2KK—Kent, R. C. H., 68 Motueka Street, Nelson.
 2KM—Robertson, G. A., Bay View, Napier.

Call Sign. Name and Address.

2KN—Millward, H. P., 12 Tulloch Street, St. John's Hill, Wanganui.
 2KO—Davison, S. C., 329 The Parade, Island Bay, Wellington.
 2KP—Henskie, F. J., c/o. N.Z. Railways, Blenheim.
 2KQ—Spiers, M. E., Murphy's Road, Springlands, Blenheim.
 2KR—Cole, K. R., 64 Duncan Terrace, Kilbirnie, E.3.
 2KS—Furness, J. S., 9 Keiss Street, Blenheim.
 2KU—Ward, T., 53 Calabar Road, Miramar, Wellington.
 2KV—Ward, T. W., Rugby Street, Inglewood.
 2KW—Palmer, C. P., Alton, Taranaki.
 2KX—Wickstead, C. G., 2 Witako Street, Lower Hutt.
 2KY—Burch, J. R., Cnr. Central Terrace and Cuba Street, Lower Hutt.
 2KZ—Partelow, A. L., Nae Nae Road, Lower Hutt.
 2LA—Slack, E. J., 8 Raymond Terrace, Waterloo, Lower Hutt.
 2LB—Fouhy, W., 99 Washington Avenue, Wellington, S.W.1.
 2LD—Westwood, E. N., 26 Ropata Crescent, Lower Hutt.
 2LE—Pinhey, J., 84 Pendarves Street, New Plymouth.
 2LG—Pierce, S. W., 34 Ranui Crescent, Khandallah.
 2LF—Guthrie, W. A., 93 Courtenay Street, New Plymouth.
 2LH—Sharland, R. T., 242 Nile Street, Nelson.
 2LI—Munro, C. S. H., R.N.Z.A.F. Station, Ohakea.
 2LK—Dance, W. E., 2 Muller Road, Blenheim.
 2LO—Leatham, W. G., 16 Penrose Street, Lower Hutt.
 2LW—McLennan, H.C.S., 28 Rangiora Avenue, Kaiwarrawarra.
 2LX—Motion, R., 276 Queen's Drive, Lyall Bay, Wellington.
 2LZ—Irvine, E., 45 Halifax Street, Nelson.
 2MA—Hight, P. D., 2 Milton Street, Nelson.
 2MC—Lawson, S. C., 13 Binham Street, Wellington, C.2.
 2MD—Jackson, A. F., "Wharekoa," Speedys Road, Takapau.
 2MF—O'Leary, B. J., Waikupa Road, Okoia, Wanganui.
 2MG—Harvey, P. R., 16 Mercere Avenue, Palmerston North.
 2MI—Parsons, C. B., 5A John Street, Wellington, S.1.
 2MK—Adams, J. A., Stansall Avenue, Tahuna, Nelson.
 2ML—Castles, C. R., 1 Buick Street, Petone.
 2MM—Adcock, H. F., Railway Road, Masterton.
 2MO—Johnston, R. W., 16 Duigan Street, Wanganui.
 2MP—Powell, W. H., Raetih Road, Ohakune.
 2MR—Blair, D. I., Te Horo.
 2MS—Thomson, L. H., River Road, Rewa, Feilding.
 2MU—Bell, S. M., Moroa, Greytown.
 2MW—Wiggins, F. V., 8 Gerse Street, Wanganui.
 2MY—Sellers, F. W., 7 Kandwick Road, Northland, W.2.
 2NA—Shanks, J. M., Karori Transmitting Station, Air Department, Wellington.
 2NB—Doyle, D., 260 The Terrace, Wellington.
 2NC—Henderson, J., 97 Wilton Road, Wadestown, N.2.
 2ND—White, J. T., High Street, Bulls.
 2NG—Bates, L. C., 208 Hardy Street, Nelson.
 2NH—Briffault, H. L., 53 Centennial Crescent, Gisborne.
 2NJ—Ross, H. D., 38 Miro Street, Palmerston North.
 2NK—Smith, G. C. T., Hydro, Kaitāwa, Wairoa.
 2NL—Reeves, G. T., 6 Hollands Crescent, Nae Nae, Lower Hutt.
 2NO—McLaughlin, J., 93 Waddington Drive, Nae Nae, Lower Hutt.
 2NP—King, A., 5 Huia Street, Petone.
 2NQ—Fairbrother, E. H., 132 Wellesley Road, Napier.
 2NS—Douche, W. P., 22 Elizabeth Street, Moera, Lower Hutt.
 2NT—Sutton, C. H., Hill Street, Richmond.
 2NV—Stallard, E. H., Motueka.
 2NW—Lesueur, A. I., 35 Richmond Avenue, Karori, W.3.
 2NY—Mace, W. G., 199 Barnard Street, Wellington, N.2.
 2NZ—Turner, C. H., 40 Bankok Crescent, Ngaio, Wellington.
 2OD—Barnes, W. D., 8 Second Street, Masterton.
 2OF—Story, R. B. E., Wellington Street, Picton.
 2OG—Lough, E. B., 55 Cavendish Square, Wellington, E.5.
 2OI—Hansen, I. P., Sutherland Road, Maniaia.
 2OJ—Inge, W. J., 359 Botanical Road, Palmerston North.
 2OM—Millier, H. W., "Foster Crest," Belmont, Lower Hutt.
 2ON—Lowe, J. M., 47 Majoribanks Street, Wellington.
 2OP—Seamary, G. E., 48 Derwent Street, Island Bay, Wellington.
 2OU—Parminter, J. D., McLean Street, Wairoa, Hawke's Bay.
 2OV—Petrie, L. G., 127 Coromandel Street, Wellington.
 2OW—Forbes, W. D., 28 Strathmore Avenue, Seatoun.
 2PA—Leete, J. B., 11 Liverpool Street, Miramar, Wellington.
 2PB—McLaren, H. B., 206 Colingwood Street, Nelson.
 2PC—Mitchell, G. W., 160 Waiwhetu Road, Lower Hutt.
 2PF—King, T., 126 Russell Street, Gisborne.
 2PJ—Barns, L. D. M., 2 Ashton Terrace, Castlecliff, Wanganui.
 2PI—Treleaven, A. R., 10 Manawara Street, Palmerston North.
 2PM—Norman, J. N. MacD., 13 Tinakori Road, Wellington.
 2PO—Tout, R. E., Rocks Road, Nelson.
 2PP—Sinclair, J. D. J., 224 Nile Street, Nelson.
 2PQ—Angelini, L., Main Road, Pahiatua.
 2PR—Nalder, R., 182 Crawford Road, Gisborne.
 2PV—Molony, M., 19 Turnbull Street, Wellington.
 2PX—Taylor, M. F. W., 10 Monro Street, Seatoun, Wellington, E.6.

Call Sign. Name and Address.

2PY—Heslop, H. G., 8 Washington Road, Nelson.
 2QA—Bailey, A. W., 33 Thomson Street, Palmerston North.
 2QB—Shortall, J. P., Spur Road West, Colyton, Feilding.
 2QC—Noble, W. A., 21 Bauchop Road, Lower Hutt.
 2QE—Byrn, H. Le T., 17 Macara Street, Masterton.
 2QH—Barnes, C. J., 8 Second Street, Masterton.
 2QK—Kenny, J. P., 119 Tipahi Street, Nelson.
 2QL—Wilkinson, A. R., 18 Ngatoto Street, Khandallah, N.5.
 2QM—Stevens, O. J., 74 Waripori Street, Wellington.
 2QN—Bornholdt, A. V., Troon Crescent, Lower Hutt.
 2QQ—Cook, S. T., 57 Stanley Crescent, Nelson.
 2QR—Nolan, R., 280 Clifford Road, Gisborne.
 2QS—Padman, N. B., No. 3 Flat, Ville d'esche Bldgs., Hastings.
 2QT—Hilkie, A. J., 58 Norton Park Avenue, Lower Hutt.
 2QU—Hitchins, M. J., 22 Derwent Street, Island Bay, Wellington.
 2QV—Haynes, W. R., Bonny Glen, Marton.
 2QX—Ryder, N. M., 148 Jackson Street, Petone.
 2QY—McCarthy, J. B., 1 Downer Street, Lower Hutt.
 2RC—Coakley, R. J., 13 Te Mome Road, Lower Hutt.
 2RD—Andrews, N. A., Wemsley Road, Richmond.
 2RI—Savell, B. E., Caley Street, Foxton.
 2RJ—Inglis, W. I., Cross Creek, Featherston.
 2RP—Goodger, B. E. G., 63 Racecourse Road, Waipukurau.
 2RT—Murphy, J. F., 117 Cashmere Avenue, Khandallah, N.5.
 2RU—Rowe, I. S., 88 Washington Avenue, Brooklyn.
 2RV—White, R. E. W., Rata.
 2RW—Gibbs, E. G., 2 Ruapehu Street, Castlecliff, Wanganui.
 2RY—Hayward, E. B., 6 Peakes Road, St. John's Hill, Wanganui.
 2RZ—Cresswell, R.M., Pembroke Rd., Stratford.
 2SC—Grant, C. J., 25 Fitzroy Street, Napier.
 2SE—Daws, B. V., 56 Gonville Avenue, Wanganui.
 2SJ—Wilson, T. D., Upper Manaia Road, Solway, Masterton.
 2SL—Clark, R. E., 10 Bould Street, Johnsonville.
 2SM—Jenkins, D. A., Main Road, Paramata.
 2SN—St. Clair, A. R., 22 Barker Road, Marewa, Napier.
 2SP—Senior, J. P., c/o. Station 2YA, Titahi Bay, Wellington.
 2SQ—Ford, H. W., 13 Richmond Street, Wanganui.
 2SR—Boardman, W., 6 Norma Crescent, Kelburn, W.1.
 2SV—Searle, J. N. L., 25 Falkland Street, Wanganui.
 2SW—Nicholls, L. W., Atua Street, Johnsonville.
 2SX—Bell, F. G., Nelson Street, Waitara.
 2SY—Ensoll, J. R., 18 Gloucester Street, Wanganui.
 2TA—Blackmore, W. V., Tudor Street, Motueka.
 2TB—Rush, D. O., 14 Mountain Road, Eltham.
 2TC—Page, B. R., Riverside Road, Gisborne.
 2TD—Sullivan, W. G., 55 Alma Street, Gonville, Wanganui.
 2TE—Foster, E. M., 41 Glamis Avenue, Strathmore Park, Wellington.
 2TG—McGinity, T. G. I., Nairnville Park Camp, Ngaio.
 2TH—Weenink, H., 16 Mahoe Street, Lower Hutt.
 2TI—Connor, D. P., 110 Rongotai Terrace, Wellington, E.3.
 2TJ—Ambury, H. A. V., Kina Road, Oaonui, Opunake, New Plymouth.
 2TK—Coleman, H. A., 24 Hinaki Street, Gisborne.
 2TO—Read, G. G., 159 Totara Road, Miramar, E.4.
 2TP—Pascoe, E. J., 11 Daphne Street, Kaiti, Gisborne.
 2TQ—Richardson, A., Baring Head Lighthouse, c/o. Marine Dept., Wellington, C.1.
 2TS—Nixon, H. W. J., 2YA Transmitting Station, Titahi Bay.
 2TU—Harlen, I. L. F., 42 Owen Street, Newtown, Wellington, S.1.
 2TW—Tunncliffe, W. M., 42 Hall Street, Newtown, Wellington, S.1.
 2TX—Cunniffe, A. J., 13 Kilmore Avenue, Wellington.
 2TX—Scanlon, V. A., Manaia Road, Kapuni.
 2TL—Phillips, A. S., 26 Grove Street, Nelson.
 2TM—Rosevear, J. W., c/o. Station 2YH, Opapa, Hawkes Bay.
 2TY—Goffe, E. M., 402 Ormond Road, Gisborne.
 2UA—Vickers, E. R., 89 Townsend Road, Wellington, E.4.
 2UB—Oliver, J., c/o. Naval W/T Station, Waiouru.
 2UD—Gamman, A. R., 206 Park Road, Hastings.
 2UF—Ludwig, M., 18 College Street, Masterton.
 2UG—Riddle, M. W. C., 66 Calabar Road, Miramar, E.4.
 2UH—Leslie, D. A., 122 Sheehan Street, Gisborne.
 2UJ—Hanlon, K. R., 257 Jackson Street, Petone.
 2UK—Murray, C. G., 31 Rimu Road, Kelburn, W.1.
 2UL—Bartlett, A. J. W., Hampden Street, Murchison.
 2UM—Hollard, C. S., Rowan, via Stratford.
 2UO—Heuvel, T. V., 7 Hutcheson Street, Blenheim.
 2UP—Louisson, G. M., 30 Alan Street, Palmerston North.
 2UQ—Heyward, A. W. N., 28 Wayside West, Wellington, E.4.
 2US—Gawn, J. E., 2 Lerwick Terrace, Wellington, E.3.
 2UT—Etheridge, H. G., 87 Wellesley Road, Napier.
 2UW—Fitzgerald, A. J., School Residence, Horopiti.
 2UY—Bradley, H. A., 175 Houghton Bay Road, Wellington.
 2VA—Vaughan, D. L., 91 Wilton Road, Wellington.
 2VB—Nix, G. C. P., Main Road, Apiti.

Call Sign.	Name and Address.
2VC	Hall-Jones, W. M., c/o. Aeradio Station, Nelson.
2VF	Brocklebank, W. G., 39 Juliet Street, Stratford.
2VH	Mogford, F. L., P.W.D. Hostel, Tuai.
2VI	Long, A. E., 211 Whitaker Street, Gisborne.
2VJ	Angelini, L., Marima, Mangamaire.
2VL	Chatfield, R. O., 21 Pirie Street, Palmerston North.
2VP	Cheshire, A. H., Palmer Crescent, Heretaunga.
2VR	Johnson, L. E. C., 74 Clark Street, Khandallah, N.5.
2VT	Bennett, W. R., 12 Moore Street, Wanganui.
2VV	Bennett, P., Kai-iwi.
2VW	Gray, O. T., 29 Kiwi Street, Lower Hutt.
2VZ	Eyles, J. R., Church Street, Bulls.
2WA	Menendez, R.R., c/o. Weir House, Kelburn, Wellington.
2WB	Cameron, D., 1 Rakau Road, Hataitai, Wellington.
2WF	Cropp, F. T., 17 Mason Street, Lower Hutt.
2WG	Nunns, H., 42 Norman Road, Gisborne.
2WI	Wareham, A., Station 2YA, Titahi Bay, Wellington.
2WJ	Ross, J. B., 118 Rutherford Street, Nelson.
2WK	Pattersley, S. G., 15 Rata Street, Nelson.
2WL	Hurrell, L. W., 3 Havelock Street, Wellington, S.W.1.
2WM	Indler, J. H., 14 Palmer Street, Wellington, C.2.
2WP	White, J. T., R.N.Z.A.F. Station, Ohakea.
2WQ	Whibley, J. N., 15 Glen Almond Street, New Plymouth.
2WE	McEwen, K. D., 266 Queen Street, Masterton.
2WU	Bonner, P. C., 46 Rhine Street, Island Bay, Wellington.
2WX	Corson, R. W., Lighthouse, Portland Island, via Wairoa.
2WY	Push, C. F., 71 Mitchell Street, Brooklyn, Wellington.

CHRISTCHURCH DISTRICT

3AA	Anderson, D. W., 105 Office Road, Christchurch.
3AB	Evans, L. C., 60 Wainoni Road, Christchurch.
3AC	Broom, F. E., c/o. Aeradio Station, Harewood, Christchurch.
3AF	Strachan, J. M., 60 Searolls Road, Papanui, Christchurch.
3AH	Courtis, H. B., 69 Grey Road, Timaru.
3AJ	Service, W. J., Clyde Road, Fendalton, Christchurch.
3AK	Lane, S. W., 21 Bridie Path, Lyttelton.
3AM	Kirk, R. E., 181 Richmond Terrace, New Brighton, E.3.
3AN	Bitossi, F. D., 10 Empson Road, Sockburn, Christchurch.
3AP	Tomlinson, H. C., Motunau, R.M.D. Cheviot, Canterbury.
3AR	Buchanan, D. W., 40 Wills Street, Ashburton.
3AU	Byrne, J. L., 659 Gloucester Street, Christchurch.
3AV	Wills, S. P., 44 Firth Street, Cobden, Greymouth.
3AW	Hills, H. O., Davie Street, Kaiapoi.
3AY	Mason, G. E., Hawarden, Canterbury.
3AZ	Stanton, R. T., 193 Ashgrove Terrace, Christchurch, S.2.
3BC	Harrison, J. (M/s.), "Pinaki," R.D. Cheviot.
3BD	Ludwig, M., 770 Harewood Road, Harewood, Christchurch.
3BH	Bowman, G. R. B., 18 Wild Street, Hokitika.
3BJ	Hunter, L. C., 86 Springfield Road, Christchurch.
3BL	Blair, R. L., 25 Grant's Road, Christchurch, N.W.2.
3BM	Cook, D., 176 Knowles Street, St. Albans, Christchurch.
3BN	Marks, S., 161 Kilmore Street, Christchurch.
3BO	Zanders, F. H., 7 Dublin Street, Lyttelton.
3BR	Savage, V., 70 Wildberry Street, Woolston, Christchurch.
3BS	Rose, W. C., 41 Penrith Ave., Christchurch.
3BQ	Griffiths, C. E., Tramway Street, Ross.
3BV	Schaefer, L. M., Bridge Street, Greymouth.
3BW	O'Connell, F. A., 218A Kilmore Street, Christchurch.
3BX	Jones, T. R., Maungati, Timaru.
3BY	Whiteley, F., 15 Lonsdale Street, New Brighton.
3BZ	Jackson, W. H., Esplanade, Kaikoura.
3CA	Hughes, C. A., 28 Thomas Street, Linwood, Christchurch.
3CC	Elliott, J. B., 25 Frankleigh Street, Spreydon, Christchurch.
3CD	Holland, C. P., 4 Pratt Street, Redcliffs, Christchurch.
3CF	Simpson, A. E. H., 136 Mersey Street, Christchurch, N.1.
3CG	Brown, H. P. V., 10 Merivale Lane, Christchurch.
3CH	McKnight, S. G. J., 326 Barrington Street, Christchurch.
3CK	Shipley, E. G., 51 Fitzgerald Avenue, Christchurch.
3CL	Gerity, L. P., 192 Ferry Road, Christchurch.
3CP	Parton, C. W., 78 Diamond Avenue, Spreydon, Christchurch.
3CS	Downer, W. H. H., 4 Heathfield Avenue, Fendalton, N.W.1.
3CU	Cleveland, L. H., 29 Tika Street, Riccarton, Christchurch.
3CV	Gilligan, H. S. J., P.O. Box 2, Hinds.
3CY	Hughes, W., 196 Hastings Street, Waltham, S.1.
3CZ	Rose, F. L., 119 Salisbury Street, Christchurch.
3DD	Lemin, A., 52 Milton Road, Greymouth.
3DB	Reynolds, W. A., 84 Fitzherbert Street, Hokitika.
3DH	McBride, A. W. I., Flat 12, "Commodore," Hereford Street, Christchurch.
3DP	Sweeney, A. P. H., Crown Hotel, Christchurch.
3DQ	Goldsbrough, R. F., 224 Lincoln Road, Christchurch.

Call Sign.	Name and Address.
3DR	Hullett, E. W., 43 Te Awa Kura Ter., St. Andrew's Hill, Sumner, Christchurch.
3DS	Farquhar, A. J., Mt. Hutt R.D., Rakaia.
3DU	Wilson, V. J., 33 Roseberry Street, Christchurch.
3DZ	Wilson, D., Greendale R.D., West Melton.
3FA	Wilson, R. H., 48 Hinau Street, Riccarton, Christchurch.
3FB	Freeman, J. F., 164 Aldwins Road, Christchurch, E.1.
3FC	Guthrie, M. W., 172 Papanui Road, Christchurch.
3FE	Ellwood, H. H. G., 30 Fleming Street, Belfast, Christchurch.
3FG	Wickham, L. M., 20 Carrick Street, Christchurch.
3FH	Mall, L. C., Wilson Street, Geraldine.
3FK	Hepburn, L. D., 152 Peterborough Street, Christchurch.
3FP	Reid, J. A. M., c/o. N.Z. Railways, Heathcote, Christchurch.
3FQ	Hamlin, J. H., 344 Selwyn Street, Christchurch, S.W.1.
3FR	Lilly, C. P., 44 Nicholls Street, Shirley.
3FV	McCracken, W. D., 18 Grants Road, Papanui, Christchurch.
3FX	Brown, N. W., 20 Sydney Street, Spreydon, Christchurch.
3FZ	Gledhill, A. F., 43 Severn Street, St. Albans, Christchurch.
3GA	Gale, W. T., 113 Petrie Street, Shirley, Christchurch.
3GB	Pratt, E., 3 Acland Avenue, Avonside, Christchurch.
3GC	Ferry, W. J., Weld Street, Hokitika.
3GH	Voss, C. H. J., P.W.D., Springburn.
3GJ	McCaul, W. G., 37 Searells Road, Papanui, Christchurch.
3GL	Keast, T. J., William Street, Lincoln.
3GM	Andrews, R. A., 30 Cowlishaw Street, Christchurch.
3GN	Dacombe, A. N., 47 Puriri Street, Riccarton, Christchurch.
3GR	Rowe, R. H., Puaha, Little River.
3GT	Sumner, A. H., 143 Bright Street, Cobden, Greymouth.
3GU	Keys, J. R., 60 Huxley Street, Sydenham, Christchurch.
3GV	Edwards, W. G., 50 Domain Terrace, Spreydon, Christchurch.
3HA	Arnold, H. F., 165 Knowles Street, Christchurch, N.1.
3HD	Gardner, A. L., 396 Manchester Street, Christchurch.
3HM	Evans, C. E., Long Creek, Kaikoura.
3HP	Hildebrand, D. E., Seddon Terrace, Runanga.
3HQ	Rodda, C. A., 71 Springfield Road, Christchurch, N.1.
3HS	Kemphorne, J. H., 140 Esplanade, Sumner.
3HT	Grey, R. B., 25 Hagley Street, Riccarton, Christchurch.
3HV	Johnson, J. F. L., 239 Lichfield Street, Christchurch, C.1.
3HX	Perkins, H. T., 607 Ferry Road, Christchurch.
3HY	Watkins, E. C. K., 122 River Road, New Brighton.
3IA	Langrope, S. J., Lavaud Street, Akaroa.
3IC	McCulloch, I. A. G., 38 Retreat Road, Avonside, Christchurch.
3ID	Pettigrew, W. L., Mill Street, Westport.
3IE	Hopkinson, L. G., 48 Hornbrook Street, Temuka.
3IF	Higgins, H. E., 56 Alexandra Street, Greymouth.
3IG	Buchanan, D. W., Peel Forest, Rangitara R.D., Geraldine.
3IH	French, G. H., Room 29, Officers' Mess, R.N.Z.A.F. Station, Wigram.
3IR	Benson, A. F., 12 Breens Road, Harewood, Christchurch.
3IS	Soanes, G. A., 245 Westminster Street, Christchurch, N.1.
3IT	Willis, B. G., 423 Ferry Road, Christchurch.
3IM	Summerfield, H. J. D., 63 Rockwood Avenue, North Beach, Christchurch.
3IV	Danrell, R. A., 152 Hamilton Avenue, Fendalton, Christchurch.
3IW	Maddren, G. R. H., 11 Merlewood Avenue, Cashmere, Christchurch.
3IX	Morris, R. A., 53 Gloucester Street, Christchurch.
3IY	Vickery, K., 45 Fuller Street, Kaiapoi.
3IZ	Brain, E. R., Clontary House, Pleasant Point.
3JA	Rowe, H. J., Southbridge.
3JB	Burtenshaw, J. W., 54 Heaton Street, Christchurch.
3JD	Lyes, A. E., 514 Madras Street, St. Albans, W.1.
3JE	Duffield, K., 467 Tuam Street, Christchurch.
3JF	Henderson, H. P., 57 Lindsay Street, St. Albans, Christchurch.
3JJ	Lowry, T. N., 9 Gwynfa Avenue, Cashmere, Christchurch.
3JL	Purton, A., Alexander Street, Greymouth.
3JM	White, D. V. B., 118 St. Martins Road, Christchurch.
3JN	Ashley, D. H., Princes Street, Waimate.
3JO	Johnstone, M. O., 3 Hereford Street, Timaru.
3JP	Langley, E. W., 711 Worcester Street, Christchurch.
3JS	Pruden, H. C. L., 131 Tancred Street, Christchurch, E.1.
3JT	Dixon, R. A., Taylorville, Brunton.
3JW	Anderson, R. A., 262 Lincoln Road, Christchurch.
3JX	Rowlands, T. E., "Ruthin," R.M.D., Kaiapoi.
3KA	Macer, J., 77 Corson Avenue, Christchurch.
3KC	Sharp, V. E. E., 31 Gayhurst Road, Christchurch, N.E.1.
3KE	McGrath, R. E., 181 Richmond Terrace, New Brighton.
3KF	Pettitt, E. R., High School, Methven.
3KG	Millard, H. W., 352 Gloucester Street, Christchurch.
3KH	Reed, F. V., 1 Tika Street, Riccarton, Christchurch.
3KL	Knight, H. T., Main Street, Oxford, North Canterbury.
3KM	Woodfield, R. T., Horrelville, Rangiora.
3KQ	Mason, W. L., Temuka.
3KR	Cox, R. C., 48 Matipo Street, Riccarton, Christchurch.
3KS	Downer, W. H. H., 4 Heathfield Avenue, Fendalton, N.W.1.
3KV	Duxbury, T. A., 176 Idris Road, Bryndwr, Christchurch.
3KX	Heslop, G. W., 4 Mere Mere Street, Timaru.
3KZ	Eadie, J. McC., Joyce Crescent, Greymouth.
3LA	Gardner, H. F., 35 Alpha Avenue, Papanui, Christchurch.

Call Sign. Name and Address.

- 3LB—Hamilton, W. R., 61 Cambridge Terrace, Christchurch.
 3LC—Diedrichs, G. H., Evans Creek, South Westland.
 3LD—Hunt, S., 158 Travis Road, Burwood, Christchurch.
 3LE—Baird, W. C., Goodrich Road, Springston South.
 3LF—Cameron, R. H. T., "Amber Downs," Waihai Downs, Waimate.
 3LG—Hutchison, D. E., 15 North Parade, Richmond, Christchurch.
 3LH—Shave, P. G., Cnr. Hayhurst and High Streets, Temuka.
 3LI—Wainwright, W. J., c/o. 3 Preston Street, Timaru.
 3LJ—Nelson, A. D., 60 Bealey Street, Christchurch, N.I.
 3LK—Schaltz, D. L., 56 Shirley Road, Christchurch.

DUNEDIN DISTRICT

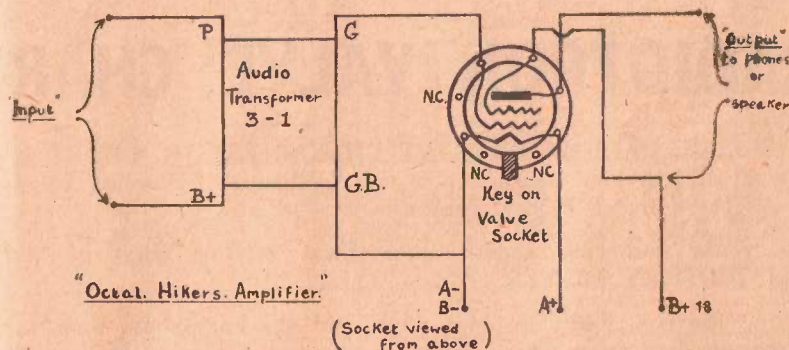
- 4AB—Gibb, L., 144 Forbury Road, St. Clair, Dunedin.
 4AC—Robinson, R. E., 3 Chatham Avenue, Dalmore, Dunedin.
 4AE—Brown, G. E., 31 Rawhiti Street, Dunedin, E.I.
 4AF—Shore, K. H., 22 Helena Street, Dunedin.
 4AK—Shiel, W. L., 243 Macandrew Road, Dunedin.
 4AL—Grubb, A. H. McL., 19 Thomas Street, Gore.
 4AM—Earland, F. P., Omakau, Otago Central.
 4AN—Breen, A. I., 68 Pine Hill Terrace, Dunedin.
 4AO—Shrimpton, H. N., c/o. National Broadcasting Service, Highcliffe, Dunedin.
 4AP—Stroud, L. R., 46 Skibo Street, Kew, Dunedin, S.W.1.
 4AQ—Edgar, G. T., 120 Pine Hill Road, Dunedin, N.E.1.
 4AR—Natta, H. W., 137 Bayview Road, St. Kilda, Dunedin, S.2.
 4AS—Morris, C. C., 787 George Street, Dunedin.
 4AT—Stone, J., 256 Macandrew Road, Dunedin.
 4AU—Gerkin, G. D., 30 Oldham Street, Gore.
 4AX—Halcrow, L. A., 175 Musselburgh Rise, Andersons Bay, Dunedin.
 4AY—Budd, L. W., 11 Angus Street, Mornington, Dunedin, W.1.
 4BA—Smith, J. G., 7 Crosby Street, Dunedin.
 4BB—Smith, W. T., 22A Alva Street, Dunedin, C.2.
 4BC—Ferris, J. L., Manuherikia Road, Alexandria.
 4BE—Shepherd, N. H., 13 Scott Street, St. Kilda, Dunedin, S.2.
 4BF—Smith, L. K., 24 Mitchell Street, Invercargill.
 4BG—Marshall, W., 11A Carr Street, North East Valley, Dunedin.
 4BH—Booker, J. W., 16 Onslow Street, St. Clair, S.W.1.
 4BJ—Cameron, E. P., 46 Cargill Street, Dunedin.
 4BK—McDonald, N. M., 19 Bouverie Street, Dunedin, N.E.1.
 4BN—Middlemiss, T. C., 6 Philip Street, Kensington, Dunedin.
 4BO—Miller, E. D. N., Puysegur Point Lighthouse, via Riverton.
 4BP—Collett, W. G., 9 Albert Street, Dunedin.
 4BQ—Frame, F. E., 38 Ferguson Street, Dunedin, S.2.
 4BR—Thompson, H. G., c/o. F. Birch, Carlyle Street, Mataura.
 4BS—Burnby, L. A., Waikaka Valley, Gore.
 4BV—McConnell, J. R., 73 Banks Street, Invercargill.
 4BW—Haves, S. C., 11 Park Street, Dunedin.
 4CA—Harris, A. R., 52 Peter Street, Dunedin.
 4CB—Callander, H. A., 163 Main Street, Gore.
 4CF—McLaren, A. D., 32 Melbourne Street, South Dunedin.
 4CK—Self, W. F., 30 School Street, Roslyn, Dunedin, N.W.2.
 4CL—Cameron, M. E. (M/s.), 102 Princes Street, Dunedin.
 4CN—Peterson, A. McN., 22 Aotea Street, Andersons Bay, Dunedin.
 4CO—Crocker, A. V., 261 Thames Street, Oamaru.
 4CP—Eginton, K. S., 47 Henderson Street, Bluff.
 4CU—McEwan, D. McG. R., 20 Mitchell Street, Invercargill.
 4DA—Warren, B. C., 784 George Street, Dunedin, N.1.
 4DC—Mulholland, G. C., 48 Peter Street, Caversham, Dunedin.
 4DD—Sargeant, G. W., Kurow.
 4DG—Gilchrist, N. C., Brookfield, Waiareka.
 4DK—Hunter, S. T., 40 Ramrig Street, Invercargill.
 4DL—Leslie, A. J., 8 Stanley Street, Mornington, Dunedin, W.1.
 4DN—Sharp, J. R., 41 Greenhill Avenue, Wakari, N.W.2.
 4DP—Grant, J., Otekaike, (8.K. R.D., Oamaru).
 4DR—Mutch, J. W., Awarua Radio, Private Bag, Invercargill.
 4DS—Renton, B. R., Clyde Street, Balclutha.
 4DU—Stiglish, C. A., 42 Argyle Street, Mornington, Dunedin, W.1.
 4FA—Miles, T. H., 16 Merchiston Street, Andersons Bay, E.1.
 4FF—Nishet, A. J., 5 Greenock Street, Dunedin, N.W.2.
 4FH—Freeman, C. H., Janefield, Mosgiel.
 4FC—Ellis, C. A., 319 Herbert Street, Invercargill.
 4FK—Dodds, R. B., 9 Coughtrey Street, St. Clair, Dunedin.
 4FN—Egan, M. A. (Mrs.), 152 Keith Street, Dunedin.
 4FO—Hudson, S. T., 4 Merlin Street, Roslyn, Dunedin.
 4FR—Howard, J. G., "Airlie," Ravensbourne, Dunedin.
 4FU—Thomson, G. B., The Highlands, Riverton.
 4FW—Phillips, R. D., 42 Royal Terrace, Dunedin.
 4GA—Frame, A. F., 10 Gilfillan Street, Dunedin.
 4GB—Chapman, Miss M., Rosebank, Balclutha.
 4GC—Hayward, A. S., James Street, Balclutha.
 4GD—King, A. B., 377 Tay Street, Invercargill.

Call Sign. Name and Address.

- 4GF—Borthwick, G., 17 Grove Street, Dunedin.
 4GG—Boddy, H. W., 204 Highgate, Roslyn, Dunedin, N.W.1.
 4GI—Burnby, J. C., Waikaka R.D., Gore.
 4GK—Kitto, R. G., 5 Anzac Street, Gore.
 4GL—Carrick, W., 160 Union Street, Dunedin, N.1.
 4GM—Jackson, A. D. D., Orangapai, Waipiata.
 4GR—Earland, Mrs. M., Omakau, Otago Central.
 4GS—Graham, E. J. W., 317 Yarrow Street, Invercargill.
 4GT—Skinner, L. C., 10 Borthwick Street, Mornington, Dunedin.
 4GW—Staitte, W. G., 165 George Street, Invercargill.
 4GX—Sutton, H., 63 Dublin Street, Invercargill.
 4GZ—Applegath, G., Radio 4YZ, Dacre, Invercargill.
 4HA—Greene, R. S., 219 Bay View Road, St. Clair, Dunedin.
 4HB—Russell, V. T., 39 Swinton Street, Invercargill.
 4HD—Findlater, J. L. L., Lynn Street, Balclutha.
 4HG—Murray, G. A., 102 Avenal Street, Invercargill.
 4HF—Hazlett, F., 5 Robertson Street, Invercargill.
 4HL—Bevin, J. E., 9 Tyne Street, Roslyn, Dunedin.
 4HQ—Ward, W. G., 30 Test Street, Oamaru.
 4HR—Hodge, V. C. S., 79 Harrow Street, Dunedin, N.1.
 4HS—Throp, G. M. R., 8 Lynwood Avenue, Dunedin.
 4HT—Johnson, W. B., 7 Bridger Street, Dunedin.
 4HU—Nutsford, E. J., 173 Etrick Street, Invercargill.
 4HV—Hancock, E. J., Awarua Radio, Invercargill.
 4HX—Tibbles, W. J., 48 Young Street, St. Kilda, Dunedin.
 4HY—Duncan, L. E., 48 Grey Street, North East Valley, Dunedin.

"OCTAL HIKER'S" AMPLIFIER

1C5G. or 1Q5G.



In response to many requests we are publishing the circuit of a Single Valve Amplifier using an Octal type valve. This amplifier may be used in conjunction with any of the Hikers' Series Sets, or for amplifying a crystal set or other small receivers.

The input to the amplifier is simply connected to the headphone terminals of the Hiker's or crystal set, etc. A 3 : 1 audio transformer is shown in the diagram, but a 3½ : 1 or 5 : 1 Transformer would do equally as well.

To obtain satisfactory results it is recommended that 18 volts be used on the plate of the valve, although the amplifier may work on a lower voltage. Using the 22½ volt tapping of a 45 volt B battery would be quite satisfactory.

PARTS LIST FOR "OCTAL HIKER'S" AMPLIFIER

- One 1C5GT or 1Q5GT Valve
 One Octal Baseboard Socket
 One Audio Transformer
 Seven Fahnstock Clips
 One Baseboard
 Twelve Wood Screws
 Hook-up Wire
 Solder Lugs
 One No. 6 Dry Cell
 Two 9-volt C Batteries

COMPLETE KIT OF PARTS, as listed above.

Cat. No. TK2010 36/-

Radiotrons for Reception

FOR sensitivity to weak signals, distortionless amplification and clarity of speaker output use "Radiotrons." The crucial tests of active service conditions have proved the reliability of these Tubes. Now with peace, you can re-valve your radio with

RADIOTRONS

"The Valve with a Reputation"

RADIOTRON VALVE CHART

This RADIOTRON VALVE CHARACTERISTIC CHART is published by kind permission of the Amalgamated Wireless Valve Co. Pty. Ltd., of Sydney, Australia.

The following pages represent a complete chart of all RADIOTRON VALVES.

The N.Z. Radio Hobbies Club and the Lamphouse wish to express their appreciation of the Amalgamated Wireless Valve Co. Pty. Ltd., of Sydney, in allowing the reproduction of this Chart to be published in the Annual.



TYPE	NAME	DIMENSIONS SOCKET CONNECTIONS	CATHODE TYPE AND RATING	C.T.	VOLTS	AMP.	USE Values to right give operating conditions and characteristics for indicated typical use	PLATE SUPPLY VOLTS	GRID BIAS VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURRENT MA.	PLATE CURRENT MA.	I-C PLATE RESISTANCE OHMS	TRANSFORMER TAP (PLATE)	AMPLIFICATION FACTOR	LOAD FOR TESTED OUTPUT OHMS	POWER OUTPUT WATTS	TYPE
1C4	SUPER-CONTROL R.F. AMPLIFIER PENTODE	D13	4M	D.C. F	2.0	0.12	CLASS A AMPLIFIER	135	{ 0	45	0.5	1.25	1,500,000	700	1220	—	—	1C4
								135	{ min.	67.5	0.9	2.5	800,000	1000	600	—	—	
								180		67.5	0.9	2.5	1,000,000	1000	1000	—	—	
1D4	POWER AMPLIFIER PENTODE	D12	8K	D.C. F	2.0	0.24	AMPLIFIER	135	{ 0	45	0.5	1.25	1,500,000	820	1430	—	—	1D4
								135	{ min.	67.5	0.9	2.5	1,000,000	1050	1050	—	—	
								180		67.5	0.9	2.5	1,240,000	1050	1700	—	—	
1K4	R.F. AMPLIFIER PENTODE	D13	4M	D.C. F	2.0	0.12	AMPLIFIER	135	{ 0	45	0.5	1.25	1,750,000	620	1250	—	—	1K4
								135	{ min.	67.5	0.9	2.5	1,000,000	1050	1050	—	—	
								180		67.5	0.9	2.5	1,240,000	1050	1700	—	—	
1K5-G	R.F. AMPLIFIER PENTODE	D8	6-8Y	D.C. F	2.0	0.12	R.F. AMPLIFIER	135	{ 0	45	0.5	1.25	1,750,000	620	1250	—	—	1K5-G
								135	{ min.	67.5	0.9	2.5	1,000,000	1050	1050	—	—	
								180		67.5	0.9	2.5	1,240,000	1050	1700	—	—	
1K6	DUPLICATION PENTODE	D13	6WA	D.C. F	2.0	0.12	PENTODE UNIT AS AMPLIFIER	135	{ 0	45	0.5	1.25	1,750,000	620	1250	—	—	1K6
								135	{ min.	67.5	0.9	2.5	1,000,000	1050	1050	—	—	
								180		67.5	0.9	2.5	1,240,000	1050	1700	—	—	
1K7-G	DUPLICATION PENTODE	D8	6-7AE	D.C. F	2.0	0.12	PENTODE UNIT AS TRIODE CLASS A AMPLIFIER	135	{ -1.5	45	0.5	1.25	1,750,000	620	1250	—	—	1K7-G
								135	{ min.	67.5	0.9	2.5	1,000,000	1050	1050	—	—	
								180		67.5	0.9	2.5	1,240,000	1050	1700	—	—	
1L5-G	POWER AMPLIFIER PENTODE	D10	6-AX	D.C. F	2.0	0.24	CLASS A AMPLIFIER	135	{ -4.5	135	1.5	6.0	150,000	2150	330	15,000	0.35	1L5-G
								135	{ min.	157.5	2.2	9.0	125,000	2400	300	15,000	0.55	
								180		180	2.2	9.5	137,000	2400	330	15,000	0.75	
1M5-G	SUPER-CONTROL R.F. AMPLIFIER PENTODE	D8	6-8Y	D.C. F	2.0	0.12	CLASS A AMPLIFIER	135	{ 0	45	0.5	1.25	1,000,000	780	1400	—	—	1M5-G
								135	{ min.	67.5	0.9	2.5	1,000,000	1000	1000	—	—	
								180		67.5	0.9	2.5	1,450,000	1000	1450	—	—	
6B7S	DIODE-HEXODE CONVERTER	D9	7D	H	6.3	0.3	PENTODE UNIT AS AMPLIFIER	250	{ -3.0	100	1.5	6.5	850,000	1100	900	—	—	6B7S
								250	{ min.	125	2.2	9.5	510,000	1210	600	—	—	
								250		125	2.2	9.5	510,000	1210	600	—	—	
6E8-G	DIODE-HEXODE SUPER-CONTROL PENTODE	D8	6-8E3	H	6.3	0.3	PENTODE UNIT AS R.F. AMPLIFIER	135	{ -3.0	100	1.5	6.5	850,000	1100	900	—	—	6E8-G
								135	{ min.	125	2.2	9.5	510,000	1210	600	—	—	
								250		125	2.2	9.5	510,000	1210	600	—	—	
6K8-G	TRIODE-HEXODE CONVERTER	D8	6-8K3	H	6.3	0.5	TRIODE UNIT AS OSCILLATOR	1000	{ -3.0	100	6.2	2.3	400,000	—	—	—	—	6K8-G
								100	{ min.	1000	6.0	2.3	400,000	—	—	—	—	
								100		1000	6.0	2.3	400,000	—	—	—	—	

For other characteristics, refer to Type 1K5-G.

For other characteristics, refer to Type 1K7-G.

For other characteristics, refer to Type 6C8-G.

For other characteristics, refer to Type 1K5-G.

For other characteristics, refer to Type 1K7-G.

For other characteristics, refer to Type 6C8-G.

GENERAL TYPES

TYPE	NAME	DIMENSIONS		CATHODE TYPE AND RATING	USE	PLATE SUPPLY VOLTS	GRID BIAS VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURR. MA.	PLATE CURR. MA.	A.C. PLATE RESIS. OHMS	TRANS. CAPACITANCE μF	AMPLIFI. FACTOR	LOAD FOR STATED OUTPUT OHMS	POWER OUT. WATTS	TYPE
		SOCKET CONNCTIONS	AMP.													
00-A	DETECTOR TRIODE	D12	4D	D.C. F	5.0	45	Grid Return to (-) Filament	1.5	30000	666	20	—	—	—	—	00-A
01-A	DETECTOR & AMPLIFIER	D12	4D	D.C. F	5.0	90 135	4.5 9.0	—	2.5 3.0	11000 10000	725 800	8.0 8.0	—	—	—	01-A
0A4-G	GAS-TRIODE	D3	4V	Cold	—	—	—	—	—	—	—	—	—	—	—	0A4-G
0Z4	FULL-WAVE GAS RECTIFIER	B3	4R	Cold	—	—	—	—	—	—	—	—	—	—	—	0Z4
0Z4-G	FULL-WAVE GAS RECTIFIER	B1	4R	Cold	—	—	—	—	—	—	—	—	—	—	—	0Z4-G
1A4-P	FULL-WAVE GAS RECTIFIER	D8	4M	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1A4-P
1A5-G	POWER AMPLIFIER PENTODE	D1	4X	D.C. F	1.4	0.05	85 90	0.7 0.8	3.5 4.0	300000 300000	800 850	240 255	25000 25000	0.100 0.115	—	1A5-G
1A6	PENTAGRID CONVERTER	D8	8L	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1A6
1A7-G	PENTAGRID CONVERTER	D6	4Z	D.C. F	1.4	0.05	0	0.6	0.55	600000	—	—	—	—	—	1A7-G
1B4-P	R-F AMPLIFIER PENTODE	D9	4M	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1B4-P
1B5/25S	DUPLEX-DIODE TRIODE	D5	4M	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1B5/25S
1C5-G	POWER AMPLIFIER PENTODE	D1	4X	D.C. F	1.4	0.10	83 90	1.6 1.8	7.0 7.5	110000 115000	1500 1550	165 180	9000 8000	0.20 0.24	—	1C5-G
1C6	CONVERTER	D8	8L	D.C. F	2.0	0.12	—	—	—	—	—	—	—	—	—	1C6
1C7-G	PENTAGRID CONVERTER	D8	4Z	D.C. F	2.0	0.12	135 180	2.0 2.5	1.3 1.5	550000 750000	800 850	240 255	25000 25000	0.100 0.115	—	1C7-G
1D5-GP	SUPER-CONTROL R-F AMPLIFIER PENTODE	D8	4Y	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1D5-GP
1D7-G	PENTAGRID CONVERTER	D8	4Z	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1D7-G
1E5-GP	R-F AMPLIFIER PENTODE	D8	4Y	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1E5-GP
1E7-G	TWIN TRIODE POWER AMPLIFIER	D8	4Y	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1E7-G
1F4	POWER AMPLIFIER PENTODE	D19	9K	D.C. F	2.0	0.12	—	—	—	—	—	—	—	—	—	1F4
1F5-G	POWER AMPLIFIER PENTODE	D10	4X	D.C. F	2.0	0.12	90 135	1.3 2.6	4.0 8.0	240000 200000	1400 1700	340 340	20000 16000	0.12 0.34	—	1F5-G

For other characteristics, refer to Type 1D5-GP.
 For other characteristics, refer to Type 1B5-GP.
 For other characteristics, refer to Type 1H6-G.
 For other characteristics, refer to Type 1C7-G.
 Anode-Grid (#2): 180 max. volts, 3.3 ma. Oscillator-Grid (#1) Resistor, Conversion Conductance, 335 microhms.
 Anode-Grid (#2): 180 max. volts, 2.3 ma. Oscillator-Grid (#1) Resistor, Conversion Conductance, 300 microhms.
 Anode-Grid (#2): 180 max. volts, 2.5 ma. Oscillator-Grid (#1) Resistor, Conversion Conductance, 300 microhms.
 Power Output is for one tube at stated plate-to-plate load.
 For other characteristics, refer to Type 1F5-G.

1F6	DUPLEX-DIODE PENTODE	D6	6W	D.C. F	2.0	0.06	—	—	—	—	—	—	—	—	—	1F6	
1F7-GV	DUPLEX-DIODE PENTODE	08	6-7AD	D.C. F	2.0	0.06	180	1.5	67.5	0.6	2.0	1000000	650	650	—	1F7-GV	
1G5-G	POWER AMPLIFIER PENTODE	D10	4X	D.C. F	2.0	0.12	135	2.5	135	2.5	8.5	133000	1500	200	8500	0.25	1G5-G
1G6-G	TWIN TRIODE DETECTOR & AMPLIFIER	D1	6-7AB	D.C. F	1.4	0.10	90	—	—	—	—	—	—	—	—	1G6-G	
1H4-G	DIODE HIGH-NU TRIODE DUPLEX-DIODE	D3	6-5S	D.C. F	2.0	0.06	90	—	—	—	—	—	—	—	—	1H4-G	
1H5-G	HIGH-NU TRIODE DUPLEX-DIODE	D3	6-5Z	D.C. F	1.4	0.05	90	—	—	—	—	—	—	—	—	1H5-G	
1H6-G	TWIN TRIODE AMPLIFIER	D3	6-7AA	D.C. F	2.0	0.06	135	—	—	—	—	—	—	—	—	1H6-G	
1J6-G	R-F AMPLIFIER PENTODE	D8	6-5Y	D.C. F	1.4	0.05	90	—	—	—	—	—	—	—	—	1J6-G	
1K5-G	HALF-WAVE RECTIFIER	D5	4G	M	6.3	0.3	250	45.0	—	—	—	—	—	—	—	1K5-G	
1-V	POWER AMPLIFIER TRIODE	E3	4D	F	2.5	2.5	300	—	—	—	—	—	—	—	—	1-V	
2A3	POWER AMPLIFIER PENTODE	D12	68	M	2.5	1.75	300	—	—	—	—	—	—	—	—	2A3	
2A5	DUPLEX-DIODE HIGH-NU TRIODE	D6	80	M	2.5	0.8	300	—	—	—	—	—	—	—	—	2A5	
2A6	PENTAGRID DUPLEX-DIODE PENTODE	D8	7C	M	2.5	0.8	300	—	—	—	—	—	—	—	—	2A6	
2A7	FULL-WAVE RECTIFIER	D7	5T	F	5.0	2.0	250	250	250	—	—	—	—	—	—	2A7	
2B7	FULL-WAVE RECTIFIER	E2	6-5T1	F	5.0	3.0	300	—	—	—	—	—	—	—	—	2B7	
5U4-G	FULL-WAVE RECTIFIER	D16	6-5L1	M	5.0	2.0	350	—	—	—	—	—	—	—	—	5U4-G	
5V4-G	FULL-WAVE RECTIFIER	E2	6-5L1	M	5.0	2.0	350	—	—	—	—	—	—	—	—	5V4-G	
5W4	FULL-WAVE RECTIFIER	E2	6-4Q	F	5.0	1.5	350	—	—	—	—	—	—	—	—	5W4	
5Y3-G	FULL-WAVE RECTIFIER	D10	6-5T1	F	5.0	2.0	350	—	—	—	—	—	—	—	—	5Y3-G	
5Y4-G	FULL-WAVE RECTIFIER	D10	6-5Q	F	5.0	2.0	350	—	—	—	—	—	—	—	—	5Y4-G	
5Z3	FULL-WAVE RECTIFIER	E3	6C	F	5.0	3.0	350	—	—	—	—	—	—	—	—	5Z3	

For other characteristics, refer to Type 1F7-GV.
 Screen Supply, 135 volts applied through 0.8-megohm resistor.
 Grid Resistor, 1.0 megohm. Voltage Gain, 46.
 Power Output is for one tube at stated plate-to-plate load.
 Maximum A-C Plate Voltage, 350 Volts, RMS
 Maximum D-C Output Current, 50 Milliamperes
 For other characteristics, refer to Type 6F6.
 For other characteristics, refer to Type 6B7.
 For other characteristics, refer to Type 6B8-G.
 The 550-volt rating applies to filter circuits having an input choke of at least 10 henries.
 Maximum A-C Voltage per Plate, 450 Volts, RMS
 Maximum D-C Output Current, 250 mA
 Maximum A-C Voltage per Plate, 500 Volts, RMS
 Maximum D-C Output Current, 250 Milliamperes
 Maximum A-C Voltage per Plate, 400 Volts, RMS
 Maximum D-C Output Current, 200 Milliamperes
 A-C Voltage per Plate (Volts RMS), 350
 D-C Output Current (Maximum Ma.), 110
 For other ratings, refer to Type 5U4-G.
 Maximum A-C Voltage per Plate, 400 Volts, RMS
 Maximum D-C Output Current, 125 Milliamperes
 A-C Voltage per Plate (Volts RMS), 350
 D-C Output Current (Maximum Ma.), 125
 For other ratings, refer to Type 5Y4-G.

TYPE	NAME	DIMENSIONS SOCKET CONNECTIONS	CATHODE TYPE AND RATING	USE	PLATE SUPPLY (VOLT)	GRID BIAS (VOLTS)	SCREEN SUPPLY (VOLTS)	SCREEN CURR. (MA)	PLATE CURR. (MA)	A-C PLATE RESISTANCE (OHMS)	TRANS-CONDUCTANCE (GRID-PLATE) (μMH)	AMPLIFICATION FACTOR	LOAD FOR STATED POWER OUTPUT (OHMS)	POWER OUTPUT (WATTS)	TYPE
5Z4	FULL-WAVE RECTIFIER	C7 9A	M 5.0 2.0		100	-6.5	100	1.6	9.0	83250	1200	100	11000	0.31	5Z4
6A4/LA	POWER AMPLIFIER PENTODE	D12 9B	F 6.3 0.3	CLASS A AMPLIFIER	180	-12.0	180	3.9	22.0	45500	2200	100	8000	1.40	6A4/LA
6A6	TWIN TRIODE AMPLIFIER	D12 7B	M 6.3 0.8	AMPLIFIER											6A6
6A7	PENTAGRID CONVERTER	D8 7C	M 6.3 0.3	CONVERTER	100 230	-1.5 min. -3.0 min.	50 100	1.3 2.7	1.1 3.5	600000 360000					6A7
6A8	PENTAGRID CONVERTER	C1 8A	M 6.3 0.3	CONVERTER	100 250	-1.5 min. -3.0 min.	50 100	1.5 3.2	1.2 3.3	600000 360000					6A8
6A8-G	PENTAGRID CONVERTER	D8 6-8A	M 6.3 0.3	CONVERTER	100 250	-1.5 min. -3.0 min.	50 100	1.3 2.7	1.1 3.5	600000 360000					6A8-G
6A8-GT	PENTAGRID CONVERTER	C3 6-8A	M 6.3 0.3	CONVERTER	250	0			5.0			10000			6A8-GT
6AC5-G	HIGH-MU TRIODE POWER AMPLIFIER	D3 6-40	M 6.3 0.4	DYNAMIC COUPLED TYPE-A DRIVER	250										6AC5-G
6AF6-G	ELECTRON-RAY TUBE ¹ / ₂ in. Indicator	B7 6-7AG	M 6.3 0.15	INDICATOR											6AF6-G
6B6-G	DIODE	D8 6-7V	M 6.3 0.3	RECTIFIER											6B6-G
6B7	DUPLEX DIODE PENTODE	D9 70	M 6.3 0.3	CLASS A AMPLIFIER	250	-2.0			1.0	91000	1100	100			6B7
6B8	DUPLEX DIODE PENTODE	C1 8E	M 6.3 0.3	PENTODE UNIT AS AMPLIFIER	250	-3.0	125	2.3	10.0	600000	1325	800			6B8
6B8-G	DUPLEX DIODE PENTODE	D9 6-8E	M 6.3 0.3	PENTODE UNIT AS AMPLIFIER	50 300	-3.0 Self-bias, 3500 ohms	100 Screen Resistor = 1.1 meg	1.7 Grid Resistor, **	5.8 (Gain per stage = 55)	300000 Screen Resistor = 1.2 meg	950 (Gain per stage = 79)	285			6B8-G
6C5	DETECTOR & AMPLIFIER TRIODE	B3 60	M 6.3 0.3	CLASS A AMPLIFIER	250	-8.0			8.0	10000	2000	20			6C5

Maximum A-C Voltage per Plate, 400 Volts, RMS
Maximum D-C Output Current, 125 Milliamperes

For other characteristics, refer to Type 6A7.

Anode-Grid (#2): 350 μ max. volts, 4.0 ma. Oscillator-Grid (#1) Resistor = 300 microhms, Conversion Conductance, 550 micromhos.

Anode-Grid (#2): 350 μ max. volts, 4.0 ma. Oscillator-Grid (#1) Resistor = 300 microhms, Conversion Conductance, 500 micromhos.

Anode-Grid (#2): 350 μ max. volts, 4.0 ma. Oscillator-Grid (#1) Resistor = 300 microhms, Conversion Conductance, 550 micromhos.

For other characteristics, refer to Type 6A8.

Bias for both 6AC5-G and 76 is developed in coupling circuit. Average Plate Current of Driver = 5.5 milliamperes.

Target Voltage 100 volts, Control Electrode Voltage, 0 volts, Shadow Angle, 100°; Target Current, 0.9 ma. Control Electrode Voltage, 60 volts, Angle, 0°.

Target Voltage 135 volts, Control Electrode Voltage, 0 volts, Shadow Angle, 100°; Target Current, 1.5 ma. Control Electrode Voltage, 81 volts, Angle, 0°.

For other characteristics, refer to Type 6A8.

For other characteristics, refer to Type 6B8-G.

Grid Resistor, ** 0.25 megohm (Gain per stage = 11)

Grid Resistor, ** 0.25 megohm (Gain per stage = 13)

6C5-G	DETECTOR & AMPLIFIER TRIODE	D3 6-40	M 6.3 0.3	AMPLIFIER DETECTOR	250	-4.5			3.2	23500	1600	36			6C5-G
6C6	TWIN TRIODE DETECTOR	D13 6F	M 6.3 0.3	AMPLIFIER DETECTOR											6C6
6C8-G	TWIN TRIODE AMPLIFIER	D8 6-40	M 6.3 0.3	EACH UNIT AS AMPLIFIER	250	-4.5			3.2	23500	1600	36			6C8-G
6D6	SUPER-CONTROL AMPLIFIER	D13 6F	M 6.3 0.3	AMPLIFIER MIXER											6D6
6D8-G	PENTAGRID CONVERTER	D8 6-8A	M 6.3 0.15	CONVERTER	135 250	-3.0 min.	67.5 100			40000 310000					6D8-G
6E5	ELECTRON-RAY TUBE	D6 6F	M 6.3 0.3	VISUAL INDICATOR											6E5
6F5	HIGH-MU TRIODE	C1 8M	M 6.3 0.3	AMPLIFIER	250	-16.5	250	6.5	34.0	80000	2500	200	7000	3.0	6F5
6F5-G	HIGH-MU TRIODE	D8 6-8M	M 6.3 0.3	AMPLIFIER	315	-22.0	315	8.0	41.0	75000	2650	200	7000	5.0	6F5-G
6F6	POWER AMPLIFIER PENTODE	C2 7S	M 6.3 0.7	TRIODE CLASS A AMPLIFIER	250	-20.0									6F6
6F6-G	POWER AMPLIFIER PENTODE	V10 6-7S	M 6.3 0.7	TRIODE CLASS A AMPLIFIER	100	-3.0									6F6-G
6F7	TRIODE PENTODE	D9 7E	M 6.3 0.3	TRIODE CLASS A AMPLIFIER	100	-3.0									6F7
6F8-G	TWIN TRIODE AMPLIFIER	D8 6-40	M 6.3 0.6	EACH UNIT AS AMPLIFIER	250	-10.0	100	0.5	2.8	77000	2600	20			6F8-G
6G6-G	POWER AMPLIFIER PENTODE	D3 6-7A	M 6.3 0.15	CLASS A AMPLIFIER	135 180	-6.0 -9.0	135 180	2.0 2.5	11.5 170000	2100 3500	360 2000	12000 400	10000 1.1		6G6-G
6H6	TWIN DIODE	A1 70	M 6.3 0.3	DETECTOR RECTIFIER											6H6
6H6-G	TWIN DIODE	D9 6-7Q	M 6.3 0.3	DETECTOR RECTIFIER											6H6-G
6J5	DETECTOR AMPLIFIER TRIODE	B8 80	M 6.3 0.3	CLASS A AMPLIFIER	250	-8.0			9.0	7700	2600	20			6J5
6J5-G	DETECTOR AMPLIFIER TRIODE	C8 6-8J	M 6.3 0.3	AMPLIFIER											6J5-G

For other characteristics, refer to Type 6C5.

For other characteristics, refer to Type 6F7.

For other characteristics, refer to Type 6D6.

Anode-Grid (#2): 350 μ max. volts, Oscillator-Grid (#1) Resistor = 310000, Conversion Conductance, 500 micromhos.

Plate & Target Supply = 100 volts, Triode Plate Resistor = 0.8 meg, Target Current = 1.0 ma. Grid Bias, -3.3 volts; Shadow Angle, 0°; Bias, 0 volts; Angle, 90°; Plate Current, 0.19 ma.

Plate & Target Supply = 250 volts, Triode Plate Resistor = 1.0 meg, Target Current = 4.0 ma. Grid Bias, -8.0 volts; Shadow Angle, 0°; Bias, 0 volts; Angle, 90°; Plate Current, 0.24 ma.

For other characteristics, refer to Type 6F5.

For other characteristics, refer to Type 6F6.

Oscillator Peak Volts = 7.0.

Conversion Conductance = 300 micromhos.

Maximum A-C Voltage per Plate, 400 Volts, RMS
Maximum D-C Output Current, 4 Milliamperes

For other ratings, refer to Type 6F6.

For other characteristics, refer to Type 6J5.

TYPE	NAME	DIMENSIONS		CATHODE TYPE AND RATING	USE	PLATE SUPPLY VOLTS	GRID BIAS VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURR. MA.	PLATE CURR. MA.	A-C PLATE RESISTANCE OHMS	TRANS. CONDUCT. (GRID-PLATE) μMHOS	AMPLIFICATION FACTOR	LOAD FOR STATED POWER OUTPUT OHMS	POWER OUTPUT WATTS	TYPE
		DIMEN.	S.C.													
6J7	TRIPLE-GRID DETECTOR AMPLIFIER	C1	7R	H	CLASS A RF AMPLIFIER CLASS A AF AMPLIFIER BIAS DETECTOR	100 250	- 3.0 - 3.0	100 100	0.5 0.5	2.0 2.0	1000000 1.5 + 1	1185 1500+	—	—	—	6J7
6J7-G	TRIPLE-GRID AMPLIFIER	D8	G-7R1	H	AMPLIFIER DETECTOR	—	—	—	—	—	—	—	—	—	—	6J7-G
6K5-G	HIGH-μU TRIODE	D8	G-4U	H	CLASS A AMPLIFIER	100	- 1.5	—	—	0.35	78000	900	70	—	—	6K5-G
6K6-G	POWER AMPLIFIER	D3	G-7R1	H	CLASS A AMPLIFIER	100	- 7.0	100	1.6	9.0	103500	1450	150	12000	0.33	6K6-G
6K7	TRIPLE-GRID SUPERAMPLIFIER	C1	7R	H	CLASS A AMPLIFIER	50	- 3.0 min.	90	1.3	5.4	315000	1275	400	7600	3.40	6K7
6K7-G	TRIPLE-GRID SUPERAMPLIFIER	D8	G-7R1	H	MIXER IN SUPERHETERODYNE AMPLIFIER	250	- 10.0	100	—	—	—	—	—	—	—	6K7-G
6K7-GT	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	C3	G-7R1	H	CLASS A AMPLIFIER	100	- 3.0 min.	100	1.6	6.5	250000	1325	350	—	—	6K7-GT
6K8	TRIODE-HEXODE CONVERTER	C1	8K	H	TRIODE UNIT AS OSCILLATOR	100	- 3.0 min.	100	6.2	2.3	400000	3.8	—	—	—	6K8
6L5-G	DETECTOR AMPLIFIER TRIODE	D3	G-4U1	H	CLASS A AMPLIFIER	135	- 5.0	—	—	—	—	—	—	—	—	6L5-G
6L6	BEAM POWER AMPLIFIER	D7	7AC	H	SINGLE TUBE CLASS A AMPLIFIER FISHBELL CLASS A AMPLIFIER FISHBELL CLASS A AMPLIFIER CLASS AB AMPLIFIER	250 250 250 400	- 14.0 - 16.0 - 15.0 - 25.0	250 250 300 300	5.0 10.0 10.0 7.0	72.0 170.0 120.0 109.0	— — — —	— — — —	— — — —	2500 2500 5000 6000	6.5 6.5 14.51 34.1	6L6
6L6-G	BEAM POWER AMPLIFIER	E2	G-7AC1	H	AMPLIFIER	400	- 25.0	300	6.0	102.0	—	—	—	—	—	6L6-G
6L7	PENTAGRID MIXER AMPLIFIER	C1	7T	H	MIXER IN SUPERHETERODYNE CLASS A AMPLIFIER	250	- 3.0	100	7.1	2.4	—	—	—	—	—	6L7

For other characteristics, refer to Type 6J7.
For other characteristics, refer to Type 6K7.
For other characteristics, refer to Type 6K7-G.
For other characteristics, refer to Type 6L6.
For other characteristics, refer to Type 6L7.

TYPE	NAME	DIMENSIONS		CATHODE TYPE AND RATING	USE	PLATE SUPPLY VOLTS	GRID BIAS VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURR. MA.	PLATE CURR. MA.	A-C PLATE RESISTANCE OHMS	TRANS. CONDUCT. (GRID-PLATE) μMHOS	AMPLIFICATION FACTOR	LOAD FOR STATED POWER OUTPUT OHMS	POWER OUTPUT WATTS	TYPE
		DIMEN.	S.C.													
6N5	ELECTRON-RAY TUBE	D5	8R	H	VISUAL INDICATOR	350	5.0	—	—	—	—	—	—	—	—	6N5
6N7	TWIN TRIODE AMPLIFIER	C2	8B	H	CLASS A AMPLIFIER (A-Direct)	204	- 6.0	—	—	—	—	—	—	—	—	6N7
6N7-G	TWIN TRIODE AMPLIFIER	D10	G-8B1	H	AMPLIFIER	300	0	—	—	—	—	—	—	—	—	6N7-G
6O7	DUPLEX-DIODE HIGH-μU TRIODE	C1	7V	H	TRIODE UNIT AS CLASS A AMPLIFIER	250	- 1.5	—	—	—	—	—	—	—	—	6O7
6O7-G	DUPLEX-DIODE HIGH-μU TRIODE	D8	G-7V1	H	TRIODE UNIT AS TRIODE AMPLIFIER	100	- 1.5	—	—	—	—	—	—	—	—	6O7-G
6O7-GT	DUPLEX-DIODE HIGH-μU TRIODE	C3	G-7V1	H	TRIODE UNIT AS CLASS A AMPLIFIER	250	- 3.0	—	—	—	—	—	—	—	—	6O7-GT
6R7	DUPLEX-DIODE TRIODE	C1	7V	H	TRIODE UNIT AS CLASS A AMPLIFIER	250	- 9.0	—	—	—	—	—	—	—	—	6R7
6R7-G	DUPLEX-DIODE TRIODE	D8	G-7V1	H	TRIODE UNIT AS AMPLIFIER	135	- 3.0 min.	67.5	0.9	3.7	—	—	—	—	—	6R7-G
6S7	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	C1	7R	H	CLASS A AMPLIFIER	250	- 3.0 min.	100	2.0	8.5	1000000	1750	1750	—	—	6S7
6S7-G	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	D8	G-7R1	H	AMPLIFIER	—	—	—	—	—	—	—	—	—	—	6S7-G
6SA7	PENTAGRID CONVERTER	B3	8R	H	MIXER	100	- 2.0	100	8.0	3.2	500000	Grid #1 Resistor, 20000 ohms.	—	—	—	6SA7
6SC7	TWIN TRIODE AMPLIFIER	B3	8S	H	EACH UNIT AS AMPLIFIER	250	- 2.0	—	—	—	—	—	—	—	—	6SC7
6SF5	HIGH-μU TRIODE	B3	6AB	H	CLASS A AMPLIFIER	250	- 2.0	—	—	—	—	—	—	—	—	6SF5
6S47	TRIPLE-GRID DETECTOR AMPLIFIER	B3	8M	H	CLASS A AMPLIFIER	100	- 3.0	100	0.9	2.9	700000	1575	1100	—	—	6S47
6SK7	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	B3	8N	H	CLASS A AMPLIFIER	250	- 3.0 min.	100	0.8	3.0	1500000	1650	2500	—	—	6SK7
6SQ7	DUPLEX-DIODE HIGH-μU TRIODE	B3	8Q	H	TRIODE UNIT AS CLASS A AMPLIFIER	100	- 3.0	100	2.6	8.9	250000	1900	475	—	—	6SQ7
6T7-G	DUPLEX-DIODE HIGH-μU TRIODE	D8	G-7V1	H	TRIODE UNIT AS CLASS A AMPLIFIER	135	- 1.5	—	—	—	—	—	—	—	—	6T7-G

For other characteristics, refer to Type 6L7.
For other characteristics, refer to Type 6N5.
For other characteristics, refer to Type 6N7.
For other characteristics, refer to Type 6O7.
For other characteristics, refer to Type 6O7-G.
For other characteristics, refer to Type 6R7.
For other characteristics, refer to Type 6S7.
For other characteristics, refer to Type 6S7-G.
For other characteristics, refer to Type 6SA7.
For other characteristics, refer to Type 6SC7.
For other characteristics, refer to Type 6SF5.
For other characteristics, refer to Type 6S47.
For other characteristics, refer to Type 6SK7.
For other characteristics, refer to Type 6SQ7.
For other characteristics, refer to Type 6T7-G.

TYPE	NAME	DIMENSIONS		CATHODE		USE	PLATE SUPPLY VOLTS	GRID BIAS VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURR. MA.	PLATE CURR. MA.	A-C PLATE RESIS-TANCE OHMS	TRANS-CONDUCTANCE (GRID-PLATE) PER AMP.	AMPLIF. FACTOR	LOAD FOR STATED POWER OUTPUT OHMS	POWER OUT-PUT WATTS	TYPE
		SOCKET CONNec-TIONS	SOCKET DIMEN.	TYPE AND BALING	AMP.												
6U5/6G5	ELECTRON-RAY TUBE	D4	6R	H	6.3	0.3	Plate \pm Target Supply = 100 volts; Triode Plate Resistor = 0.5 meg.; Target Current = 1.0 ma. Grid Bias = 8 volts; Shadow Angle, 0°. Bias, 0 volts; Angle, 90°. Plate Current = 0.19 ma. Plate \pm Target Supply = 250 volts; Triode Plate Resistor = 1.0 meg.; Target Current = 4.0 ma. Grid Bias = -22 volts; Shadow Angle, 0°. Bias, 0 volts; Angle, 90°. Plate Current, 0.24 ma.	100 (3-0)	100	2.2	8.0	250000	1500	375	—	—	6U5/6G5
6U7-G	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	D8	G-7R1	H	6.3	0.3	CLASS A AMPLIFIER	250	100	2.0	8.2	800000	1600	1280	—	—	6U7-G
6V6	BEAM POWER AMPLIFIER	G2	7AC	H	6.3	0.45	MIXER IN SUPERHETERODYNE	100	100	100	—	—	—	—	—	—	6V6
6V6-G	BEAM POWER AMPLIFIER	D10	G-7AC1	H	6.3	0.45	CLASS A AMPLIFIER	250	100	2.0	8.2	800000	1600	1280	—	—	6V6-G
6W7-G	TRIPLE-GRID DETECTOR AMPLIFIER	D8	G-7R1	H	6.3	0.15	CLASS A AMPLIFIER	250	100	0.5	2.0	1500000	1225	1850	—	—	6W7-G
6X5	FULL-WAVE RECTIFIER	C2	6S	H	6.3	0.6	MAXIMUM A-C Voltage per Plate.....350 Volts, RMS Maximum D-C Output Current.....75 Milliamperes	—	—	—	—	—	—	—	—	—	6X5
6X5-G	FULL-WAVE RECTIFIER	D3	G-8S1	H	6.3	0.6	For other ratings, refer to Type 6X5.	—	—	—	—	—	—	—	—	—	6X5-G
6Y6-G	BEAM POWER AMPLIFIER	D10	G-7AC1	H	6.3	1.25	SINGLE-TUBE CLASS A1 AMPLIFIER	135	135	3.0	58.0	—	—	—	2000	3.6	6Y6-G
6Z7-G	TWIN TRIODE AMPLIFIER	D3	G-8R1	H	6.3	0.3	CLASS B AMPLIFIER	135	0	—	—	—	—	—	9000	2.5	6Z7-G
6Z75-G	FULL-WAVE RECTIFIER	D3	G-8S1	H	6.3	0.3	MAXIMUM A-C Voltage per Plate.....350 Volts, RMS Maximum D-C Output Current.....35 Milliamperes	—	—	—	—	—	—	—	12000	4.2	6Z75-G
10	POWER AMPLIFIER TRIODE	E4	4D	F	7.5	1.25	CLASS A AMPLIFIER	350	-32.0	—	16.0	5150	1550	8.0	11000	0.9	10
11	DETECTOR AMPLIFIER	D2	4F	D.C.	1.1	0.25	CLASS A AMPLIFIER	425	-40.0	—	18.0	5000	1600	8.0	10200	1.6	11
12	CONVERTER	D11	4A	F	—	—	CLASS A AMPLIFIER	90	-4.5	—	2.5	15500	425	6.6	—	—	12
12A8-GT	PENTODE CONVERTER	C1	G-8A1	H	12.6	0.15	PENTODE UNIT AS AMPLIFIER	135	-10.5	—	3.0	15000	440	6.6	—	—	12A8-GT
12C8	DUPLEX-DIODE PENTODE	C1	8E	H	12.6	0.15	CONVERTER	—	—	—	—	—	—	—	—	—	12C8
12K7-6T	TRIPLE-GRID SUPER-AMPLIFIER L	C3	G-7R1	H	12.6	0.15	AMPLIFIER	—	—	—	—	—	—	—	—	—	12K7-6T
12Q7-6T	DUPLEX-DIODE HIGH- μ TRIODE	C3	G-7V1	H	12.6	0.15	TRIODE UNIT AS AMPLIFIER	—	—	—	—	—	—	—	—	—	12Q7-6T
12SA7	PENTAGRID TWIN TRIODE AMPLIFIER	B3	8R	H	12.6	0.15	MIXER	—	—	—	—	—	—	—	—	—	12SA7
12SC7	TWIN TRIODE AMPLIFIER	B3	8S	H	12.6	0.15	AMPLIFIER	—	—	—	—	—	—	—	—	—	12SC7
12SJ7	TRIPLE-GRID DETECTOR AMPLIFIER	B3	8N	H	12.6	0.15	AMPLIFIER	—	—	—	—	—	—	—	—	—	12SJ7

TYPE	NAME	DIMENSIONS	CATHODE	USE	PLATE SUPPLY VOLTS	GRID BIAS VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURR. MA.	PLATE CURR. MA.	A-C PLATE RESIS-TANCE OHMS	TRANS-CONDUCTANCE (GRID-PLATE) PER AMP.	AMPLIF. FACTOR	LOAD FOR STATED POWER OUTPUT OHMS	POWER OUT-PUT WATTS	TYPE			
																SOCKET CONNec-TIONS	SOCKET DIMEN.	TYPE AND BALING	AMP.
12SK7	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	B3	8N	H	12.6	0.15	AMPLIFIER	—	—	—	—	—	—	—	—	12SK7		
12SQ7	DUPLEX-DIODE HIGH- μ TRIODE	B3	8Q	H	12.6	0.15	TRIODE UNIT AS AMPLIFIER	—	—	—	—	—	—	—	—	12SQ7		
12Z3	HALF-WAVE RECTIFIER	D5	4G	H	12.6	0.3	MAXIMUM A-C Plate Voltage.....250 Volts, RMS Maximum D-C Output Current.....60 Milliamperes	67.5	1.5	67.5	0.3	1.85	630000	710	450	—	12Z3	
15	R-F AMPLIFIER	D9	3F	D.C.	2.0	0.22	CLASS A AMPLIFIER	135	-1.5	67.5	0.3	1.85	800000	750	600	—	15	
19	TWIN TRIODE AMPLIFIER	D5	6C	D.C.	2.0	0.26	AMPLIFIER	—	—	—	—	—	—	—	—	19		
20	POWER AMPLIFIER TRIODE	D2	4D	D.C.	3.3	0.132	CLASS A AMPLIFIER	90	-16.5	—	—	6.0	8300	415	3.3	9600	0.045	20
22	R-F AMPLIFIER TETRODE	E1	4K	D.C.	3.3	0.132	SCREEN-GRID R-F AMPLIFIER	135	-1.5	45	0.6*	1.7	725000	525	3.3	6500	0.110	20
24-A	R-F AMPLIFIER TETRODE	E1	5E	H	2.5	1.75	SCREEN-GRID R-F AMPLIFIER	180	-3.0	90	1.7*	3.7	325000	500	160	—	—	22
25A6	POWER AMPLIFIER PENTODE	C2	7S	H	25.0	0.3	CLASS A AMPLIFIER	250	-3.0	90	1.7*	4.0	400000	1000	400	—	—	24-A
25A6-G	POWER AMPLIFIER PENTODE	D10	G-7S1	H	25.0	0.3	AMPLIFIER	250	-5.0 (approx.)	20	—	—	—	—	—	—	—	24-A
25A7-G	RECTIFIER-PENTODE	D10	8F	H	25.0	0.3	PENTODE UNIT AS CLASS A AMPLIFIER RECTIFIER	100	-15.0	100	4.0	20.5	50000	1800	90	4500	0.77	25A6-G
25B6-G	POWER AMPLIFIER PENTODE	D10	G-7S1	H	25.0	0.3	CLASS A AMPLIFIER	95	-15.0	95	1.5	41.0	4600	75	2000	1.9	25B6-G	
25L6	BEAM POWER AMPLIFIER	C2	7AC	H	25.0	0.3	SINGLE-TUBE CLASS A1 AMPLIFIER	110	-7.5	110	4.0	49.0	10000	8200	82	1500	2.1	25L6
25L6-G	BEAM POWER AMPLIFIER	D10	G-7AC1	H	25.0	0.3	AMPLIFIER	110	-7.5	110	4.0	49.0	10000	8200	82	2000	2.2	25L6-G
25L6-GT	BEAM POWER AMPLIFIER	C3	G-7AC1	H	25.0	0.3	AMPLIFIER	—	—	—	—	—	—	—	—	—	—	25L6-GT
25T5	RECTIFIER-DOUBLER	D5	6E	H	25.0	0.3	VOLTAGE DOUBLER	—	—	—	—	—	—	—	—	—	—	25T5
25T6	RECTIFIER-DOUBLER	C2	7O	H	25.0	0.3	VOLTAGE DOUBLER	—	—	—	—	—	—	—	—	—	—	25T6
25Z6-G	RECTIFIER-DOUBLER	D3	G-7O1	H	25.0	0.3	RECTIFIER-DOUBLER	—	—	—	—	—	—	—	—	—	—	25Z6-G
25Z6-GT	RECTIFIER-DOUBLER	C3	G-7O1	H	25.0	0.3	RECTIFIER-DOUBLER	—	—	—	—	—	—	—	—	—	—	25Z6-GT
26	AMPLIFIER TRIODE	D12	4O	F	1.5	1.05	CLASS A AMPLIFIER	90	-7.0	—	—	2.9	8900	935	8.3	—	—	26

TYPE	NAME	DIMENSIONS SOCKET CONNECTIONS		CATHODE TYPE AND BATING		USE	PLATE SUPPLY VOLTS	GRID BIAS VOLTS	SCREEN SUPPLY VOLTS	SCREEN CUR. REAT MA.	PLATE CUR. REAT MA.	A-C PLATE RESISTANCE OHMS	TRANS. CONDUCTANCE (OHMS) ⁻¹	AMPLIF. CAPTION FACTOR	LOAD FOR WHICH STATED OUTPUT OHMS	POWER OUT. PUT WATTS	TYPE
		DIENH.	S.C.	C.T.	AMP.												
78	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	D9	8F	H	6.3	0.3	180	0	—	—	—	—	—	7000	5.5	78	
79	TWIN TRIODE AMPLIFIER	D9	6H	H	6.3	0.6	250	0	—	—	—	—	—	14000	8.0	79	
80	HALF-WAVE RECTIFIER	D12	4C	F	5.0	2.0	—	—	—	—	—	—	—	—	—	80	
81	HALF-WAVE RECTIFIER	F1	4B	F	7.5	1.25	—	—	—	—	—	—	—	—	—	81	
82	FULL-WAVE RECTIFIER	D12	4C	F	2.5	3.0	—	—	—	—	—	—	—	—	—	82	
83	FULL-WAVE RECTIFIER	E3	4C	F	5.0	3.0	—	—	—	—	—	—	—	—	—	83	
83-V	FULL-WAVE RECTIFIER	D12	4L	H	5.0	2.0	—	—	—	—	—	—	—	—	—	83-V	
84/624	FULL-WAVE RECTIFIER	D5	4D	H	6.3	0.5	—	—	—	—	—	—	—	—	—	84/624	
85	DIODE TRIODE	D9	6C	H	6.3	0.3	135	-10.5	—	—	—	—	—	—	—	85	
89	TRIPLE-GRID POWER AMPLIFIER	D9	8F	H	6.3	0.4	150	-20.0	—	—	—	—	—	—	—	89	
V-99	DETECTOR TRIODE	C4	4E	D.C.	3.3	0.063	90	-4.5	—	—	—	—	—	—	—	V-99	
X-99	DETECTOR TRIODE	D1	4D	F	5.0	0.25	180	-13.5	—	—	—	—	—	—	—	X-99	
112-A	DETECTOR TRIODE	D12	4D	D.C.	5.0	0.25	90	-4.5	—	—	—	—	—	—	—	112-A	
874	VOLTAGE REGULATOR	E4	45	—	—	—	—	—	—	—	—	—	—	—	—	874	
876	CURRENT REGULATOR	G1	—	F	—	—	—	—	—	—	—	—	—	—	—	876	
886	CURRENT REGULATOR	G1	—	F	—	—	—	—	—	—	—	—	—	—	—	886	

For additional types refer to Supplementary Australian and Supplementary General Types. NOTE.—GT types not included in this Chart have electrical characteristics identical with equivalent G types.

SUPPLEMENTARY GENERAL TYPES

TYPE	NAME	DIENH.	S.C.	C.T.	AMP.	USE	PLATE SUPPLY VOLTS	GRID BIAS VOLTS	SCREEN SUPPLY VOLTS	SCREEN CUR. REAT MA.	PLATE CUR. REAT MA.	A-C PLATE RESISTANCE OHMS	TRANS. CONDUCTANCE (OHMS) ⁻¹	AMPLIF. CAPTION FACTOR	LOAD FOR WHICH STATED OUTPUT OHMS	POWER OUT. PUT WATTS	TYPE
1A7-GT	PENTABRID CONVERTER	C3	G-7Z	D.C.	1.4	0.05	—	—	—	—	—	—	—	—	—	—	1A7-GT
1G4-G	DETECTOR AMPLIFIER TRIODE	D1	G-5S	D.C.	1.4	0.05	90	-6.0	—	—	—	—	—	—	—	—	1G4-G
1H5-GT	DIODE HIGH-MU TRIODE	C3	G-5Z	D.C.	1.4	0.05	—	—	—	—	—	—	—	—	—	—	1H5-GT
1N5-GT	R.F. AMPLIFIER PENTODE	C3	G-5Y	D.C.	1.4	0.05	—	—	—	—	—	—	—	—	—	—	1N5-GT
1Q5-GT	BEAM POWER AMPLIFIER	C3	G-6AF	D.C.	1.4	0.10	90	-4.5	90	1.6	9.5	2100	—	—	8,000	0.27	1Q5-GT
6A87/1853	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	B3	8N	H	6.3	0.45	300	-3.0 min.	200	3.2	12.5	700,000	5000	3500	—	—	6A87/1853
6AC7/1852	TRIPLE-GRID DETECTOR AMPLIFIER	B3	8N	H	6.3	0.45	300	-3.0 min.	150	2.5	10.0	750,000	9000	6350	—	—	6AC7/1852
6F5-GT	HIGH-MU TRIODE	C3	G-5M	H	6.3	0.3	—	—	—	—	—	—	—	—	—	—	6F5-GT
6J5-GT	DETECTOR AMPLIFIER TRIODE	C3	G-6Q	H	6.3	0.3	—	—	—	—	—	—	—	—	—	—	6J5-GT
6J7-GT	TRIPLE-GRID DETECTOR AMPLIFIER	C3	G-7R	H	6.3	0.3	—	—	—	—	—	—	—	—	—	—	6J7-GT
6J8-G	TRIODE-HEPTODE CONVERTER	C3	G-8H	H	6.3	0.3	250	-3	100	2.9	1.3	4,000,000	—	—	—	—	6J8-G
6K6-GT	POWER AMPLIFIER PENTODE	C3	G-7S	H	6.3	0.4	—	—	—	—	—	—	—	—	—	—	6K6-GT
6V6-GT	BEAM POWER AMPLIFIER	C3	G-7AC	H	6.3	0.45	—	—	—	—	—	—	—	—	—	—	6V6-GT
12J7-GT	TRIPLE-GRID DETECTOR AMPLIFIER	C3	G-7R	H	12.6	0.15	—	—	—	—	—	—	—	—	—	—	12J7-GT
35Z5-GT	HALF-WAVE RECTIFIER	C3	G-6AD	H	35.0	0.15	—	—	—	—	—	—	—	—	—	—	35Z5-GT
50L6-GT	BEAM POWER AMPLIFIER	D9	G-7AC	H	50.0	0.15	—	—	—	—	—	—	—	—	—	—	50L6-GT
VR105-30	VOLTAGE REGULATOR	D3	G-5AB	—	—	—	—	—	—	—	—	—	—	—	—	—	VR105-30
VR150-30	VOLTAGE REGULATOR	D3	G-5AB	—	—	—	—	—	—	—	—	—	—	—	—	—	VR150-30
302	CURRENT REGULATOR	E4	AA	—	—	F	—	—	—	—	—	—	—	—	—	—	302

- * For Grid-leak Detection—plate volts 45, grid return to + filament or to cathode.
- Either A.C. or D.C. may be used on filament or heater, except as specifically noted.
- For use of D.C. A.C. filament types, decrease stated grid volts by $\frac{1}{2}$ (approx.) of filament voltage.
- ☉ Supply voltage applied through 20000-ohm voltage-dropping resistor.
- > Mercury-Vapour Type.
- Grid #1 is control grid. Grid #2 is screen. Grid #3 tied to cathode.
- ⊕ Grid #1 is control grid. Grids #2 and #3 tied to plate.
- ⊖ Grids #1 and #2 connected together. Grid #3 tied to plate.
- ⊗ Grids #3 and #5 are screen. Grid #4 is signal-input control grid.
- ▲ Grids #2 and #4 are screen. Grid #1 is signal-input control grid.
- ** For grid of following tube.
- Both grids connected together; likewise, both plates
- ↑ Power output is for two tubes at stated plate-to-plate load.
- ‡ For two tubes.
- ‡ This diagram is like the one having the same designation without the prefix G, except that Pin No. 1 has no connection.
- ◆ This diagram is like the one having the same designation without the prefix G, except that Pin No. 2 is omitted and Pin No. 1 has no connection.
- ♣ Obtained preferably by using 70000-ohm voltage-dropping resistor in series with a 90-volt supply.
- ⊙ The diagram for this type is the same as that of the designation shown, except that Pin No. 1 is also connected to the Base Sleeve
- △△ This type is fitted with a tapped heater for pilot lamp operation
- ▲▲ This type is fitted with Standard Edison Screw Base

- ‡‡ This diagram is like the one having the same designation without the prefix G, except that Pin No. 1 is connected to internal shield.
- Applied through plate resistor of 250000 ohms or 500-henry choke shunted by 0.25-megohm resistor.
- ♥ Applied through plate resistor of 100000 ohms.
- ⊗ Applied through plate resistor of 250000 ohms.
- ⊙ 50000 ohms.
- ⊕ Requires different socket from small 7 pin.
- ⊖ Grid #2 tied to plate. Grids #1 and #2 tied together
- ⊗ Plate voltages greater than 125 volts RMS require 100-ohm (minimum) series-plate resistor.
- ⊙ Applied through plate resistor of 150000 ohms.
- ‡ For signal-input control-grid (#1); control-grid #3 bias, —3 volts.
- ⊕ Applied through 200000-ohm plate resistor.
- Note 1: Types with oval bases have Miniature Metal Cap; all others have Small Metal Cap.
- Note 2: Subscript 1 on class of amplifier service (as AB₁) indicates that grid current does not flow during any part of input cycle.
- Subscript 2 on class of amplifier service (AB₂) indicates that grid current flows during some part of the input cycle.
- ▲ Grids #2 and #4 are screen. Grid #3 is signal-input control grid.
- ⊗ Following grid resistor 1000000 ohms.
- ⊗ Following grid resistor 1000000 ohms.
- ▲ Applied through 50000-ohm screen-dropping resistor.
- ▽ Applied through 60000-ohm screen-dropping resistor.
- ⊖ Hexode screen and triode plate supply voltage should be applied through common 15000-ohm voltage-dropping resistor from a 250 volt D.C. source.

KEY TO TUBE DIMENSIONS

Symbol	Maximum Overall Length x Diameter	Symbol	Maximum Overall Length x Diameter	Symbol	Maximum Overall Length x Diameter
A1	1 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D5	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D11	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "
B1	2 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D6	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D12	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "
B2	2 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D7	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D13	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "
B3	2 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D8	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	E1	5 $\frac{1}{8}$ " x 1 $\frac{1}{8}$ "
C1	3 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D9	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	E2	5 $\frac{1}{8}$ " x 2 $\frac{1}{8}$ "
C2	3 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	D10	4 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ "	E2A	5 $\frac{1}{8}$ " x 2 $\frac{1}{8}$ "
				E3	5 $\frac{1}{8}$ " x 2 $\frac{1}{8}$ "
				E4	6 $\frac{1}{2}$ " x 2 $\frac{1}{8}$ "
				F1	8" x 2 $\frac{1}{8}$ "
				G1	8" x 2 $\frac{1}{8}$ "

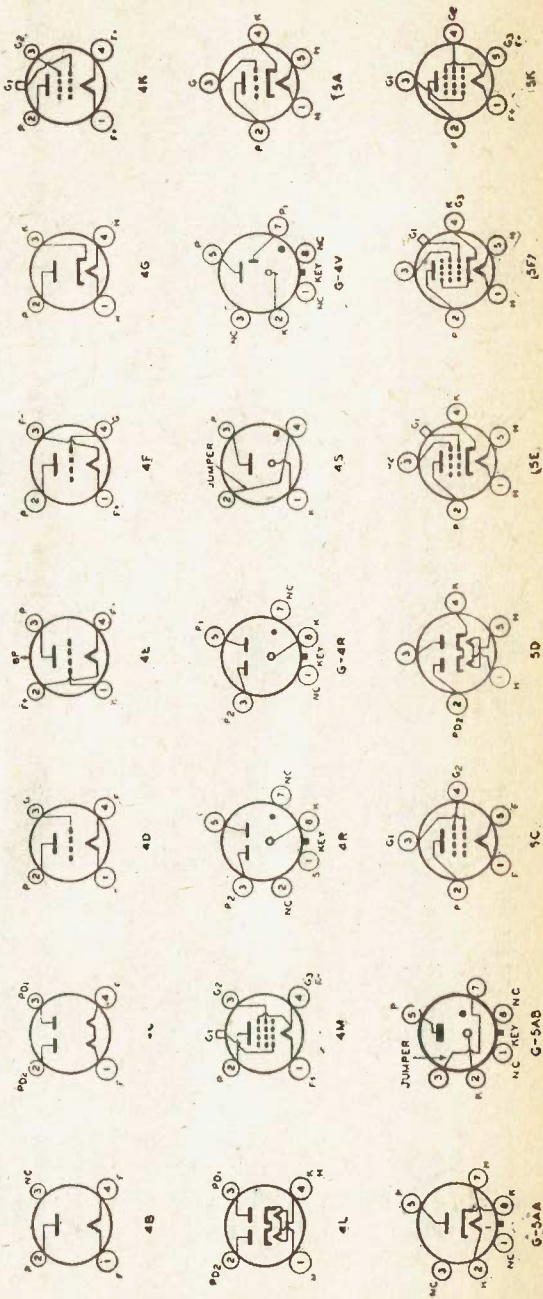
RADIOTRON SOCKET CONNECTIONS

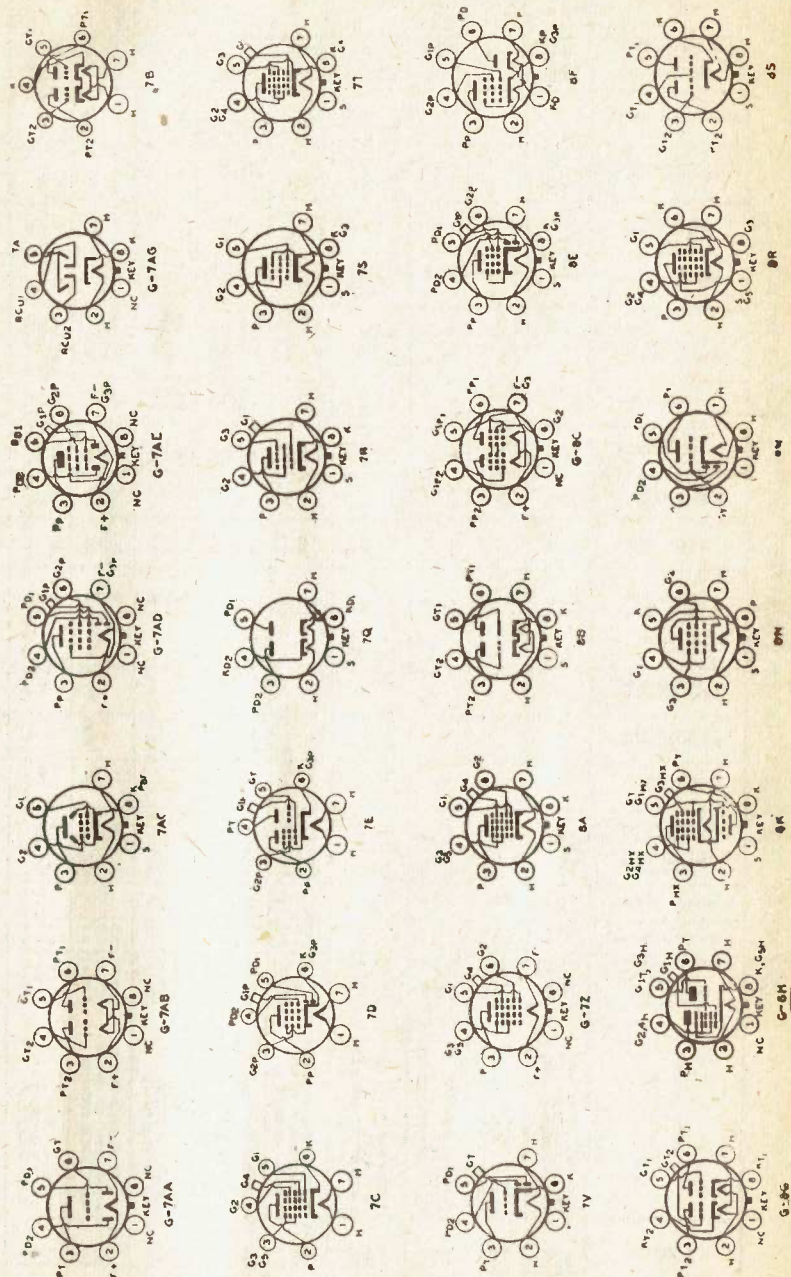
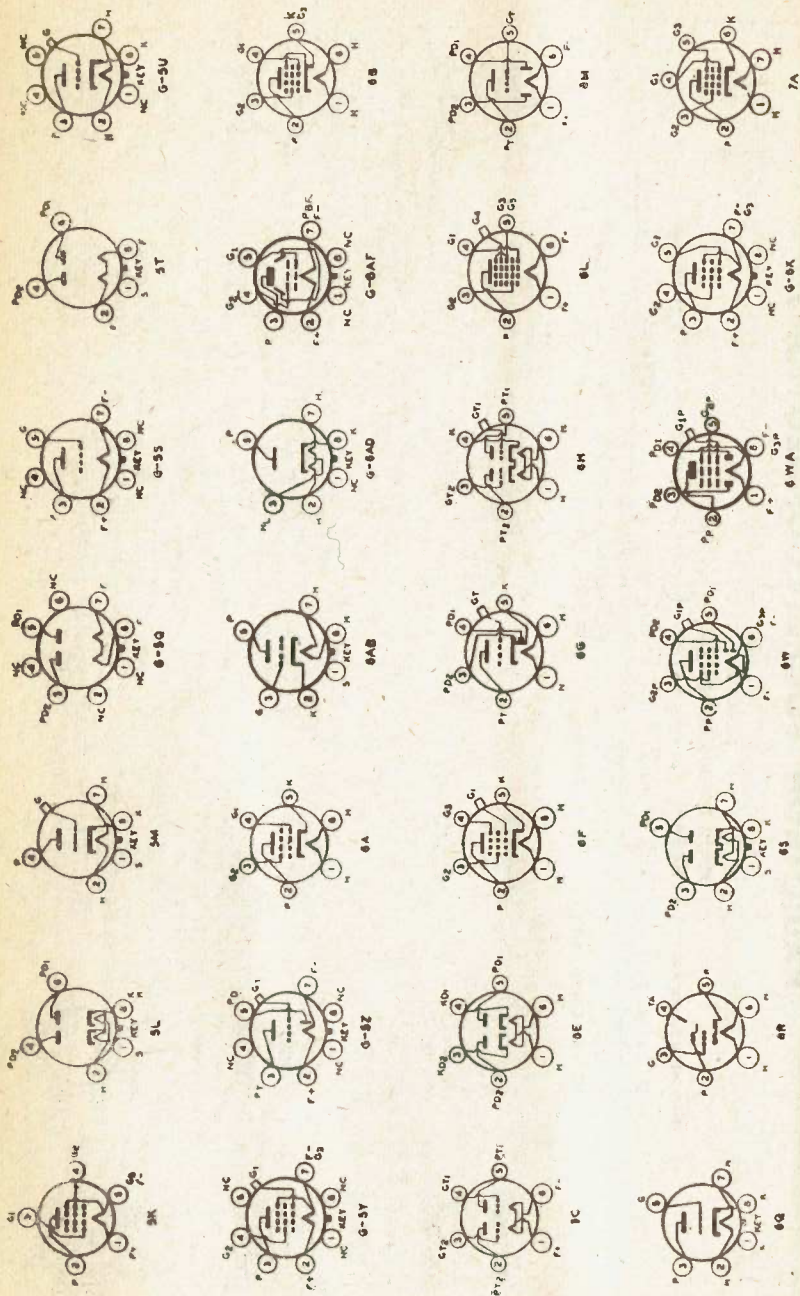
Bottom Views

KEY TO TERMINAL DESIGNATIONS OF SOCKETS

Alphabetical subscripts D, P, T, and HX indicate, respectively, diode unit, pentode unit, triode unit, and hexode unit in multi-unit types.

- BP = Boyonet Pin
- F = Filament
- G = Grid
- RC = Ray-Control Electrode
- H = Heater
- K = Cathode
- NC = No Connection
- HL = Heater Tap
- P = Plate (Anode)
- P₁ = Starter-Anode
- P₂ = Beam-Forming Plates
- BS = Base Sleeve
- S = Shell
- TA = Target
- = Gas-Type Tube
- U = Unit





VALVE EQUIVALENT CHART

*Socket change necessary.

All metal tubes are interchangeable with glass or G.T. tubes of the same type.
 ■g., 6K7 = 6K7G = 6K7GT.

A number of these equivalents are not intended for use in A.C.-D.C. sets due to difference in filament consumption.

Type.	Equivalents.	Type.	Equivalents.
1A4P	1D5G*	30	1H4G*
1A6	1C6 1D7G*	31	20
1B4P	32 1E5G*	32	1B4P
1B5/25S	1H6G*	33	1D4
1C4	1M5G*	34	1A4
1C6	1A6 1C7G*	35	24A
1D4	1L5G*	36	6C6* 77*
1F4	1F5G*	37	76
1F6	1F7G*	38	6K6G* 41*
1K4	1K5G*	39/44	6D6* 78*
1K5	1K4*	41	42 6K6G*
1K6	1K7G*	42	41 6F6G* KT68*
IV	6Z3	43	25L6* 25B6*
2A3	45	45	2A3
2A6	55	46	50*
5T4	5U4G	47	59*
5W4	5Z3* 5Z4 5Y3G	49	1C5G* 1Q5G*
5Z3	5Z4* 5W4* 80	56	2A6
5Z4	80* 5Y3G U50	57	27
6A3	6B4G*	58	24A*
6A6	6N7* 79*	59	35*
6A7	6A8*	60	47*
6A8	6A7* 6J8G	75	85
6B5	6N6*	76	37
6B7	6B8*	77	6C6
6B8	6B7*	78	6D6
6C5	6J5 76*	79	6A6*
6C6	77 36*	80	5Y3G* 5W4*
6D6	78 39/44*	83	5Z3
6E5	6U5 6G5	83V	80
6F6	6SF5	84	6Z4
6F6	6K6 6V6G KT63	85	75
6F7	6P7G*	89	41
6G5	6U5 6H5	1A5G	1T5G 1C5G
6H6	D63	1A7G	1B7G
6J5	6C5 76*	1C5G	1T5G 1A5G
6J7	6C6* 77*	1C7G	1C6*
6K7	6D6* 78*	1D5GP	1A4P*
6K8	6A8	1D7G	1A6*
6L6	KT66	1E5GP	1A4P* 1B4*
6L7	X64	1F5G	1F4*
6N7	6A6* 79* 6E6*	1F5GV	1F6*
6Q7	6R7 6T7G	1G4G	1E4G
6R7	6Q7 6T7G	1G5G	33*
6S7	6D6*	1H4G	30*
6T5	6G5 6U5	1H6G	1B5/25S*
6U5	6G5 6T5	1J6G	19*
6V6	6F6 6K6G	1N5G	1D5G
6X5	84*	5U4G	5Z3* 5Y4G*
19	1J6G*	5V4G	83V*
20	35/51	5X4G	5U4G* 5Z3*
24A	43*	5Y3G	5Y4G*
25A6	25C6G 25A6G	5Y4G	5Y3G*
25L6	25Z5	6B4G	6A3*
25Y5	25Z5	6B6G	75* 6Q7G
25Z5	25Y5	6C8G	6F8G
25Z6	25Z5*	6D8G	6A8G 6A7*
27	56	6F8G	6C8G

Type.	Equivalents.	Type.	Equivalents.
6G6G	6K6G 41*	6P5G	76*
6G8G	6B8G	6T7G	6Q7G 75*
6J8G	6K8G	6U7G	6D6* 6K7G
6K5G	6F5G	6W7G	6J7G 6C6*
6K6G	41*	6Y6G	6V6G 6L6G
6L5G	6C5G 76*	6Z7G	6N7G 6A6*
6N6G	6B5G*		

WIRE TABLES

B.E.S.A. STANDARD SIZES OF ANNEALED COPPER WIRE.

S.W.G. Size.	Standard Diameter		Calculated Sectional Area		Standard Resistance at 60° F.		Current Rating Amps. at 1,000 per Sq. inch.	
	Inch.	M/m.	Sq. In.	Sq. M/m.	1,000 yds. Pounds.	Per lb. Ohms.		
50	.0010	.0254	.0000007854	.0005067	.009083	30570	3365000	.0008
49	.0012	.0305	.0000011310	.0007297	.013079	21230	162300	.0011
48	.0016	.0408	.000002011	.0012972	.02325	11941	513500	.0020
47	.0020	.0508	.000003142	.002027	.03633	7642	210300	.0031
46	.0024	.0610	.000004524	.002019	.05232	5307	101440	.0045
45	.0028	.0711	.000006158	.003973	.07121	3899	54750	.0062
44	.0032	.0813	.000008042	.005189	.09301	2985	32090	.0080
43	.0036	.0914	.000010179	.006567	.11772	2359	20040	.0101
42	.0040	.1016	.000012566	.008107	.14533	1910.5	13146	.0126
41	.0044	.1118	.000015205	.009810	.17585	1578.9	8979	.0152
40	.0048	.1219	.000018096	.011675	.2093	1326.7	6340	.0181
39	.0052	.1321	.00002124	.013701	.2456	1130.5	4603	.0212
38	.0060	.1524	.00002827	.018241	.3270	849.1	2597	.0283
37	.0068	.1727	.00003632	.02343	.4200	661.1	1574.0	.0363
36	.0076	.1930	.00004536	.02927	.5246	529.2	1008.7	.0454
35	.0084	.2134	.00005542	.03575	.6409	433.2	676.0	.0554
34	.0092	.2337	.00006648	.04289	.7688	361.2	469.8	.0665
33	.0100	.2540	.00007854	.05067	.9083	305.7	336.5	.0785
32	.0108	.2743	.00009161	.05910	1.0594	262.1	247.4	.0916
31	.0116	.2946	.00010568	.06818	1.2222	227.2	185.87	.1057
30	.0124	.3150	.00012076	.07791	1.3966	198.80	142.35	.1208
29	.0136	.3454	.00014527	.09372	1.6800	165.27	98.37	.1453
28	.0148	.3759	.00017203	.11099	1.9895	139.55	70.14	.1720
27	.0164	.4166	.0002112	.13628	2.443	113.65	46.52	.2112
26	.018	.4572	.0002545	.16417	2.943	94.35	32.06	.2545
25	.020	.5080	.0003142	.2027	3.633	76.42	21.03	.3142
24	.022	.5588	.0003801	.2453	4.396	63.16	14.366	.3801
23	.024	.6096	.0004524	.2919	5.232	53.07	10.144	.4524
22	.028	.7112	.0006158	.3973	7.121	38.99	5.475	.6158
21	.032	.8128	.0008042	.5189	9.301	29.85	3.209	.8042
20	.036	.9144	.0010179	.6567	11.772	23.59	2.004	1.0179
19	.040	1.0160	.0012566	.8107	14.533	19.105	1.3146	1.2566
18	.048	1.2192	.0018096	1.1675	20.93	13.267	.8340	1.8096
17	.056	1.4224	.002463	1.5890	28.48	9.747	.3422	2.463
16	.064	1.6256	.003217	2.0755	37.20	7.463	.2006	3.217
15	.072	1.8288	.004072	2.6268	47.09	5.897	.12523	4.072
14	.080	2.0320	.005027	3.2429	58.13	4.776	.08216	5.027
13	.092	2.3368	.006648	4.2888	76.88	3.612	.04698	6.648
12	.104	2.6416	.008495	5.4805	98.24	2.826	.02877	8.495

LOOK BEFORE YOU LEAP —

(By RAHOB A450)

AND HOW TO LEAP!

IN designing a complete radio set, the individual components are all accurately calculated to suit the completed circuit. This involves an extensive knowledge of mathematics and radio engineering which would be well beyond the average home constructor. However, this does not prevent the amateur from carrying out experiments with ideas culled from the circuits produced by engineers, and the following article covers design as carried on by that vast army of radio enthusiasts who make construction their hobby.

Practically in every case, the young radio enthusiast who contemplates the construction of his first set, will start off by looking for a circuit in a magazine or book, and bothering about little else except the first cost and an assurance that it will give good results.

Both these considerations are highly important, but the two alone are not sufficient. With a little thought, and a little extra cost in the first place, it is possible to save money in the long run and thus make quicker progress.

Let me make it clear how this can be brought about.

We will take the case of a young radio enthusiast who, for no reason at all we shall call George James. According to an almost unbroken tradition he grabs a few magazines and peruses them, or tears off to a local serviceman in search of a circuit, usually a three-valve for a start.

Having acquired one which he is assured is capable of receiving Australia at midday, etc., he commences operations. "A three-valve circuit—oh yes—a chassis about that by that will do. Only three valves—I'll get a 60 mil. tranny." And so it goes on.

When he comes to build his second set, he possibly looks a little harder for a circuit to suit him, but he ends up with one valve, one condenser, and numerous odds and ends left over from his original set. It stands to reason that if he had been able to use nearly all these parts in his second set it would have cost him less. He would have got on much better if he had spent more time over his first circuit. Not only in seeing that his condenser, valves and tranny were good for a few sets, but also in choosing the tiniest little resistor and condenser so that it can be used again if possible.

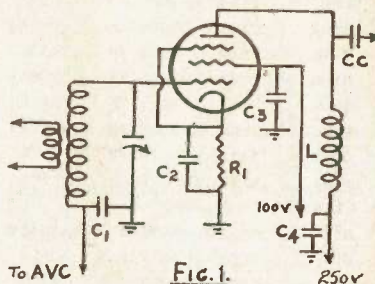
This is not an attack on the circuits published in the radio magazines—possibly if one looked long enough one would find one to suit. But how much more satisfactory it would be if the individual could design his own circuits exactly to suit himself and the parts on hand (or adapt circuits to suit one's own

design). No doubt many are gasping at the thought. Fancy designing ones own circuits! It isn't very hard at all. Once one has a few separate circuits in mind and a bit of practice, it is, in fact, a pushover.

The first thing that must be borne in mind is that each radio circuit containing more than one valve is not just one circuit that must be put together just like that and no other way. Each circuit is built up of a number of separate circuits and each of these can be largely interchanged from one complete circuit to another.

The only ways in which the separate circuits of a receiver are interdependent is that each gets its input from the preceding stage, the R.F. circuits get their A.V.C. voltage from the detector, and all are hooked up to the power supply.

An R.F. amplifier will practically always be identical with that shown in Fig. 1.

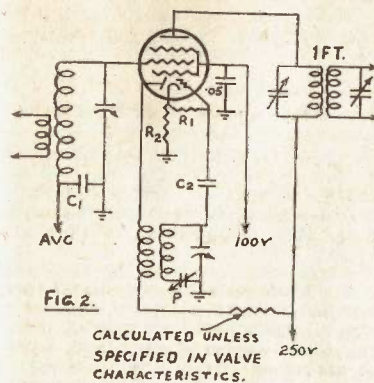


The coil labelled "in" is either an aerial coil or a plate coil from a previous stage. All condensers except Cc and the tuning condenser are about .05 mfd. L is either an RFC (for choke coupling) or the primary of an R.F. coil, in which case Cc is not used. Cc is about .00025 mfd.

If no AVC is used, the wire marked for this purpose is earthed, and C1, of course, omitted.

R1 can be determined by an easy calculation.

In Fig. 2, the most commonly used converter circuit is shown. C1 as before is about .05 mfd. R1 should be



50,000 unless otherwise specified. C2 is .0001 or .00005 mfd. R2 is calculated. So much for the individual circuits for the time being.

Back to the radio activities of George James. George, you may remember, was choosing his chassis and decided on one to fit his first circuit. Either he didn't think or else he likes a lot of work. Probably the former. His first chassis should have been made a fair bit bigger than his first set demanded. This may take up a bit of extra room, but, after all, isn't chassis making one of the drudgeries of radio construction?

A better idea (in my opinion) than making one large chassis is to make three smaller ones—one for the power supply, one for the audio section and one for the receiver itself.

Here are some of the advantages of having the power supply separate:—

1. It is possible to eliminate all traces of hum from the output.
2. The power pack can be used to operate other pieces of equipment such as various items of test equipment and low-power transmitters.
3. Experimental sets can be built and operated by it.

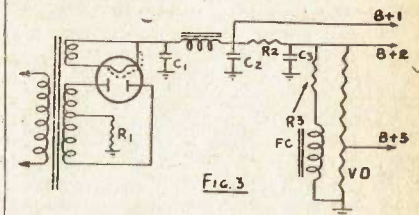
The audio may be kept separate for these reasons:—

1. It can be used to amplify the output from experimental sets.
2. Later on, when it develops into quite a substantial piece of hi-fi equipment, it can be used as an amplifier quite separate from the receiver.

The design of the power pack will now be considered.

The mistake many people make in connection with this portion of the radio is to choose a transformer, which, after a while, has to be consigned to the junk box because of its inability to deliver more than 60 or 80 ma. Now 80 ma. may be considered fair enough if it were

not for the fact that most radio enthusiasts acquire in time a considerable interest in hi-fi audio equipment. In view of this, it is wise to allow about 100 ma. for the audio section when designing the power pack, even if you have been accustomed to thinking of audio amplifiers in terms of only one or two valves. On top of that there will be something under 50 ma. taken by the radio itself. So it would be best to build the unit so that it will deliver at least 150 ma., a transformer rated at this current being used.



The circuit of the power pack is shown in Fig. 3. L could be a speaker field, but the fault with this plan is that the speaker has to be changed every now and then. Take for example a standard 8-inch type. It has a 2000 ohm field which is rated at 8 watts. With the load drawing 40 ma., the voltage drop across the field is (by Ohm's law) $.04 \times 2000 = 80$ volts, and the power consumed by it is thus $80 \times .04 = 3.2$ watts. This is a bit weak compared to the required 8 watts. With the load drawing 65 ma., the power consumed is 8.45 watts. It would not be wise to use a greater load than this, so another speaker would have to be purchased. Since the average enthusiast is not prepared to buy a new speaker every year or so this plan is not so good. The thing to do is to use a filter choke instead. A permag. speaker would then be employed. If an electro should happen to be on hand it could be energised by putting it across the B voltage in series with a suitably chosen resistance, as shown in the circuit. If an 8-watt field is used, the current passing through it should be about 65 ma. Assuming the B voltage is 250, the resistance of the field and R3 would be

$$\frac{250}{.065} = 4000 \text{ ohms (roughly).}$$

So using a 2000 ohm F.C., R3 would be 2000 Ω and should be rated at 10 watts.

This method uses up a lot of current, but there will be current to spare until a big audio set up is built. When such a set up is used a better speaker than the ordinary commercial variety is called for. This type could be a permag. which of course would not use any cur-

rent for field excitation. Should it be desired to use an electro dynamic type while a big load was hooked up to the pack, a transformer with a higher rating than 150 ma. would be chosen.

Even with full rectifier and transformer data on hand, it is practically impossible to estimate what the voltage between rectifier filament and HV secondary centretap will be at different loads. If the constructor can use a voltmeter for adjustments to the power pack he will have no trouble at all. However, if such an instrument is not available for use, things are made more difficult. I think the best idea would be to take the finished power pack to a serviceman, and ask him to test the voltage between B+1 (on the circuit diagram) and HV secondary centretap, with various resistances connected between these two points. These resistances should be chosen so that (assuming the output voltage is equal to the rated voltage of the transformers) they will draw 40-60-80 up to 150 ma. These currents would be only approximate, but the true current could easily be found (by Ohm's law) when the voltage is measured. A graph would then be drawn plotting output voltage against current drawn. The voltage between B+1 and HV secondary centretap at any current could then be easily found by referring to the graph.

Since filter chokes have very low resistances, the rated voltage of the transformer (roughly) can be impressed on the plates of the output valves. So a 385 V transformer should meet most requirements. The use of a 400V type would make the power pack more versatile, but 380 should be sufficient in most cases. Where a higher voltage than 250 is used in the output stage, two B+ voltages will have to be provided—a high one for the audio, and 250 for the radio itself. If a small audio set up is used, only 250 volts output is required. In the former case, R2 and C3 are included in the circuit; in the latter case they are omitted. The voltage between B+1 and earth can be varied by adjusting R1, which is a variable type since its resistance has to be altered each time the load is changed.

Here are a few examples on the calculation of R1.

1. With the load (including speaker field, if used, and voltage divider) drawing 40 ma. 250 volts output is required. Voltage between rect. fil. and HV centretap is 400. Voltage drop required is therefore 150. R1 therefore equals (by Ohm's law)

$$\frac{150}{.04} = 3800 \Omega \text{ (approx.)}$$

2. With load drawing 70 ma. 250V output required. Voltage between rect. fil. and HV centretap is 395. Volt drop required is 145.

$$R1 = \frac{145}{.07} = 2100 \Omega$$

3. With load drawing 130 ma. 300V output required. Voltage between rect. fil. and HV centretap is 388. Volt drop is 88.

$$\therefore R1 = \frac{88}{.13} = 700 \text{ ohms.}$$

The best arrangement for R1 would be to use a variable 2000 Ω resistor (rated at at least 50 watts) and put a 2000 Ω 5-watt fixed resistance in series with it when a higher value than this is needed.

The best way to adjust the resistance is to use a voltmeter, but if one of these is not available for use, a calculation like those above must be carried out.

R2, when needed, should also be an adjustable type. It can be adjusted by means of a voltmeter or else its resistance can be calculated. Here are some examples:—

1. B+1 = 300V B+2 = 250V. Therefore voltage drop = 50V. Current drawn by load (including speaker field if used and voltage divider) = 30 ma.

$$R2 = \frac{50}{.03} = 1700 \Omega$$

2. B+1 = 350V. B+2 = 250. There volt drop = 100V. Current drawn by load = 50ma.

$$R2 = \frac{100}{.05} = 2000 \Omega$$

All figures in the above calculations are given to the nearest hundred.

The screen voltage for the receiver can be tapped off the voltage divider (B+3). The position of the tap is best adjusted with a voltmeter. The load must be connected while the adjustment is made. If it is not possible to get hold of a meter, and the equipment cannot be taken into a serviceman's establishment, the only thing to do is to tap the voltage off in proportion. This, however, is a very inaccurate method.

C1, C2, and C3 should have capacities of at least 8 mfd., and should be rated at at least 500 V, preferably higher.

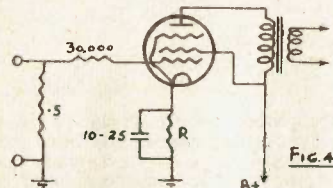
The rectifier valve can be a 5T4, 5V4, 5U4, or 5Z3. An 80, 5Y3-G, etc., would be quite suitable providing the set is not over 9 valves. It would be run a little over rating at full power pack load, but they would "take it" for a fair while. The 5V4 is definitely preferred.

Make sure the transformer used is adequately equipped in the way of filament windings. This is important. Two 6.3v.—3 amps. windings should be sufficient, but an extra 2.5v.—5 amp. winding should not be sniffed at. Be sure to earth either the centretap or one side of the filament windings (except where direct heater valves are used).

If for some reason you do not wish to build a power pack exactly as described here, I think enough angles of the subject have been discussed for you to be able to design one for yourself.

Now we come to the audio part of the receiver.

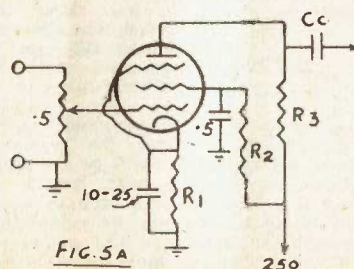
For a start, this will invariably consist of one valve. If radio valves didn't decrease in efficiency as they grow older, the best plan would be to choose a valve which could be used in a subsequent push pull set up. However, as they do, the original output valve would probably be low enough to cause quite a deal of unbalance in a push pull circuit by the time the constructor is thinking of such things. So the best idea is to choose a valve that has a high gain. The one that comes to mind at once is the EL3. This is undoubtedly the best that could be used. A pentode or beam power tube such as a 6F6 or 6V6, is the best in the American types.



The circuit for a one-valve audio set up is shown in Fig. 4.

C can be anything from .1 to .01 mfd. .1 will give better bass response. The grid "stopper" labelled 30,000 is usually employed when an EL3 output valve is used. It is not at all critical in value. R is found by calculation—for an EL3 it is 150 ohms; and for type 6F6, 420 ohms.

Although for the first one or two sets there will not be much power for the speaker to handle, in subsequent set ups it will be called upon to do more work. So it is not much use getting a four or five-inch speaker to start with. If you are the son of a millionaire you could get a G12PM or something for a start. If you are not the son of a millionaire, you will be well rewarded if you get an 8-inch first.



The first addition to this section is that of a preamplifier. This is either a 6J7, 6C6, 77, etc., or else the pentode section of a 6B8-G. This will be discussed later. It's circuit is shown in Fig. 5A. R1 and R2 can be calculated. An improvement in tone can be effected at the expense of gain by omitting the cathode bypass condenser. R3 can be something between .1 and .25 of a meg. The B+ voltage should be 250 or 300 volts. If the supply voltage to the audio is greater than this, a dropping resistor and by-pass condenser should be included as in Fig. 5B.

To operate two valves in push pull it is necessary to get two signals of equal magnitude but opposite in direction (i.e., 180° out of phase with each other) which are applied to the two control grids of the output valves. The method which presents itself is that of using transformer coupling between two stages, the secondary being centre tapped with the two ends going to the two grids (Fig. 6). However, transformers suitable for the job are very expensive and therefore not used extensively. The most

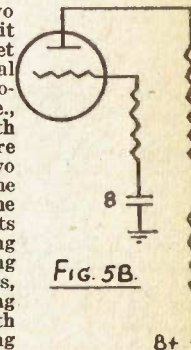


FIG. 5B.

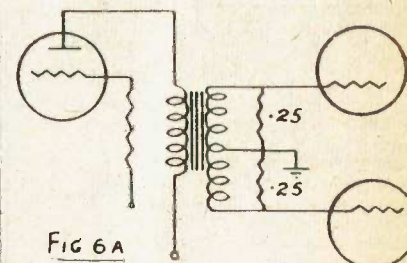


FIG. 6A

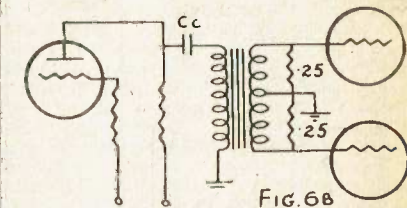


FIG. 6B

sound and practical method of obtaining the two signals is by use of a phase splitter, shown in Fig. 7. The signals will have the same magnitude exactly provided the plate and cathode resistors (labelled 1, which is a good all-round value) are exactly equal (get them

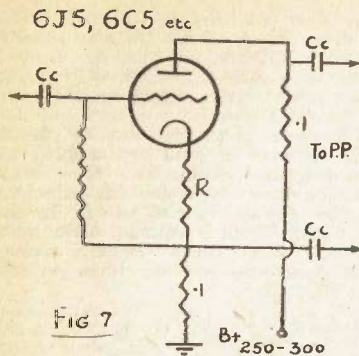


FIG 7

tested). Resistor R is found by dividing twice the resistance of the plate resistor by the amplification factor of the valve used. A triode must be used, or else a pentode (such as the 6J7) connected as a triode. The amplification factor of a 6J7 so connected (screen and suppressor connected to plate) is 20.

Double triode phase inverters are capable of giving good results. The Fig. 7 phase splitter is foolproof.

In some amplifiers, the two signals from the phase splitter (or transformer) are amplified by push-pull drivers before being fed to the output valves.

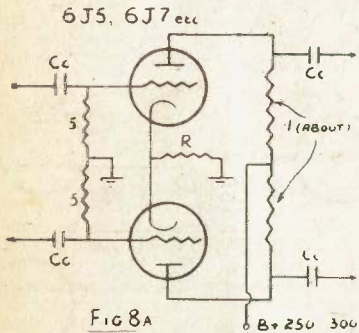


FIG 8A

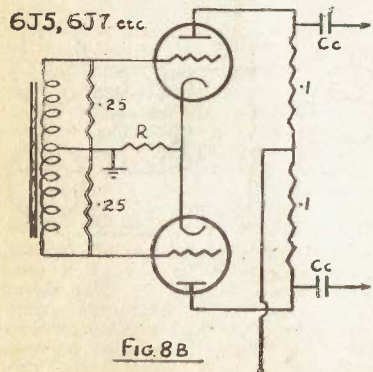


FIG 8B

Fig. 8 shows suitable circuits. When such drivers are used, the phase splitter would come in the first stage in most cases, in which case the circuit would be like that shown in Fig. 9.

When building the output stage it is as well to have a meter on hand to check voltages and currents. With the correct bias, the valves may be drawing considerably over the rated current. In this case the bias may have to be increased in order to avoid overload of the power pack, if it is being run near its full load.

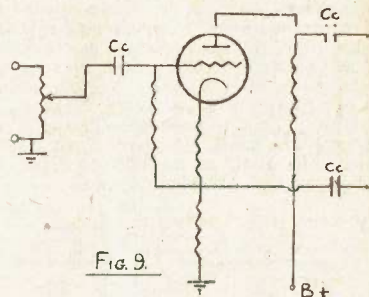


FIG. 9.

If the plate currents of the two push-pull valves are found to be widely different (write to Ripley if they are exactly the same), some means of adjusting them is called for. First connect the cathodes (or filament centre taps) together, and bias them by means of a variable resistor (make sure it will take the current) of a sensible resistance. Adjust this to approximately the correct value. Switch the amplifier on and adjust the resistor until the total plate current for the two valves is approximately correct. Without altering its setting remove the resistor and measure the resistance of the part that was in the circuit.

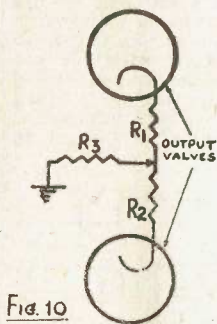


FIG 10

The next step is to arrange a set up like that in Fig. 10. R3 should be $\frac{1}{3}$ of the resistance we have just measured or a little less and R1 and R2 together should be four times the remainder. Should R1 + R2 equal a standard potentiometer resistance or do so fairly closely, they can be just the one resistance. Otherwise R2 will be the standard pot having the next lowest resistance and R1 will be chosen to make the value up to the one we calculated. To adjust the pot, turn the power on and fix it so that the plate currents are equal.

If you should wish to keep this control, mount it somewhere where it cannot be accidentally "adjusted." Otherwise measure the resistance between the rotor of R2 and each cathode and substitute fixed resistances.

The circuits for resistance coupled output triodes and pentodes in push pull are shown in Figs. 11 and 12.

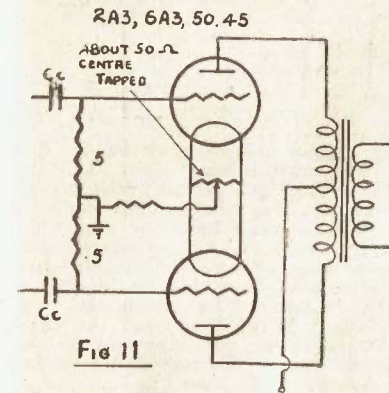


FIG 11

Since it only allowed 100 ma. for the audio, the power pack described previously could not work a radio and an amplifier using 6L6's at the one time. Should you desire to do so you could design a power pack accordingly. As long as the valves other than the output valves do not draw too much current, the pack described would supply enough current for such an amplifier if a radio was not worked at the same time.

Lower power pentodes like 6V6's should satisfy the needs of the deafest enthusiast. Remember that an ordinary superhet only delivers about 3 watts.

Theoretically, pentode output valves with inverse feedback are just as good

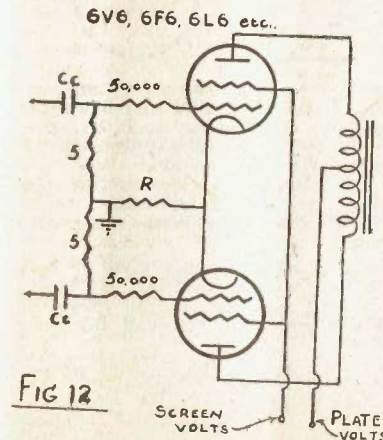


FIG 12

as triodes, but practically, the triodes give out better sound.

Special amplifiers like direct coupled and cathode follower amplifiers will not be discussed here.

The layout of amplifiers is fairly straight forward, a "stage by stage" procedure being followed. The input wire to the amplifier should be shielded right up to the grid of the first valve. In the early stages of the amplifier, make sure that the filament wires are not placed so that they could cause trouble in the way of hum pick-up.

INVERSE FEEDBACK.

Quite noticeable improvements in tonal quality can be brought about, when using pentode output valves, by the application of inverse feedback. That is, a signal from a later stage of an amplifier is fed to an earlier stage, so as to reduce the overall volume, but to improve fidelity considerably. There are several methods by which this can be done, both for small and large set-ups.

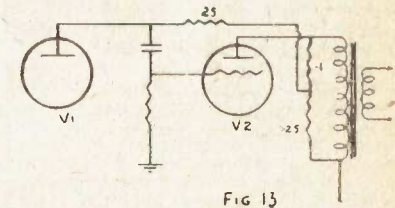


FIG 13

A well-known feedback circuit is shown in Fig. 13. V1 is the preamplifier and V2 the output valve. The values shown are not critical.

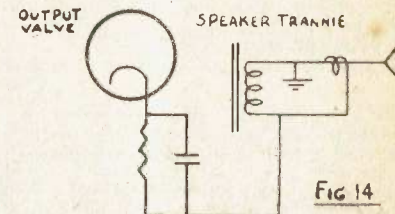


FIG 14

The circuit shown in Fig. 14 does not require any extra parts, but involves interference with the secondary of the speaker trannie and the use of two extra wires on the speaker lead. This scheme also does not lend itself to a commonly used system of jack switching to ear-phones.

Fig. 15 shows a popular feedback circuit for a three-stage amplifier. "R" is calculated to give correct voltage on the screen of the first valve. For a 6J7 it is 1.5 meg. 30,000 is a fairly safe value for R2.

Omitting the by-pass condenser from the cathode circuit of the preamplifier is also a method of introducing negative feedback.

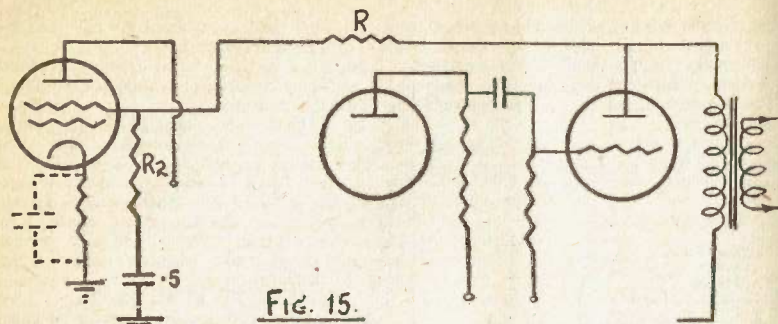


FIG. 15.

TONE CONTROLS.

Tone controls are often included in radios so that the individual can alter the nature of the sound to suit himself. The only common type of control is one which cuts off the high frequency sound with varying degrees of efficiency.

Perhaps a more important use for such a control is that it can be used to cut down noise considerably, since most static is in the high frequencies.

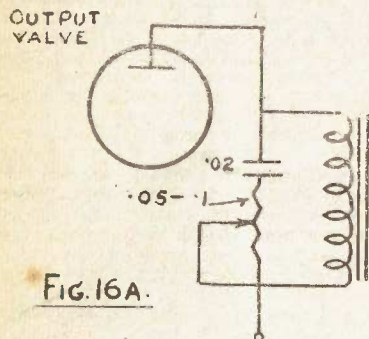


FIG. 16A.

The tone control can consist of a variable resistor and condenser in series, connected (preferably) across the output transformer (Fig. 16), or if it should be desired to earth the rotor of the pot., between the plate of the output valve and earth. If push pull is used they can be connected between the two grids

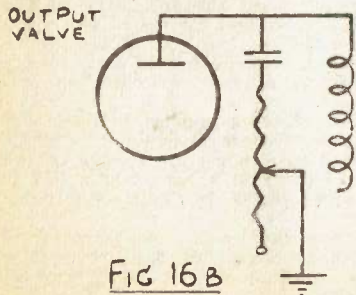


FIG 16B

of the output valves as shown in Fig. 17. The attenuation effect will be greater when there is less resistance in the circuit. The tone control could be made more efficient by fixing it so that when, turned to the high resistance end, the condenser and resistor are switched out of circuit. How this can be accomplished depends on the mechanical construction of the resistor used. Perhaps a good all-round method would be to cover the end of the resistance element with a coating of Insuvarn.

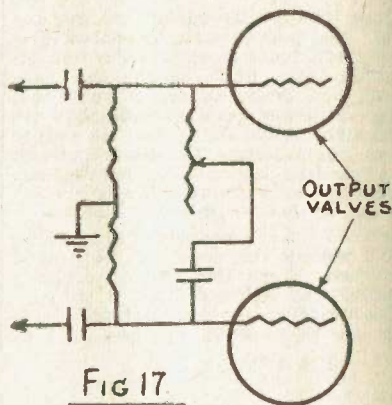


FIG 17.

This is by no means a complete treatise on the subject of amplifiers, but the amateur should have no difficulty in putting together a really first-class job with the information given.

Where tolerances in resistances and capacities are indicated, better results may be obtained by experimenting with the values.

This part of the radio gives a very large scope for experimenting. If amplifiers interest you, read all the literature on the subject that you can lay your hands on.

Now we come to the receiver proper. In practically all cases, this section is a one-valve circuit for a start. A regenerative detector is therefore employed. Several circuits are shown in Figs. 18-

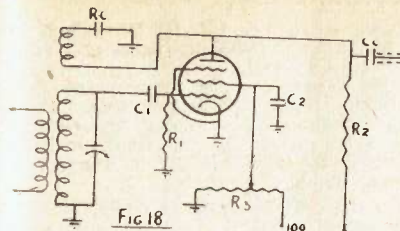


FIG. 18

20. Let us consider each component carefully and see if we can choose it to be of the greatest use later.

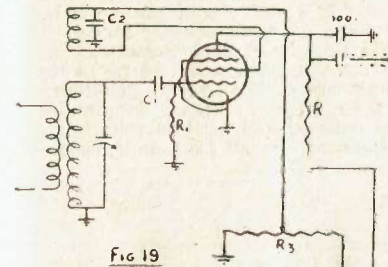


FIG 19

First the valve. Usually a 6J7 or 6C6 is chosen. Perhaps we could do better. When such a valve is finished with as a detector, the only job left for it is that of first audio. Now, a first audio is not so important, particularly as we are using (I hope) an EL3 output valve.

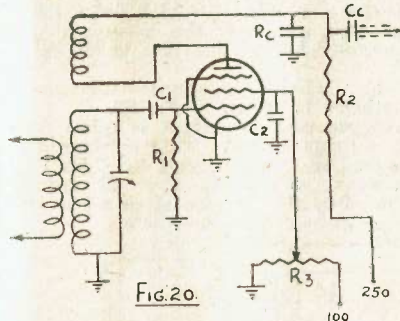


FIG.20.

How about a 6BS-G? Here we have two diodes as well as the pentode and thus more scope for experimenting. However, we can get a good R.F. pentode with two diodes attached, so it is not such a great advantage to have them on this valve. If the diodes were used as detector in a subsequent superhet, the pentode section would be used as 1st audio. It would be better to keep all the audio on the one chassis. I don't think this plan is so good.

Perhaps the best plan would be to use a converter valve. The only valve of this type at all suitable for the job of detector cum amplifier is the 6J8-G, and

various circuits have been designed around it. However, as it is not intended for the job, it is not the best that could be used. It is recommended because its use enables quicker progress. According to "Radio and Hobbies," when it is used with cathode earthed (i.e., zero bias) the output from the triode is somewhat distorted, and, although quite suitable for phones, wouldn't sound so hot when amplified for a speaker. If bias is employed, the output is reasonable, but since the injector grid is also at a negative potential to cathode, the pentode section does not operate as well. Well, there it is. You can try the set-up with or without bias and see if you can get satisfaction. Even if it means operating the valve disregarding the triode section completely, I think this valve is the best choice. A circuit of a resistance coupled Class A triode is illustrated.

So much for the valve. As was mentioned before, that is not the only consideration.

The coil presents no difficulty. Use either factory-made or home-made coils. Coil winding data has been published so often that it is not deemed necessary here. Remember that when an R.F. stage is added its coil must be of the same type as that used with the detector. If a factory-made reimartz coil is used, it will be necessary to use choke coupling when an R.F. stage is added. This is because the end of primary and secondary, which are earthed normally, are joined together inside, and the primary possibly isn't suitable for putting in the plate circuit, any way.

Only the first one or perhaps two sets will require a single gang condenser, so the best plan would be to get a two gang, or, if possible, a three gang for a start, and thus save the expense of the single gang.

C1 can be anything between .0001 and .0005. Usually .00025 mfd is chosen. This can be used in future circuits as an R.F. by-pass condenser. One meg. seems to be a good all-round value for a grid leak. If this value is chosen it is likely that it will fit into some other subsequent circuit. C2 is in the vicinity of 25 mfd. R2 is usually 250,000 ohms. Sometimes it is replaced by a choke of about 50 henries. This has low resistance but high impedance to audios.

Regeneration can be controlled by varying the screen voltage by means of a voltage divider system or by using a variable reaction condenser. The former method is preferred. If it is used the reaction condenser (R.C.) should have a capacity of about .0001 mfd. R3 would best be chosen so that it would come in useful in a later set. The potentiometer the set is most likely to want is a 1/2 meg. type which could be used as an audio vol. control. So one of this resist-

ance would be best. Although only small currents would flow through it, it is as well to get a pot. with a fairly solid-looking resistance strip in it. Some of the types intended only for work as an ordinary audio volume control are likely to burn out at the slightest provocation.

If the variable reaction condenser control is used, the screen voltage should be adjusted by means of a wire wound voltage divider. Otherwise R3 could be two 20,000 ohm resistors in series, the screen voltage being taken from their junction.

So much for the detector circuit.

First addition to this section of the radio will be that of an R.F. amplifier. The circuit of this was discussed earlier. So far as the valve type goes, it is the wisest plan to pick one with a very high transconductance. One of the best available is the Philips EBF2. It is much better than any of the American types. It also has the advantage of having a pair of diodes in the envelope with the pentode.

If we are using a converter valve as a detector and an EBF2 as R.F., we can count the set-up into a super without getting any more valves. A converter circuit is shown in Fig. 2 and was discussed earlier. The pentode section of the EBF2 remains in the same circuit as before, except that the R.F. coils are replaced by I.F. trannies and AVC is applied.

The circuit is as shown in Fig. 21. The amplifier, detector and AVC circuits do not in any way interfere with each other. Delayed AVC is used. With this system the signals are not affected unless they have an intensity greater than the voltage across the cathode resistors.

Since diode detection is employed, the audio will be practically distortion free.

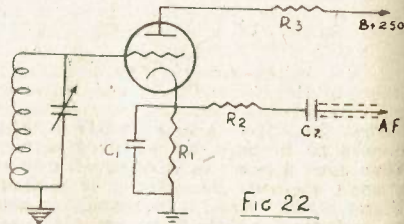
Circuit values are as follows:—R8, R1, R2, R3 can be somewhere around

$\frac{1}{2}$ meg.; C8, C1, C2, C3 are about .05 mfd.; C4 is .0005 or thereabouts, and C5 and C7 .0001.

R4 determines the amount of AVC action. Usually it is one meg. If the AVC action is too strong, try reducing its value; if it is too weak make it larger. R5 is .5, and R7 is .1 meg. R6 is calculated.

A 6G8—G or 6B8—G could be used instead of the EBF2G in this set-up, but to the marked detriment of the output.

The intermediate frequency could be either 465 Kc or 175 Kc. The latter frequency isn't used much now, because of double spotting and the necessity of providing extra pre-selector stages. With a 465 Kc IF and diode detection, the selectivity will perhaps not be up to the requirements of the average amateur, but by later incorporating an infinite impedance detector and variable selectivity, the receiver will be all that could be desired



from the point of view of selectivity and also tonal quality (provided distortion is not introduced after the detector stage). Altogether I think 465 Kcs. is the better IF.

This infinite impedance detector I mentioned is shown in Fig. 22.

As you see, the output is taken from the cathode circuit. This detector does not load the tuned circuit to which it is connected, and thus makes the set far more selective. It also gives a less distorted output than the diode.

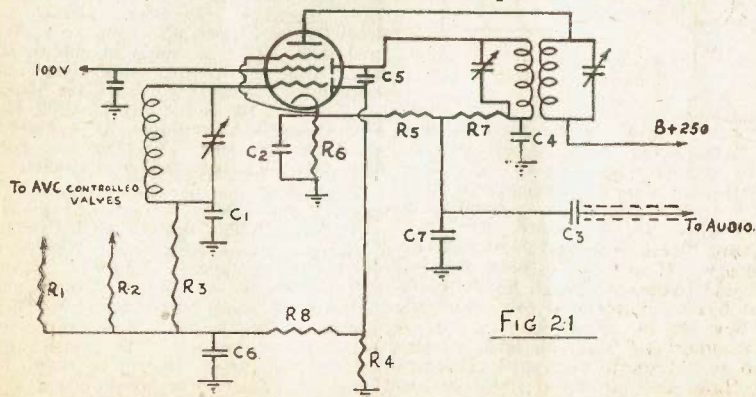


FIG 21

The valve used is a general purpose triode, such as the 6J5 or 6C5. C1 can be around .00025 and C2 .05 mfd. R1 is about .1 of a meg., R2 about 30,000 ohms, and R3 about 25,000.

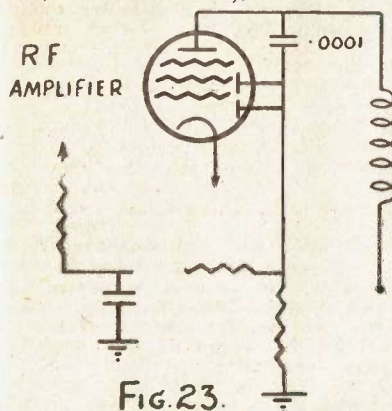


FIG. 23.

AVC voltage can be taken from the plate of the IF amplifier, and the diodes of this valve can be used as AVC diode (Fig. 23). Perhaps a better method would be to take the AVC signal from the plate circuit of the detector, as in a circuit recently shown in the "Australasian Radio World." This plan makes use of the amplification of the detector to get a larger AVC signal and thus a more efficient AVC system. The circuit of this arrangement is shown in Fig. 24. The bypass condenser between the RFC and the plate resistor is about .25 mfd.

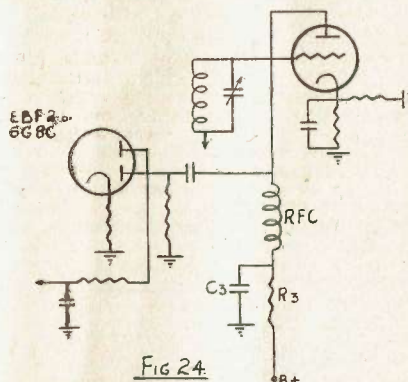


FIG 24

Getting back to where we were a while ago. If our two-valve T.R.F. set-up should happen to be an EBF2 as RF and a 6J7 as detector, a converter valve will have to be added to turn the set into a superhet. The 6J7 will be transferred to the audio section as preamplifier. Since the converter does not have to work as anything but a converter,

the characteristics we are looking for are those that indicate good operation as such. Philips have about the best available in the ECH35. (The 6A8 is best for medium or broadcast, while 6J8 gives better performance on short waves).

The main additions to the set as it stands now are those of extra R.F. and I.F. amplifiers. Each time an R.F. amplifier is added, an extra gang is needed on the tuning condenser. There is little point in adding more than one stage of R.F., so a three gang condenser would be a fairly good buy for a start. When adding extra R.F. and I.F. stages, medium gain valves like 6D6 or 6K7 should be used. Having more than two I.F. stages and one R.F. would be simply asking for trouble in the way of instability.

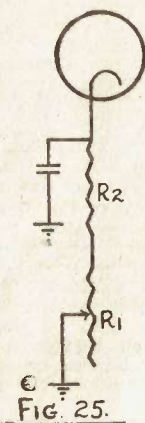


FIG. 25.

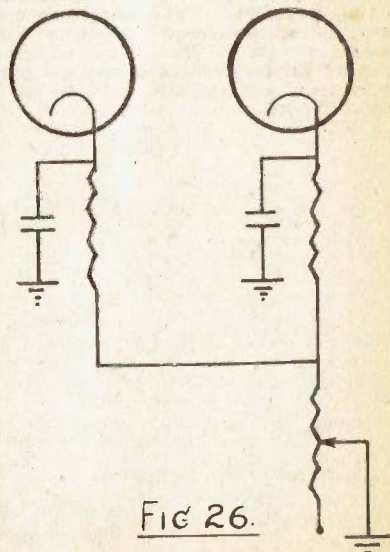


FIG 26.

On a superhet, C.W. morse signals come in with a sort of harsh "burp." That is, unless a beat frequency oscillator is built on to the set. The "burp" may be considered good enough by many, but if it is not, a beat oscillator must be used. This oscillator generates a frequency 400 or so cycles different to the I.F. If the signal and the output from this oscillator are "mixed" at the detector, the resultant frequency is the differ-

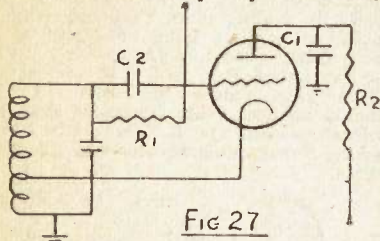


FIG 27

ence between these two frequencies. The circuit of the oscillator is shown in Fig. 27. It is the Hartley circuit, which is most commonly used for this purpose. The valve is a general purpose triode like the 6J5 or 6C5. The wire going from the oscillator is twisted around the lead to the diode plate of the detector. This gives enough coupling. All of this wire (except the twisted part) should be shielded. Take care to keep all of the oscillator well shielded. The coil or transformer itself should be available ready for the job. If they were not already on the transformer, C2 would be .00025, and R1 one or two megs. C1 is about .01. R2 should be about 75,000Ω.

A useful addition to any set is that of a tuning indicator. The most common of these is the "magic eye" using an "electron ray tube." The circuit shown in Fig. 28 can be adapted to any set using A.V.C. A suitable valve for the job is the 6U5/6G5.

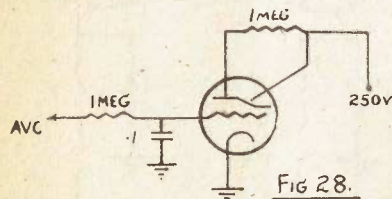


FIG 28.

Where several RF and IF valves are used, coupling between their plate circuits and their screen grid circuits is likely to cause trouble. This can be overcome by by-passing the plates and screens of these amplifiers efficiently. The screens will not give any trouble when they are by-passed simply as in Fig. 29. Separate dropping resistors are not necessary. C is about .1 mfd. for I.F.'s and .01 for R.F.'s. Fig. 30 shows

how the plates should be dealt with. L is the primary of any R.F. coil or I.F.T. C is chosen as before. Resistors R should be chosen so that the voltage drop across each is about ten volts. The B+ voltage could then be adjusted to 260.

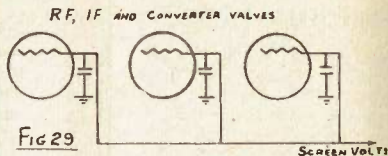


FIG 29

VARIABLE SELECTIVITY

Unfortunately, high fidelity and high selectivity are never synonymous. The effect of having high selectivity is to cut down the high frequencies. A superhet with two I.F. stages and one or two R.F. stages would have very poor high frequency response unless some method of decreasing the selectivity was provided, while if an infinite impedance detector were used with such a large set-up, the highs would be practically choked out of existence.

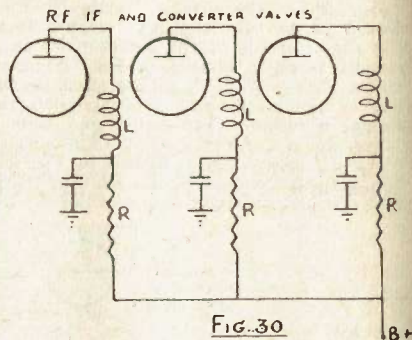


FIG.30

The best schemes for varying the selectivity of a receiver unfortunately involve the use of special intermediates, and I doubt if any of these are at present available in either New Zealand or Australia.

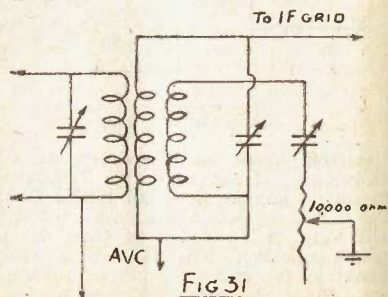


FIG 31

One type has an adjusting screw which varies the distance between the primary and the secondary—the further apart they are the greater the selectivity. Two other types have a third winding. If the "bottom" end of the third winding is connected to the "bottom" end of the secondary, the circuit of the control used would be like that shown in Fig. 31. The trimmer shown would probably be built into the I.F.T., but if it was not, it should be of such capacity as to tune the third winding to the intermediate frequency. If the ends of the third winding were not connected to anything inside the I.F.T., the simplest method would be to connect a variable resistor of about 5000Ω across it. (Fig. 32.)

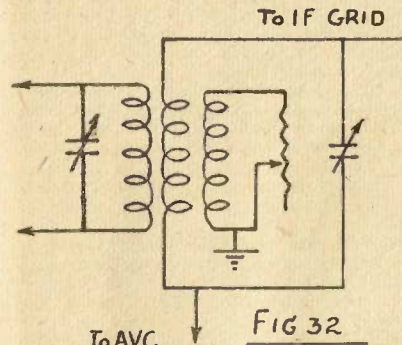


FIG 32

If none of these types are available (or the prices are a bit fancy) the best plan in regard to the intermediates is to get only medium efficiency types. With a small set-up using diode detection, the selectivity wouldn't be so hot, but this could be overcome by switching to an infinite impedance detector. Then, when the selectivity became too high with this detector, the diode could be resorted to.

Besides those using special I.F.'s, the only system for variable selectivity that your writer can recommend is that of switching resistors across one or two of the I.F.'s. A suitable arrangement is shown in Fig. 33. The value of R1 (the minimum value of the combined resistance) depends quite a bit on the selectivity of the set. Values suggested are 30,000 ohms, 50,000 ohms, and 100,000 ohms. R2 could be about one-half or one meg. The bottom end of R2 should be covered with a layer of Insuvarn, so that, for maximum selectivity, the resistors would be switched out of circuit.

The main fault with this system is that as the selecting is decreased, the signal strength is decreased. But as a highly-selective set has also a high gain, and signals which would be made too soft by switching in the resistors would be accompanied by so much noise as to warrant the attenuation of the highs;

and so the resistors would be better left out of circuit.

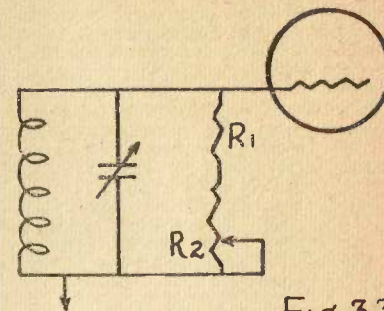


FIG 33

LAY-OUT OF THE RECEIVER

In the first receivers built, lay-out is of minor importance. By this I don't mean that you can just make a hash of the job with tangled wires and haphazardly placed components and then expect A1 performance. The matter just isn't critical. The main thing is to make sure that (assuming you are using a much smaller chassis than you need) you don't cut the chassis about so that when you come to larger sets you'd wish you hadn't.

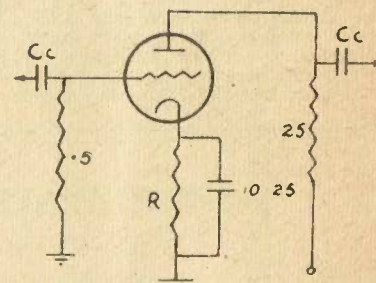


FIG 34

A "stage by stage" procedure is the usual thing and seems to me the best plan. With a TRF set, leads to a wave change switch (if desired) can go anywhere without trouble, and so the lay-out is not thus complicated. But even with the simplest superhet, it is as well to keep such wires as short as possible and away from other stages. Since it is the first stages of the receiver that are connected to the wave change switch, and the wave change switch is situated at the front of the receiver, it follows that the early stages of the receiver will have to be at the front of the receiver also. The same goes for any other controls.

A fair bit of practice is necessary in designing good lay-outs. With big sets, unless the stages are fairly well isolated,

the set is liable to give trouble in the way of instability and oscillation. Such trouble may be effectively overcome by increasing the bias on the I.F. amplifiers. If it is not, the only thing to do apart from re-designing the whole layout, is to use a lot of shielding under the chassis—preferably to shield each circuit from every other one. Wires running from circuit to circuit would then pass through holes drilled in the shielding. Little need be said about the actual wiring. A good plan is to run the heavy filament wires around the edge of the chassis, and work outwards from the centre of the chassis with the B+ wires. Otherwise it is just a matter of commonsense.

All valves on this chassis should be shielded, as should be the first valve on the audio chassis. The metal sprayed, or metal types, of course, do not require shields.

Now a few general remarks.

Always make sure that the voltage and wattage ratings of the condensers and resistors are sufficiently high. A good plan is to calculate the voltage or wattage the component has to take, multiply by $1\frac{1}{2}$, and use a component of the next highest rating (unless the value found is only a little above a standard rating).

The filament leads should be made as short as possible and should be made of the heaviest wire available. The wire running from the output of the detector to the input of the audio amplifier

should be shielded. Preferably, it should be led into the audio section by means of a banana plug. Remember that all shields must be earthed.

If the idea of considering a circuit as being made up of a number of separate circuits is new to you, or you have been hazy on the matter, you would do well to practise separating any existing circuits you can find into their different parts before trying any designing. The main thing to consider when designing is to make sure that all the parts used can be used again if possible. For example, when you have a small superhet you may wish to switch to infinite impedance detection to get greater selectivity. Then when further stages have been added, making the set selective enough with diode detection, the value used for the inf. imp. detector can be switched over to the audio as a phase splitter or something.

Even when you think you have grasped the art of designing your own circuits, don't look the other way and sniff when you see other circuits. Look them over right from aerial to speaker, and if they contain any unusual or interesting features, make a note of them, mental or otherwise.

Even if you could fly straight into a superhet for your first set, without any financial worries, start off with smaller jobs. There's nothing like a bit of experience.

As I mentioned before, an important thing is to read as much radio literature as you can—both practical and theoretical.

SHORT-WAVE COIL DATA

H. VERNON WHEATLEY

Coil data over a comprehensive range is a very handy thing to have, and this table covers most eventualities.

In the first column you will note that it gives the popular sizes. In deciding the tuning range, one must have some idea as to the maximum and minimum capacity of the tuning condenser, for this information tells you the wavelength coverage of the coil you select. The lower the minimum capacity of any tuning condenser, the greater the actual tuning range of any L/C combination, the range extending on the lower end of the wavelength.

In noting the tables you will observe that for all combinations a minimum capacity of 30 mmfs. has been selected for the computation of the highest tunable frequency (lowest wavelength). This value was chosen because it is fairly average. The actual wiring needed to

connect the coil to the other components in the receiver will alter the range of the coil slightly, but this may be safely disregarded. The extension of the range is only minute, you do not have to worry about it with other coil data, and neither do you have to with this table.

The table is easy to follow, and here is an example. We have a lin. former, some 18 S.W.G. wire, and a .00015 mfd. tuning condenser—maximum capacity. We plan to wind a coil which will tune to 18 metres. Looking at the table we find in the former column for lin. using 18 S.W.G. and moving along to the maximum tuning column under .00015, that with a winding of $5\frac{1}{2}$ turns, wound over a width of half an inch, which is spaced at $10\frac{1}{2}$ turns per inch, we will have a coil capable of tuning from 8.75 to 19.5 metres. Similarly, but using a .0001 mfd. condenser, the range will be

from 8.75 to 16 metres. Using a .00035 mfd. condenser, the range covered will be from 8.75 to 30 metres.

The table gives sizes for secondary windings.

To calculate aerial turns, the following rule should be adhered to:—

10 metres up to 25 metres—3 turns close-wound.

25 metres to 50 metres—5 turns close-wound.

50 metres to 100 metres—7 turns close-wound.

The number of turns are irrespective of size of former, and are wound $\frac{1}{2}$ in. away from the secondary, depending upon the degree of coupling desired.

When correctly spaced, they are cemented into place. Less turns may be used.

The same applies to reaction windings also. A general guide as to the number of turns is:

10 to 15 metres—2 turns close-wound.

15 to 40 metres—3 turns close-wound.

40 to 100 metres—7 turns close-wound.

If regeneration fails to materialise, move winding closer to the secondary, add turns or increase B+ detector voltage. Should regeneration be uncontrollable, move reaction winding away from the secondary, remove turns or reduce B+ detector voltage.

SHORTWAVE COIL DATA TABLE

Dia. of Former.	S.W.G.	T. per 1" Spaced One Dia. of S.W.G.	No. of Turns.	Length of Winding.	Range .0001		Min. Cap. 30 mmfd.	
					Max.	Max.	.00015 Max.	.00035 Max.
$\frac{1}{2}$ "	18	$10\frac{1}{2}$	$5\frac{1}{2}$	$\frac{1}{2}$ "	5	9	11	16
$\frac{1}{2}$ "	18	$10\frac{1}{2}$	$10\frac{1}{2}$	1"	7.5	13.5	17	26
$\frac{3}{4}$ "	18	$10\frac{1}{2}$	$5\frac{1}{2}$	$\frac{3}{4}$ "	6.75	12.5	15.5	24.5
$\frac{3}{4}$ "	18	$10\frac{1}{2}$	$10\frac{1}{2}$	1"	11	20	24.5	37
$\frac{3}{4}$ "	18	$10\frac{1}{2}$	$5\frac{1}{2}$	$\frac{1}{2}$ "	8	14.5	17.5	26.5
1"	18	$10\frac{1}{2}$	$5\frac{1}{2}$	$\frac{1}{2}$ "	8.75	16	19.5	30
1"	18	$10\frac{1}{2}$	$10\frac{1}{2}$	1"	14	25.5	31	47
1"	18	$10\frac{1}{2}$	$15\frac{3}{4}$	$1\frac{1}{2}$ "	18	33.5	40	62
$1\frac{1}{4}$ "	18	$10\frac{1}{2}$	$5\frac{1}{2}$	$\frac{1}{2}$ "	10.5	19	23.5	36
$1\frac{1}{4}$ "	18	$10\frac{1}{2}$	$7\frac{3}{8}$	$\frac{3}{4}$ "	14.5	26	31.5	49.5
$1\frac{1}{4}$ "	18	$10\frac{1}{2}$	$10\frac{1}{2}$	1"	17	31.5	38.5	58
$1\frac{1}{4}$ "	18	$10\frac{1}{2}$	$15\frac{3}{4}$	$1\frac{1}{2}$ "	23	42	50	73
$1\frac{1}{2}$ "	18	$10\frac{1}{2}$	$10\frac{1}{2}$	1"	20	36	44	67
$1\frac{1}{2}$ "	18	$10\frac{1}{2}$	$15\frac{3}{4}$	$1\frac{1}{2}$ "	26.5	48	58	90
$1\frac{1}{2}$ "	20	14	7	$\frac{1}{2}$ "	14	25.5	31	47
$1\frac{1}{2}$ "	20	14	14	1"	23	42	51	74
$1\frac{1}{2}$ "	20	14	21	$1\frac{1}{2}$ "	30	55	67	103
$1\frac{1}{2}$ "	20	14	7	$\frac{1}{2}$ "	16	29	35.5	54
$1\frac{1}{2}$ "	20	14	14	1"	26.5	48	59	90
$1\frac{1}{2}$ "	20	14	21	$1\frac{1}{2}$ "	35	63	78	120
$1\frac{1}{4}$ "	22	18	9	$\frac{1}{2}$ "	18	33	40	61
$1\frac{1}{4}$ "	22	18	$13\frac{1}{2}$	$\frac{3}{4}$ "	25	45	55	82
$1\frac{1}{4}$ "	22	18	18	1"	30	53	65	100
$1\frac{1}{4}$ "	22	18	27	$1\frac{1}{2}$ "	39	70	85	135
$1\frac{1}{2}$ "	22	18	9	$\frac{1}{2}$ "	20	36.5	46	70
$1\frac{1}{2}$ "	22	18	$13\frac{1}{2}$	$\frac{3}{4}$ "	28	51	62	96
$1\frac{1}{2}$ "	22	18	18	1"	34	62	76	115
$1\frac{1}{2}$ "	22	18	27	$1\frac{1}{2}$ "	45	83	100	150
$1\frac{1}{4}$ "	24	$22\frac{1}{2}$	$11\frac{1}{2}$	$\frac{1}{2}$ "	22	41	50	76
$1\frac{1}{4}$ "	24	$22\frac{1}{2}$	$16\frac{3}{4}$	$\frac{3}{4}$ "	31	55	68	105
$1\frac{1}{4}$ "	24	$22\frac{1}{2}$	$22\frac{1}{2}$	1"	36.5	65.5	80	125
$1\frac{1}{4}$ "	24	$22\frac{1}{2}$	28	$1\frac{1}{4}$ "	43	78	95	147
$1\frac{1}{4}$ "	24	$22\frac{1}{2}$	$33\frac{3}{4}$	$1\frac{1}{2}$ "	48.5	88	107	165
$1\frac{1}{2}$ "	24	$22\frac{1}{2}$	$11\frac{1}{2}$	$\frac{1}{2}$ "	26	47	57	88
$1\frac{1}{2}$ "	24	$22\frac{1}{2}$	$16\frac{3}{8}$	$\frac{3}{4}$ "	35	63	78	120
$1\frac{1}{2}$ "	24	$22\frac{1}{2}$	$22\frac{1}{2}$	1"	43	78	94	145
$1\frac{1}{2}$ "	24	$22\frac{1}{2}$	28	$1\frac{1}{4}$ "	50	91	110	170
$1\frac{1}{2}$ "	24	$22\frac{1}{2}$	$33\frac{3}{4}$	$1\frac{1}{2}$ "	56.5	103	125	192

SHORT WAVE STATIONS OF THE WORLD

Complete list of all short wave stations, in operation, or which may become active in the future. Stations marked with an asterisk are not active at present, but news of these will be found in the "Girdling the Globe" pages of the "Radiogram" when they take the air, or when the frequencies are taken into operation again. Compiled by your DX Adviser, Arthur T. Cushen, 212 Earn Street, Invercargill.

ALL TIMES NEW ZEALAND DAYLIGHT SAVING TIMES.

Call. and Location.	Frequency Kilo. Power in cycles. Watts.	Schedule, Slogan, English News Periods, etc.
*TG3—Guatemala City, Guat.	2320 300	"Radio Morse."
*ZQI—Kingston, Jamaica	2330 200	
HOA—Panama City, Panama	2340 300	"La Voz de la Democracia."
WVW—Washington, D.C.	2500 1,000	Frequency check station.
—Keijo, Chosen	2510 —	American recordings, 12.30 a.m.
—Souel, Korea	2510 —	English News, 10.05 p.m.
*GRC—London, England	2880 50,000	
*YDA—Batavia, Java	3030 10,000	
HDZ—Riobamba, Ecuador	3228 250	"La Voz del Chimborazo."
VUC2—Calcutta, India	3305 10,000	News, 1 a.m.
YV1RO—Trujillo, Venezuela	3310 2,000	"Radio Trujillo," 10 a.m.-2.30 p.m.
VUD3—Delhi, India	3335 10,000	News, 1 a.m.
*Teheran, Iran	3340 2,000	"Radio Teheran."
*VUB2—Bombay, India	3365 10,000	
YV1RT—Maracaibo, Venezuela	3370 1,000	"La Voz de la Fe," 10.30 a.m.-3.30 p.m.
YV5RY—Caracas, Venezuela	3380 2,000	"Radio Continente," 10.30 p.m.-3.30 p.m.
YV4RK—Maracay, Venezuela	3390 500	"Radio Maracay," 11 a.m.-3.30 p.m.
Colombo, Ceylon	3395 700	12.30-4.00 a.m.
YV5RW—Caracas, Venezuela	3400 1,100	"Radio Tropical," 11 a.m.-3.30 p.m.
YV2RC—Merida, Venezuela	3420 600	"La Voz de la Sierra," to 3.30 p.m.
*VONI—St. John's, Newfoundland	3420 300	
*LRS—Buenos Aires, Argentina	3430 —	
*VUM2—Madras, India	3435 10,000	
YV1RU—Maracaibo, Venez.	3440 1,000	"Radio Maracaibo," to 2.30 p.m.
*Johannesburg, South Africa	3450 —	
YV7RB—Cumaná, Venezuela	3450 500	"Radio Sucre," 9.30 a.m.-2.30 p.m.
YV4RP—Valencia, Venezuela	3460 1,000	"Radio Valencia," 1-3.30 p.m.
*HNC—Bagdad, Iraq	3478 5,000	
YV4RQ—Puerto, Cabello, Ven.	3480 900	"Radio Puerto Cabello," to 2.20 p.m.
*XZZ—Rangoon, Burma	3488 1,200	
CR7AB—Lourenco Marques, Mozambique	3490 600	8.30 p.m.-11 p.m.
YV3RS—Barquisimeto, Ven.	3490 4,000	"Radiodifusora Occidental."
VUD2—Delhi, India	3495 10,000	News, 1 a.m.
YV5RX—Caracas, Ven.	3500 1,500	"La Voz de la Patria," 2.30 p.m.
YV6RC—Barcelona, Ven.	3510 1,000	"Emisoras Unidas," 11 a.m.-3.30 p.m.
YV5RS—Caracas, Venezuela	3525 2,000	"Radio Libertador," 10 a.m.-3.30 p.m.
*HCK—Quito, Ecuador	3529 300	
YV5RD—Caracas, Venezuela	3570 500	"Radio Cultura," noon-2.55 p.m.
*HCT—Guayaquil, Ecuador	3571 2,000	
*HCVT—Ambato, Ecuador	3708 250	"La Voz de Tungurahua."
*HCQRX—Quito, Ecuador	3710 300	"Radio Quito."
HC11M—Ibarra, Ecuador	4020 300	"La Voz de Imbabura," noon-3 p.m.
Ponta Delgada, Azores	4040 1,000	"Radio Nacional," 8-9 a.m.
HCJB—Quito, Ecuador	4105 200	"La Voz de los Andes," 11 a.m.-3.30 p.m.
*HCGE—Quito, Ecuador	4108 200	
HC1AO—Cuenca, Ecuador	4200 200	"La Voz de Tomebamba."
HHCA—Port-au-Prince, Haiti	4600 750	10 a.m.-2.30 p.m.
HC2AK—Guayaquil, Ecuador	4650 1,000	"Radio Ecuador," 11 a.m.-4.30 p.m.
*ZQI—Kingston, Jamaica	4700 200	
HC2ET—Guayaquil, Ecuador	4720 300	"Radio El Telegrafo," 10.30 a.m.-4.30 p.m.
YV1RV—Maracaibo, Ven.	4750 300	"Ecos del Zulia," 11 a.m.-2.30 p.m.
YV5RV—La Guaira, Venezuela	4760 1,000	"Emisora Vargas," 11 a.m.-2.30 p.m.
YV1RY—Coro, Venezuela	4770 300	"Radio Coro," 9 a.m.-3.10 p.m.
HJGB—Bucaramanga, Colombia	4775 1,500	"Radio Santander," 11 a.m.-2.45 p.m.
*HND—Bagdad, Iraq	4777 5,000	
YV4RO—Valencia, Venezuela	4780 300	"La Voz de Carabobo," 9.30 a.m.-2.30 p.m.
*HJAB—Barranquilla, Colombia	4785 1,000	"La Voz de Barranquilla."
YV6RU—Ciudad Bolívar, Ven.	4790 1,000	"Ecis del Orinoco," 10.30 a.m.-2.30 p.m.
HJDX—Medellin, Colombia	4795 750	"Ecos de la Montana," 10.30 a.m.-2.30 p.m.
HUB—San Salvador, El. Salv.	4795 300	"Alma Cuscatleca," 1.30-4 p.m.

Call and Location.	Frequency Kilo- Power in cycles. Watts.	Schedule, Slogan, English News Periods, etc.
YV1RX—Maracaibo, Venezuela	4800 2,000	"Ondas Del Lago," 10.30 a.m.-2.30 p.m.
HJDU—Medellin, Colombia	4805 750	"Emisora Cultural," 10 a.m.-3 p.m.
St. Denis, Reunion Is.	4807 80	
Saigon, Indo-China	4810 12,000	News, 10.30 p.m.
YV1RL—Maracaibo, Venezuela	4810 400	"Radio Popular," 11.30 a.m.-3.30 p.m.
HJBB—Cucuta, Colombia	4815 750	"La Voz de Cucuta," 10 a.m.-3 p.m.
*HCK—Quito, Ecuador	4818 5,000	"Radio Nacional."
*CE482—Antofagasta, Chile	4820 5,000	"La Voz del Norte."
XEJG—Guadalajara, Mexico	4820 200	3-4 p.m.
PRJ4—Parnaiba, Brazil	4825 500	"Radio Educadora de Parnaiba."
HJED—Call, Colombia	4825 1,000	"La Voz del Valle," noon-3.32 p.m.
*EQD—Teheran, Iran	4830 2,000	"Radio Teheran."
Bogota, Colombia	4835 5,000	"Radio Continental de Bogota."
VUC2—Calcutta, India	4840 10,000	
YV1RZ—Valera, Venezuela	4840 300	"Radio Valera," 11 a.m.-2.40 p.m.
HJGF—Bucaramanga, Colombia	4845 1,000	"Radio Bucaramanga," 1.3 p.m.
HJCA—Bogota, Colombia	4855 1,000	"Radio Cristal," noon-3-10 p.m.
*YDX—Madan, Sumatra	4855 500	
VUD3—Delhi, India	4860 5,000	
YV5RU—Caracas, Venezuela	4860 5,000	"Ondas Populares," 9.30 a.m.-4 p.m.
PRC5—Belem, Para, Brazil	4865 2,000	"Radio Club de Para," 11 a.m.-noon.
HJEX—Call, Colombia	4865 2,500	"Radio Pacifico," noon-3 p.m.
HJFH—Armenia, Colombia	4875 3,000	"La Voz de Armenia," 10.45 p.m.-3 p.m.
*ZAA—Tirana, Albania	4880 3,000	"Radio Tirana."
VUB2—Bombay, India	4880 10,000	
HJDP—Medellin, Colombia	4885 2,500	"Emisora Claridad," 11 a.m.-3 p.m.
PRF6—Manaos, Brazil	4893 100	"Governo del Estado do Amazonas,"
Colombo, Ceylon	4900 —	Relays ZOH, 1-4.20 a.m.; News, 1-3 a.m.
VUM2—Madras, India	4920 10,000	1-2.30 a.m.
*CR7BO—Lourenco Marques, Mozambique	4920 —	
YV5RN—Caracas, Venezuela	4920 5,000	"Radio Caracas," 11 p.m.-5 a.m., 9 a.m.-3.30 p.m.
HJAP—Cartagena, Colombia	4930 750	"Radio Colonial," 11 p.m.-6 a.m., noon-3 p.m.
HJCVW—Bogota, Colombia	4945 1,000	"Emisora Sur America," 11.45 p.m.-4.15 p.m.
VQ7LO—Nairobi, Kenya	4950 1,500	4-7 a.m.; News, 6.15 a.m.
*YVCK—Caracas, Venezuela	4950 10,000	"Radiodifusora Nacional."
HJQO—Bogota, Colombia	4955 1,000	"Radiodifusora Nacional," 10 a.m.-4 p.m.
VUD2—Delhi, India	4960 10,000	News, 1 a.m.
HJAE—Cartagena, Colombia	4965 750	"Laboratorios Fuentes," noon-3.30 p.m.
YV5RM—Caracas, Venezuela	4970 5,000	"Radiodifusora Venez," 10.30 p.m.-3 p.m.
HJAG—Barranquilla, Colombia	4975 450	"Emisora Atlantica," noon-4-15 p.m.
YV5RN—Barquisimeto, Venez.	4990 4,000	"Radio Barquisimeto," 11 a.m.-3.30 p.m.
WVW—Washington, D.C.	5000 10,000	Frequency check station.
*TFI—Reykjavik, Iceland	5058 7,000	
*PMY—Bandoeng, Java	5145 225	
*OAX3A—Huanuco, Peru	5565 500	"Radio Huanuco."
OAX1B—Piura, Peru	5575 —	"Radio Piura," 11 a.m.-5 p.m.
*HACJ—Tulcan, Ecuador	5580 —	"La Voz del Carchi."
OAX2A—Trujillo, Peru	5620 250	"Radio Trujillo," 11.30 a.m.-5 p.m.
MTCY—Hsinking, Manchukuo	5710 20,000	
HC1PM—Quito, Ecuador	5725 150	"El Palomar," 11.15 a.m.-5.05 p.m.
PZX—Paramaribo, Surinam	5750 750	11 a.m.-1.45 p.m.
YNJAT—Leon, Nicaragua	5758 500	"La Voz del Aire," 11 a.m.-2 p.m.
*Rangoon, Burma	5770 —	
*Brazzaville, Fr. Eq. Africa	5858 —	"Radio Club."
CR7AA—Lourenco Marques, Mozambique	5860 300	
HRN—Tegucigalpa, Honduras	5875 750	"La Voz de Honduras," 1-3 a.m., 11 a.m.-4 p.m.
*CP15—La Paz, Bolivia	5880 1,000	"Radio El Condor."
*YNCS—Managua, Nicaragua	5880 —	
CE8AA—Santiago, Chile	5885 500	"Radio Soc. Nacional de Agricultura."
*HCK—Quito, Ecuador	5885 300	"Radio Nacional."
ZRK—Capetown, South Africa	5885 5,000	3.30-9.10 a.m., News.
Moscow, U.S.S.R.	5890 —	
OAX4Z—Lima, Peru	5895 14,000	"Radio Nac. de Peru," 11 a.m.-4.30 p.m.
*XGOA—Chungking	5920 4,000	"The Voice of China."
*PJC1—Willemssted, Curacao	5935 3,000	"Radio Princess Juliana."
OAX4V—Lima, Peru	5940 500	"Radio America," 2-5 p.m.
HH2S—Port-au-Prince, Haiti	5950 300	10 a.m.-2.40 p.m.
VONH—St. Johns, Newfoundland	5970 300	2-6 a.m., 10 a.m.-2.15 p.m.
HVJ—Vatican City, Vatican	5970 25,000	News for Britain, 7.15 a.m.
HCQRX—Quito, Ecuador	5972 250	"Radio Quito," 11.45 p.m.-3.45 p.m.

Call and Location.	Frequency		Schedule, Slogan, English News Periods, etc.
	Kilo-cycles.	Power in Watts.	
YCW—Santa Ana, El Salvador	5980	—	9-10 a.m.
OAX4P—Huancaayo, Peru	5980	250	"Radio Huancayo."
LR51—Buenos Aires, Argentina	5985	5,000	"Radio Splendid," 10 a.m.-3 p.m.
*WNRX—New York, U.S.A.	5985	50,000	
*H13U—Santiago, D.R.	5990	200	"La Voz del Comercio."
Andorra, Andorra	5997	—	"Radio Andorra," 10 p.m.-10.30 a.m.
*PR13—Belo Horizonte, Brazil	6000	5,000	"Radio Inconfidencia."
ZFY—Georgetown, Br. Guiana	6000	1,000	"Voice of Guiana," 10.40 p.m.-12.15 p.m.
*ZOY—Accra, Gold Coast	6000	5,000	
VE9AI—Edmonton, Canada	6005	—	2-6.05 p.m.; News, 5 p.m.
CFCX—Montreal, Canada	6005	75	Midnight, 3.15 p.m.
HP5K—Colon, Panama	6005	250	"La Voz de la Victor," 12.05 a.m.-4 p.m.
*XYZ—Rangoon, Burma	6007	—	
ZR14—Johannesburg, Sth. Africa	6007	5,000	3-4 a.m.
CJXC—Sydney, N.S., Canada	6010	1,000	11.55 p.m.-4 p.m.
CE601—Antofagasta, Chile	6010	5,000	"La Voz del Norte," 2-4 p.m.
OLR2A—Prague, Czechoslovakia	6010	30,000	7-10.15 a.m.; English 8.00 a.m.
GRB—London, England	6010	50,000	European Service.
VUC2—Calcutta, India	6010	10,000	
*VUD2—Delhi, India	6010	10,000	
OAX4Q—Lima, Peru	6010	2,000	"Radio Victoria."
PR48—Recife, Brazil	6012	5,000	"Radio Club Pernambuco."
*H13U—Santiago, Dom. Rep.	6015	200	"La Voz del Comercio."
JLR—Tokio (A.F.R.N.)	6015	50,000	Forces programme to 9 p.m.
XE01—Mexico City, Mexico	6015	1,000	"Radio Mil," to 6 p.m. and later.
HJCX—Bogota, Colombia	6018	750	"La Voz de Colombia," 12-1 a.m., to 4 p.m.
*CP41—Sucre, Bolivia	6020	250	"Radio Charcas."
Luxembourg, Luxembourg	6020	—	
XEUW—Vera Cruz, Mexico	6020	250	Midnight-5.45 p.m.
H11J—San Pedro de Macoris, D.R.	6025	250	10.35 a.m.-1.30 p.m.
IRF—Rome, Italy	6025	—	4.30-7.40 a.m.
CFVP—Calgary, Canada	6030	100	12.30 a.m.-6 p.m., News 5 p.m.
*OLR2B—Prague, Czechoslovakia	6030	30,000	
XEKW—Morelia, Mexico	6030	500	"El Eco de Michoacan" to 4 p.m.
*CR7AA—Lourenco Marques, Mozambique	6030	300	
HP5B—Panama City, Panama	6030	150	"Radio Miramar," 11 a.m.-4 p.m.
*MTCY—Hsinking, Manchukuo	6035	20,000	
GWS—London, England	6035	50,000	European Service.
OAX6B—Arequipa, Peru	6035	150	"Radio Sur," 11 a.m.-noon.
CXA30—Montevideo, Uruguay	6035	800	"Radio Nacional," 10 a.m.-3 p.m.
Algiers, Algeria	6040	50,000	"Voice of America in Nth. Africa."
*KZIB—Manila, Philippines	6040	1,000	
COBF—Havana, Cuba	6040	1,000	"Radio Libertad," 1 a.m.-4 p.m.
WRUA—Boston, U.S.A.	6040	20,000	To South America, 1.30-6 p.m.
Rangoon, Burma	6045	7,500	4.15-5 p.m., 12.15-1 a.m., news, 4.30 p.m.
*CE604—Santiago, Chile	6045	—	Relays CE106.
XETW—Tampico, Mexico	6045	100	"La Voz de Tampico," 4.45 a.m.-4.45 p.m.
GSA—London, England	6050	50,000	European Service.
*HP5F—Colon, Panama	6050	200	"La Voz de Colon."
*OAX6A—Arequipa, Peru	6050	250	"Radio Arequipa."
HJFA—Pereira, Colombia	6055	750	"La Voz de Pereira," 11.30 a.m.-3.20 p.m.
*CP47—Cochabamba, Bolivia	6060	—	"Radio Popular."
*OXY—Skemlebak, Denmark	6060	6,000	
*KNBA—San Francisco, Calif.	6060	50,000	
KNBI—San Francisco, Calif.	6060	50,000	News, 10, 11 p.m.
WCBN—New York, U.S.A.	6060	50,000	To South America, 11.30 a.m.-6 p.m.
*VUD3—Delhi, India	6060	5,000	
*LR51—Buenos Aires, Argentina	6065	5,000	"Radio Splendid."
*TIWS—Puntenenas, Costa Rica	6065	500	"Ecos del Pacifico."
*SBO—Stockholm, Sweden	6065	12,000	
Tetuan, Spanish Morocco	6067	1,500	"Radio Tetuan," 7.30-8 p.m.
CXA14—Montevideo, Uruguay	6068	6,000	"Radio Electrica."
CFR—Toronto, Canada	6070	1,000	From 10.45 p.m.
GRR—London, England	6070	50,000	GFP to 3.30 p.m.
*CXA3—Montevideo, Uruguay	6075	1,000	"Radio Ariel."
CKFX—Vancouver, Canada	6080	10	2 a.m.-6.45 p.m.
*WLWK—Cincinnati, Ohio	6080	50,000	
AFN—Munich, Germany	6080	50,000	4.55-8.45 p.m., 5.30 a.m.-1 p.m.
*ZAA—Tirana, Albania	6084	3,000	"Radio Tirana."
*VUM2—Madras, India	6085	10,000	
LRV-1—Buenos Aires, Argentina	6090	25,000	"Radio Belgrano," from 10.45 p.m.
ZNS—Nassau, Bahamas	6090	200	12.45-1.15 a.m., 9 a.m.-2.05 p.m.
*CKOB—Sackville, N.B., Canada	6090	50,000	
Radio Luxembourg, Luxembourg	6090	—	English, 7.00-8.00 a.m., Mondays.

Call and Location.	Frequency		Schedule, Slogan, English News Periods, etc.
	Kilo-cycles.	Power in Watts.	
CBFW—Montreal, Canada	6090	7,500	12.30 a.m.-4.30 p.m.
*ZBW2—Hongkong, China	6090	2,500	
*GWM—London, England	6090	50,000	
*XEBF—Jalapa, Mexico	6090	250	"La Amiga del Hogar."
*KGEI—San Francisco, Calif.	6090	50,000	
ZYB7—Sao Paulo, Brazil	6095	5,000	"Radiodiusoar Sao Paulo," to 3 p.m.
Singapore, Malaya	6095	25,000	10.30-11.45 p.m., midnight-3.30 a.m., News 2.30.
*ZHJ—Penang, Malaya	6045	1,000	
*VUD7—Delhi, India	6100	100,000	"All India Radio."
*KZRH—Manila, Philippines	6100	1,000	
*KROJ—Los Angeles, Calif.	6100	15,000	
*WNRX—New York, U.S.A.	6100	50,000	
Warsaw, Poland	6100	—	News, 8 a.m.
XRR4—Peiping, China	6103	—	10.30 p.m.-4 a.m.
PRE9—Fortalzoa, Brazil	6105	5,000	"Ceara Radio Club."
HJFK—Pereira, Colombia	6105	2,500	"La Voz Amiga," 9 a.m.-3.30 p.m.
*CP2—La Paz, Bolivia	6110	5,000	"Radio Nac. de Bolivia."
YUA—Belgrade, Yugoslavia	6110	10,000	
GSL—London, England	6110	50,000	2.15-4.45 p.m. to North America.
*KZRC—Cebu City, Philippines	6110	1,000	
*OLR2C—Prague, Czechoslovakia	6115	30,000	
LRX1—Buenos Aires, Argentina	6120	10,000	2.45 a.m.-1.05 p.m.
VQ7LO—Nairobi, Kenya	6114	1,500	2.45-7 a.m., news 6.15 a.m.
*OIX1—Helsinki, Finland	6120	10,000	
KRHO—Honolulu, Hawaii	6120	100,000	From 9 p.m. News on the hour.
WOOW—New York, U.S.A.	6120	50,000	5-8.15 p.m.
*HP5H—Panama City, Panama	6122	600	"La Voz del Pueblo."
H11G—Ciudad Trujillo, Dom. Rep.	6125	150	"Radio la Opinion," 10.30 p.m.-1.30 a.m.
GWA—London, England	6125	50,000	European Service.
*OAX7A—Cuzco, Peru	6128	250	"Radio Cuzco."
CHNX—Halifax, Canada	6130	500	11 p.m.-3.15 p.m.
COCD—Havana, Cuba	6130	1,000	"La Voz del Aire," 2 a.m.-5 p.m.
XEUZ—Mexico City, Mexico	6130	1,000	8 a.m.-5.20 p.m.
*CP30—Santa Cruz, Bolivia	6135	250	"Radio Florida."
*Punta Arenas, Chile	6135	—	
VPD2—Suva, Fiji	6135	400	6.10 p.m. Sundays.
AFN—Milan, Italy (U.S. Army)	6135	50,000	Heard 7 a.m.
Jerusalem, Palestine	6135	—	"Sharq el Adna."
XGOY—Chungking, China	6140	35,000	News, 2 a.m.
*WRUA—Boston, Mass., U.S.A.	6140	50,000	
*SP48—Warsaw, Poland	6140	5,000	
HUDE—Medellin, Colombia	6145	5,000	"La Voz de Antioquia," 9 a.m.-3.30 p.m.
VLR2—Melbourne, Aust.	6150	2,000	8-9.10 a.m., 7.30 p.m.-1.30 a.m.
*CKR0—Winnipeg, Man., Canada	6150	2,000	
TIRH—San Jose, Costa Rica	6150	—	"Radio El Mundo," 3.30-5 p.m.
*YSPB—San Salvador, El Salv.	6150	350	
GRW—London, England	6150	50,000	3.55-6.00 p.m.
*VUB2—Bombay, India	6150	10,000	"All India Radio."
CE615—Santiago, Chile	6155	3,000	"La Cooperative Vitalicia," 4 p.m.
EOB—Teheran, Iran	6155	14,000	"Radio Teheran."
*CS2WD—Lisbon, Portugal	6155	300	9.30 a.m.-1 p.m.
*CP39—Cochabamba, Bolivia	6160	250	"Radio el Mundo."
*CHAC—Sackville, N.B., Canada	6160	50,000	
CBRC—Vancouver, Canada	6160	150	11 p.m.-8 p.m., relays CBR.
HJCD—Bogota, Colombia	6160	5,000	"Emisora Nueva Granada," 11 p.m.-3.30 p.m.
Radio Kuala Lumpur, Malaya	6160	—	BBC News, 1 a.m.
*TILS—San Jose, Costa Rica	6165	1,000	"Radiodifusora Para Ti"
HER3—Berne, Switzerland	6165	25,000	6-8 a.m.
*GWK—London, England	6165	50,000	
HHCM—Port-au-Prince, Haiti	6167	100	"N.B.C.," 10 p.m.-1.30 a.m., 10 a.m.-2 p.m.
*WCRC—New York, U.S.A.	6170	50,000	
XA21—Montevideo, Uruguay	6170	100	"Radio Felix," 11 a.m.-2 p.m.
*OLR2D—Prague, Czechoslovakia	6170	30,000	
Durban, South Africa	6170	—	4-10 a.m.
*CP37—Oruro, Bolivia	6170	100	"Radio Oruro."
KNBA—San Francisco, Calif.	6170	50,000	1-6 p.m., United Network.
*YVKB—Caracas, Venezuela	6172	10,000	"Radiodifusora Nacional."
H19T—Puerto Plata, Dom. Rep.	6175	200	"Broadcasting Tropical."
XEXA—Mexico City, Mexico	6175	1,000	"Radio Gobernacion," 1 a.m.-6 p.m.
LRM—Mendoza, Argentina	6180	10,000	"Radio Aconcagua," 10.30 p.m.-4 p.m.
*VLW5—Perth, West. Australia	6180	2,000	
*TIRCC—San Jose, Costa Rica	6180	300	"Accion Catolica."
GRO—London, England	6180	50,000	6.30-8.30 p.m. to Europe.
HIL—Ciudad Trujillo, Dom. Rep.	6187	200	10.15 a.m.-12.40 p.m.
*HNE—Bagdad, Iraq	6188	5,000	

Call and Location.	Frequency Kilo- Power in cycles. Watts.	Schedule, Slogan, English News Periods, etc.
*Saigon, Indo-China	6190 12,000	
VUD7—Delhi, India	6190 100,000	3.50-6.15 a.m.
*WNRE—New York, U.S.A.	6190 50,000	
GRN—London, England	6195 50,000	5-10.15 p.m.
HJCT—Bogota, Colombia	6198 10,000	"Radiodifusora Nacional," 3.30 p.m.
YVGRD—Ciudad Bolivar, Venez.	6200 1,000	"La Voz de Guyana," to 4 p.m.
*ZYC7—Rio de Janeiro, Brazil	6200 25,000	
CP5—La Paz, Bolivia	6205 250	"Radio Illimani," 10.15 a.m.-2.45 p.m.
Noumea, New Caledonia	6208 80	7.30-9, 9.30-10 p.m.
*OAX1A—Chiclayo, Peru	6210 300	"Radio Delcar" (now on 7120).
HJFB—Manizales, Colombia	6225 4,500	"Radio Manizales," 10 a.m.-3.35 p.m.
*TG2—Guatemala City, Guatemala	6225 300	"Radio Morse,"
HRD2—La Caiba, Honduras	6235 200	"La Voz de Atlantida," to 3 p.m.
HJCF—Bogota, Colombia	6240 750	"La Voz de Bogota," 10 a.m.-4.10 p.m.
HI1N—Ciudad Trujillo, Dom. Rep.	6245 1,000	"Broadcast Nac.," 9 a.m.-3.25 p.m.
YSR—San Salvador, El Salvador	6270 1,000	"La Voz de El Salvador," to 4 p.m.
*YNXW—Managua, Nicaragua	6275 —	"Radio America" (see 7070).
ZPA1—Asuncion, Paraguay	6276 2,500	"Radio Nac. de Paraguay," to 4 p.m.
*Leopoldville, Belg. Congo	6280 —	
HCBJ—Quito, Ecuador	6280 1,000	11 a.m.-3 p.m.
HI1Z—Ciudad Trujillo, Dom. Rep.	6310 400	"Broadcasting Nac.," 9 a.m.-2.40 p.m.
COCW—Havana, Cuba	6325 1,000	"Cadena Rojo," 11 p.m.-3 p.m.
OAX6E—Arequipa, Peru	6333 3,000	"Radio Continental," 11 a.m.-5 p.m.
HE12—Berne, Switzerland	6345 25,000	5.26-6.40 p.m., 6-10.15 a.m.
*COKQ—Santiago, Cuba	6345 —	
HI1X—Ciudad Trujillo, Dom. Rep.	6350 1,000	10.45 p.m.-11.30 p.m., 10.30 a.m.-2.15 p.m.
HRP1—Sao Pedro, Sula, Dom. Rep.	6351 250	11 p.m.-12.30 a.m., 11.30 a.m.-3.30 p.m.
OAX4H—Lima, Peru	6368 1,000	"Radio Mundial."
*WLWS—Cincinnati, Ohio	6370 75,000	
CSX—Lisbon, Portugal	6370 10,000	8.30 a.m.-noon.
HI9B—Santiago, Dom. Rep.	6390 250	10 a.m.-1.40 p.m.
TGOA—Quezaltenango, Guatemala	6405 300	1-6 p.m. Sundays.
OAX4G—Lima, Peru	6410 300	"Radio Lima," 1-6 p.m. Sundays.
COHI—Santa Clara, Cuba	6450 300	"RHC—Cadena Azul," midnight-6.02 p.m.
TGWB—Guatemala, Guatemala	6460 1,000	"La Voz de Guatemala," to 6 p.m.
HI2T—Monsenor Nouel, Dom. Rep.	6480 250	9.10 a.m.-3.40 p.m.
CP40—Cochabamba, Bolivia	6510 —	12.30-3 p.m., "Radio Central."
YNBH—Managua, Nicaragua	6547 —	"Radio Panamerican" (see 7007).
TG3—Guatemala City, Guatemala	6620 300	"Radio Morse," 11 a.m.-6 p.m. Sun- days.
HIT—Ciudad Trujillo, Dom. Rep.	6630 200	"El Hit del Aire," to 2.40 p.m.
Jaffa, Palestine	6710 —	6.30-9 a.m.
ZLT7—Wellington, N.Z.	6715 5,000	9.30-9.40 p.m.
PMH—Bandong, Java	6720 1,500	10.30 p.m.-2.30 a.m.
*ZNR2—Aden, Aden	6760 250	
YNPS—Managua, Nicaragua	6765 800	"La Voz de Nicaragua," 10 a.m.-5 p.m.
Singapore, Malaya	6770 —	News, 2 a.m.
CP49—La Paz, Bolivia	6770 500	"Radio Municipal," 10.20 a.m.-2 p.m.
Jerusalem, Palestine	6790 —	Tests, 6.30-9 a.m.
YNOW—Managua, Nicaragua	6850 1,000	"La Voz de la America Central."
YNQW—Managua, Nicaragua	6917 —	"La Voz de Victoria," 6 a.m.-4 p.m.
Dakar, West Africa	6917 —	7.15-7.30 p.m., 6.45-9.25 a.m.
FO8AA—Papeete, Tahiti	6980 200	"Radio Club de Tahiti," 3.30-4.30 p.m.
YNBO—Boaco, Nicaragua	6985 30	"La Voz de Boaco," 11 a.m.-3 p.m.
HCIVT—Ambato, Ecuador	7000 —	1-3 p.m.
YNBH—Managua, Nicaragua	7008 —	"Radio Panamerica," 11 a.m.-3.20 p.m.
XPSA—Kweiyang, China	7010 —	News, 1 a.m.
*Pontas Delgada, Azores	7017 1,000	
YNVW—Granada, Nicaragua	7020 —	"Radio Sport," 6 a.m.-3 p.m.
YSI—San Salvador, El Salvador	7040 —	6 a.m.-4 p.m.
TGOA—Guatemala City, Guate.	7045 —	"La Voz de las America."
ZOY—Accra, Gold Coast	7050 5,000	4-8 a.m., news 6 a.m.
HC2CM—Guayaquil, Ecuador	7055 250	"Radiodifusora Iman," noon-4.15 p.m.
YNXW—Managua, Nicaragua	7070 —	"Radio America," 10.30 a.m.-2 p.m.
GRS—London, England	7075 50,000	4-8.30 p.m., News 6, 8 p.m.
YISKG—Bagdad, Iraq	7090 —	Native programme, 1 a.m.
GRM—London, England	7120 50,000	Pacific Service, 6-8.45 p.m.
Harreisha, Br. Somaliland	7125 400	"Radio Somali," 2.30-3.30 a.m.
HC4FA—Portoviejo, Ecuador	7140 100	"La Voz de Manabi," 11.45 p.m.- 3.30 p.m.
YNFP—Managua, Nicaragua	7140 100	"La Voz del Tropico," noon-3.15 p.m.
GRT—London, England	7150 50,000	European Service.
XGOY—Chungking, China	7153 35,000	11.35 p.m.-3.40 a.m., news 2, 3 a.m.
HC1BF—Quito, Ecuador	7160 500	"Radio Commercial," 11.45 p.m.-4 p.m.
TGNA—Guatemala City, Guate.	7170 —	"La Voz de Libertad," 10 a.m.-3.15 p.m.

Call and Location.	Frequency cycles. Watts.	Schedule, Slogan, English News Periods, etc.
GRK—London, England	7185 50,000	European Service.
JCPA—Jerusalem, Palestine	7190 250	3.30-5.30 a.m.
HC1AC—Quito, Ecuador	7200 200	"La Voz de la Democracia," to 4.15 p.m.
GWL—London, England	7205 50,000	North American service, 1.15-2 p.m.
FGY—Dakar, French West Africa	7210 —	6.45-9.25 a.m.
VUD10—Delhi, India	7210 100,000	12.30-5.30 a.m., News, 1, 2, 3 a.m.
HI8Z—Santiago de los Caballero	7212 —	D.R. to 4 p.m. Sundays.
VLQ2—Brisbane, Aust.	7215 10,000	7.30 p.m.-1.30 a.m.
JCKW—Jerusalem, Palestine	7220 7,500	Signs 8 a.m., Forces station.
Singapore, Malaya	7220 25,000	10.30 p.m.-3.30 a.m., news 2.30 a.m.
GSW—London, England	7230 50,000	G.F.P., 6-8.30 p.m., news 6, 7, 8 p.m.
KWIX—San Francisco, Calif.	7230 50,000	8.45 p.m.-1.45 a.m., news on the hour.
*KWID—San Francisco, Calif.	7230 100,000	
VLQ—Brisbane, Aust.	7240 10,000	8 a.m.-noon.
VUD8—Delhi, India	7240 7,500	2 a.m.-6.30 a.m., news 2.45 a.m.
*GWI—London, England	7250 50,000	
*KGEI—San Francisco, Calif.	7250 50,000	
KGEX—San Francisco, Calif.	7250 100,000	9 p.m.-2.45 a.m., news on the hour.
WRUA—Boston, Mass.	7250 50,000	Latin American service, 2.30-6 p.m.
GSU—Skamlebak, Denmark	7260 5,000	4.35-7 a.m.
OZU—London, England	7260 5,000	9.15 a.m.-4.45 p.m. to North America.
VUD5—Delhi, India	7270 100,000	11 p.m.-midnight, 4.15-5.15 a.m.
GWN—London, England	7280 50,000	European service.
VLC8—Shepparton, Aust.	7280 50,000	News 12.30 a.m.
VUD3—Delhi, India	7290 10,000	10.30 p.m.-midnight.
ZOY—Accra, Gold Coast	7300 5,000	Signs 6 a.m.
TGOA—Guatemala City, Guatemala	7303 —	1-5.30 p.m.
YSO—San Salvador, El Salvador	7312 1,000	"La Voz de Democracia," noon-4 p.m.
GRJ—London, England	7320 50,000	G.F.P., 4-5 p.m.
*YNWW—Granada, Nicaragua	7325 —	"Radio Sport" (see 7020).
HC2DC—Guayaquil, Ecuador	7350 250	11 a.m.-4.45 p.m.
*HET3—Berne, Switzerland	7360 25,000	
HEK3—Berne, Switzerland	7380 25,000	1.30-3 p.m., News 1.45 p.m.
YNFT—Granada, Nicaragua	7500 250	"La Voz de la Sultana," 10 a.m.-3p.m.
*AFRN—Tokio, Japan	7525 25,000	
Macao, Portuguese China	7530 —	9.30 p.m.-1 a.m., News 11.40 p.m.
WNRE—New York, U.S.A.	7565 50,000	5-8.15 p.m., AFRS programme.
*KNBA—San Francisco	7565 50,000	9 p.m.-2.45 a.m.
KCBA—San Francisco, Calif.	7575 50,000	"La Voz de Leon," 11 a.m.-4 p.m.
YNLAT—Granada, Nicaragua	7615 300	10 a.m.-3.15 p.m.
YNDC—Leon, Nicaragua	7660 200	9 p.m.-2.45 a.m.
KNBX—San Francisco, Calif.	7805 200,000	10 p.m.-4 a.m.
WOOO—New York, U.S.A.	7805 50,000	5-8.16 p.m.
*WBOS—Boston, Mass., U.S.A.	7805 50,000	
*WLWS—Cincinnati, Ohio, U.S.A.	7832 75,000	
ZAA—Tirana, Albania	7850 3,000	Signs 7.40 a.m.
SUX—Cairo, Egypt	7860 10,000	5-9 a.m., News 6, 7 a.m.
PSL—Rio de Janeiro, Brazil	7935 12,000	10-11 a.m.
FXE—Beirut, Syria	8020 3,000	10-11 a.m. Signs 9.10 a.m.
*CNR—Rabat, Morocco	8035 12,000	"Radio Maroc."
*EPF—Teheran, Iran	8110 14,000	
AFN—Munich, Germany	8565 50,000	10 p.m.-4 a.m.
COCJK—Camaguey, Cuba	8656 1,000	1-5.30 p.m.
COCO—Havana, Cuba	8700 2,000	"Radio America," midnight-4.30 p.m.
COCQ—Havana, Cuba	8825 5,000	10.30 p.m.-5.15 p.m.
FGA—Dakar, Senegal	8840 300	8-9.25 a.m.
COKG—Santiago, Cuba	8955 2,400	"Cadena Oriental de Radio," 11.30 a.m.-4 p.m.
*THA2—Algiers, Algeria	8960 10,000	
CQBZ—Havana, Cuba	9026 250	"Radio Salas," midnight-4.45 p.m.
CNR3—Rabat, Morocco	9095 25,000	6-8 p.m., 6-10 a.m.
PJC1—Willemstad, Curacao	9105 3,000	10-10.30 a.m.
*HAT4—Budapest, Hungary	9125 20,000	
Biakpapan, Borneo	9125 125	English, 12.30 a.m.
HEF4—Berne, Switzerland	9185 25,000	1.30-3 p.m., news 1.45 p.m.
HI2G—Ciudad Trujillo, Dom. Rep.	9210 275	"Radio la Opinion," 9.30 a.m.-3.30 p.m.
Khartoum, Anglo-Egyptian Sudan	9220 —	
Bucharest, Romania	9250 2,000	5-5.45 a.m.
CQBQ—Havana, Cuba	9235 —	"La Voz de Cuba," 1-5 p.m. and later.
COCX—Havana, Cuba	9270 1,000	"Casa Levin," midnight-4 p.m.
WVLC—Manila, Philippines	9295 5,000	9 p.m. onwards.
LRS—Buenos Aires, Argentina	9317 17,000	"Radio Splendid," midnight-4 p.m.
*Andorra, Andorra	9330 —	Was 5-10.30 a.m.
OAX4J—Lima, Peru	9330 1,000	"Radio International," 11 a.m.-5 p.m.
HBL—Geneva, Switzerland	9345 20,000	6-8 a.m.
HC1BS—Quito, Ecuador	9355 250	"Radio Teatro Bolivar," 1 a.m.-3 p.m.
COCB—Havana, Cuba	9362 1,000	"Radio Progreso," midnight-4 p.m.
Madrid, Spain	9370 50,000	"Radio Nat. de Espana," 3-8.30 a.m.
Leopoldville, Belgian Congo	9380 50,000	4-8 p.m., 7-9 a.m.

Call and Location.	Frequency Kilo- cycles.	Power in Watts.	Schedule, Slogan, English News Periods, etc.
GRI—London, England	9410	50,000	Latin American service, 11 a.m.-3.30 p.m.
Belgrade, Yugoslavia	9425	10,000	5-8 p.m., French news, 7 p.m.
CP21—Sucre, Bolivia	9430	270	"Radio La Plata," 2-4.45 a.m., 8-10 a.m.
COCH—Havana, Cuba	9440	1,000	"Radio O'Shea," 11 p.m.-6 p.m.
Brazzaville, Fr. Eq. Africa	9440	50,000	4 a.m.-1 p.m., News 6.45, 8.45 a.m.
*OAX4W—Lima, Peru	9440	1,500	"Radio America."
*LRY—Buenos Aires, Argentina	9455	25,000	Irregular, opens 10.45 p.m.
TAP—Ankara, Turkey	9465	20,000	English, Mondays 8.30 a.m. News, 5.45 a.m.
CR6RA—Luanda, Angola	9470	250	7-8.30 a.m.
CP38—La Paz, Bolivia	9480	250	"Radio Nat. de Bolivia."
*VONG—St. John, Newfoundland	9480	300	
Moscow, U.S.S.R.	9480	—	
*GWF—London, England	9490	50,000	
KNBI—San Francisco, Calif.	9480	50,000	7-8.45 p.m., 9 p.m.-2.45 a.m.
WCBX—New York, U.S.A.	9490	50,000	9 a.m.-3.30 p.m. for Brazil.
XEWV—Mexico City, Mexico	9500	10,000	"La Voz de America Latina," 12.30 a.m.-6.45 p.m.
OIX2—Helsinki, Finland	9500	15,000	5-5.45 a.m., 12.15-12.45 p.m.
*OAX6D—Arequipa, Peru	9500	300	"Radio Continental."
*OLR3B—Prague, Czechoslovakia	9504	30,000	
*YUC—Belgrade, Yugoslavia	9507	10,000	
GSB—London, England	9510	50,000	G.F.P. 4-9 p.m., News 6, 7, 8 p.m.
OZF—Skemlebak, Denmark	9518	6,000	4.35-7 a.m.
Paris, France	9520	100,000	News 2.30, 3.30 p.m.
VLW7—Perth, Australia	9520	2,000	10.30 p.m.-3.30 a.m.
ZBW—Hongkong	9520	2,500	9.30 p.m.-1.30 a.m.
GWJ—London, England	9525	50,000	European Service.
WGE0—Schenectady, U.S.A.	9530	100,000	10 a.m.-4 p.m. to South America.
*LKC—Oslo, Norway	9530	5,000	
*VPD2—Suva, Fiji	9535	4,000	
SBU—Stockholm, Sweden	9535	12,000	6.30-10 a.m.
HER4—Berne, Switzerland	9535	25,000	
VLR2—Melbourne, Aust.	9540	2,000	8-9.10 a.m., 7.30 p.m.-1.30 a.m.
VLC5—Shepparton, Aust.	9540	50,000	
Paris, France	9540	100,000	
LKJ—Oslo, Norway	9540	5,000	6-6.15, 6.30-6.45 p.m.
Algiers, Algeria	9540	50,000	Heard 7 p.m.
VE9AI—Edmonton, Canada	9540	—	10.15 p.m.-5 p.m.
XEFT—Vera Cruz, Mexico	9540	250	"La Voz de Vera Cruz," 6 p.m. & later.
*OLR3A—Prague, Czechoslovakia	9550	30,000	(Now on 6010).
GWB—London, England	9550	50,000	European service.
KGEI—San Francisco, Calif.	9550	50,000	9 p.m.-3.45 a.m.
*WGE0—Schenectady, U.S.A.	9550	100,000	
Singapore, Malaya	9555	25,000	From 10.30 p.m.
Paris, France	9558	100,000	6-6.15 p.m., 6.30-6.45 p.m., etc.
XETT—Mexico City, Mexico	9558	500	Midnight-6.45 p.m.
OAX4T—Lima, Peru	9562	10,000	"Radio Nac. del Peru."
KWID—San Francisco, Calif.	9570	100,000	9 p.m.-2.45 a.m.
*KWIX—San Francisco, Calif.	9570	50,000	
WRUA—Boston, Mass., U.S.A.	9570	50,000	9.30-11 a.m.
GSC—London, England	9580	50,000	Eastern Broadcasts 4.30 p.m.
VLH-3—Melbourne, Aust.	9580	—	8.45 p.m.-1.30 a.m.
*VLR—Melbourne, Aust.	9580	2,000	
PCJ—Hilversum, Holland	9590	60,000	7-8 a.m., 1-2 p.m.
VUD4—Delhi, India	9590	10,000	News 1 a.m.
WLW0—Cincinnati, Ohio, U.S.A.	9590	75,000	To South America, signs 5.15 p.m.
GRY—London, England	9600	50,000	African Service, news 8.45 a.m.; 6 p.m.
CE960—Santiago, Chile	9603	1,000	"Radio La Americana," noon-4 p.m.
XEYU—Mexico City, Panama	9605	250	"Radio Univ. Nacional," 2-5 p.m.
HP5J—Panama City, Panama	9605	380	"La Voz de Panama," 10 a.m.-3.30 p.m.
Algiers, Algeria	9610	50,000	
ZYC8—Rio de Janeiro, Brazil	9610	25,000	"Radio Tamoio," 9 a.m.-4.30 p.m.
*CHLS—Sackville, N.B., Canada	9610	50,000	
*LLG—Oslo, Norway	9610	5,000	
Paris, France	9613	100,000	To Britain, 8 a.m.
VLC6—Shepparton, Aust.	9615	150,000	9-11.45 p.m. to Asia.
XERQ—Mexico City, Mexico	9615	500	Radio Continental," heard 6 p.m.
Addis Ababa, Ethiopia	9617	1,000	2-4.45 a.m.
CXA6—Montevideo, Uruguay	9623	3,000	8.30 a.m.-2 p.m.
GWO—London, England	9625	50,000	Latin Service, 11 a.m.-3.30 p.m.
CBFX—Montreal, Canada	9630	7,500	12.30 a.m.-5.05 p.m.
CKD0—Sackville, N.B., Canada	9630	50,000	News, 9.45 a.m.
VUD7—Delhi, India	9630	100,000	12.30-2.45 a.m.
XEBT—Mexico City, Mexico	9635	1,000	"Radio Pan-Americana," 1.45 a.m.-5 p.m.
Milan, Italy	9635	—	7-11 a.m., all Italian.
CXAS—Colonia, Uruguay	9640	3,000	4-6 a.m., 9 a.m.-2 p.m. (see 11840).
LRY—Buenos Aires, Argentina	9640	10,000	10.11 p.m., "Radio Belgrano."

Call and Location.	Frequency Kilo- cycles.	Power in Watts.	Schedule, Slogan, English News Periods, etc.
*CHMD—Sackville, N.B., Canada	9640	50,000	
*COX—Havana, Cuba	9640	5,000	
GVZ—London, England	9640	50,000	Pacific Service, 6-10 p.m.
VVKC—Caracas, Venezuela	9640	10,000	"Radiodifusora Nacional," 5-9 a.m.
*XGOY—Chungking, China	9645	35,000	
*LLH—Oslo, Norway	9640	5,000	
*KRHO—Honolulu, Hawaii	9650	100,000	
WCBN—New York, U.S.A.	9650	50,000	A.F.R.S. Broadcasts, 8 a.m.
*VLW2—Perth, Aust.	9650	2,000	
LRX—Buenos Aires, Argentina	9660	7,500	"Radio el Mundo," 10.30 p.m.-2 a.m., 9 a.m.-4 p.m.
VLO3—Brisbane, Aust.	9660	10,000	1.45-7.25 p.m.
*GWP—London, England	9660	50,000	
HVJ—Vatican City, Vatican	9660	25,000	News 6.15 a.m.
HBBM—Port-au-Prince, Haiti	9660	1,000	"Nac. Broadcasting Co.," 10 p.m.-1.30 a.m.
*OLR3C—Prague, Czechoslovakia	9670	30,000	
WNBL—New York, U.S.A.	9670	50,000	10.45 p.m.-12.45 a.m.
WRCA—New York, U.S.A.	9670	50,000	Noon-3.30 p.m. to South America.
GWT—London, England	9675	50,000	G.F.P. news 6 p.m., European service, 7 p.m.
*VLC8—Melbourne, Aust.	9680	10,000	
VLC2—Shepparton, Aust.	9680	50,000	7.30-8.45 p.m. to Japan.
XEQQ—Mexico City, Mexico	9680	1,000	"Radio Panamericana," midnight-5.45 p.m.
*VLW6—Perth, Aust.	9680	2,000	
EQC—Teheran, Iran	9680	14,000	"Radio Teheran," 5-7.30 a.m., news, 6.30 a.m.
VUD6—Delhi, India	9680	10,000	10 p.m.-2 a.m., 3-5 a.m.
*LRA1—Buenos Aires, Argentina	9683	7,000	"Radio del Estado."
GRX—London, England	9690	50,000	Pacific Service, 6-10 p.m.
HJCAB—Bogota, Colombia	9690	2,500	"Radiodifusora Nacional," 10 a.m.-4.30 p.m.
XUZE—Taihoka, Taiwan	9695	10,000	12.30-2.15 a.m., news 2 a.m.
WRUS—Boston, Mass., U.S.A.	9700	50,000	11.30 a.m.-6 p.m. to South America.
KCBR—San Francisco, Calif.	9700	200,000	7-9.45 p.m., 10 p.m.-5 a.m.
Fort-de-France, Martinique	9705	1,500	"Radio Martinique," 2 a.m.-1 p.m.
CR7BE—Lourenco Marques, Moz.	9710	10,000	7.55-9 a.m.
OAX4K—Lima, Peru	9712	250	"Radio Goicochea," 11 a.m.-3 p.m.
FRL7—Rio de Janeiro, Brazil	9720	50,000	"Radio Nacional," 8.10 a.m.-2.30 p.m.
CE970—Valparaiso, Chile	9728	1,000	11.00 p.m.-4 p.m., opens and signs in English.
XGOA—Chungking, China	9730	4,000	10.30 p.m.-3.15 a.m., News 2 a.m.
CSW7—Lisbon, Portugal	9740	10,000	"Emissora Nacional," noon-1 p.m.
Leopoldville, Belgian Congo	9748	50,000	5 a.m.-4.45 p.m., News 4.30 p.m. from BBC.
WLWR1—Cincinnati, Ohio, U.S.A.	9750	175,000	AFRS programme 10 a.m.-noon.
KCBF—San Francisco, Calif.	9750	50,000	4-6 p.m. United Network.
GWAA—Guatemala City, Guata.	9780	10,000	3 a.m.-6 p.m., signs in English.
XGOY—Chungking, China	9810	35,000	11.30 p.m.-5.35 a.m., News 12.30, 2 a.m.
OAX5C—Ica, Peru	9810	150	"Radio Universal," 10.30 a.m.-5 p.m.
GRH—London, England	9825	50,000	North American Service, 9.15 a.m.-2.45 p.m.
COBL—Havana, Cuba	9833	1,000	"Radio Cadena Suaritos," 12.15 a.m.-5.45 p.m.
KWIX—San Francisco, Calif.	9855	50,000	7.15-8.30 p.m. to N.Z.
GRU—London, England	9915	50,000	G.F.P., 8 a.m.
HCBJ—Quito, Ecuador	9960	1,000	To 3.30 p.m. in English.
CE1173—Santiago, Chile	11735	—	Heard 9.30 p.m.
WWV—Washington, D.C., U.S.A.	10,000	10,000	Frequency check station.
SUV—Cairo, Egypt	10055	10,000	5.30-8.37 a.m., News 7, 8 a.m.
HH3W—Port-au-Prince, Haiti	10135	125	11 p.m.-7.30 a.m., 11 a.m.-3 p.m.
PSH—Rio de Janeiro, Brazil	10220	12,000	10.11 a.m. irregular.
*XGAP—Peiping, China	10260	—	
Moscow, U.S.S.R.	10445	—	4.45-7 p.m., News 6.30 p.m.
ZIK2—Belize, Br. Honduras	10600	200	2.00-2.15 a.m., 4-5.48 a.m.
VQ7LO—Nairobi, Kenya	10730	1,500	2.45-4 a.m.
SDB2—Stockholm, Sweden	10780	10,000	4.00-10.05 a.m., News 5.45 a.m.
CSW6—Lisbon, Portugal	11040	10,000	6.30-9 a.m.
Ponta Delgada, Azores	11090	1,000	7-8 a.m., closes with clock chime.
*WCBN—New York, U.S.A.	11145	50,000	
*HBO—Geneva, Switzerland	11402	20,000	
Moscow, U.S.S.R.	11630	—	News 6.30, 11.15, 11.45 p.m.
XTPA—Canton, China	11650	1,000	Midnight-3 a.m., News 2 a.m.
GRG—London, England	11680	50,000	5.00-7.15 a.m., 7.30-9 a.m., News, 7 a.m.
HVJ—Vatican City, Vatican	11688	25,000	Fridays, 8.30-8.45 a.m.

Call and Location.	Frequency		Schedule, Slogan, English News Periods, etc.
	Kilo-cycles.	Power in Watts.	
XORA—Shanghai, China	11695	1,000	9 p.m.-4 a.m., News 11 p.m.
HP5A—Panama City, Panama	11695	1,000	"Radio Teatre Estrella," to 4 p.m.
*CE1170—Santiago, Chile	11700	1,000	"Radio Bulnes."
GVV—London, England	11700	50,000	G.F.P. 4-10 p.m. News 6, 7, 8 p.m.
*CBFY—Montreal, Canada	11705	7,500	
*CKXA—Sackville, N.B., Canada	11705	50,000	
SBP—Stockholm, Sweden	11705	12,000	1-2 p.m. to North America.
VLG3—Melbourne, Aust.	11710	10,000	5-10-5.45 p.m., 6-6.40 p.m.
WLWK—Cincinnati, Ohio, U.S.A.	11710	50,000	Closes 5.15 p.m. to South America.
*VUD3—Delhi, India	11710	10,000	
*HSP5—Bangkok, Thailand	11715	10,000	
HE15—Berne, Switzerland	11715	25,000	
Dakar, Fr. West Africa	11715	—	8-9.30 p.m., Tuesdays to N.Z.
OTT—Leopoldville, Belgian Congo	11720	50,000	"Radio Dakar," 12.15-12.45 a.m.
PRL8—Rio de Janeiro, Brazil	11720	50,000	10.30 p.m.-12.30 a.m.
CHOL—Sackville, N.B., Canada	11720	50,000	For Britain, news 8 a.m.
CKRX—Winnipeg, Canada	11720	2,000	8.30 a.m.-noon. News 9.45 a.m.
*GVV—London, England	11730	50,000	3 a.m.-6 p.m., Sundays 7 p.m.
Paris, France	11730	100,000	4.15-9 a.m.
*EQE—Teheran, Iran	11730	14,000	"Radio Teheran."
*KGEX—San Francisco, Calif.	11730	100,000	7-8.45 p.m. to South Pacific.
PHI—Hilversum, Holland	11730	20,000	7.00-8.00 a.m.
WRUL—Boston, Mass., U.S.A.	11730	50,000	Spanish programmes to 6 p.m.
*KGEX—San Francisco, Calif.	11730	100,000	3.15-5.00 a.m.
Singapore, Malaya	11735	25,000	8.45-10.45 p.m., English news 9 p.m.
XGOL—Yungang, China	9995	200	11.30 p.m.-4.05 p.m., relays CE106.
*LKQ—Oslo, Norway	11735	5,000	
*YUE—Belgrade, Yugoslavia	11735	10,000	
CR6RC—Luanda, Angola	11735	500	"Radio Club Angola," 7-8.30 a.m.
COCY—Havana, Cuba	11740	1,000	"R.H.C. Cadona Azul," 11 p.m.-5 p.m.
HVJ—Vatican City, Vatican	11740	25,000	Messages 7 p.m., irregular.
CE1174—Santiago, Chile	11740	—	Midnight-4.30 p.m.
GSD—London, England	11750	50,000	5.30 p.m.-8 p.m., 9 p.m.-9 a.m.
Komsomolsk, U.S.S.R.	11750	50,000	11.40 p.m.-1.15 a.m.
*VLR6—Melbourne, Aust.	11760	2,000	
VUD7—Delhi, India	11760	100,000	10.30 p.m.-midnight.
Algiers, Algeria	11765	50,000	11 p.m.-6.30 a.m.
ZYB8—Sao Paulo, Brazil	11765	5,000	"Radiodifusora Sao Paulo," 1-4.30 p.m.
GVU—London, England	11770	50,000	European service.
KCBR—San Francisco, Calif.	11770	200,000	AFRS broadcasts to 6 p.m.
VL4A—Shepparton, Aust.	11770	100,000	
*HE16—Berne, Switzerland	11775	25,000	
Saigon, Indo-China	11778	12,000	7 p.m.-4 a.m., News 10.30 p.m., 2.45 a.m.
HP5G—Panama City, Panama	11780	600	5 a.m.-5 p.m.
*XENN—Mexico City, Mexico	11780	500	"Radiomundial."
OIX3—Helsinki, Finland	11780	15,000	5-8.30 a.m.
VUD5—Delhi, India	11790	100,000	News 9.30 p.m.
WRUS—Boston, Mass., U.S.A.	11790	50,000	11 p.m.-11 a.m. to Europe.
KNBA—San Francisco, Calif.	11790	1,000	5-8.45 p.m., 7-8.45 p.m.
KNBX—San Francisco, Calif.	11790	200,000	4.15-8.30 a.m.
*CE1180—Santiago, Chile	11800	50,000	"Radio Soc. Nac. de Agricultura."
GW1—London, England	11800	50,000	European service.
*OZG—Skamlebak, Denmark	11805	6,000	
*ZOJ—Colombo, Ceylon	11810	75,000	
WLWL1—Cincinnati, Ohio, U.S.A.	11810	75,000	6-10.45 a.m. to Europe.
*WGEA—Schenectady, U.S.A.	11810	100,000	To Europe, 11 p.m.
GSN—London, England	11820	50,000	6.00-10.00 p.m., Pacific Service.
XEBR—Hermosillo, Mexico	11820	150	"Radiodifusora de Sonora," 2 a.m.-4 p.m.
WCRC—New York, U.S.A.	11830	50,000	11 p.m.-3.30 a.m., 5-9.30 a.m., 10 a.m.-4 p.m.
SEAC—Colombo, Ceylon	11830	100,000	1.30-4.00 a.m., "Radio SEAC."
VLW3—Perth, Aust.	11830	2,000	3.30-10.15 p.m.
Moscow, U.S.S.R.	11830	50,000	News 6.30 p.m.
VUD6—Delhi, India	11830	10,000	3.30-10 p.m.
CXA19—Montevideo, Uruguay	11835	1,500	"Radio El Spectador," 11 p.m.-3 p.m.
VL7—Shepparton, Aust.	11840	50,000	5.15-4.45 p.m.
*GWQ—London, England	11840	50,000	
Paris, France	11840	100,000	
*CXA8—Colonia, Uruguay	11840	3,000	
WGEA—Schenectady, U.S.A.	11847	100,000	11 p.m.-8.45 a.m., 9 a.m.-3.30 p.m.
Rangoon, Burma	11855	7,500	News, 12.45 a.m.
Singapore, Malaya	11855	25,000	
XMHAA—Shanghai, China	11860	1,000	News, 10.45 p.m.
CE1185—Santiago, Chile	11860	3,500	"Radio El Mercurio," midnight-3.30 p.m.
GSE—London, England	11860	50,000	European service.
ZPA3—Asuncion, Paraguay	11863	1,000	"Radio Telego," 9.55 a.m.-2.05 p.m.

Call and Location.	Frequency		Schedule, Slogan, English News Periods, etc.
	Kilo-cycles.	Power in Watts.	
*VLC3—Shepparton, Aust.	11870	50,000	
WOOW—New York, U.S.A.	11870	50,000	11 p.m.-10.45 a.m., AFRS service.
WNBI—New York, U.S.A.	11870	50,000	Latin American service to 4 p.m.
*KWID—San Francisco, Calif.	11870	100,000	
*OLR4C—Prague, Czechoslovakia	11875	30,000	
VLH4—Melbourne, Aust.	11880	—	8.00-10.15 a.m., 6.30-8.30 p.m.
*VLR3—Melbourne, Aust.	11880	2,000	
LRR—Rosario, Argentina	11880	10,000	"Radio Ovidio Lagos," 11 p.m.-2 p.m.
KWIX—San Francisco, Calif.	11890	50,000	8.10 a.m.-4.30 p.m.
WRCA—New York, U.S.A.	11893	50,000	10.45-11.15 p.m.
WNBI—New York, U.S.A.	11893	50,000	7-9.45 a.m.
*EQF—Teheran, Iran	11895	14,000	"Radio Teheran."
CE1190—Santiago, Chile	11900	1,000	11 p.m.-4 p.m.
*CKEX—Sackville, N.B., Canada	11900	50,000	
CXA10—Montevideo, Uruguay	11900	10,000	"Radio Electrica," 8.30 a.m.-2.15 p.m.
XGOY—Chungking, China	11918	35,000	News, 10 p.m.
GVX—London, England	11930	50,000	G.F.P. 4-6.15 p.m.
GVY—London, England	11955	50,000	European service.
ZPA5—Encarnacion, Paraguay	11955	2,500	"Radio Encarnacion," 11 p.m.-2 p.m.
*HEK4—Berne, Switzerland	11960	25,000	
Brazzaville, French Eq. Africa	11970	50,000	5-7.30 p.m., 4 a.m.-1 p.m.
CE1180—Santiago, Chile	12000	1,000	"Radio Soc. Nac. de Agricultura," 11 p.m.-4 p.m.
GRV—London, England	12040	50,000	
GRF—London, England	12090	50,000	GFP, news 6, 7, 8 p.m.
H13X—Ciudad Trujillo, Dom. Rep.	12110	250	"Radiodifusora Oficiales," 4 a.m.-2.40 p.m.
ZNR—Aden, Arabia	12115	250	
THA1—Algiers, Algeria	12120	50,000	4.23-6.30 p.m., 5-11 a.m.
Tananarive, Madagascar	12127	—	11 p.m.-1.45 a.m., 3-5 a.m.
TFJ—Reykjavik, Iceland	12235	7,000	2.00-2.30 a.m., irregular.
CE1127—Punta Arenas, Chile	12270	—	"Radio Ejercito," 11 a.m.-5 p.m.
JANS—Batavia, Java	12275	—	
HCJB—Quito, Ecuador	12455	10,000	11 p.m.-3 a.m., 7 a.m.-3.30 p.m.
CS2WI—Paredo, Portugal	12400	300	1 a.m.-11.30 a.m.
*HBJ2—Geneva, Switzerland	12965	20,000	
WNRI—New York, U.S.A.	13050	50,000	11 p.m.-11 a.m. to Europe.
*KNBI—San Francisco, Calif.	13050	50,000	
Omdurman, Sudan	13200	—	"Sudan Broadcasting Service," 4-6 a.m.
*SPW—Warsaw, Poland	13635	10,000	
SUZ—Cairo, Egypt	13825	10,000	News, 3.30, 6 a.m.
*HBZ2—Geneva, Switzerland	14538	20,000	
WNRX—New York, U.S.A.	14560	50,000	11 p.m.-noon.
PSF—Rio de Janeiro, Brazil	14690	12,000	10.30-11 a.m.
PSE—Rio de Janeiro, Brazil	14935	12,000	10.00-10.30 p.m. irregular.
WWV—Washington, D.C., U.S.A.	15000	1,000	Frequency checks.
*Macao, Portuguese China	15040	—	"Macao Radio Club."
GWG—London, England	15070	50,000	European service.
HVJ—Vatican City, Vatican	15095	25,000	
HCJB—Quito, Ecuador	15095	1,000	10 p.m.-5 a.m.
*EPB—Teheran, Iran	15100	14,000	"Radio Teheran."
KGW—London, England	15110	50,000	G.F.P. News 8, 11 p.m., 1 a.m.
GWGI—San Francisco, Calif.	15130	50,000	6.00-9.45 a.m.
WLWS—Cincinnati, Ohio, U.S.A.	15130	75,000	12.30-9.45 a.m.
GSF—London, England	15140	50,000	G.F.P. News 11 p.m.
WRCA—New York, U.S.A.	15150	50,000	12.30-8.30 a.m., 9 a.m.-11.45 a.m.
KNBX—San Francisco, Calif.	15150	100,000	2-4.45 p.m.
SBT—Stockholm, Sweden	15155	12,000	3-6.15 a.m.
*CE1511—Santiago, Chile	15115	—	To relay CE106.
VLG7—Melbourne, Aust.	15160	10,000	8-10 a.m.
*ZYB9—Sao Paulo, Brazil	15180	5,000	"Radiodifusora Sao Paulo."
*ORL5C—Prague, Czechoslovakia	15160	30,000	
VUD7—Delhi, India	15160	100,000	3.15-6.30 p.m., News 4.30 p.m.
*XEWV—Mexico City, Mexico	15160	10,000	
Algiers, Algeria	15165	50,000	
PRE9—Fortaleza, Brazil	15165	5,000	" Ceara Radio Club," 11.30 a.m.-1.35 p.m.
Skamlebak, Denmark	15165	6,000	
*TGWA—Guatemala City, Guata.	15170	10,000	
*OAX4R—Lima, Peru	15170	10,000	"Radio Nac. de Peru."
GSO—London, England	15180	50,000	News 11 p.m.
OIX4—Helsinki, Finland	15190	15,000	Closes 11.30 p.m. also 4-8.30 a.m.
CKCX—Sackville, N.B., Canada	15190	50,000	11.00 p.m.-8.15 a.m., news 11.45 p.m.
CBFZ—Montreal, Canada	15190	50,000	
VUD5—Delhi, India	15190	100,000	3.15-6 p.m., 9-10.15 p.m.
TAQ—Ankara, Turkey	15195	20,000	9.15 p.m.-1.15 a.m.
WOOC—New York, U.S.A.	15200	50,000	11 p.m.-8.15 a.m.
VL4A—Shepparton, Aust.	15200	100,000	9.15-11 a.m., 2-5 p.m., 7.30-10.45 p.m.
WBOS—Boston, Mass., U.S.A.	15210	50,000	11 p.m.-10.45 a.m.
KGEX—San Francisco, Calif.	15210	100,000	9.15 a.m.-3.15 p.m.
*CHTA—Sackville, N.B., Canada	15220	50,000	

Call and Location.	Frequency Kilo- Power in cycles. Watts.	Schedule, Slogan, English News Periods, etc.
PCJ2—Hilversum, Holland	15220 60,000	1-2.30 a.m., English and Dutch.
*XGOY—Chungking, China	15220 35,000	
SEAC—Colombo, Ceylon	15220 100,000	6.00-7.30 p.m., 9.00 p.m.-1.30 a.m.
VLG6—Melbourne, Aust.	15230 10,000	2-4 p.m.
WLWL—Cincinnati, Ohio, U.S.A.	15230 75,000	3.30-10.45 a.m. to Europe.
*OLR5A—Prague, Czechoslovakia	15230 30,000	
KNBX—San Francisco, Calif.	15240 100,000	11 a.m.-1.45 p.m.
Paris, France	15240 100,000	10-10.15, 11-11.15 p.m.
*YUF—Belgrade, Yugoslavia	15240 10,000	
WLWK—Cincinnati, Ohio	15250 50,000	10 a.m.-12.15 p.m.
WLWR—Cincinnati, Ohio	15250 175,000	12.30 a.m.-8 a.m.
GSI—London, England	15260 50,000	6-10 p.m., Pacific Service.
KCBR—San Francisco, Calif.	15270 200,000	9 a.m.-3 p.m.
KCBF—San Francisco, Calif.	15270 50,000	6.00-9.45 a.m.
WCBX—New York, U.S.A.	15270 50,000	11 p.m.-8.45 a.m.
*ZOJ—Colombo, Ceylon	15275 7,500	
WNRE—New York, U.S.A.	15280 50,000	12.30-9.45 a.m. to Europe.
*CR7BG—Lourenco Marques, Moz.	15285 10,000	
WRUL—Boston, Mass., U.S.A.	15290 50,000	2-10 a.m.
VUD3—Delhi, India	15290 5,000	3.30 p.m.-midnight.
*LRU—Buenos Aires, Argentina	15290 5,000	"Radio El Mundo."
GWR—London, England	15300 50,000	News 11 p.m.
GSP—London, England	15310 50,000	News 8, 11 p.m.
VLC4—Shepparton, Aust.	15315 50,000	10.30 a.m.-noon, 3-5 p.m.
*YVPX—Caracas, Venezuela	15315 10,000	"Radiodifusora Nacional."
WGE0—Schenectady, U.S.A.	15330 100,000	11 p.m.-9.30 a.m.
*KGEX—San Francisco, Calif.	15330 100,000	
KNBX—San Francisco, Calif.	15330 200,000	8.45-11 a.m., 3.00-4.45 p.m.
KNBI—San Francisco, Calif.	15340 50,000	6.15-8.45 p.m.
VUD8—Delhi, India	15350 7,500	2-6.30 p.m., 8.30 p.m.-1.30 a.m.
*ZYC9—Rio de Janeiro, Brazil	15370 25,000	"Radio Tamoio."
*GRE—London, England	15375 50,000	
PZXS—Paramaribo, Surinam	15405 750	10-11.30 p.m.
GWE—London, England	15435 50,000	Eastern Service, 11 p.m.-4 a.m.
*GWD—London, England	15450 50,000	
Brazzaville, French Eq. Africa	15595 50,000	5-6.30 p.m., 9.45-12.45 a.m.
HEK5—Berne, Switzerland	15875 25,000	7.20-7.50 a.m.
XMEW—Kunming, China	16540 —	A.F.R.S. broadcasts, 11 p.m.
HVJ—Vatican City, Vatican	17445 25,000	1.40-2.15 a.m.
Brazzaville, French Eq. Africa	17527 50,000	5-6.30 p.m., 9.45-12.45 a.m.
GVP—London, England	17700 50,000	Pacific Service, 7.30-10 p.m.
GFA—London, England	17715 50,000	GFP, news 11 p.m.
LRA5—Buenos Aires, Argentina	17720 7,000	"Radio del Estado," 10-10.27 a.m.
GRV—London, England	17730 50,000	News 11 p.m.
WRUW—Boston, Mass., U.S.A.	17750 50,000	12.30-2.15 a.m., 2.45-6.45 a.m.
*OZI—Skemlebak, Denmark	17750 6,000	
KWID—San Francisco, Calif.	17760 100,000	8 a.m.-12.30 p.m.
KWIX—San Francisco, Calif.	17760 50,000	2-8 a.m.
KCBR—San Francisco, Calif.	17770 200,000	3.00-6.00 p.m.
OTC—Leopoldville, Belg. Congo	17770 50,000	11 p.m.-2.30 a.m.
WNBI—New York, U.S.A.	17780 50,000	1-6.45 a.m., 10-11.15 a.m.
KNBI—San Francisco, Calif.	17780 50,000	1.00-5.00 p.m.
GKEA—San Francisco, Calif.	17780 50,000	7-10 a.m.
GSG—London, England	17790 50,000	Eastern Service, 11 p.m.
KRHO—Honolulu, Hawaii	17800 100,000	9 a.m.-4.30 p.m.
WLWO—Cincinnati, Ohio	17800 75,000	12.30-8.15 a.m.
GSV—London, England	17810 50,000	8 p.m.-3.15 a.m., News 11 p.m., 1 a.m.
CKNC—Sackville, N.B., Canada	17820 50,000	midnight-8 a.m.
WCBN—New York, U.S.A.	17830 5,000	11 p.m.-5.30 a.m.
VUD10—Delhi, India	17830 5,000	3.20-10.30 p.m., 10.40 p.m.-1 a.m.
*HVJ—Vatican City, Vatican	17840 25,000	
Brussels, Belgium	17845 5,000	11 p.m.-midnight.
KCBF—San Francisco, Calif.	17850 50,000	United Network, 9 a.m.-3.45 p.m.
*PRL9—Rio de Janeiro	17850 50,000	"Radio Nacional."
GRP—London, England	17870 50,000	3.30 a.m.-5 a.m.
WLWL1—Cincinnati, Ohio	17955 75,000	1 a.m.-5.45 a.m.
GRQ—London, England	18025 50,000	3.30-4.30 a.m.
GVO—London, England	18080 50,000	11 p.m.-3.15 a.m.
*Batavia, Java	18135 —	
WNRA—New York, U.S.A.	18160 50,000	11 p.m.-6.30 a.m.
WLWS—Cincinnati, Ohio	18390 75,000	12.30-8 a.m.
GSH—London, England	21470 50,000	2.15-3.45 a.m.
GSI—London, England	21530 50,000	11 p.m.-12.45 a.m.
*GST—London, England	21550 50,000	
GVR—London, England	21675 50,000	11 p.m.-12.45 a.m.
*CHLA—Sackville, N.B., Canada	21710 50,000	
*GVS—London, England	21710 50,000	
*GVT—London, England	21750 50,000	

RAHOB AUSTRALASIAN BROADCAST LOG

Compiled by ARTHUR T. CUSHEN, 212 Earn Street, Invercargill, Short Wave Editor of the New Zealand DX Club's Bulletin, "N.Z. DX-TRA."

Location and Call.	Kilo- Power in cycles. Watts.	Location and Call.	Kilo- Power in cycles. Watts.
Cumnock, N.S.W.—2CR	550 10,000	Auckland, N.Z.—1ZB	1,070 1,000
Minding, W.A.—6WA	560 10,000	Griffith, N.S.W.—2RG	1,070 200
Wellington, N.Z.—2YA	570 60,000	Katanning, W.A.—6WB	1,070 2,000
Horsham, Vic.—3WV	580 10,000	Lithgow, N.S.W.—2LT	1,080 100
Hobart, Tas.—7ZL	600 2,000	Rockhampton, Q.—4RO	1,080 200
Sydney, N.S.W.—2FC	610 10,000	Hobart, Tas.—7HT	1,080 500
Melbourne, Vic.—3AR	620 10,000	Lubeck, Vic.—3LK	1,080 2,000
Townsville, Q.—4QN	630 7,000	Longreach, Q.—4LG	1,100 1,000
Crystal Brook, S.A.—5CK	640 7,500	Merridun, W.A.—6MD	1,100 500
Auckland, N.Z.—1YA	650 10,000	Launceston, Tas.—7LA	1,100 500
Dubbo, N.S.W.—2DU	660 200	Sydney, N.S.W.—2UW	1,110 750
Burnie, Tas.—7BU	660 200	Brisbane, Q.—4BC	1,120 1,000
Corowa, N.S.W.—2CO	670 7,500	Wellington, N.Z.—2ZB	1,130 1,000
Lochinvar, N.S.W.—2HR	680 300	Colac, Vic.—3CS	1,130 200
Atherton, Q.—4AT	680 500	Perth, W.A.—6PM	1,130 500
Queenstown, Tas.—7QT	680 300	Armidale, N.S.W.—2AD	1,130 200
Invercargill, N.Z.—4YZ	680 5,000	Dunedin, N.Z.—4YO	1,140 150
Perth, W.A.—6WF	690 5,000	Newcastle, N.S.W.—2HD	1,140 500
Lawrence, N.S.W.—2NR	700 7,500	Wagga, N.S.W.—2WG	1,150 2,000
Kelso, Tas.—7NT	710 7,500	Hobart, Tas.—7ZR	1,160 500
Christchurch, N.Z.—3YA	720 10,000	Inverell, N.S.W.—2NZ	1,170 2,000
Kalgoorlie, W.A.—6GF	720 2,000	Gisborne, N.Z.—2ZM	1,180 100
Adelaide, S.A.—5CL	730 4,000	Melbourne, Vic.—3KZ	1,180 600
Sydney, N.S.W.—2BL	740 10,000	Sydney, N.S.W.—2CH	1,190 750
Napier, N.Z.—2YH	750 5,000	Adelaide, S.A.—5KA	1,200 500
Dalby, Q.—4QS	760 10,000	Christchurch, N.Z.—3YL	1,200 300
Melbourne, Vic.—3LO	770 10,000	Grafton, N.S.W.—2GF	1,210 200
Katoomba, N.S.W.—2KA	780 2,000	Warrnambool, Vic.—3YB	1,210 200
Townsville, Q.—4TO	780 200	Kalgoorlie, W.A.—6KG	1,210 500
Dunedin, N.Z.—4YA	790 10,000	Oakey, Q.—4AK	1,220 2,000
Broken Hill, N.S.W.—2BH	790 200	Newcastle, N.S.W.—2NC	1,230 2,000
Perth, W.A.—6WN	790 500	Sale, Vic.—3TR	1,240 1,000
Brisbane, Q.—4OG	800 2,500	Perth, W.A.—6IX	1,240 500
New Plymouth, N.Z.—2YB	810 30	Auckland, N.Z.—1ZM	1,250 750
Murray Heights, S.A.—5RM	810 2,000	Shepparton, Vic.—3SR	1,260 2,000
Newcastle, N.S.W.—2NA	820 10,000	Sydney, N.S.W.—2SM	1,270 1,000
Geraldton, W.A.—6GN	820 2,000	Melbourne, Vic.—3AW	1,280 600
Sale, Vic.—3GI	830 7,000	Brisbane, Q.—4BK	1,290 500
Wellington, N.Z.—2YC	840 5,000	Tamworth, N.S.W.—2TM	1,300 2,000
Canberra, F.T.—2CY	850 10,000	Dunedin, N.Z.—4ZB	1,310 1,000
Toowoomba, Q.—4GR	860 500	Adelaide, S.A.—5AD	1,310 500
Hobart, Tas.—7HO	860 500	Ballararat, Vic.—3BA	1,320 500
Sydney, N.S.W.—2GB	870 1,000	Perth, W.A.—6KY	1,320 500
Auckland, N.Z.—1YX	880 150	Swan Hill, Vic.—3SH	1,330 200
Warragul, Vic.—3UL	880 200	Bundaberg, Q.—4BU	1,330 500
Warrack, Q.—4WK	880 100	Young, N.S.W.—2LF	1,340 300
Perth, W.A.—6PR	880 500	Dardanup, W.A.—6TZ	1,340 2,000
Adelaide, S.A.—5AN	890 500	Geelong, Vic.—3GL	1,350 500
Lismore, N.S.W.—2LM	900 500	Gympie, Q.—4GY	1,350 200
Devonport, Tas.—7AD	900 300	Mildura, Vic.—3MA	1,360 200
Rockhampton, Q.—4RK	910 2,000	Gunnedah, N.S.W.—2MO	1,370 100
Suva, Fiji—ZJV	920 400	Mt. Gambire, S.A.—5SE	1,370 200
Nelson, N.Z.—2YN	920 30	Geraldton, W.A.—6GE	1,370 500
Cooma, N.S.W.—2XL	920 200	Brisbane, Q.—4BH	1,380 1,000
Charleville, Q.—4VL	920 200	Goulburn, N.S.W.—2GN	1,390 200
Melbourne, Vic.—3UZ	930 600	Mackay, Q.—4MK	1,390 100
Greymouth, N.Z.—3ZR	940 100	Palmerston Nth., N.Z.—2ZA	1,400 1,000
Brisbane, Q.—4QR	940 2,000	Parkes, N.S.W.—2PK	1,400 200
Sydney, N.S.W.—2UE	950 2,000	Port Augusta, S.A.—5AU	1,400 200
Adelaide, S.A.—5DN	950 1,000	Newcastle, N.S.W.—2KO	1,410 500
Bendigo, Vic.—3BO	970 500	Melbourne, Vic.—3XY	1,420 600
Ayr, Q.—4AY	970 500	Coilie, W.A.—6CI	1,430 100
Kempsey, N.S.W.—2KM	980 300	Christchurch, N.Z.—3ZB	1,430 1,000
Gisborne, N.Z.—2ZJ	980 100	Woolongong, N.S.W.—2WL	1,430 500
Northam, W.A.—6AM	980 2,000	Deniliquin, N.S.W.—2QN	1,440 200
Orange, N.S.W.—2GZ	990 2,000	Ipswich, Q.—4IP	1,440 200
Wellington, N.Z.—2YD	990 250	Mudgee, N.S.W.—2MG	1,450 100
Cairns, Q.—4CA	1,000 300	Derby, Tas.—7DY	1,450 200
Maryborough, Q.—4MB	1,000 300	Cessnock, N.S.W.—2CK	1,460 300
Launceston, Tas.—7EX	1,000 500	Murray Heights, S.A.—5MU	1,460 200
Hamilton, Vic.—3HA	1,010 750	Murwillumbah, N.S.W.—2MW	1,470 500
Dunedin, N.Z.—4ZD	1,010 100	Bendigo, Vic.—3CV	1,470 500
Sydney, N.S.W.—2KY	1,020 1,000	Albury, N.S.W.—2AY	1,480 200
Melbourne, Vic.—3DB	1,030 600	Bega, N.S.W.—2BE	1,490 200
Crystal Brook, S.A.—5PI	1,040 2,000	Roma, Q.—4ZR	1,490 200
Canberra, F.T.—2CA	1,050 2,000	Bathurst, N.S.W.—2BS	1,500 200
Kingaroy, Q.—4SB	1,060 2,000	Melbourne, Vic.—3AK	1,500 200

ARMED FORCES STATIONS IN THE PACIFIC AREA

Stations operating for Troop entertainment by the American and Australian authorities as listed by Arthur T. Cushen, 212 Earn Street, Invercargill, DX Adviser to the Radio Hobbies Club.

Call and Location.	Frequency.	Power.	Call and Location.	Frequency.	Power.
WVTR—Tokio, Japan	590	10,000	WVTB—Mindinao, Philip- pines	1280	—
WVXJ—Iwo Jima	620	250	WVTM—Manila, Philippines	1300	1,000
WXLJ—Saipan, Marianas	660	1,000	WVTQ—Osaka, Japan	1310	10,000
WVUT—Nadi, Fiji	665	50	WXLK—Eniwetok, Marshall Island	1320	1,000
WVUQ—Guadalcanal Solo- mons	690	1,000	WVTC—Nagoya, Japan	1335	10,000
WXLH—Okinawa	680	—	WVTI—Cebu City, Philip- pines	1340	250
KZFM—Manila, Philippines	710	5,000	WVTW—Pelelui	1340	300
KMTH—Midway Island	800	5	WXLF—Tarawa, Gilbert Is.	1340	1,000
WXLF—Canton Island	905	5	9AG—Balikpapan, South- east Borneo	1360	200
9AF—Labuan, N.W. Borneo	960	200	9AE—Rabaul, New Britain	1370	200
WVUS—Noumea, New Cale- donia	975	1,000	9AL—Sendai, Japan	1370	3,000
WVLI—Guam	980	1,000	WVTV—Johnston Island	1390	15
9AJ—Wewak, New Guinea	980	10	WLK—Kumamoto, Japan	1400	3,000
9AO—Jesselton	980	10	WXLH—Makin, Gilbert Is.	1400	1,000
—Tokio, Japan	990	—	WLK—Suppora, Japan	1420	3,000
KSAL—Saipan, Marianas	1010	50,000	9AD—Moratai Island	1440	200
9AL—Faro Island	1030	10	WXLG—Kwajalein, Marshall Island	1440	—
WVUR—Espiritu Santo, New Hebrides	1045	1,000	WLKH—Hiroshima, Japan	1440	3,000
9AB—Lae, New Guinea	1070	200	WVTO—Omura, Japan	1450	—
—Madang, New Guinea	1130	500	WVUU—Christmas Is. —Okayama	1480	50
9AA—Port Moresby, New Guinea	1250	500	5DR—Darwin, Australia	1500	200
WVYV—Tutuila, Samoa	1270	50	WVTK—Leyte, Philippines	1510	475
9AC—Torakina, Bougain- ville	1280	200			

NORTH AMERICAN BROADCAST STATIONS

Complete list of stations in United States and Canada with main Mexican and Cuban stations. Stations listed are in operation, except where preceded by an asterisk, which means construction permit only has been granted. Where stations are to change frequency the present frequency is also shown. American stations are listed in four zones, Eastern Standard; Central Standard; Mountain Standard and Pacific Standard Times. Midnight EST is 5 p.m. in New Zealand, while 6 p.m. in N.Z. is midnight CST, 7 p.m. in N.Z. is midnight MST and 8 p.m. N.Z. time is midnight PST, all these days being following one in New Zealand. Copyright for the Radio Hobbies Club by Arthur T. Cushen, 212 Earn Street, Invercargill, to whom enquiries concerning the Logs printed in this "Annual" can be addressed.

Call and Location.	Power in Watts. Zone.	Call and Location.	Power in Watts. Zone.
540 Kilocycles—		560 Kilocycles—Continued.	
CBK—Watrous, Sask.	50,000 M	WGAN—Portland, Me.	5,000 E
550 Kilocycles—		WIND—Chicago, Ill.	5,000 C
CFNB—Fredericton, N.B.	5,000 E	WIS—Solumbia, S.C.	5,000 E
*CHLN—Three Rivers, Que.	1,000 E	WJLS—Beckley, W.Va.	250 E
KFYR—Bismarck, N.D.	5,000 C	WQAM—Miami, Fla.	5,000 E
KOAC—Corvallis, Ore.	1,000 P	570 Kilocycles—	
KOY—Phoenix, Ariz.	1,000 M	CMHI—Santa Clara, Cuba	15,000 E
KSD—St. Louis, Mo.	1,000 C	KGKO—Fort Worth, Tex.	5,000 C
KTSA—San Antonio, Tex.	1,000 C	KMTR—Los Angeles, Cal.	1,000 P
WDEV—Waterbury, Vt.	1,000 E	KUTA—Salt Lake City, Ut.	5,000 M
WGR—Buffalo, N.Y.	1,000 E	KVI—Tacoma, Wash.	5,000 P
WKRC—Cincinnati, Ohio	1,000 E	WKBN—Youngstown, Ohio	5,000 E
WSVA—Harrisonburg, Va.	1,000 E	WMAM—Marinette, Wis.	250 C
560 Kilocycles—		WMCA—New York, N.Y.	5,000 E
CBRA—Revelstoke, B.C.	1,000 P	WNAX—Yankton, S. Dak.	5,000 C
CJKL—Kirkland Lake, Ont.	5,000 E	WSYR—Syracuse, N.Y.	5,000 E
KFDM—Beaumont, Texas	1,000 C	WWNC—Asheville, N.C.	1,000 E
KLZ—Denver, Colo.	5,000 M	580 Kilocycles—	
KPQ—Wenatchee, Wash.	1,000 P	CJFX—Antigonish, N.S.	5,000 A
KSFO—San Francisco, Cal.	5,000 P	CKEY—Toronto, Ont.	1,000 E
KWTO—Springfield, Mo.	5,000 C	CKPR—Ft. William, Ont.	1,000 E
WFIL—Philadelphia, Pa.	1,000 E	CKUA—Edmonton, Atla.	1,000 M

Call and Location.	Power in Watts. Zone.	Call and Location.	Power in Watts. Zone.
580 Kilocycles—Continued.		650 Kilocycles—	
KALB—Alexandria, La.	1,000 C	WSM—Nashville, Tenn.	50,000 C
KMJ—Fresno, Cal.	5,000 P	660 Kilocycles—	
KSAC—Manhattan, Kansas	500 C	KFAR—Fairbanks, Alaska	10,000 —
WCHS—Charleston W., Va.	5,000 E	KOWH—Omaha, Nebr.	500 C
WDBO—Orlando, Fla.	5,000 E	KSKY—Dallas, Texas	1,000 C
WIAC—San Juan, P. Rico	5,000 A	WEAF—New York, N.Y.	50,000 E
WIBW—Topeka, Kansas	5,000 C	670 Kilocycles—	
WILL—Urbana, Ill.	5,000 C	WMAQ—Chicago, Ill.	50,000 C
WTAG—Worcester, Mass.	5,000 E	680 Kilocycles—	
590 Kilocycles—		*CKGB—Timmins, Ontario (1470)	5,000 C
CMCY—Havana, Cuba	15,000 E	KABC—San Antonio, Texas	50,000 C
KGMB—Honolulu, Hawaii	5,000 —	KFEQ—St. Joseph, Mo.	5,000 C
KHQ—Spokane, Wash.	5,000 P	KPO—San Francisco, Cal.	50,000 P
KTBC—Austin, Texas	5,000 C	WISR—Butler, Pa.	250 E
WAGA—Atlanta, Ga.	5,000 E	WLaw—Lawrence, Mass.	5,000 E
WEEL—Boston, Mass.	5,000 E	WPTF—Raleigh, N.C.	50,000 E
WKZO—Kalamazoo, Mich.	5,000 E	690 Kilocycles—	
WMBS—Uniontown, Pa.	1,000 E	CBF—Montreal, Que.	50,000 E
WOW—Omaha, Nebr.	5,000 C	CMQ—Havana, Cuba	25,000 E
600 Kilocycles—		KGGE—Coffeyville, Kans.	500 C
CFCF—Montreal, Que.	5,000 E	XEAC—Tijuana, Mex.	5,000 P
CFCH—North Bay, Ont.	1,000 E	XEN—Mexico City, Mex.	5,000 C
CFQC—Saskatoon, Sask.	5,000 M	700 Kilocycles—	
CJOR—Vancouver, B.C.	5,000 P	WLW—Cincinnati, Ohio	50,000 C
KFSD—San Diego, Cal.	1,000 P	710 Kilocycles—	
KROD—El Paso, Texas	500 M	*KGNC—Amarillo, Texas (1440)	10,000 C
KSJB—Jamestown, N.D.	5,000 C	KIRO—Seattle, Wash.	50,000 P
WCAO—Baltimore, Md.	5,000 E	KMPC—Hollywood, Cal.	10,000 P
WICC—Bridgeport, Conn.	5,000 E	WGBS—Miami, Fla.	10,000 E
WMT—Cedar Rapids, Iowa	5,000 C	WFTL—Ft. Lauderdale, Fla.	10,000 E
*WPDQ—Jacksonville, Fla. (1270)	5,000 E	WOR—New York, N.Y.	50,000 E
WREC—Memphis, Tenn.	5,000 C	720 Kilocycles—	
WSJS—Winston Salem, N.C.	5,000 E	WGN—Chicago, Ill.	50,000 C
610 Kilocycles—		730 Kilocycles—	
CHNC—New Carlisle, Que.	5,000 E	CKAC—Montreal, Que.	5,000 E
CJAT—Trail, B.C.	1,000 P	*WPIK—Alexandria, Virg.	250 E
KDAL—Duluth, Minn.	1,000 C	*Durham, N.C.	500 E
KFRS—San Francisco, Cal.	5,000 P	*WOHS—Shelby, N.C.	250 E
WAYS—Charlotte, N.C.	1,000 E	740 Kilocycles—	
WDAF—Kansas City, Mo.	5,000 C	CBL—Toronto, Ont.	50,000 E
WHKC—Columbus, Ohio	1,000 E	KQW—San Jose, Cal.	5,000 P
WIOD—Miami, Fla.	5,000 E	KTRH—Houston, Texas	50,000 C
WIP—Philadelphia, Pa.	5,000 E	750 Kilocycles—	
WMUR—Manchester, N.H.	1,000 E	KMMJ—Grand Island, Nebr.	1,000 C
WSGN—Birmingham, Ala.	1,000 C	KXL—Portland, Ore.	10,000 P
620 Kilocycles—		WHEB—Portsmouth, N.H.	1,000 E
CKCK—Regina, Sask.	5,000 M	WSB—Atlanta, Ga.	50,000 E
KGW—Portland, Ore.	5,000 P	760 Kilocycles—	
KTAR—Phoenix, Ariz.	5,000 M	KGU—Honolulu, Hawaii	2,500 —
KWFT—Wichita Falls, Tex.	1,000 C	WJR—Detroit, Mich.	50,000 E
WAGE—Syracuse, N.Y.	1,000 E	770 Kilocycles—	
WCAX—Burlington, Vt.	1,000 E	KOB—Albuquerque, N.M.	50,000 M
WHJB—Greensburg, Pa.	250 E	KUOM—Minneapolis, Minn.	5,000 C
WKAQ—San Juan, P.R.	5,000 A	KXA—Seattle, Wash.	1,000 P
WLBZ—Bangor, Me.	5,000 E	WCAL—Northfield, Minn.	5,000 C
WROL—Knoxville, Tenn.	500 C	WEW—St. Louis, Mo.	1,000 E
WSUN—St. Petersburg, Fla.	5,000 E	WJZ—New York, N.Y.	50,000 C
WTMJ—Milwaukee, Wisc.	5,000 C	WLB—Minneapolis, Minn.	5,000 C
630 Kilocycles—		780 Kilocycles—	
CFCO—Chatham, Ont.	1,000 E	WBBM—Chicago, Ill.	50,000 C
CFCY—Charlottetown, P.E.I.	1,000 A	WJAG—Norfolk, Nebr.	1,000 C
CKOV—Kelowna, B.C.	1,000 P		
CKRC—Winnipeg, Man.	1,000 C		
KGFX—Pierre, S.D.	200 C		
KOH—Reno, Nev.	1,000 P		
KVOD—Denver, Colo.	5,000 M		
KXOK—St. Louis, Mo.	5,000 C		
WMAL—Washington, D.C.	5,000 E		
WPRO—Providence, R.I.	5,000 E		
640 Kilocycles—			
KFI—Los Angeles, Cal.	50,000 P		
WHKK—Akron, Ohio	1,000 E		
WNAD—Norman, Okla.	1,000 C		
WOI—Ames, Iowa	5,000 C		

Call and Location.	Power in Watts.	Zone.
790 Kilocycles—		
CKSO—Sudbury, Ont.	5,000	E
KECA—Los Angeles, Calif.	5,000	P
KFQD—Anchorage, Alaska	1,000	—
KGHL—Billings, Mont.	5,000	M
KVOS—Bellingham, Wash.	1,000	P
WEAN—Providence, R.I.	5,000	E
WEAU—Eau Claire, Wisc.	1,000	C
WMC—Memphis, Tenn.	5,000	C
WPC—Sharon, Penn.	1,000	E
WTAR—Norfolk, Va.	5,000	E
WVNY—Watertown, N.Y.	1,000	E
800 Kilocycles—		
CBRN—North Bend, B.C.	1,000	P
CHAB—Moose Jaw, Sask.	5,000	M
CHRC—Quebec, Que.	5,000	E
*CJAD—Montreal, Que.	1,000	E
CKLW—Windsor, Ont.	5,000	E
XELO—Ciudad Jaurex, Mex.	150,000	E
WDSC—Dillon, S.C.	1,000	E
810 Kilocycles—		
*KCMO—Kansas City, Mo. (1480)	10,000	C
KGO—San Francisco, Calif.	7,500	P
KOAM—Pittsburg, Kansas	1,000	C
WGY—Schenectady, N.Y.	50,000	E
820 Kilocycles—		
WAIT—Chicago, Ill.	5,000	C
WBAP—Fort Worth, Texas	50,000	C
WFAP—Dallas, Texas	50,000	C
WOSU—Columbus, Ohio	5,000	E
830 Kilocycles—		
WCCO—Minneapolis, Minn.	50,000	C
WNYC—New York, N.Y.	1,000	E
840 Kilocycles—		
WHAS—Louisville, Ky.	50,000	C
850 Kilocycles—		
KFUO—Clayton, Mo.	5,000	C
KOA—Denver, Colo.	50,000	M
WEEU—Reading, Pa.	1,000	E
WHDH—Boston, Mass.	5,000	E
WJW—Cleveland, Ohio	5,000	E
WRUF—Gainesville, Fla.	5,000	E
860 Kilocycles—		
CFRB—Toronto, Ont.	10,000	E
*KOAM—Pittsburg, Kansas (810)	5,000	C
KTRB—Modesto, Calif.	1,000	P
*WNEL—San Juan, P.R. (1320)	5,000	A
WSON—Henderson, Ky.	500	E
XEMO—Tijuana, Mex.	5,000	P
870 Kilocycles—		
KIEV—Glendale, Calif.	250	P
WHCU—Ithaca, N.Y.	1,000	E
WKAR—East Lansing, Mich.	5,000	E
WWL—New Orleans, La.	50,000	C
880 Kilocycles—		
WABC—New York, N.Y.	50,000	E
WHB—Kansas City, Mo.	1,000	C
890 Kilocycles—		
WENR—Chicago, Ill.	50,000	C
WHNC—Henderson, N.C.	250	E
WLS—Chicago, Ill.	50,000	C
900 Kilocycles—		
CHLT—Sherbrooke, Ont.	1,000	E
CHML—Hamilton, Ont.	5,000	E

Call and Location.	Power in Watts.	Zone.
900 Kilocycles—Continued.		
CJBR—Rimouski, Que.	5,000	E
CJVI—Victoria, B.C.	1,000	P
CKBI—Prince Albert, Sask.	1,000	M
KLCN—Blytheville, Ark.	1,000	C
WSBA—York, Pa.	1,000	E
XEW—Mexico City, Mex.	100,000	C
910 Kilocycles—		
CBO—Ottawa, Ont.	1,000	E
CFJC—Kamloops, B.C.	1,000	P
KALL—Salt Lake City, Ut.	1,000	M
KFKA—Greeley, Col.	1,000	M
KLX—Oakland, Cal.	1,000	P
KPOF—Denver, Col.	1,000	M
KRRV—Sherman, Texas	1,000	C
KVAN—Vancouver, Wash.	500	P
WABI—Bangor, Me.	5,000	E
WCOC—Meridian, Miss.	1,000	C
WDFD—Flint, Mich.	1,000	E
WGBI—Scranton, Pa.	500	E
WJHL—Johnson City, Tenn.	1,000	C
WQAN—Scranton, Pa.	500	E
WRNL—Richmond, Va.	5,000	E
WSUI—Iowa City, Iowa	5,000	C
920 Kilocycles—		
*CJCH—Halifax, N.S.	5,000	A
CKNX—Wingham, Ont.	1,000	E
KARK—Little Rock, Ark.	5,000	C
KFNF—Shenandoah, Iowa	500	C
KFPY—Spokane, Wash.	5,000	P
KFXJ—Grand Junction, Colo.	500	M
KUSD—Vermillion, S. Dak.	1,500	C
WBAA—W. Lafayette, Ind.	1,000	E
WBBS—Burlington, N.C.	1,000	E
WGST—Atlanta, Ga.	1,000	E
WJAR—Providence, R.I.	5,000	E
WMMN—Fairmont, W.Va.	5,000	E
WTTM—Trenton, N.J.	1,000	E
930 Kilocycles—		
CHNS—Halifax, N.S.	1,000	A
CJCA—Edmonton, Alb.	1,000	M
KHJ—Los Angeles, Cal.	5,000	P
KSEI—Pocatello, Idaho	250	M
KTKN—Ketchikan, Alaska	1,000	—
WBEN—Buffalo, New York	5,000	E
WFMD—Frederick, Md.	500	E
WJAX—Jacksonville, Fla.	1,000	E
WKY—Oklahoma City, Okla.	5,000	C
WLBL—Stevens Pt., Wisc.	5,000	C
WPAT—Paterson, N.J.	1,000	E
WRRF—Washington, N.C.	1,000	E
WSAZ—Huntington, W.Va.	1,000	C
WTAD—Quincy, Ill.	1,000	C
940 Kilocycles—		
CBM—Montreal, Que.	5,000	E
KTKC—Visalia, Calif.	5,000	P
WMAZ—Macon, Ga.	5,000	E
XEDP—Mexico City, D.F.	50,000	C
950 Kilocycles—		
CKNB—Campbellton, N.B.	1,000	E
KFEL—Denver, Colo.	5,000	M
KJR—Seattle, Wash.	5,000	P
KPRC—Houston, Texas	5,000	C
WAAF—Chicago, Ill.	1,000	C
WORL—Boston, Mass.	1,000	E
WPEN—Philadelphia, Pa.	5,000	E
WSPA—Spartanburg, S.C.	5,000	E
WWJ—Detroit, Mich.	5,000	E
XEGM—Tijuana, Mex.	2,500	P
960 Kilocycles—		
CFAC—Calgary, Alta.	1,000	M
CHNS—Halifax, N.S.	1,000	A
CKWS—Kingston, Ont.	1,000	E
KMA—Shenandoah, Iowa	5,000	C

Call and Location.	Power in Watts.	Zone.
960 Kilocycles—Continued.		
KROW—Oakland, Cal.	1,000	P
WBRC—Birmingham, Ala.	5,000	C
WDBJ—Roanoke, Va.	5,000	E
WELI—New Haven, Conn.	1,000	E
WSBT—South Bend, Ind.	1,000	C
970 Kilocycles—		
KOIN—Portland, Ore.	5,000	P
WAAT—Newark, N.J.	1,000	E
WAVE—Louisville, Ky.	5,000	C
WCSH—Portland, Me.	5,000	E
WDAY— Fargo, N.D.	5,000	E
WFLA—Tampa, Fla.	5,000	C
WHA—Madison, Wis.	5,000	E
WICA—Ashtabula, Ohio	1,000	E
980 Kilocycles—		
CBV—Quebec, Que.	1,000	E
CKRM—Regina, Sask.	1,000	M
CKWX—Vancouver, B.C.	5,000	P
KFWB—Los Angeles, Cal.	5,000	P
KMBC—Kansas City, Mo.	5,000	C
WGBG—Greensboro, N.C.	1,000	E
WRC—Washington, D.C.	5,000	E
WSIX—Nashville, Tenn.	5,000	E
WTRY—Troy, N.Y.	1,000	E
990 Kilocycles—		
CKY—Winnipeg, Man.	15,000	C
WIBG—Philadelphia, Pa.	10,000	E
KNX—Knoxville, Tenn.	10,000	C
WPRM—Mayaguez, P. Rico	1,000	A
XECL—Mexicali, B.C.	5,000	P
1000 Kilocycles—		
KOMO—Seattle, Wash. (*50,000)	5,000	P
WCFL—Chicago, Ill.	10,000	C
XEOY—Mexico City, Mex.	10,000	C
1010 Kilocycles—		
CJBC—Toronto, Ont.	5,000	E
CFCN—Calgary, Alta.	10,000	M
CMX—Havana, Cuba	25,000	E
WINS—New York, N.Y.	10,000	E
KLRA—Little Rock, Ark.	50,000	C
1020 Kilocycles—		
KDKA—Pittsburgh, Pa.	50,000	E
KFVD—Los Angeles, Cal.	5,000	P
1030 Kilocycles—		
KWBU—Corpus Christi, Tex.	50,000	C
WBZ—Boston, Mass.	50,000	E
WBZA—Boston, Mass.	1,000	E
1040 Kilocycles—		
WHO—Des Moines, Iowa	50,000	C
1050 Kilocycles—		
CFGP—Grand Prairie, Alta.	1,000	M
WDZ—Tuscola, Ill.	1,000	E
WHN—New York, N.Y.	50,000	E
WPAG—Ann Arbor, Mich.	250	E
XEG—Monterrey, N.L.	150,000	C
1060 Kilocycles—		
CJOC—Lethbridge, Alta.	1,000	M
KYW—Philadelphia, Pa.	50,000	E
XEST—Mexico City, Mex.	50,000	C
1070 Kilocycles—		
CBA—Sackville, N.B.	50,000	E
CHOK—Sarnia, Ont.	1,000	E
KFBI—Wichita, Kansas	1,000	C
KNX—Los Angeles, Cal.	50,000	P
WAPI—Birmingham, Ala.	5,000	C
WIBC—Indianapolis, Ind.	5,000	C

Call and Location.	Power in Watts.	Zone.
1080 Kilocycles—		
KRLD—Dallas, Texas	50,000	C
KWJJ—Portland, Ore.	1,000	P
WCAZ—Carthage, Ill.	250	C
WTIC—Hartford, Conn.	50,000	E
1090 Kilocycles—		
KEVR—Seattle, Wash.	10,000	P
KTHS—Hot Springs, Ark.	5,000	C
WBAL—Baltimore, Md.	50,000	E
XERB—Tijuana, Mex.	50,000	P
1100 Kilocycles—		
KJBS—San Francisco, Cal.	1,000	P
WTAM—Cleveland, Ohio	50,000	E
1110 Kilocycles—		
KFAB—Omaha, Nebr.	50,000	C
KXLA—Pasadena, Calif.	10,000	P
WBT—Charlotte, N.C.	50,000	E
WMBI—Chicago, Ill.	5,000	C
XEFO—Mexico City, D.F.	5,000	C
1120 Kilocycles—		
KMOX—St. Louis, Mo.	50,000	C
1130 Kilocycles—		
CBR—Vancouver, B.C.	5,000	P
KWKH—Shreveport, La.	50,000	C
WCAR—Pontiac, Mich.	1,000	E
WDGY—Minneapolis, Minn.	500	E
WNEW—New York, N.Y.	10,000	E
1140 Kilocycles—		
KGDM—Stockton, Calif.	5,000	P
KSOO—Sioux Falls, S.D.	5,000	C
WRVA—Richmond, Va.	50,000	E
1150 Kilocycles—		
*CHLP—Montreal, Que.	1,000	E
CHSJ—St. John, N.B.	5,000	E
CKOC—Hamilton, Ont.	5,000	C
CKX—Brandon, Man.	1,000	C
KFSG—Los Angeles, Cal.	1,000	P
KRKD—Los Angeles, Cal.	1,000	P
KRSC—Seattle, Wash.	1,000	P
KSAL—Salina, Kansas	1,000	C
KSWO—Lawton, Okla.	250	C
WAO—Chattanooga, Tenn.	1,000	C
WCOP—Boston, Mass.	500	E
WDEL—Wilmington, Del.	5,000	E
WISN—Milwaukee, Wis.	5,000	C
WJBO—Baton Rouge, La.	5,000	C
WKPA—New Kensington, Pa.	250	C
WTAW—College Station, Tex.	1,000	C
1160 Kilocycles—		
KSL—Salt Lake City, Utah	50,000	M
WJJD—Chicago, Ill.	20,000	C
1170 Kilocycles—		
KVOO—Tulsa, Okla.	50,000	C
WWVA—Wheeling, W.Va.	50,000	E
1180 Kilocycles—		
*KOB—Albuquerque, N.M. (770)	50,000	M
WHAM—Rochester, N.Y.	50,000	E
WLDS—Jacksonville, Ill.	250	C
1190 Kilocycles—		
KEX—Portland, Ore.	5,000	P
WLBB—New York, N.Y.	1,000	E
WOWO—Fort Wayne, Ind.	10,000	C
1200 Kilocycles—		
WOAI—San Antonio, Texas	50,000	C

Call and Location.	Power in Watts. Zone.
1210 Kilocycles—	
WCAU—Philadelphia, Pa.	50,000 E
1220 Kilocycles—	
*CKCW—Moncton, N.B. (1400)	5,000 A
CJRL—Kenora, Ont.	1,000 C
WGAR—Cleveland, Ohio	5,000 E
WGNV—Newburgh, N.Y.	1,000 E
WVCX—Sitka, Alaska	15 C
XEB—Mexico City, Mex.	20,000 C
1230 Kilocycles—	
CFAR—Flin Flon, Man.	250 C
CFPA—Port Arthur, Ont.	250 E
CJGJ—Calgary, Alta.	250 M
*CJEM—Edmonston, N.B. (1240)	250 A
CKNW—New Westminster, B.C.	250 P
*CKPG—Prince George, B.C.	250 P
CKSF—Cornwall, Ont.	250 E
CKVD—Val d'Or, Que.	250 E
KADA—Ada, Okla.	250 C
KAST—Astoria, Ore.	250 C
KBTM—Jonesboro, Ark.	250 C
KCMC—Texarkana, Texas	250 C
KCRS—Midland, Texas	250 C
KELO—Sioux Falls, S.D.	250 C
KFDA—Amarillo, Texas	250 C
KFIO—Spokane, Wash.	250 P
KFJB—Marshalltown, Iowa	250 C
KFUN—Las Vegas, N.M.	250 M
KFXD—Nampa, Idaho	250 M
*KGAK—Gallup, N.M.	250 M
KGDE—Fergus Falls, Minn.	250 C
KGKE—Stirling, Colo.	250 M
KGJF—Los Angeles, Cal.	250 P
KGHI—Little Rock, Ark.	250 C
KHAS—Hastings, Nebr.	250 C
KHBC—Hilo, Hawaii	250 C
KMLB—Munroe, La.	250 C
*KNOE—Monroe, La. (1450)	250 C
KODL—The Dalles, Ore.	250 P
KOOS—Coos Bay, Ore.	250 P
KPHO—Phoenix, Ariz.	250 M
KPOW—Powell, Wyo.	250 M
KRLH—Midland, Texas	250 C
KRUN—Lowell, Ariz.	250 M
KTHT—Houston, Texas	250 C
KVCV—Redding, Cal.	250 P
KVEC—San Luis Obispo, Cal.	250 P
KVNU—Logan, Utah	250 M
KWC—Stockton, Cal.	250 P
KWNO—Winona, Minn.	250 C
*KWTX—Waco, Texas	250 C
KXO—El Centro, Cal.	250 P
KYSM—Mankato, Minn.	250 C
WAIM—Anderson, S.C.	250 E
WAJR—Morgantown, W.Va.	250 E
WAYX—Waycross, Ga.	250 E
WBBZ—Ponca City, Okla.	250 C
WBHP—Huntsville, Ala.	250 C
WBLJ—Dalton, Ga.	250 C
WBOS—Salisbury, Md.	250 E
WBOW—Terre Haute, Ind.	250 C
WCAT—Rapid City, S.D.	250 M
WCBT—Roanoke Rapids, N.C.	250 E
WCED—Du Bois, Penn.	250 E
WCLO—Janesville, Wis.	250 C
WCMA—Corinth, Miss.	250 E
WCOL—Columbus, Ohio	250 E
WCPO—Cincinnati, Ohio	250 E
WDLF—Panama City, Fla.	250 E
WDSM—Superior, Wis.	250 E
WENY—Elmira, N.Y.	250 E
WERC—Erie, Pa.	250 E
WESX—Salem, Mass.	250 E
WFAS—White Plains, N.Y.	250 E
WFTC—Kinston, N.C.	250 E
*WFVA—Fredericksburg, Va. (1290)	250 E

Call and Location.	Power in Watts. Zone.
1230 Kilocycles—Continued.	
WHBY—Appleton, Wis.	250 C
WHLN—Harlan, Ky.	250 E
WHOP—Hopkinsville, Ky.	250 E
WHTB—Tellepsa, Ala.	250 C
WIBX—Utica, N.Y.	250 E
WIL—St. Louis, Mo.	250 E
WISE—Asheville, N.C.	250 E
WITB—Baltimore, Md.	250 E
WJBC—Bloomington, Ill.	250 C
WJBW—New Orleans, La.	250 E
WJEF—Grand Rapids, Mich.	250 E
WJNO—West Palm Beach, Fla.	250 E
WJOB—Hammond, Ind.	250 C
WJRD—Tuscaloosa, Ala.	250 E
WKBO—Harrisburg, Pa.	250 E
WKVM—Arecibo, P.R.	250 A
WLOF—Orlando, Fla.	250 E
WLOG—Logan, W.Va.	250 E
WLVA—Lynchburg, Va.	250 E
WMFR—High Point, N.C.	250 E
WMOB—Mobile, Ala.	250 C
WMPC—Lapeer, Mich.	250 E
WOCB—West Yarmouth, Mass.	250 E
WOLS—Florence, S.C.	250 E
*WPUV—Pulaski, Vas.	250 E
WRBL—Columbus, Ga.	250 E
WSKB—McComb, Miss.	250 C
WSOO—Sault St. Marie, Mich.	250 E
WTHT—Hartford, Conn.	250 E
WTOL—Toledo, Ohio	250 E
*—Marietta, Ga.	250 C
1240 Kilocycles—	
CBH—Halifax, N.S.	100 A
CFPR—Prince Rupert, B.C.	50 P
CJCS—Stratford, Ont.	250 E
CKCH—Hull, Que.	250 P
CKLN—Nelson, B.C.	250 P
CKPA—Port Alberni, B.C. —Osbawa, Ont.	250 P
*CHLT—Sherbrooke, Que.	250 E
KANS—Wichita, Kansas	250 C
KASA—Elk City, Okla.	250 C
KAVE—Carlsbad, N. Mex.	250 M
*KBIZ—Ottumwa, Iowa	250 C
*KCOK—Tulare, Iowa	250 P
*KCOV—Ellensburg, Wash.	250 P
KDLR—Devil's Lake, N.D.	250 C
KDON—Monterey, Cal.	250 P
KFBC—Cheyenne, Wyo.	250 P
KFJI—Klamath Falls, Ore.	250 P
KFOR—Lincoln, Nebr.	250 C
KFXM—San Bernardino, Cal.	250 P
KGBS—Hartington, Texas	250 C
KGY—Olympia, Wash.	250 P
KHBG—Okmulgee, Okla.	250 C
KICA—Clovis, N. Mex.	250 M
KICD—Spencer, Iowa	100 C
KIUL—Garden City, Kansas	250 M
KMAC—San Antonio, Texas	250 C
KOCA—Kilgore, Texas	250 C
KODY—North Platte, Nbr.	250 C
KOVO—Provo, Utah	250 M
KPFA—Helena, Mont.	250 M
KPPC—Pasadena, Calif.	250 P
KROY—Sacramento, Calif.	250 P
KVSO—Ardmore, Okla.	250 C
KWAT—Watertown, S.D.	250 C
KWIL—Albany, Ore.	250 P
KWJB—Globe, Ariz.	250 M
KWLC—Decorah, Iowa	250 C
KWOS—Jefferson City, Mo.	250 C
KWRC—Pendleton, Ore.	250 P
KXOX—Sweetwater, Texas	250 C
KYUM—Yuma, Ariz.	250 M
WATN—Watertown, N.Y.	250 E
*WATT—Cadillac, Mich.	250 E
WBAX—Wilkes-Barre, Pa.	100 E
*WBEJ—Elizabethton, Tenn.	250 C

Call and Location.	Power in Watts. Zone.
1240 Kilocycles—Continued.	
WBIR—Knoxville, Tenn.	250 C
WBML—Macon, Ga.	250 E
WBHV—Charlottesville, Va.	250 E
WCOU—Lewiston, Me.	250 E
WCOV—Montgomery, Ala.	250 E
WCRW—Chicago, Ill.	250 C
WEBQ—Harrisburg, Ill.	250 C
WEDC—Chicago, Ill.	250 C
WFOY—St. Augustine, Fla.	250 E
WGAC—Augusta, Ga.	250 E
WGBB—Freeport, N.Y.	250 E
WGCM—Gulfport, Miss.	250 E
WGGG—Gainesville, Ga.	250 E
WGRM—Greenwood, Miss.	250 E
WHAI—Greenfield, Mass.	250 E
WHBU—Anderson, Ind.	250 E
WHIZ—Zanesville, Ohio	250 E
WIBU—Payette, Wis.	250 E
WINK—Fort Myers, Fla.	250 E
WINN—Louisville, Ky.	250 E
WJBY—Gadsden, Ala.	250 E
WJEJ—Hagerstown, Md.	250 E
WJIM—Lansing, Mich.	250 E
WJLS—Beckley, W.Va.	250 E
WJMC—Rice Lake, Wis.	250 E
*WJNC—Jacksonville, N.C.	250 E
WJRM—Elkins, W.Va.	250 E
WJTN—Jamestown, N.Y.	250 E
WKOK—Sunbury, Pa.	250 E
WLAG—La Grange, Ga.	250 E
WLOK—Lima, Ohio	250 E
WMFG—Hibbing, Minn.	250 C
*WMFT—Florence, Ala.	250 C
WMIS—Natchez, Miss.	250 C
*WMOX—Meridian, Miss.	250 C
WOCB—West Yarmouth, Mass.	250 E
WOMT—Manitowoc, Wis.	250 E
WPAX—Thomasville, Ga.	250 E
WRAL—Raleigh, N.C.	250 E
WSSC—Chicago, Ill.	250 E
WSLS—Roanoke, Va.	250 E
WSNJ—Bridgeton, N.J.	250 E
WSNY—Schenectady, N.Y.	250 E
WSOC—Charlotte, N.C.	250 E
WSSV—Petersburg, Va.	250 E
WTAX—Springfield, Ill.	250 C
1250 Kilocycles—	
*CKSB—St. Boniface, Man.	250 C
KFKU—Lawrence, Kansas	1,000 C
KPAC—Port Arthur, Texas	1,000 C
KTMS—Santa Barbara, Cal.	1,000 P
KTW—Seattle, Wash.	1,000 P
KWSC—Pullman, Wash.	5,000 P
WCAE—Pittsburgh, Pa.	5,000 E
WDAE—Tampa, Fla.	5,000 E
WREN—Lawrence, Kansas	1,000 C
WTMA—Charleston, S.C.	1,000 E
1260 Kilocycles—	
CFRN—Edmonton, Alta.	5,000 M
KFGO—Boone, Iowa	250 C
KGBX—Springfield, Mo.	5,000 C
KGGM—Albuquerque, N.M.	1,000 M
KVA—San Francisco, Cal.	1,000 P
WFBM—Indianapolis, Ind.	5,000 C
WNAC—Boston, Mass.	5,000 E
WOL—Washington, D.C.	1,000 E
1270 Kilocycles—	
CICB—Svdney, N.S.	1,000 A
KFIZ—Fort Worth, Texas	5,000 C
KGCU—Mandan, N.D.	500 M
KTFI—Twin Falls, Idaho	1,000 M
WHBF—Rock Island, Ill.	5,000 C
WPDQ—Jacksonville, Fla.	5,000 E
WSPR—Springfield, Mass.	5,000 E
WXYZ—Detroit, Mich.	5,000 E
Call and Location.	Power in Watts. Zone.
1280 Kilocycles—	
KFOV—Long Beach, Calif.	1,000 P
KIT—Yakima, Wash.	1,000 P
WDSU—New Orleans, La.	5,000 C
WGBF—Evansville, Ind.	1,000 C
WHB—Newark, N.J.	1,000 E
WKST—New Castle, Pa.	1,000 E
WMRO—Aurora, Ill.	250 E
WOV—New York, N.Y.	5,000 C
WTCN—Minneapolis, Minn.	1,000 C
*—Trinidad, Col.	500 M
1290 Kilocycles—	
KGVO—Missoula, Mont.	1,000 M
KHSL—Chico, Calif.	1,000 P
KOIL—Omaha, Nebr.	5,000 C
KRCV—Weslaco, Texas	1,000 C
KUOA—Siloam Springs, Ark.	5,000 C
*KVOA—Tucson, Ariz.	1,000 M
WHIO—Dayton, Ohio	5,000 E
WHKY—Hickory, N.C.	1,000 E
WHLN—Niagara Falls, N.Y.	1,000 E
WKNE—Keene, N.H.	5,000 E
WNBF—Binghamton, N.Y.	5,000 E
WTOC—Savannah, Ga.	5,000 E
1300 Kilocycles—	
KGLO—Mason City, Iowa	5,000 C
KOL—Seattle, Wash.	5,000 P
*KROP—Brawley, Calif.	1,000 P
KVOR—Colorado Springs, Colo.	1,000 M
*KVET—Austin, Texas	1,000 C
WFBF—Baltimore, Md.	5,000 E
WJDX—Jackson, Miss.	1,000 E
WOOD—Grand Rapids, Mich.	5,000 C
*—Austin, Texas	1,000 C
1310 Kilocycles—	
CKCO—Ottawa, Ont.	1,000 E
KFBF—Great Falls, Mont.	5,000 M
KWRB—Oakland, Calif.	1,000 P
WCAM—Camden, N.J.	500 E
WCAP—Ashbury Park, N.J.	500 E
WDDO—Chattanooga, Tenn.	5,000 C
WIBA—Madison, Wisc.	5,000 C
WISH—Indianapolis, Ind.	1,000 C
WORC—Worcester, Mass.	1,000 E
WRR—Dallas, Texas	5,000 C
WTNJ—Trenton, N.J.	500 E
1320 Kilocycles—	
KDYL—Salt Lake City, Utah	5,000 M
KXYZ—Houston, Texas	5,000 C
WATR—Waterbury, Conn.	1,000 E
WEBC—Duluth, Minn.	5,000 E
WJAS—Pittsburgh, Pa.	5,000 E
WJHP—Jacksonville, Fla.	250 E
WNBZ—Saranac Lake, N.Y.	100 E
WNEL—San Juan, P. Rico	5,000 A
1330 Kilocycles—	
KALE—Portland, Ore.	5,000 P
KFAC—Los Angeles, Cal.	1,000 P
KFH—Wichita, Kansas	5,000 C
WBBR—Brooklyn, N.Y.	1,000 E
WEVD—New York, N.Y.	5,000 E
WFBF—Greenville, S.C.	5,000 E
WFIN—Findlay, Ohio	1,000 E
WHAZ—Troy, N.Y.	1,000 E
WHBL—Sheboygan, Wisc.	250 C
WLWL—Minneapolis, Minn.	1,000 C
1340 Kilocycles—	
CHAD—Amos, Que.	250 E
CHOV—Pembroke, Ont.	250 E
CHWK—Chilliwack, B.C.	100 P
CJLS—Yarmouth, N.S.	250 A
*CJOB—Winnipeg, Man.	250 C
CKCV—Quebec, Que.	250 E
CKFI—Port Francis, Ont.	250 E

Call and Location.	Power in Watts. Zone.	Call and Location.	Power in Watts. Zone.
1340 Kilocycles—Continued.			
KAND—Corsicana, Texas	250 C	WNHC—New Haven, Conn.	250 E
KBND—Bend, Ore.	250 P	WRAW—Reading, Pa.	250 E
KCKN—Kansas City, Kansas	250 C	WRHI—Rock Hill, S.C.	250 E
KCMJ—Palm Springs, Calif.	250 P	WSAJ—Grove City, Pa.	250 E
KCRE—Sacramento, Calif.	250 P	WSAV—Savannah, Ga.	250 E
KFRE—Fresno, Cal.	250 P	WSOY—Decatur, Ill.	250 E
KFYO—Lubbock, Texas	250 C	WSTV—Steubenville, Ohio	250 E
KGYZ—Kalispell, Mont.	250 C	WTAL—Tallahassee, Fla.	250 E
KGFV—Kearney, Nebr.	250 C	WTEL—Philadelphia, Pa.	250 E
KHMO—Hannibal, Mont.	250 C	WTRC—Elkhart, Ind.	250 E
KHUB—Watsonville, Calif.	250 P	WWPG—Palm Beach, Fla.	250 E
KMYR—Denver, Col.	250 M		
KOCY—Oklahoma City, Okla.	250 C	1350 Kilocycles—	
KOME—Tulsa, Okla.	250 C	CHGB—Ste. Anne de la Po-	
KPDN—Pampa, Texas	250 C	catiere, Que.	1,000 E
KPKW—Pasco, Wash.	250 P	KGHF—Pueblo, Colo.	500 M
KRBA—Lufkin, Texas	250 C	KID—Idaho Falls, Idaho	500 M
KRJE—Miles City, Mont.	250 M	KRNT—Des Moines, Iowa	5,000 C
KRMD—Shreveport, La.	250 C	KSRO—Santa Rosa, Calif.	1,000 P
KROC—Rochester, Minn.	250 C	WADC—Akron, Ohio	5,000 E
KROS—Clinton, Iowa	250 C	WORK—York, Pa.	1,000 E
*KSIL—Silver City, N.M.	250 M	WSMB—New Orleans, La.	5,000 C
KSUB—Cedar City, Utah	250 M		
KUIN—Grant's Pass, Ore.	250 P	1360 Kilocycles—	
KVIC—Victoria, Texas	250 C	KGB—San Diego, Calif.	1,000 P
KVOL—Lafayette, La.	250 C	KMO—Tacoma, Wash.	5,000 P
KVOX—Moorhead, Minn.	250 C	KRIS—Corpus Christi, Texas	1,000 C
KVSF—Santa Fe, N.M.	250 M	KSCJ—Sioux City, Iowa	5,000 C
KWFC—Hot Springs, Ark.	250 C	WDRG—Hartford, Conn.	5,000 E
KWLM—Willmar, Minn.	250 C	WKAT—Miami Beach, Fla.	1,000 E
KWOC—Poplar Bluff, Mo.	250 C	WSAI—Cincinnati, Ohio	5,000 E
KXRO—Aberdene, Wash.	250 P	WTAQ—Green Bay, Wis.	5,000 C
WAIR—Winston-Salem, N.C.	250 E	*WPPA—Pottsville, Pa.	500 E
WALL—Middletown, N.Y.	250 E		
WAML—Laurel, Miss.	250 C	1370 Kilocycles—	
WBAC—Cleveland, Tenn.	250 E	*—Dawson City, B.C.	1,000 P
WBRE—Wilkes-Barre, Pa.	250 E	KDTH—Dubuque, Iowa	1,000 C
WBRK—Pittsfield, Mass.	250 E	KFRO—Longview, Texas	1,000 M
WBRW—Welch, W.V.	250 E	KGIR—Butte, Mont.	5,000 C
WCBI—Columbus, Miss.	250 C	KGNO—Dodge City, Kansas	250 C
WCLS—Joliet, Ill.	250 C	WCOA—Pensacola, Fla.	500 C
WCMI—Ashland, Ky.	250 C	WFEA—Manchester, N.H.	5,000 E
WDAK—Columbus, Ga.	250 C	WPAB—Ponce, Puerto Rica	1,000 A
WDMJ—Marquette, Mich.	250 C	WSAY—Rochester, N.Y.	1,000 E
WEBR—Buffalo, New York	250 E	WSPD—Toledo, Ohio	5,000 E
WEIM—Fitchburg, Mass.	250 E		
WEMP—Milwaukee, Wis.	250 C	1380 Kilocycles—	
WENT—Gloversville, N.Y.	250 E	CKPC—Brantford, Ont.	1,000 E
WEXL—Royal Oak, Mich.	250 E	KBWD—Brownwood, Texas	500 C
WFBG—Altoona, Pa.	250 E	KIDO—Boise, Idaho	1,000 M
WFEB—Sylacauga, Ala.	250 C	KOTA—Rapid City, S.D.	5,000 M
WFHR—Wisconsin Rapids,		KTSM—El Paso, Texas	500 M
Wis.	250 C	KWK—St. Louis, Mo.	1,000 C
WFIG—Sumter, S.C.	250 E	WAWZ—Zarephath, N.J.	1,000 E
WGAA—Cedartown, Ga.	250 E	WBNX—New York, N.Y.	1,000 E
WGAU—Athens, Ga.	250 E	WMBG—Richmond, Var.	5,000 E
WGN—Newport News, Va.	250 E	WSYB—Rutland, Vt.	1,000 E
WGNI—Wilmington, N.C.	250 E	WTSP—St. Petersburg, Fla.	500 E
WGTM—Wilson, N.C.	250 E		
WHAT—Philadelphia, Pa.	250 E	1390 Kilocycles—	
WINX—Washington, D.C.	250 E	KCRC—Enid, Okla.	1,000 C
WIZE—Springfield, Ohio	250 E	KGER—Long Beach, Calif.	5,000 P
WJPF—Herrin, Ill.	250 C	KLPM—Minot, N.D.	1,000 P
WJPR—Greenville, Miss.	250 C	KSLM—Salem, Ore.	1,000 P
*WJOI—Florence, Ala.	250 C	WCSC—Charleston, S.C.	1,000 E
WJOL—Joliet, Ill.	250 C	WFBL—Syracuse, N.Y.	5,000 E
WKEY—Covington, Va.	250 E	WGES—Chicago, Ill.	5,000 C
*WKRK—Columbia, Tenn.	250 C	WTJS—Jackson, Tenn.	1,000 E
*WKUL—Cullman, Ala.	250 C		
*WKRZ—Oil City, Pa.	250 E	1400 Kilocycles—	
WLAK—Lakeland, Fla.	250 E	CJSO—Sorel, Que.	100 E
WLAV—Grand Rapids, Mich.	250 E	CKRN—Rouyn, Que.	250 E
WLBC—Munice, Ind.	250 C	KELD—El Dorado, Ark.	250 P
WLBK—Bowling Green, Ky.	250 C	KENO—Las Vegas, Nevada	250 P
WLNH—Laconia, N.H.	250 E	KFPW—Fort Smith, Ark.	250 C
WMBO—Auburn, N.Y.	250 E	KFRU—Columbia, Mo.	250 C
WMFF—Plattsburg, N.Y.	250 E	KFVS—Cape Girardeau, Mo.	250 C
WMLT—Dublin, Ga.	250 E	*KGVJ—Greenville, Texas	250 C
WMSA—Massena, N.Y.	250 E	KGFL—Roswell, N.M.	250 M
WNBH—New Bedford, Mass.	250 E	KGKL—San Angelo, Texas	250 C
WNCA—Asheville, N.C.,	250 E	*KHON—Honolulu, Hawaii	250 —

Call and Location.	Power in Watts. Zone.	Call and Location.	Power in Watts. Zone.
1400 Kilocycles—Continued.			
KIUN—Pecos, Texas	250 C	WSVS—Buffalo, N.Y.	250 E
KIUP—Durango, Colo.	250 M	WTCM—Traverse City, Mich.	250 E
*KLIZ—Brainerd, Minn.	250 C	WTON—Staunton, Va.	250 E
KLUF—Galveston, Texas	250 C	*—Honolulu, Hawaii	250 —
KNAK—Salt Lake City, Utah	250 M	*—McAlester, Okla.	250 C
KOKO—La Junta, Colo.	250 M	*—Maryville, Tenn.	250 C
KONO—San Antonio, Texas	250 C	*—Greenville, Texas	250 C
KORN—Fremont, Nebr.	250 C	*—Ellensburg, Wash.	250 P
KRE—Berkeley, Calif.	250 P		
KRKO—Everett, Wash.	250 P	1410 Kilocycles—	
KRLS—Lewiston, Idaho	250 P	CKMO—Vancouver, B.C.	1,000 P
KTEM—Temple, Texas	250 P	KERN—Bakersfield, Cal.	1,000 P
KTNM—Tucumcari, N.M.	250 M	KQV—Pittsburgh, Pa.	1,000 E
KTKO—Oklahoma, Okla.	250 C	WALA—Mobile, Ala.	5,000 E
KTSW—Emporia, Kansas	250 C	WEGO—Concord, N.C.	1,000 E
KTTS—Springfield, Mo.	250 C	WHTD—Hartford, Conn.	5,000 E
KTUC—Tucson, Ariz.	250 M	WING—Dayton, Ohio	5,000 E
KVFD—Port Dodge, Iowa	250 C	WKBH—La Crosse, Wis.	5,000 C
KVGB—Great Bend, Kansas	250 C		
KVOP—Plainview, Texas	250 C	1420 Kilocycles—	
KVRS—Rock Springs, Wyo.	250 P	KABR—Aberdeen, S.D.	5,000 C
KWLK—Longview, Wash.	250 M	KUJ—Walla Walla, Wash.	1,000 P
KWON—Bartlesville, Okla.	250 C	WFCL—Pawtucket, R.I.	1,000 E
KWYO—Sheridan, Wyo.	250 E	WHK—Cleveland, Ohio	5,000 E
WABY—Albany, N.Y.	250 E	WOC—Davenport, Iowa	5,000 C
WAGF—Dothan, Ala.	250 E	WPRP—Ponce, Puerto Rico	250 A
WARM—Scranton, Pa.	250 E	WQBC—Vicksburg, Miss.	1,000 C
WATL—Atlanta, Ga.	250 E	WWSR—St. Albans, Vt.	1,000 E
WATW—Ashland, Wis.	250 E		
WBLK—Clarksburg, W.Va.	250 E	1430 Kilocycles—	
WBNY—Buffalo, N.Y.	250 E	CHEX—Peterborough, Ont.	1,000 E
WBTH—Williamson, W.Va.	250 E	KARM—Fresno, Calif.	5,000 P
WBTM—Danville, Va.	250 E	KLO—Ogden, Utah	5,000 M
WCBM—Baltimore, Md.	250 E	KTUL—Tulsa, Okla.	5,000 C
WCNC—Elizabeth City, N.C.	250 E	KWKW—Pasadena, Calif.	1,000 P
WCOS—Columbia, S.C.	250 E	WBYN—Brooklyn, N.Y.	5,000 E
WDAS—Philadelphia, Pa.	250 E	WIRE—Indianapolis, Ind.	5,000 C
WDEF—Chattanooga, Tenn.	250 C		
WDWS—Champaign, Ill.	250 C	1440 Kilocycles—	
WELL—Battle Creek, Mich.	250 E	KFJM—Grand Forks, N.D.	500 C
WEOA—Evansville, Ind.	250 E	KGNC—Amarillo, Texas	1,000 C
WEST—Easton, Pa.	250 C	KILO—Grand Forks, N.D.	1,000 C
WFOR—Hattiesburg, Miss.	250 C	KMED—Medford, Ore.	1,000 P
WGAP—Maryville, Tenn.	250 E	*KMLB—Monroe, La. (1,230)	1,000 C
WGBR—Goldsboro, N.C.	250 C	KPRO—Riverside, Calif.	1,000 P
WGIL—Galesburg, Ill.	250 C	WAAB—Worcester, Mass.	5,000 E
WGRC—Louisville, Ky.	250 C	WBCM—Bay City, Mich.	500 E
WHBQ—Memphis, Tenn.	250 E	WHIS—Bluefield, W.Va.	500 E
WHDF—Calumet, Mich.	250 E	WROK—Rockford, Ill.	500 C
WHGB—Harrisburg, Pa.	250 E	WSFA—Montgomery, Ala.	500 C
WHLB—Virginia, Minn.	250 C		
WHUB—Cookeville, Tenn.	250 E	1450 Kilocycles—	
WHYN—Holyoke, Miss.	250 E	CFAB—Windsor, N.S.	100 A
WINC—Winchester, Va.	250 E	CFBR—Brookville, Ont.	250 E
WJAC—Johnstown, Pa.	250 E	CFOR—Orillia, Ont.	250 E
WJHO—Opelika, Ala.	250 E	CHPS—Parry Sound, Ont.	250 P
WJLB—Detroit, Mich.	250 C	CKOK—Penticton, B.C.	250 C
WJLD—Bessemer, Ala.	250 C	*KAMD—Camden, Ark.	250 C
WJZM—Clarksville, Tenn.	250 C	KATE—Albert Lea, Minn.	250 P
WKMO—Kokomo, Ind.	250 C	*KBNE—Boulder City, Nev.	250 P
WKPT—Kingsport, Tenn.	250 C	KBPS—Portland, Ore.	250 P
WKWK—Wheeling, W.Va.	250 E	KDNT—Denton, Texas	250 C
WLLH—Lowell, Mass.	250 E	KFAM—St. Cloud, Minn.	250 C
WMAN—Mansfield, Ohio	250 E	KFIZ—Fond du Lac, Wis.	250 P
*WMBG—Macon, Miss.	250 C	*KFLW—Klamath Falls, Ore.	250 P
WMBR—Jacksonville, Fla.	250 E	KFMB—San Diego, Calif.	250 C
WMFD—Wilmington, N.C.	250 E	KGFF—Shawnee, Okla.	250 M
WMGA—Moultrie, Ga.	250 E	KGIW—Alamosa, Colo.	250 M
WMIN—St. Paul, Minn.	250 C	KGLU—Flagstaff, Ariz.	250 M
WMSL—Decatur, Ala.	250 C	*KGRH—Fayetteville, Ark.	250 C
WNEX—Macon, Ga.	250 C	KLBM—La Grande, Ore.	250 P
WORD—Spartanburg, S.C.	250 E	KMYC—Marysville, Calif.	250 P
WPAY—Portsmouth, Ohio	250 E	KNET—Palestine, Texas	250 C
WRAK—Williamsport, Pa.	250 E	KNOE—Monroe, La.	250 C
WRDO—Augusta, Me.	250 E	KOAL—Price, Utah	250 M
WRJN—Racine, Wis.	250 C	KONP—Port Angeles, Wash.	250 P
WRRN—Warren, Ohio	250 E	KORE—Eugene, Ore.	250 P
WSAM—Saginaw, Mich.	250 E	KRBC—Abilene, Texas	250 C
WSAU—Wausau, Wisc.	250 C	KRBM—Bozeman, Mont.	250 M
WSLB—Ogdensburg, N.Y.	250 E		
WSRR—Stamford, Conn.	250 E		

Call and Location.	Power in Watts.	Zone.
1450 Kilocycles—Continued		
KRIC—Beaumont, Texas	250	M
KSAN—San Francisco, Calif.	250	P
*KSRV—Ontario, Ore.	250	P
KSMA—Santa Maria, Calif.	250	P
KTRI—Sioux City, Iowa	250	C
KVAK—Atchison, Kansas	250	C
KWAL—Wallace, Idaho	250	C
KWBW—Hutchinson, Kansas	250	C
*KXLR—North Little Rock, Ark.	250	C
*WAGC—Chattanooga, Tenn.	250	C
WACO—Waco, Texas	250	C
WAGM—Presque Isle, Me.	250	E
WAOV—Vincennes, Ind.	250	C
WASK—Lafayette, Ind.	250	C
WAZL—Hazleton, Pa.	250	E
WBBL—Richmond, Va.	250	E
WCBS—Springfield, Ill.	250	E
*WCNH—Concord, N.H.	250	E
WCRS—Greenwood, S.C.	250	E
*WDAD—Indiana, Pa.	250	E
WEED—Rocky Mount, N.C.	250	E
WFMJ—Youngstown, Ohio	250	E
WFNC—Fayetteville, N.C.	250	E
WFPG—Atlantic City, N.J.	250	E
WGL—Fort Wayne, Ind.	250	E
WGNC—Gastonia, N.C.	250	E
WGOV—Valdosta, N.C.	250	E
WGPC—Albany, Ga.	250	E
WHDL—Olean, N.Y.	250	E
WHFC—Cicero, Ill.	250	E
WHIT—New Bern, N.C.	250	E
WHLS—Post Huron, Mich.	250	E
WHMA—Anniston, Ala.	250	E
*WHSC—Hartsville, S.C.	250	E
WIBM—Jackson, Mich.	250	E
WILM—Wilmington, Del.	250	E
WJMS—Ironwood, Mich.	250	E
WJPA—Washington, Pa.	250	E
WKEU—Griffin, Ga.	250	E
WKLA—Ludington, Mich.	250	E
WKIP—Ploughkeepsie, N.Y.	250	E
WLAN—Endicott, N.Y.	250	E
WLAP—Lexington, Ky.	250	E
*WLAR—Athens, Tenn.	250	C
WLAY—Muscle Shoals City, Ala.	250	C
*WLEE—Richmond, Va.	250	E
WLEU—Erie, Pa.	250	E
WLPM—Suffolk, Va.	250	E
WMAJ—State College, Pa.	250	E
WMAS—Springfield, Mass.	250	E
WMBH—Joplin, Mo.	250	E
WMFJ—Daytona Beach, Fla.	250	E
WMOH—Hamilton, O.	250	E
WMVA—Martinsville, Va.	250	E
*WMVG—Milledgeville, Ga.	250	E
WNAB—Bridgeport, Conn.	250	E
WNOE—New Orleans, La.	250	E
*WNVA—Norton, Va.	250	E
WPAD—Paducah, Ky.	250	E
*WPAR—Parkersburg, W.Va.	250	E
*WPOR—Portland, Me.	250	E
WRLC—Toccoa, Ga.	250	E
WROX—Clarksdale, Miss.	250	C
WSLI—Jackson, Miss.	250	C
WSPB—Sarasota, Fla.	250	E
WTBO—Cumberland, Md.	250	E
WWDC—Washington, D.C.	250	E
*—Cartersville, Ga.	250	C
*—Marshfield, Wisc.	250	C

Call and Location.	Power in Watts.	Zone.
1460 Kilocycles—		
CJGX—Yorkton, Sask.	1,000	C
KINY—Juneau, Alaska	5,000	—
KSO—Des Moines, Iowa	5,000	C
KTYW—Yakima, Wash.	500	P
*WACO—Waco, Texas (1,450)	1,000	C
WBNS—Columbus, Ohio	1,000	E

Call and Location.	Power in Watts.	Zone.
1460 Kilocycles—Continued.		
WHEC—Rochester, N.Y.	500	E
WHP—Harrisburg, Pa.	1,000	E
WMP5—Memphis, Tenn.	500	E
WOKO—Albany, N.Y.	500	E
XETU—Tampico, Mex.	1,000	C
1470 Kilocycles—		
*CFOS—Owen Sound, Ont. (1,400)	1,000	E
CKGB—Timmins, Ont.	1,000	E
KDFN—Casper, Wyo.	1,000	P
KELA—Centralia, Wash.	1,000	P
WBIG—Greensboro, N.C.	5,000	P
WBBD—Peoria, Ill.	1,000	E
WSAN—Allentown, Pa.	5,000	E
XEAU—Tijuana, B.C.	250	A
XESM—Mexico City, D.F.	1,000	C
1480 Kilocycles—		
CHGS—Summerside, P.E.I.	100	C
CJVI—Victoria, B.C.	1,000	P
KCMO—Kansas City, Mo.	5,000	M
KGCX—Sydney, Mont.	1,000	C
KIEM—Eureka, Calif.	1,000	P
KTBS—Shreveport, La.	1,000	P
WHBC—Canton, Ohio	1,000	E
WHOM—Jersey City, N.J.	500	E
WRDW—Augusta, Ga.	5,000	E
WSAR—Fall River, Mass.	1,000	E
1490 Kilocycles—		
CFRC—Kingston, Ont.	100	E
CJIC—Sault Ste. Marie, Ont.	250	E
CKCR—Kitchener, Ont.	250	E
KBIX—Muskogee, Okla.	250	C
KBKR—Baker, Ore.	250	P
KBON—Omaha, Nebr.	250	C
KBST—Big Springs, Texas	250	C
KBUR—Burlington, Iowa	250	C
KDB—Santa Barbara, Calif.	250	P
KDRO—Sedalia, Mo.	250	C
KEEW—Brownsville, Texas	250	C
KEYS—Corpus Christi, Texas	250	C
KFFA—Helena, Ark.	250	C
KGKB—Tyler, Texas	250	C
KGKY—Scottsbluff, Nebr.	250	M
KNEL—Brady, Texas	250	C
KNOW—Austin, Texas	250	C
KOTN—Pine Bluff, Ark.	250	C
KOVC—Valley City, N.D.	250	C
KPAB—Laredo, Texas	250	C
KPLC—Lake Charles, La.	250	C
KPLT—Paris, Texas	250	C
KRRR—Roseburg, Ore.	250	P
KSAM—Huntsville, Texas	250	C
KTBI—Tacoma, Wash.	250	P
KTOH—Libue, Hawaii	250	P
KVOE—Santa Ana, Calif.	250	C
KVWC—Vernon, Texas	250	C
KWEW—Hobbs, N.M.	250	M
*KWOR—Worland, Wyo.	250	M
KXOA—Sacramento, Calif.	250	P
KYCA—Prescott, Ariz.	250	M
KYOS—Merced, Calif.	250	P
*WARD—Johnstown, Pa.	250	E
WBAB—Atlantic City, N.J.	250	E
WBTA—Batavia, N.Y.	250	E
WDAN—Danville, Ill.	250	E
WDBC—Escanaba, Mich.	250	E
WDNC—Durham, N.C.	250	E
WELO—Tupelo, Miss.	250	C
*WFKY—Frankfort, Ky.	250	C
WGAL—Lancaster, Pa.	250	E
WGKV—Charleston, W.Va.	250	E
WGTC—Greenville, N.C.	250	E
WHBB—Selma, Ala.	250	E
WHOT—South Bend, Ind.	250	C
WIGM—Medford, Wis.	250	C
WJBK—Detroit, Mich.	250	E
WJXN—Jackson, Miss.	250	C

Call and Location.	Power in Watts.	Zone.	Call and Location.	Power in Watts.	Zone.
1490 Kilocycles—Continued.					
*WKAY—Glasgow, Ky.	250	C	1520 Kilocycles—		
WKBB—Dubuque, Iowa	250	C	KOMA—Oklahoma City, Okla.	50,000	C
WKBV—Richmond, Ind.	250	C	WKBW—Buffalo, N.Y.	50,000	E
WKBZ—Muskegon, Mich.	250	E			
WKIX—Columbia, S.C.	250	E	1530 Kilocycles—		
WKNY—Kingston, N.Y.	250	E	KFBK—Sacramento, Calif.	10,000	P
WKRO—Cairo, Ill.	250	E	WCKY—Cincinnati, Ohio	50,000	E
WLAT—Conway, S.C.	250	E			
*WMGR—Bainbridge, Ga.	250	E	1540 Kilocycles—		
WMJM—Cordele, Ga.	250	E	KXEL—Waterloo, Iowa	50,000	C
WMOG—Brunswick, Ga.	250	E			
WMRC—Greenville, S.C.	250	E	1550 Kilocycles—		
WMRF—Lewistown, Pa.	250	E	CKTB—St. Catherines, Ont.	1,000	E
WMRN—Marion, Ohio	250	E	XERG—Tijuana, Mex.	1,000	P
WNLN—New London, Conn.	250	E			
WOLF—Syracuse, N.Y.	250	E	1560 Kilocycles—		
WOMI—Owensboro, Ky.	250	C	KPMC—Bakersfield, Calif.	1,000	P
WOPI—Bristol, Tenn.	250	C	WQXR—New York, N.Y.	10,000	E
WOSH—Oshkosh, Wis.	250	C			
WRGA—Rome, Ga.	250	C	1570 Kilocycles—		
WRLD—West Point, Ga.	250	C	CFPL—London, Ont.	5,000	E
*WROW—Athens, Tenn.	250	C			
WSAP—Portsmouth, Va.	250	E	1580 Kilocycles—		
WSTP—Salisbury, N.C.	250	E	CBJ—Chicoutimi, Que.	1,000	E
WTMC—Ocala, Fla.	250	E			
WTMV—E. St. Louis, Ill.	250	E	1590 Kilocycles—		
*WTWS—Clearfield, Pa.	250	E	WAKR—Akron, Ohio	5,000	E
*WTVL—Waterville, Maine	250	E	WALB—Albany, Ga.	1,000	E
WWSW—Pittsburgh, Pa.	250	E	WBRY—Waterbury, Conn.	1,000	E
*—Brawley, Cal.	250	P	XEMC—Mexico City, Mex.	5,000	C
*—Marietta, Ohio	250	E			
1500 Kilocycles—					
KSTP—St. Paul, Minn.	50,000	C	1600 Kilocycles—		
WTOP—Washington, D.C.	50,000	E	WKWF—Key West, Fla.	500	E
			WWRL—Woodside, N.Y.	250	E
1510 Kilocycles—					
KGA—Spokane, Wash.	10,000	P			
WLAC—Nashville, Tenn.	50,000	C			
6WMEX—Boston, Mass.	5,000	E			

INDIAN BROADCAST STATIONS

Indian stations provide a good signal in the winter, with B.B.C. news at 3 a.m., previous to which local news is heard. This list is compiled by our DX Adviser, Arthur T. Cushen, 212 Earn Street, Invercargill.

Location and Call.	Kilo. cycles.	Power in watts.	Location and Call.	Kilo. cycles.	Power in watts.
Peshawar—VUP	629	10,000	Aurangabad	940	500
Travandrum—VUR	658	5,000	Lucknow—VUV	1,022	5,000
Colombo, Ceylon—ZOH	700	5,000	Lahore—VUL	1,086	5,000
Hyderabad—VUV	730	5,000	Dacca—VUY	1,167	5,000
Trichinopoly—VUT	758	5,000	Bombay—VUB	1,231	1,500
Calcutta—VUC	810	1,500	Madras—VUM	1,420	250
Delhi—VUD	886	20,000			

HINTS AND KINKS

(1) Cardboard round a No. 6 Cell makes a good Crystal Set Coil Former after the cell is worn out.

(2) A large ratchet screwdriver is quite a good tool for boring holes in wooden panels.

(3) Adaptors for testing English base valves in American sockets can easily be

made by cutting down wafer sockets and fitting them into old valve bases. Be careful to get the connections correct plate to plate, grid to grid, etc., etc.

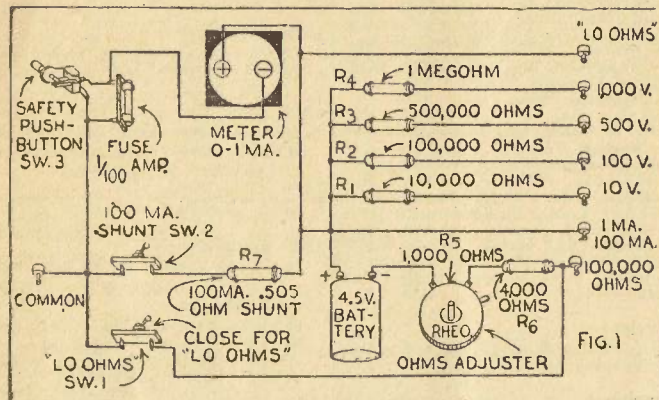
(4) When winding your own coils from printed instructions, be careful to note the direction of winding, as if this is not as indicated you may fail to get reaction.

HOW TO BUILD A UNIVERSAL SET-TESTING METER

(By JOHN T. WILCOX)

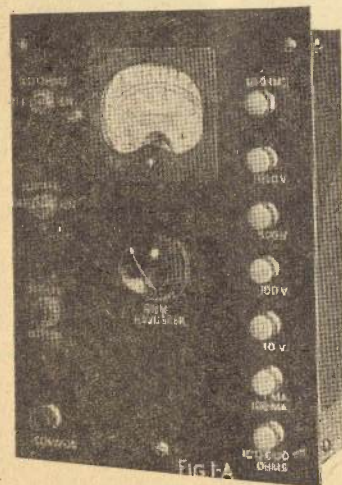
Editor's Note.—The following article appeared in a number of that well-known journal, "Popular Mechanics." The Tester appealed to us as one that would be of interest to many of our readers, and we are therefore repeating

Meters capable of measuring voltage, current and resistance constitute perhaps the most important part of the radio experimenter's equipment, enabling him to check his own construction and wiring, locate defective parts, and track

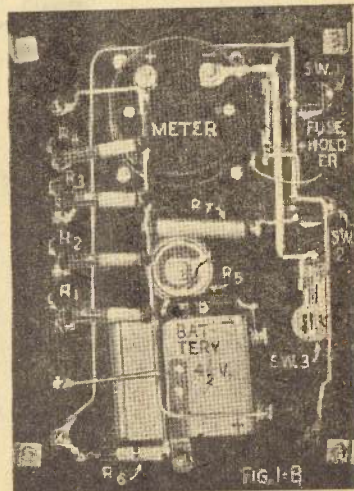


the description here. The illustrations have been copied from the original article and they may be slightly different from the components actually supplied in Kit Sets; for instance, the Meter would be a standard Palec round meter in place of the square one shown in the illustration. Price of Kit Sets does not include engraving on the panel or metal cabinet.

down circuit troubles. If separate meters were required for these various types of measurements the cost would be prohibitive to most experimenters. Fortunately, however, it is possible to use a single standard 0 to 1 ma. millimeter together with a few semi-precision resistors and switches to serve all of these purposes.



Completed Tester



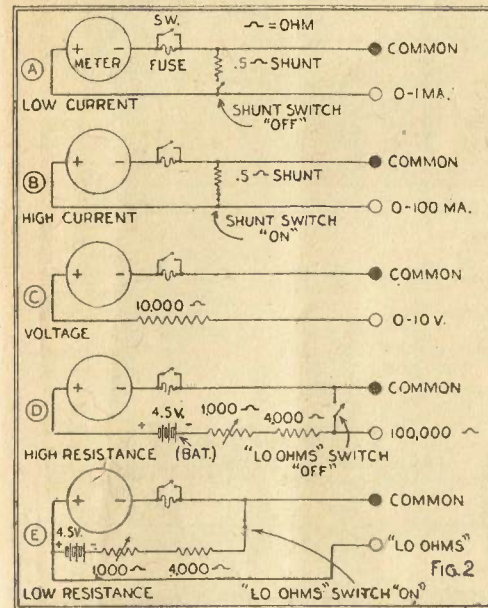
Under Panel

The home-made meter unit illustrated meets all requirements and provides the following d.c. measurement ranges: 0-1 and 0-100 milliamperes for current measurements; voltage—0-10, 0-100, 0-500 and 0-1,000 volts; resistance—0-500 and 0-100,000 ohms.

All parts, as specified and detailed in Fig. 1, cost about £5, and this includes the 7in. by 9in. Bakelite panel. The case is a standard 7in. by 9in. by 2in. sheet-steel chassis. The semi-precision fixed resistors are 1-watt carbon types supported by their own leads and the wiring. The multi-range meter scale, meter-shunt resistor, toggle switches, push-button switch, fuse and holder are all included in the kit of parts.

The fuse introduces a little additional resistance in the circuit and this will cause inaccuracies in reading certain

ranges. To avoid this, the safety push-button switch (SW3) is provided; when depressed, the fuse is short-circuited and accurate readings thus obtained. Diagrams A, B, C, D and E in Fig. 2 clearly show the connections employed for making all tests. In every case one test lead is connected to the "common" binding post, the other lead being connected to the binding post marked with the desired range. To measure resistances below 500 ohms, the "lo ohms" switch is placed in the "on" position and the "ohms adjuster" knob varied until the pointer on the meter rests at the extreme right end of the scale. For high-resistance measurements a similar preliminary adjustment must be made. To do this the "common" terminal is temporarily connected directly to the 100,000-ohm terminal and the knob is adjusted as before.



PARTS LIST FOR THE "UNIVERSAL SET-TESTING METER."

- One 0-1 MA Palec Meter
- One 7 x 9 Bakelite Panel
- Eight Terminals
- One Meter Push Switch
- Two S.P.S.T. Toggle Switches
- One Fuse Holder
- One 60 MA Fuse
- One 100 MA Shunt
- One 1000 ohm Wire-wound Potentiometer
- One Pointer Knob
- One 4½-volt Battery
- Five 1-watt Resistors
- One Packet Pushback Wire
- One Dozen Solder Lugs
- 1½ Dozen Nuts and Bolts

COMPLETE KIT OF PARTS, as listed above.

Cat. No. TK2011 £5/5/-

A novel panel finish may be obtained by first painting the chassis with whatever colour of paint one fancies, and while still wet sprinkle on sifted sand evenly and let dry. Then another coat of paint is applied over the sand. Use fine sand, and when this is spread on evenly it makes the job look professional. It can be used to do chassis and racks, etc. Salt works very well, too, but may whiten if it gets wet.—Rahob 7581.

Carbon from a torch battery makes a good welder if fastened to a piece of heavy cable and worked from a car battery.—Rahob 7474.

SEALING WAX MAKES ELECTRIC PLUGS SAFE

Short circuits often result because of the common practice of pulling electric fixture plugs out of the wall sockets by the cord. Strands of wire loosen bit by bit, eventually short, and blow the fuses. Tighten up the screws in the plug, then pour in melted sealing wax until all wires are covered. The wax will anchor the cord securely and double the life of the extension cord.—Rahob 9124.

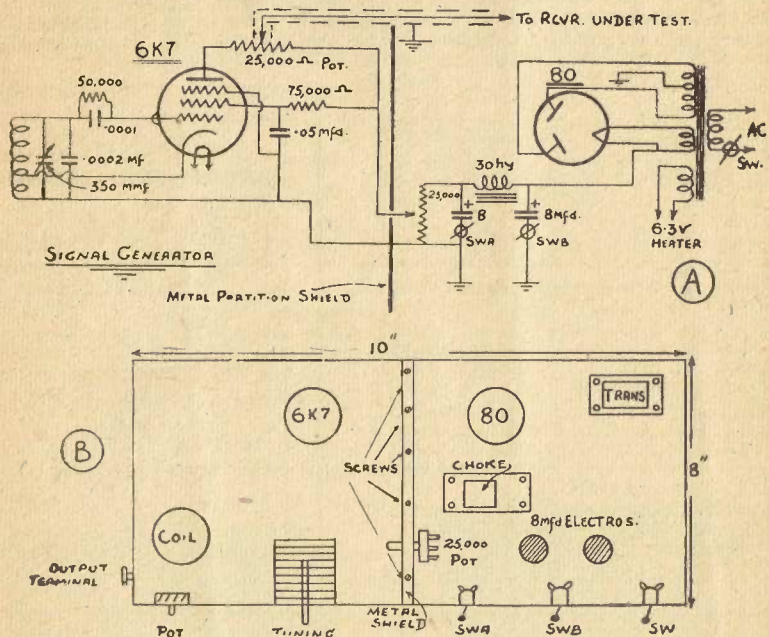
A SIGNAL GENERATOR

(By VERNON WHEATLEY)

A signal generator is a handy device to possess, but unfortunately a really first-class precision instrument is beyond the means of the average experimenter.

Here, then, is one which costs no more to build than the average two-tube receiver, and whilst it is not guaranteed to be of sub-standard accuracy, it will at least be accurate enough for the majority of experimenters, or servicemen starting off in business. The device is built on a wooden baseboard of the di-

superhets and TRF receivers, and also gives harmonics down to 20 metres for calibrating home-built receivers from the harmonics of broadcasting stations. An unmodulated signal is given when the electrolytic condensers are "switched in." With one condenser switched "out," a modulated signal is given, and, although provision is made for switching out both condensers, the builder will find that in most cases only the one condenser needs to be cut out.



mensions shown in sketch B. A general idea of the layout is shown also, and the completed job is installed in a metal case (metal bottom, as well, don't forget), with a hinged lid to effect coil changes. The metal partition shown is sufficiently large to effectively separate the two sections of the instrument, as the power supply must be screened off from the generator itself. The metal case should only be high enough to clear the top of the highest component used by about, say, half an inch. The output terminal may be mounted in any other convenient position shown, providing the connecting lead thereto is properly shielded.

The generator provides a modulated or unmodulated signal for lining up

The generator covers a range of from approximately 400 to 1500 kc/s. by means of plug-in coils. The coils are three in number, and details are given below:—

No. 1—37 turns, tapped at 9th turn.

No. 2—70 turns, tapped at 20th turn.

No. 3—140 turns, tapped at 40th turn.

Coil formers are standard 4 pin, 1½ in. in diameter, and the wire used is 28 g. to 30 g. D.C.C. or enamelled wire. Tapping points are counted from the "earth" end of the coils. All coils have an adequate overlap.

To test the completed oscillator, tune in a broadcast station on your receiver and bring the device adjacent to the receiver. Plug in coil No. 2, switch on SW to bring the instrument into action,

and rotate the tuning condenser. During the process you will hear a sharp whistling sound in the receiver. By selecting various broadcast stations and "beating" the generator against them, you can plot a chart on a sheet of graph paper for everyday reference. The dial readings of the oscillator are noted horizontally and the vertical aspect notes Kc/s. read from your receiver dial. Thus you are able to note known frequencies against your oscillator dial readings. Charts may be made for each coil.

Coil No. 3 tunes from 550 Kc/s. to about 400 Kc/s., thus covering the standard IF frequency. The ground shield of the output lead should always be grounded to the earth terminal of the receiver being tested.

To line tuning condensers, tune about to the H.F. end of the band, cut off switch SWA or SWB (either or both, as required) to give a modulated signal, and adjust the condensers to give a maximum output with the tonal signal.

To adjust I.F. stages, set the generator to 456 Kc/s. (or the appropriate frequency) and line up by direct grid connections.

To calibrate short-wave receivers, the generator is tuned to broadcast stations of known frequency, and then the harmonics are picked up on the short-wave bands.

If possible (and this is the best plan) calibrate the generator against a standard service instrument.

The power supply, you will observe, does not require to be a particularly robust job. Any supply will do, so long as about 100 to 150 volts D.C. (adjusted by the wire-wound pot.) are delivered to the oscillator tube, with, of course, necessary provision for a modulated tone when needed. Even an auto transformer or half-wave rectification

will do. The main idea is to have the source of supply deliver the necessary B+ of Pure Direct Current with an alternative of uninterrupted D.C.

It has been necessary to add a second 25,000 ohm wire-wound potentiometer in the circuit to replace the voltage divider, which is at present unprocurable.

SIGNAL GENERATOR PARTS LIST

- One 6K7 Valve
- One 80 Valve
- One .00035 mfd. Single Gang Condenser
- One 100 30h. Choke
- Three S.P.S.T. Toggle Switches
- One 60 ma. 6.3v. Power Transformer
- Two 25,000 ohm Wire-wound Potentiometers
- Two 8mfd. Dry Electrolytics
- Three 3½ in. x 1½ in. Coil Formers (with 4 pin mounting bases)
- Three Valve Sockets
- ½ lb. 28 or 30 gauge Wire
- One .0002 mfd. Tubular Condenser
- One .05 mfd. Tubular Condenser
- One .0001 mfd. Mica Condenser
- Two Resistors
- Two Knobs
- 2ft. Bonding Braid
- One Pkt. Push Back Wire
- Sundries, Nuts and Bolts, Etc.

COMPLETE KIT OF PARTS, as above, without base board or metal container

Cat. No. TK2007 £6/7/6

CUTTING ROUND HOLES IN ALUMINIUM

Experimenters usually find it very difficult to cut a neat round hole in an aluminium chassis. This can be overcome by the following:—

"Obtain a pair of carpenter's or machinist's heavy duty dividers and with one side drill a hole through the chassis until the point just shows. With this as the centre swivel adjust the dividers of the radius of the cutting and scribe out a circle. Make numerous cuts after this

fashion and then reverse the panel and make several cuts on the other side. Place this over a vice, having opened the jaws a little bit larger than the diameter already scribed and strike the inside of the circle several times with the round end of a ball peen hammer. Reverse the chassis and repeat the operation. Do this until you have lost all confidence in this method and then hit two or three times more and the cutting will drop out, leaving a fine smooth hole."

HAYMAN'S INFRA RED MEDICAL LAMPS

As supplied to the Auckland Hospital Board and many other hospitals throughout New Zealand. These Lamps allow you to obtain exactly the same Infra Red Treatment as given in many of the leading hospitals. Specially designed for use in Hospital Massage Departments, Surgeries, Clinics, Convalescent Homes, Institutions, and in private homes.

SPECIAL FEATURES INCORPORATED ARE:

Infra Red Radiating Element, emitting genuine Infra Red Rays, specially designed for heavy duty performance and long life; tested and proved by medical experts.

Non-luminous type Element.

Special brightly polished reflector to give the right focus of rays to location under treatment.

Switch on bowl to control the Element without disconnection of Wall Plug or Light Socket.

Strong, quick-fixing swivel joints which hold the radiator down firmly in any desired position, vertical or horizontal, with a very wide range of movement.

Strong, heavy cast base prevents standard from falling over. Attractively finished in bright nickel-plating, and wrinkle-finish baked enamel.

Infra Red Ray treatment is recommended for Rheumatism, Sciatica, Neuritis, Gout, Neuralgia, Lumbago, Toothache, Earache, Sprains, Insomnia, Chilblains, Boils, Septic Sores, and for healing open wounds and lacerations. Ask your Doctor.

TREATMENT: Apply the Rays to the bare skin, keeping the bowl about 18 inches away, or according to the sensitiveness of the skin of the patient. The Rays should always be a comfortably strong warmth, and should never be allowed to be so close as to be unbearably hot. The Lamp should be adjusted to suit individual requirements.

Duration of treatment should be according to medical advice, but 20 to 30 minutes is usually long enough for the first treatment, 2 or 3 times daily, according to the ailment and measure of relief received. Longer treatments can be given when accustomed to the Rays.

Before commencing treatment, the patient should be made comfortable in a bed or chair so as not to be weary during the period of treatment.

Supplied complete with flexible cord.

Spare Elements are available.

TE87—£2 each

TABLE TYPE

Cat. No. TE86

£8/5/-

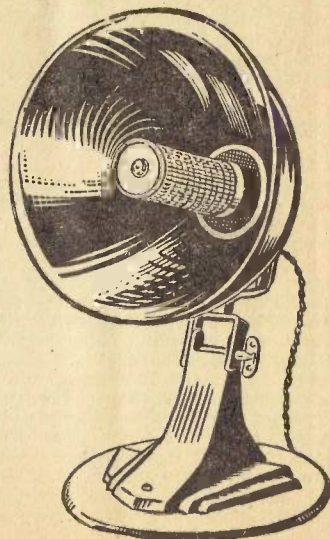
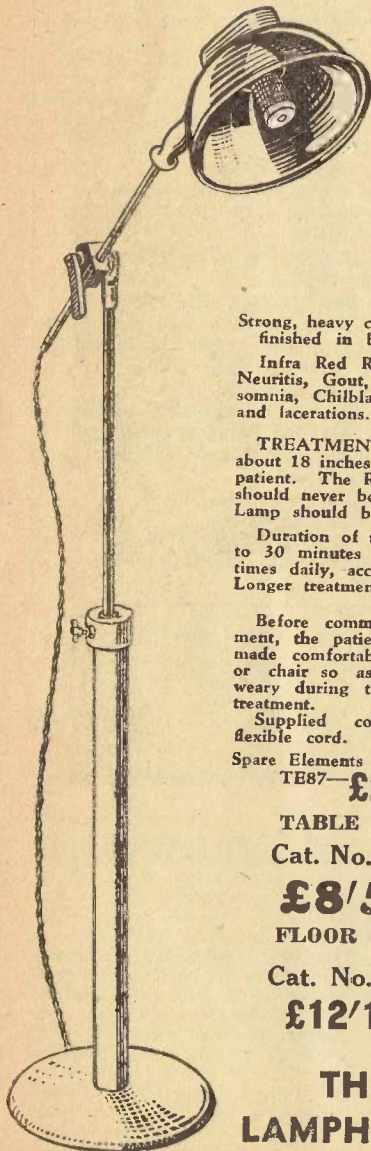
FLOOR TYPE

Cat. No. TE85

£12/10/-

**THE
LAMPHOUSE**

11 MANNERS ST.,
WELLINGTON.

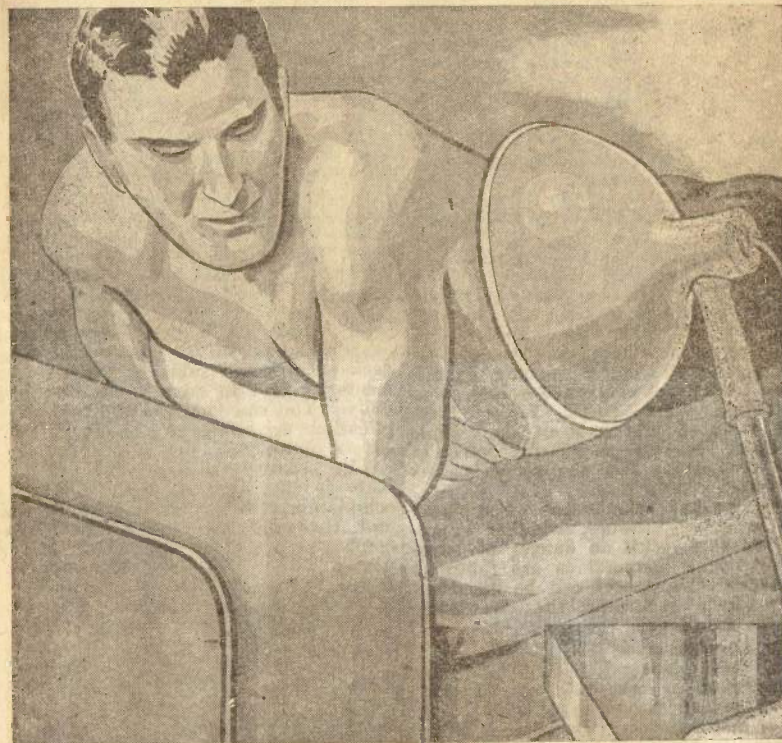


HEALTH FROM THE POWER POINT

Infra Red Therapy

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Before purchasing an Infra Red Outfit we strongly advise you to
CONSULT YOUR DOCTOR.



After many years' experience with Infra Red Lamps we are able to give a short account of the use and benefits which can be derived from this health-giving Home Treatment, and our experience is amply supported by the many letters of appreciation received from sufferers who have had great relief from pain after using the Infra Red treatment.

This article does not suggest that Home Treatment by Infra Red Therapy can or should take the place of your Physician. It is always wise to consult your Doctor, as he will know how beneficial Infra Red Treatment is, and so will be able to supervise the treatment and instruct you in the correct use of your Lamp for your particular complaint.

The value of these rays is well known by all medical practitioners, and most hospitals are now equipped with some form of Infra Red apparatus.

Very many common complaints are due firstly to the neglect of the simple rules of health—good plain food, fresh air and exercise, abundant sleep—and secondly to over indulgences, especially over-eating; and unless the primary cause is removed and bad health habits are corrected a permanent cure cannot be effected in spite of Infra Red treatment or anything else.

On the other hand, observance of these simple rules and regular Infra Red treatment to relieve pain and congestion will quickly restore to you that healthy joy of living so often envied in others.

WHAT ARE INFRA RED RAYS?

Energy is often transmitted by means of rays of a particular wave-length, and the whole series of energy rays is known as the Spectrum. A small part of the Spectrum is visible—ordinary light—and is known as the visible spectrum. This means that a certain range of energy wavelengths stimulates the eye and we are conscious of "light."

Now let us start at light—visible wave lengths. As we pass to shorter and shorter wave-lengths we enter the realm of Ultra Violet Light, invisible to the human eye and very irritating to the human skin if the exposure is prolonged. Still shorter wave-lengths are known as X-rays, which are used for deep photography. Beyond these the wave-lengths are infinitely small and are now being investigated by Physicists.

If we go back to visible light and increase the wave-length we come to Infra Red Rays, the subject of this article. These energy waves are also invisible. Infra Red gradually merges into the various types of Wireless Waves, which, of course, have still greater wave-lengths, so we see that Infra Red Rays are a form of Energy emanations which have great penetrating power insofar as the human tissues are concerned—much more penetrating than Ultra Violet Rays lying on the other side of the visible Spectrum. In this penetrating power of Infra Red Rays lies the secret of its health-giving properties.

Here we have the means of applying heat to energy tissues, whether superficial or deep, with no danger of burning, providing instructions are followed. But before this aspect can be discussed a few facts regarding the circulation must be mentioned.

The circulation of the blood is concerned with several vital functions. Among these are the supplying of food and oxygen to the tissues for the purpose of maintenance and repair. Removal of waste, including the products of tissue activity and tissue injury and protection against bacterial invasion. It follows then that the better the blood supply is to any part of the body the greater are the possibilities of tissue health. For example, a deep-seated bruise requires two things—a plentiful supply of repair materials and a rapid removal of the damaged tissue. Both depend upon a healthy blood supply to the affected part. Inflammation is the natural reaction of the system in an attempt to bring this about.

It is well-known that the application of heat assists and increases the circulation and the Infra Red Lamp is a convenient and efficient means of heat therapy. Properly used it is a useful adjunct to medical treatment prescribed by your Doctor. Local application is easily and

accurately controlled so that there is no danger of burns or accidents; and the relief from pain and the general assistance in restoring and maintaining health is beneficial to both body and mind. You will thus see that Infra Red Treatment is but the application of natural Health principles.

INSTRUCTIONS FOR USING YOUR INFRA RED LAMP

Connect to your electric light socket or wall plug and your Lamp is ready for use in 10 minutes. The Lamp is equally suitable for use by patients themselves or by an assistant. After the first treatment the patient can tell whether the treatment is going to be successful. If this is so it can be considered highly possible that the Lamp will assist considerably in a complete cure even though the ailment is deep-seated and of long standing.

The Lamp should be placed or held about 10in. to 12in. from the part being treated, or as close as can comfortably be borne. You should aim at treating about 10 square inches of the body surface. While Infra Red Rays are quite harmless and can be applied in longer periods, it is advisable to restrict treatments at first to twenty minutes, twice daily. You can lengthen the time of application according to the benefits and effects obtained.

The penetrating power of Infra Red Rays is such that deep-seated muscular complaints and congestions can be easily and conveniently treated. We cannot emphasise too strongly, however, the necessity for regular treatment at regular intervals so as to gain the maximal benefit. Endeavour to maintain this regularity, arranging a time at your own convenience so as to undergo treatment at the same time each day for several days without interruption or variation.

LAMPHOUSE ANNUAL SUPPLEMENTS

During this coming season we will be publishing periodically ILLUSTRATED SUPPLEMENTS, which will be posted free of charge to anyone interested. All those who were in the N.Z. Radio Hobbies Club need not fill in the form below as their names are already on our Mailing List.

The Electric Lamphouse, Ltd.
11. Manners St., Wellington, C.I.

Please send me Free of Charge your ILLUSTRATED SUPPLEMENT published periodically.

Name

Address